

Institutes for Implementation of Green Water Credits in the Upper Tana, Kenya



World Soil Information

Green Water Credits Report 16



F.N. Muchena and D.D. Onduru



Green Water Credits

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Green Water Credits Report 16

Foreword

ISRIC – World Soil Information has the mandate to create and increase the awareness and understanding of the role of soils in major global issues. As an international institution, ISRIC informs a wide audience about the multiple roles of soils in our daily lives; this requires scientific analysis of sound soil information.

The source of all fresh water is rainfall received and delivered by the soil. Soil properties and soil management, in combination with vegetation type, determine how rain will be divided into surface runoff, infiltration, storage in the soil and deep percolation to the groundwater. Improper soil management can result in high losses of rainwater by surface runoff or evaporation and may in turn lead to water scarcity, land degradation, and food insecurity. Nonetheless, markets pay farmers for their crops and livestock but not for their water management. The latter would entail the development of a reward for providing a good and a service. The Green Water Credits (GWC) programme, coordinated by ISRIC – World Soil information and supported by the International Fund for Agricultural Development (IFAD) and the Swiss Agency for Development and Cooperation (SDC), addresses this opportunity by bridging the incentive gap.

Much work has been carried out in the Upper Tana catchment, Kenya, where target areas for GWC intervention have been assessed using a range of biophysical databases, analysed using crop growth and hydrological modelling.

This report presents the results of an analysis that was carried out to identify the institutions that could collaborate most effectively in a GWC programme. There are many such institutions/ organisations involved in development activities in the Upper Tana catchment. Among these are natural resource users; government departments, ministries and their projects; civil society organisations; private sector institutions and development partners. All these institutions have varied interests, strengths, are faced by specific challenges, but can play different and important roles during implementation of GWC in the Upper Tana catchment. This document reveals how this can occur.

Dr ir Prem Bindraban
Director, ISRIC – World Soil Information

Key Points

- There are many institutions/organisations involved in development activities in the Upper Tana catchment. Among these are natural resource users; government departments, ministries and their projects; civil society organisations; private sector institutions and development partners. All these institutions have varied interests, strengths, are faced by specific challenges, but can play different and important roles during implementation of GWC in the Upper Tana catchment.
- An analysis - taking into account the challenges faced by farmers in implementation of *green water* management measures supported through a project such as TaNRMP - has been carried out to identify the institutions that can collaborate most effectively.
- With regard to policy support, the key ministries that are needed to implement at a large scale are: (i) the Ministry of Water and Irrigation (MoWI) - and its parastatal WRMA which can play a key role; (ii) the Ministry of Agriculture (MoA); and (iii) the National Environmental Management Authority (NEMA).
- Mobilisation and sensitisation of farmers and communities at the start of the GWC project will be key. There are many organisations that can undertake this task, but the ones that are important are those with established structures at grassroots level. Among these there are: (i) WRMA with its established WRUAs at sub-catchment levels; (ii) the Focal Area Development Committees which have been formed by NALEP and Community Forest Associations); and (iii) extension staff of the Ministry of Agriculture.
- For effective implementation of the GWC project there will be need for additional capacity building and education on *green water* management. In the Upper Tana catchment there are public, civil society and private institutions who could offer these services. Among them are the Ministries of Agriculture and of Livestock Development through NALEP and KARI; various faith based organisations; private sector companies such as Syngenta and Monsanto; and NGOs like SACDEP-Kenya and Technoserve International.
- There are many farmers' support organisations which can provide technical assistance and supportive services to improve farming practices. However, apart from MoA extension services which have a wide geographical coverage, most of the others operate only in specific areas due to manpower and financial resource limitations.
- There are CBOs and FBOs that are well organised and cohesive which can participate in GWC investments by executing a peer-monitoring role. Among them is the Catholic Diocese of Meru which can also act as a guarantor organisation for the farmers. However, from the analysis appears that no single institution can handle and guarantee all the support that the farmer needs to implement GWC.
- Two main recommendations stand out; these are:
 1. It is recommended that a consortium approach be used in implementation of GWC investments in *green water* management; and
 2. It is proposed that the representation would be from community based organisations, faith based organisations, Water Resources Users Associations and the Ministry of Agriculture.

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Acronyms and Abbreviations

ACK	Anglican Church of Kenya
AIDS	Acquired Immune Deficiency Syndrome
ARIS	Agricultural Research and Investment Services
ATIRI	Agricultural Technology and Information Response Initiative
CAAC	Catchment Area Advisory Committee
CAP	Community Action Plan
CBO	Community Based Organisation
CCS	Christian Community Services
CDA	Coast Development Authority
CFA	Community Forest Action
CHW	Community Health Programme
CIG	Common Interest Group
CMS	Catchment Management Strategies
CPC	Community Project Cycle
CSIP	Commercial Sustainable Investment Package
CSO	Community Society Organisation
DANIDA	Danish International Development Agency
DP	Development Partner
EADN	Extending Agro-Dealer Networks
EMCA	Environmental Management and Conservation Act
FADC	Focal Area Development Committee
FAO	Food and Agriculture Organisation of the United Nations
FBO	Faith Based Organisation
FCI	Farm Concern International
FFA	Food-for-assets
GEF	Global Environment Facility
GIS	Geographical Information System
GO	Government Organisation
GoK	Government of Kenya
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit
GWC	Green Water Credits
HIV	Human Immuno-deficiency Virus
IFAD	International Fund for Agricultural Development
IFDC	International Fertilizer Development Centre
IGA	Income Generating Activity
INGO	International Non-Governmental Organisation
ISRIC	World Soil Information
KADICO	Kahuro Division Interchurches Organisation
KAPP	Kenya Agriculture Productivity Project/Programme
KARI	Kenya Agricultural Research Institute
KASAL	Kenya Arid and Semi-Arid Lands Programme
KAWASCO	Kahuti Water and Sanitation Company Ltd
KENFAP	Kenya National Federation of Agriculture Producers
KenGen	Kenya Electricity Generation Company

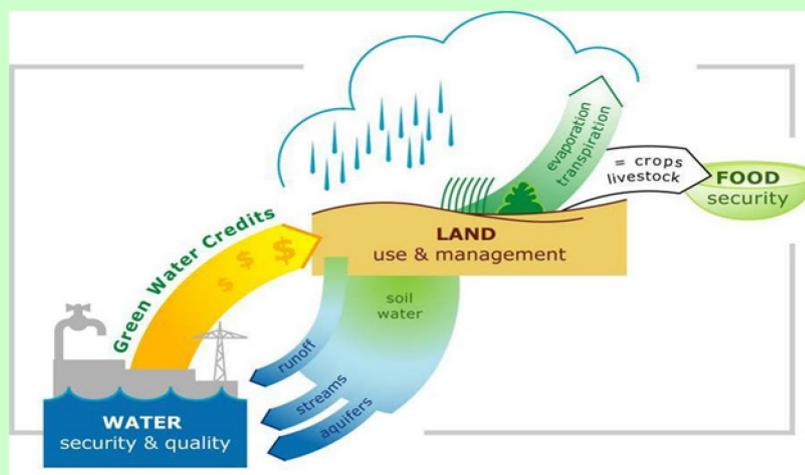
KSh	Kenya Shilling
KFS	Kenya Forest Service
KNADA	Kenya National Agro-Dealers Association
KSS	Kenya Soil Survey
KWSP	Kenya Water and Sanitation Programme
LATF	Local Authority Transfer Fund
MKEPP	Mount Kenya East Pilot Project
MoA	Ministry of Agriculture
MoLD	Ministry of Livestock Development
MOSANet	Mogoiri South Avocado Network
MoU	Memorandum of Understanding
MoWI	Ministry of Water and Irrigation
NALEP	National Agriculture and Livestock Project
NARL	National Agricultural Research Station
NASEP	National Agriculture Sector Extension Policy
NEMA	National Environmental Management Authority
NGO	Non-Governmental Organisation
NMK	Niaa Marufuku Kenya
NRM	Natural Resource Management
NWC	Nairobi Water Company
SACDEP	Sustainable Agriculture Community Development Programme
SCMP	Sub-Catchment Management Plan
SHOMAP	Small Horticulture Marketing Project
Sida	Swedish International Development Agency
SoMCODI	Songa Mbele Community Development Initiative
SSA	Sub-Saharan Africa
SWC	Soil and water conservation
SWOT	Strengths, Weaknesses, Opportunities, Threats
TaNRMP	Tana Natural Resources Management Project
TARDA	Tana and Athi Rivers Development Authority
ToT	Trainer of Trainers
UTTA	Upper Tana Target Areas
WDC	Water Resource Users Association Development Cycle
WFP	World Food Programme
WOCAT	World Overview of Conservation Approaches and Technologies
WRMA	Water Resources Management Authority
WRUA	Water Resource User Association
WSTF	Water Services Trust Fund
YARD	Youth Action for Rural Development

Green Water Credits: the concepts

Green water, Blue water, and the GWC mechanism

Green water is moisture held in the soil. Green water flow refers to its return as vapour to the atmosphere through transpiration by plants or from the soil surface through evaporation. *Green water* normally represents the largest component of precipitation, and can only be used *in situ*. It is managed by farmers, foresters, and pasture or rangeland users.

Blue water includes surface runoff, groundwater, stream flow and ponded water that is used elsewhere - for domestic and stock supplies, irrigation, industrial and urban consumption. It also supports aquatic and wetland ecosystems. *Blue water* flow and resources, in quantity and quality, are closely determined by the management practices of upstream land users.



Green water management comprises effective soil and water conservation practices put in place by land users. These practices address sustainable water resource utilisation in a catchment, or a river basin. *Green water* management increases productive transpiration, reduces soil surface evaporation, controls runoff, encourages groundwater recharge and decreases flooding. It links water that falls on rainfed land, and is used there, to the water resources of rivers, lakes and groundwater: *green water* management aims to optimise the partitioning between *green* and *blue water* to generate benefits both for upstream land users and downstream consumers.

Green Water Credits (GWC) is a financial mechanism that supports upstream farmers to invest in improved green water management practices. To achieve this, a GWC fund needs to be created by downstream private and public water-use beneficiaries. Initially, public funds may be required to bridge the gap between investments upstream and the realisation of the benefits downstream.

The concept of green water and blue water was originally proposed by Malin Falkenmark as a tool to help in the understanding of different water flows and resources - and the partitioning between the two (see Falkenmark M 1995 Land-water linkages. FAO Land and Water Bulletin 15-16, FAO, Rome).

1 Introduction

This report comprises the findings of a study on an inventory of institutions operating in the Upper Tana catchment that can support farmers and farmers groups to implement soil and water conservation or “*green water* management” (see “Green Water Credits: the concepts” on page 10) on a large scale- within the proposed Commercial Sustainable Investment Package (CSIP) in the Tana Natural Resources Management Project (TaNRMP). The report assesses the effectiveness of the institutions, looking at their interests (roles and responsibilities), strengths (comparative advantages), weaknesses (challenges) and which role they can fulfil in the Green Water Credits (GWC) approach to manage the soil and water resources of river basins, in particular in the Upper Tana catchment, which is the target of the GWC-Pilot Design project and of TaNRMP.

ISRIC-World Soil Information commissioned a team of consultants¹ (herein referred as the 'Team') from ETC East Africa Ltd to carry out an institutional inventory of farmer-supporting institutions and farmers' groups in three sub-catchments, and to extrapolate this information for potential application to the whole Upper Tana TaNRMP project area. This will inform all interested parties in GWC and the proposed TaNRMP that targets support to land users to implement soil and water conservation at a large scale.

1.1 Background Information

Green Water Credits (GWC) is a proposed investment mechanism that will support rainfed smallholders' farms to strengthen existing or introduce improved *green water* management - these are all land, soil and water conservation (SWC) measures that will reduce runoff and enhance rainwater infiltration in farmers' fields, thereby reducing evaporation from the soil surface. The GWC concept is that if upstream farmers use this improved *green water* management, downstream water users will benefit from improved *blue water* resources - this includes regulated riverflow, reduced sediments in rivers and reservoirs and recharged groundwater resources. Downstream water users considered so far in GWC include: KenGen, Nairobi Water Company (NWC) and other large urban and industrial water users, large-scale irrigation companies (e.g. Del Monte and Kakuzi) and smallholder irrigators (e.g. within the Yatta irrigation scheme).

It is envisaged that the implementation of improved land and water management will be realised in two to three demonstration sub-catchments in the Upper Tana, each home to an estimated 15,000 to 20,000 smallholder households. The selection of these demonstration sub-catchments will be based upon the Upper Tana Target Areas (UTTA) map, which delineates hotspots. Implementation will take place under the forthcoming IFAD-funded Tana NRM Project, 2012-2019.

To achieve the projected improved land and water management, the smallholder farmers will require both short-term and long-term investment packages. The short-term investment is the package of regular production inputs that the farmer needs, which is composed of seeds, fertilizer and other agro-chemicals. The long-term investment forms the backbone of the GWC concept and consists of the farmer's inputs required for improved *green water* management measures, which consists of labour, tools, mulching materials, cover crops, grasses for vegetative barriers, tree seedlings, etc. A portion of these long-term investments is

¹ Dr Fred Muchena and Mr Davies Onduru.

envisaged to be covered by a GWC Investment Fund and other available Environmental Services grants, most probably as a soft loan or a grant in the form of a voucher.

The investment package should follow the principle of a “Commercial Sustainable Investment Package (CSIP)” as advocated by Equity Bank. Innovative in the CSIP is the long-term investment part. The CSIP works well for regular farmers' loans that address production inputs for recognised commodities such as tea, coffee, grains, livestock, etc. However, the challenge is to further develop the CSIP for a combined package that includes the long-term investments inputs required for *green water* management practices. These investments, once adopted by a significant proportion of the farmers, will lead to private and public benefits in terms of: (i) on-farm productivity, (ii) recharged groundwater, reduced flooding, and reduced siltation of surface water, (iii) a sustainably protected soil and water natural resource base, and (iv) resilience to climate change.

1.2 The Study Area

The study area comprises three selected sub-catchments in the Upper Tana GWC project area. The area was selected among the catchments identified as hotspots with respect to land degradation. The selection of the sub-catchments was carried out in consultation with the Water Resources Management Authority (WRMA), Embu. The sub-catchments are Kayahwe, covering a tributary of Maragua river in Kahuro District; Lower Chania sub-catchment of Chania river, (Gatundu North, Gatanga and Thika West Districts and parts of Nyandarua District) and Tungu sub-catchment covering a tributary of Mutonga river in Meru South and Mara Districts. However, other relevant institutions with a stake in the project and operating within the Upper Tana catchment were included in the inventory.

1.3 Objective of the Study

The objective of the study was to conduct an inventory and SWOT (“Strengths, Weaknesses, Opportunities, Threats”) assessment of effective institutions that can support farmers and farmers’ groups to implement *green water* management within the Commercial Sustainable Investment Package (CSIP) in the Upper Tana project area.

2 Approach and methodology

Mapping of the institutions operating in the study area was carried out with emphasis on those institutions that would be potentially most effective in supporting farmers and farmer groups to implement *green water* management measures in the Upper Tana project area. The process of mapping the institutions was participatory through one-to-one interviews and discussions or focus group discussions with an emphasis on a SWOT analysis. A checklist of questions asked is presented in Textbox 1.

Box 1

Check list of questions raised during institutional survey

1. What is the type of organisation: Governmental organisation (GO), Non-governmental organisation (NGO), Community based organisation (CBO), Faith based organisation (FBO), Private sector.
2. What is the mandate of the organisation and main roles/responsibilities (interests): include also area of operation and duration.
3. What is the comparative advantage (strengths) of the organisation in relation to GWC activities?
4. What are the main challenges/weaknesses of the organisation?
5. What is the potential role the organisation can play in the implementation of green water management measures in the Upper Tana project area?

The inventory was carried out in the three selected sub-catchments as well as other areas within the Upper Tana project area and Nairobi. Within the sub-catchments key informant interviews were held with the district staff of the Ministry of Agriculture to get their views on the institutions (CBOs, FBOs, NGOs, Private sector) within their areas of operation which were providing services to farmers/farmer groups. The identified institutions were then interviewed separately to assess their interests; strengths, challenges faced and potential collaboration with GWC (see Annex 1).

During the household survey and focus group discussions, the farmers were requested to rank the institutions that provide them with service. This enabled the Team to assess the farmers' perception of the capacity of respective institutions to offer technical assistance and other supportive services to improve farming practices.

From the information gathered during the interviews and ranking from the farmers, the Team identified effective community based organisations that could form effective grassroots farmers' groups or associations that could handle the GWC investments and could execute a peer monitoring role.

3 Findings

3.1 Introduction

There are many players/stakeholders involved in development activities in the Upper Tana area. These stakeholders can be grouped into the following categories:

- a. Farmers and Related Natural Resource Users (farmers, agropastoralists, Water Resource Users Associations (WRUAs);
- b. Government Departments and Ministries and Projects (Water Resources Management Authority - WRMA; Mount Kenya East Pilot Project - MKEPP; National Agriculture and Livestock Extension Project - NALEP; Ministry of Agriculture - MoA, Ministry of Livestock Development - MoLD, Ministry of Water and Irrigation - MoWI);
- c. Civil Society Organisations (NGOs, FBOs and CBOs);
- d. Private Sector (including agro-chemical firms - Syngenta, Monsanto, Kakuzi, Del Monte; Kenya National Federation of Agriculture Producers - KENFAP); and
- e. Development Partners (Equity Bank Foundation; International Fertilizer Development Centre - IFDC; International Fund for Agriculture Development - IFAD).

An analysis of the interests, strengths (comparative advantages) of the farmer support institutions and organisations identified in the study area and the role they can play in GWC is presented in Annex 1. The mapping of the institutions showing their main activities, type of organisation, where they are located and area of operation is presented in Annex 2. A summary description of the institutions interviewed is presented in Annex 3. The list of persons contacted/interviewed during the inventory of institutions is presented in Annex 4.

3.2 Overview of the Institutions

3.2.1 Farmers support organisations and related natural resource users

The majority of population in Upper Tana catchment depend on rainfed agriculture for their livelihoods. These include small-scale farmers, large-scale farmers, and agropastoralists. This category of rainfed land users forms the main focus target group for Green Water Credits. The farmers and agropastoralists effectively own the land's resources and therefore have a key role in ensuring conservation of these resources for sustainable use.

An important group of stakeholders in this category are the Water Resources Users' Associations (WRUAs) which were formed after sensitisation by the Water Resources Management Agency (WRMA) to address water resources problems in the various sub-catchments. Each WRUA is first registered as a community based organisation with the Ministry of Gender, Children and Social Development and later as an association in the Office of the Registrar of Societies in Attorney General's Office. The WRUAs also register with WRMA for collaborative management of water resources within the sub-catchments. Some have signed a Memorandum of Understanding (MoU) with WRMA.

The WRUAs have been sensitised on their roles and responsibilities, institutional framework, water sector reforms, roles and functions of WRMA and Catchment Area Advisory Committee (CAAC). The WRUA management has also been instructed on procurement, financial management and on areas of collaboration with relevant

stakeholders to ensure effective water resource management. Each WRUA has representatives from the Upper, Middle and Lower parts of the sub-catchment (taking gender balance into consideration). Every WRUA has a management committee which meets quarterly.

Each WRUA, in collaboration with WRMA and local stakeholders, has prepared 5-year Sub-Catchment Management Plan (SCMP) which identifies water resources problems, prioritises them and comes up with strategies and activities to address the problems. As mentioned in Section 1.2 the specific WRUAs interviewed were Kayahwe WRUA, the Lower Chania WRUA and the Tungu WRUA. Saba Saba WRUA also in the Upper Tana catchment was analysed by Anniek Elemans in April 2011: see Annex 4) who studied the Saba Saba sub-catchment. From the analysis of the WRUAs these organisations have the following strengths:

- Legal support (They are registered with the Social Services Department of the Ministry of Gender, Children and Social Development and Registrar of Societies in the Attorney General's Office);
- Indigenous technical knowledge of the catchment;
- The confidence of the communities they represent (communities were involved in formation of WRUAs); and
- Trained committees.

However, the WRUAs face the following challenges that need to be addressed:

- Encroachment into land allocated for public purposes;
- Slow process of understanding of concept of conservation by communities;
- Inadequate funds to implement all activities, in particular for SWC/ *green water* management;
- Impacts of climate change (droughts especially);
- Illegal water abstraction;
- A poorly informed community; and
- Non-sustainable use of springs.

Potential role in Green Water Credits

The WRUAs can play an important role in the Green Water Credit programme since they are involved in sustainable management of the natural resources and have the mandate for the whole sub-catchments. Furthermore the WRUAs have Sub-Catchment Management Plans where *green water* management activities such as those anticipated for GWC are included. In view of this, the WRUAs could be involved in the following activities in respect to GWC:

- Implementation of *green water* management activities;
- Community mobilisation and sensitisation;
- Monitoring and evaluation of activities to confirm that farmers have implemented them.

However, the WRUAs would need further capacity building to enhance their effectiveness.

In particular, to support the implementation of SWC at a large scale in the Upper Tana catchment, adequate funds are not yet quantified in the Sub-Catchment Water Management Plans (SCMP). So far, in these SCMPs, very limited budgets have been defined for sensitisation about SWC, but no attempt has been made to quantify the large investments needed to support the smallholders in the Upper Tana. The GWC project studies indicate that several tens of millions of US\$ are needed.

3.2.2 Government Departments and Ministries, and Projects

This category includes the Ministry of Water and Irrigation (MoWI) which is the parent ministry under which GWC will be implemented; Ministry of Agriculture (MoA); Ministry of Livestock Development; Local Authorities (County Councils); WRMA, National Environmental Management Authority (NEMA); Kenya Forest Service (KFS); Mount Kenya East Pilot Project (MKEPP); National Agriculture and Livestock Extension Project (NALEP); Kenya

Agricultural Research Institute (KARI - NARL and Kenya Soil Survey); Provincial administration; and Water Services Trust Fund (WSTF).

The above institutions are in some way or other involved in conservation of soil, land and water resources as outlined briefly below:

- Ministry of Water and Irrigation (MoWI) is the host ministry of GWC and involved in monitoring of water resource management; supervision and provision of technical services and policy matters. By mandate the MoWI role is restricted to *blue water* management (not *green water* management, see MoA).
- Ministry of Agriculture (MoA) is involved in provision of technical extension services and training on soil and water conservation, improved farming; agroforestry and efficient use of water for irrigation. MoA jointly with Ministry of Livestock Development co-hosts NALEP. By mandate MoA is the principal agency to deal with *green water* management in farmland. MoA extension officers work at grassroots level with smallholders to disseminate knowledge on proper crop, land and water management.
- Ministry of Livestock Development (MoLD) is involved in management of rangelands and provision of technical advice and extension services and training on livestock management. By mandate MoLD is the principal agency to deal with *green water* management in rangelands.
- Local Authorities (County Councils) are responsible for the management of Trust Lands on behalf of the communities.
- Provincial administration (particularly the Chiefs and Assistant Chiefs) is involved in community sensitisation and mobilisation on conservation matters. It is also involved in enforcement of existing laws on conservation.
- Kenya Forest Service (KFS) is involved in protection of “water towers”, rehabilitation of degraded areas and provision of technical advice on suitable tree species for various ecological zones. By mandate KFS is the principal agency to deal with *green water* management in forest land. The agricultural land in the water towers is the mandate of the MoA.
- WRMA is a state corporation under the Ministry of Water and Irrigation established through the Water Act of 2002 and charged with being the lead agency in water resources management. WRMA’s mission is “to manage, regulate and conserve all water resources in an effective and efficient manner by involving the stakeholders, guaranteeing sustained access to water and equitable allocation of water while ensuring environmental sustainability”. By mandate, WRMA is the principal agency to deal with *blue water* management in the river basins. WRMA recognises that it also should include *green water* management, but needs operational linkages with the three ministries and their agencies dealing with *green water* management.
- National Environmental Management Authority (NEMA) is a state corporation under the Ministry of Environment and Mineral Resources, and is involved in enforcement of Environmental Management and Conservation Act (EMCA) 1999. This includes management of wetlands and water resources and conduct of Environmental Impact Assessment and Audit.
- Mount Kenya East Pilot Project for Natural Resources Management (MKEPP) is under MoWI. Its activities are funded by GoK/IFAD and are initially being implemented in five selected river basins in Mount Kenya east area. MKEPP is implementing five components: water resources management; rural livelihoods (which include on-farm soil and water conservation activities); environmental conservation; community empowerment; and project management and coordination.
- National Agriculture and Livestock Extension Project (NALEP) is implemented jointly by MoA and MoLD, and its aim is to increase effectiveness of integrated extension services to farmers and agropastoralists. NALEP’s strategy to achieve its goal is through the formation of Focal Area Development Committees (FADCs) in areas which comprise 2000 to 6000 farmers. In each focal area NALEP, in collaboration with farmers, carries out a participatory rural appraisal which identifies development problems at community level, culminating in development of Community Action Plans (CAPs). The CAPs are expected to act as bargaining tools for the FADCs to mobilise and access resources, and also to assess their rural development over time. NALEP extension staff - taking into account the prevailing technical challenges

faced by agriculture in the focal areas - identify “viable agricultural enterprises” which have the potential of improving agricultural yields and boosting household food security and incomes. NALEP then brings together interested farmers into common interest groups (CIGs) to address specific enterprises. Some of these CIGs are involved in soil and water conservation activities, which are promoted by Ministry of Agriculture extension staff.

- Kenya Agricultural Research Institute is a research institution conducting on-farm and on-station research on crops, livestock, land and water management (soil fertility, SWC and conservation agriculture, agroforestry, and irrigation and drainage). The National Agricultural Research Laboratories (KARI-NARL) is one of the largest research centres dealing with land and water management research. Kenya Soil Survey (KSS), which is based at NARL, deals with land resource inventory and Geographical Information System (GIS). NARL, and particularly KSS, have a large database on soils and land use.
- The Water Services Trust Fund (WSTF) is a state corporation established under the Water Act, 2002 with the mandate “to assist in financing the provision of water services to areas of Kenya which are without adequate water services”. WSTF’s mandate incorporates supporting capacity building activities and initiatives that aim at enabling communities to plan, implement, manage, operate and sustain water services - by creating awareness and disseminating information regarding community management of water services, encouraging their active participation in implementation and management and handling proposals from community groups (WRUAs) on soil and water conservation.
- Songa Mbele Community Development Initiative (SoMCDI) is a project supported by Ministry of Agriculture, and is involved in empowering communities to increase value of the available resources through training of farmers on processing and value addition to agriculture products. This can partly contribute to GWC activities given that the uptake of *green water* management practices needs to have linkages with high value crops and/ or income generation activities for addressing immediate farmer concerns while they await the long-term benefits associated with *green water* management activities.

A detailed description of the institutions is presented in Annex 3. Some of the institutions operating in Saba Saba sub-catchment have been described by Elemans (2011).

The above category of institutions has various strengths which can be summarised as follows:

- Financial and policy support by GoK;
- Good network-staff up to community level (MoA and MoLD);
- Qualified and experienced technical staff;
- Good collaboration with farmers;
- Uses a community approach (MKEPP);
- Integrated approach to conservation;
- Use of participatory approaches (MKEPP and NALEP);
- Have technical skills; and
- Have biophysical information to act as a baseline (Database on soils and land use - KARI-NARL and KSS).

However, the institutions are faced with the following challenges that would need attention:

- Inadequate staff for service provision and scientists;
- Inadequate facilitation (transport, equipment, funding etc);
- Weak policy support particularly with regard to enforcement;
- Overload with farmers’ demands for services; and
- Weak response to uptake of technologies by farmers.

Potential role in Green Water Credits

The above institutions can play different roles in GWC in terms of policy support: implementation; mobilisation and sensitisation of communities; provision of technical advisory services; and capacity building. The Ministry of Water and Irrigation (MWI) being the host ministry for the Tana Natural Resources Project (hence GWC) will

play a critical role as a key partner in implementation of GWC (policy support and provision of technical support). The Tana basin WRMA with its regional Office in Embu, in conjunction with its regional offices in Muranga, Kerugoya and Meru, can be a key partner in the implementation of the GWC, by mobilisation and capacity building of communities to form WRUAs and overseeing their activities.

The Ministry of Agriculture (MoA), being the main institution that provides extension services on soil and water conservation, can play a key role in implementation of GWC (mobilisation and capacity building of farmers and provision of technical advisory services). The Ministry of Livestock Development (MoLD) being a partner of MoA in implementation of NALEP can also play an important role in GWC by provision of technical advisory services. The GWC project can utilise some of the organisational structures such as the Focal Area Development Committees (FADCs) and Common Interest Groups (CIGs) that have been established through NALEP for mobilisation and sensitisation of the communities about soil and water conservation.

For the implementation of GWC the experiences and lessons learnt during the implementation of MKEPP should be taken into account, particularly regarding aspects related to natural resources management and conservation.

The Kenya Agricultural Research Institute (KARI) can contribute to a GWC implementation project under TaNRMP by offering technologies and technical advice on soil and water management (including soil fertility), irrigation and drainage, and land resource inventory through its research centres at NARL and Embu. NARL could supervise and coordinate activities being carried out by KARI in collaboration with GWC project and also offer the link between MoA and MoWI. The Kenya Soil Survey (KSS) which is part of NARL can participate in data collection and delivery through its GIS.

Other organisations such as the KFS can collaborate with a GWC implementation project under TaNRMP in protection of water towers and provision of technical advice on appropriate tree species for SWC. The provincial administration and local authorities would be important during the sensitisation and mobilisation of the communities at the beginning of the GWC project.

The Water Services Trust Fund (WSTF) can play a critical role in financial support of the GWC activities through the window of Water Resource Users Association Development Cycle (WDC) model while organisations like SoMCODI can offer services on capacity building of farmers.

3.2.3 Civil Society Organisations

This category of stakeholders includes the following:

- Non Governmental Organisations (NGOs): Technoserve International; Greenbelt Movement; Hand-in-Hand Eastern Africa; MURAMATI SACCO Society Ltd² and Sustainable Agriculture Community Development Programme (SACDEP-Kenya).
- Faith Based Organisations (FBOs): Kahuro Division Interchurches Organisation (KADICO); Christian Community Services (CCS); and Diocese of Meru, Tharaka-Nithi Deanery.
- Community Based Organisations (CBOs): There are many CBOs in Upper Tana catchment but only a sample of them have been interviewed during this study and particularly those operating in the three sub-catchments that have been studied (Kayahwe, Lower Chania and Tungu sub-catchments). The CBOs interviewed include: Kiamboka Self Help Group/Kiamboka Irrigation Project; Miumo Community Based Organisation; Youth Action for Rural Development (YARD); Kieni Community Forest Association (CFA);

² MURAMATI SACCO Society Ltd Operates like a microfinance institution.

Greenland Self Help Group; Mugumoini Kugeria Women Group; and Focal Area Development Committees (FADCs): Kaganda FADC; Weithaga FADC; Mogoiri North FADC; and Mogoiri South FADC in Kayahwe sub-catchment; Ithaga FADC; Gachege FADC; Gathaite FADC; and Karure FADC in Lower Chania sub-catchment; Kaanwa- Ndumbini FADC; and Ntuntuni FADC in Tungu sub-catchment.

In Kenya, villages comprise the smallest administrative and geographical boundaries in the current political dispensation (of the Central Government) and households living in a particular village are rarely organised into one big group called a 'Village Community'. Instead what is found on the ground are organised self-help groups, youth groups, women groups, benevolence groups, etc. which may draw membership from one village, different villages and clans; and not everyone living in a village is necessarily a member. These groups can come together to form an umbrella called a CBO covering a wider geographical area (legal identity through registration with Dept. of Gender and Social Development, Ministry of Gender, Children and Social Development). Similarly another entity found at community level is an association (a different entity) which may also take the format with an apex body, and may or may not have several groups under it, but with legal identity through Registrar of Societies (AGs Office) e.g. the pathway followed by WRUAs for registration to achieve a legal identity. It is noted that a society can draw membership from any quarters not confined to a village, so long as there is a common bond.

A detailed description of the institutions is presented in Annex 3. Other CBOs and FADCs operating in Saba Saba sub-catchment have been described by Elemans (2011). From the analysis of the institutions they have the following strengths and challenges as shown below in Table 1.

Table 1

Strengths and Challenges/ Weaknesses of NGOs, FBOs and CBOs interviewed

Category of Institution	Strengths	Challenges/Weaknesses
NGOs	<ul style="list-style-type: none">- Financial resources- Legal status (registered)- Qualified and skilled staff- Promote empowerment and active participation of communities in rural development	<ul style="list-style-type: none">- Attitude of the people and politics with regards to hand-outs and dependency issues- Labour availability is limited in places- Limited finances/poverty- Inadequate staff (few staff available)
FBOs	<ul style="list-style-type: none">- Support from the Church- Legal status through registration- Wide area of coverage (rural areas)- Expertise and technological skills- Have community support- Strong partnerships and collaboration	<ul style="list-style-type: none">- Few staff (Inadequate resource persons)- Limited reach out due to resource limitations (cannot meet demand for services)- Increasing frequency of drought episodes attributed to climate change- Change of farmers perceptions/attitude from traditional to modern farming techniques- Young people dislike agriculture³
CBOs	<ul style="list-style-type: none">- Legal status through registration- Active running committee (Functioning FADC Committee)- Operate in rural areas/community based- Common interest groups	<ul style="list-style-type: none">- Inadequate funds for implementation of projects (group activities)- Poor/Irregular attendance of meetings- Limited market for tree seedlings- Attitude of farmers (Some people view FADC as waste of time (no incentives)- Slow adoption of technologies

Note: An analysis of strengths and challenges of each individual organisation is presented in Annex 1.

Potential role in Green Water Credits

The above institutions (NGOs, FBOs and CBOs) can play different roles during the implementation of the GWC project activities in terms of: farmer education and training (building capacity of farmers on agricultural and environmental conservation); participating in follow-up to see that *green water* management measures have been carried out; community sensitisation and mobilisation; acting as a guarantor organisation; supporting implementation of GWC; implementation of *green water* management activities; and linking farmers to service providers (agricultural extension, markets, and input keepers).

From the analysis of the five NGOs interviewed, their current activities and strengths, it is considered that only three of them can offer services to GWC project. (1) SACDEP-Kenya and (2) Technoserve International can participate in farmer education and training on soil fertility and *green water* management, and linkage of farmers to service providers while (3) the Greenbelt Movement can offer advice on tree seedlings as well as distributing the same at low cost.

The three faith based organisations (FBOs): Kahuro Division Interchurches Organisation (KADICO); Christian Community Services (CCS); and Diocese of Meru, Tharaka-Nithi Deanery can play an important role in the SWC activities. The organisations have a wide network in their areas of operation, support and confidence of the community and are already involved in activities related to community mobilisation and awareness creation, capacity building on SWC and income generating activities. The CCS and Catholic Diocese of Meru (Tharaka-

³ The youth rarely take up farming as a business that can bring quick cash returns.

Nithi Deanery) can also act as a guarantor organisation for financial incentives to farmers/communities for undertaking *green water* management measures. The Diocese of Meru (Tharaka - Nithi Deanery) is already involved in guaranteeing farmers in their mandate area to World Food Programme (WFP) for undertaking SWC measures and then Equity Bank pays the farmers.

The CBOs can play different roles depending on their current mandate and activities, the cohesiveness and leadership of the organisation in respect to governance issues. However, most of the CBOs interviewed indicated that they can participate in GWC project activities particularly with regard to community sensitisation and mobilisation. Some of the CBOs and farmers indicated that they can supply labour in kind for actual implementation of *green water* management measures with technical support from extension service providers. However, quantification of this volume of labour to be supplied in kind was not expressively included in this study. This will be followed up by the Project Design team for it also involves some policy considerations; some projects peg farmer contribution in kind to be in the range of 25-30%⁴.

For example Water Services Trust Fund for WRUAS has different requirements for farmer contribution, assuming figures up to 25% in kind.

Among the CBOs are the Focal Area Development Committees (FADCs) which have been established through NALEP and MKEPP. The FADCs have received training from MoA and MoLD extension staff through NALEP and MKEPP on different aspects of agriculture, livestock development, SWC, leadership group dynamics and financial management. Some of the FADCs have not been very active after NALEP left the focal area while most of them have registered as self-help groups and are actively involved in livelihood improvement activities such as “table banking” (an informal savings scheme for specific community purposes), income generating activities as well as farming. However, the FADCs can be useful in sensitisation and mobilisation of farmers and implementation of *green water* management measures. Some of the well-established and cohesive FADCs such as Ithaga and Gathaite (in Lower Chania sub-catchment), Weithaga (in Kayahwe sub-catchment) and Kaanwa-Ndumbini (in Tungu sub-catchment) can be involved in monitoring of farmers who have implemented SWC measures in partnership with other institutions involved in GWC project activities such as MoA extension staff.

3.2.4 Private Sector

This category of stakeholders includes organisations providing services to farmers and communities in the study area which include KENFAP, Syngenta and Monsanto and organisations involved in production such as Kakuzi and Del Monte. Included under this category are financial institutions such as Equity Bank and service providers such as Kahuti Water and Sanitation Company Ltd (KAWASCO). This category of institutions has various strengths which can be summarised as follows:

- Legal mandate;
- Financial support/resources;
- Technical know-how;
- Products for marketing;
- Well known products; and
- Farmer trust.

However, the institutions are faced with challenges/weaknesses that would require to be addressed:

⁴ For example the Water Services Trust Fund for WRUAS has different categories of farmer contribution with figures of up to 25%.

Potential role in Green Water Credits

The above institutions can play various roles during implementation of a GWC project in terms of: being important sources of inputs (herbicides, crop protection chemicals and seeds); mobilisation of farmers; capacity building of farmers; partnership in implementation of *green water* management measures and supporting financial mechanism.

The two private companies, Syngenta and Monsanto can play a key role in being sources of inputs (agro-chemicals and seeds) for conservation agriculture. They can also participate in capacity building of farmers on conservation agriculture and proper use of agro-chemicals. The Syngenta Foundation can also offer services on crop insurance. It should, however, be noted that the magnitude of participation of these institutions (Syngenta and Monsanto) will depend on the relationship of the activities in relation to their interest which is profit-oriented.

The Kahuti Water and Sanitation Company Ltd (KAWASCO) can work in partnership with the GWC project in implementation of *green water* management activities in their mandate area of operation. KENFAP can participate on policy advocacy and mobilisation of farmers during the implementation of GWC. Equity Bank through Equity Bank Foundation would be instrumental in participation in financial mechanisms for GWC.

3.2.5 Development partners

This category of stakeholders is involved in funding of projects/programmes and could be potential partners in the GWC project. Currently the development partners operating in the Upper Tana catchment include IFAD (supporting MKEPP), World Bank (Supporting Natural Resources Management Project), IFDC (International Fertilizer Development Centre), and Equity Bank Foundation.

The above institutions have the following strengths:

- Financial resource endowment;
- International fund raising (IFAD and IFDC);
- Networking with input suppliers for efficient use of inputs (IFDC); and
- Capacity building of farmers on proper use of agro-chemicals (IFDC).

However, the institutions are faced by the following challenges that need to be addressed:

Potential role in Green Water Credits

As mentioned above this category of institutions would be instrumental in funding the activities of GWC project particularly IFAD. IFDC would bring together all players involved in GWC project activities throughout the value-chain using a cluster approach. IFDC would also participate in implementation of GWC project (contracting service providers to deal with specific clusters and capacity building) since they have had similar experiences with the accelerated Agribusiness in Africa project.

4 Conclusions and recommendations

4.1 Conclusions

On Institutions

C1. There are many institutions/organisations involved in development activities in the Upper Tana catchment area. Among them are natural resource users; government departments, ministries and projects; civil society organisations; private sector institutions and development partners. All these institutions have varied interests, strengths; are faced by varied challenges and can play different roles during implementation of SWC in the Upper Tana catchment. These factors in conjunction with the challenges faced by farmers in implementation of *green water* management measures, supported through an implementational project such as TaNRMP, have been considered in identification of the various institutions that can collaborate effectively with project or programme that will support farmers and agropastoralists to implement SWC/ *green water* management on a large scale.

On policy support

C2. With regard to policy support the key ministries that are needed to implement on a large scale SWC are: (i) the Ministry of Water and Irrigation (MoWI) and its parastatals: WRMA can play a key role (implementation of the Water Act 2002), (ii) the Ministry of Agriculture (implementation of Agricultural Act 1965 and subsequent amendments), and (iii) the National Environmental Management Authority (NEMA) in implementation of the Environmental Management and Conservation Act (EMCA) 1999. A challenge will be cooperation at the operational level between these key ministries.

On mobilisation and sensitisation

C3. Mobilisation and sensitisation of farmers and communities at the start of the implementation of GWC project will be key. There are many organisations that can undertake this task but the ones that are considered most important are those with established structures at grassroots level. Among them there are three important ones: (i) WRMA with its established WRUAs at sub-catchment levels; (ii) the Focal Area Development Committees (FADCs) which have been formed by NALEP and Community Forest Associations (CFAs); and (iii) the extension staff of the Ministry of Agriculture, who are represented up to location level, also contribute to mobilisation and awareness creation. It should however be noted that all these organisations have challenges that need to be addressed and will require more staff and staff training.

On capacity building and education

C4. For effective implementation of GWC project there will be need for additional capacity building and education on soil and water conservation. In the Upper Tana catchment there are public, civil society and private institutions who could offer these services. Among them are the extension staff of the Ministry of Agriculture and Ministry of Livestock Development through NALEP and KARI; faith based organisations such as the Christian Community Services (CCS), and the Catholic Diocese of Meru-Tharaka-Nithi Deanery; private sector companies such as Syngenta and Monsanto can offer services on conservation tillage; and NGOs like SACDEP-Kenya and Technoserve International can offer capacity building services.

On Technical Assistance and support services

C5. There are many farmers' support organisations which can provide technical assistance and supportive services to improve farming practices. However, apart from MoA extension services which have a wide geographical coverage, most of the others operate only in specific areas due to manpower and financial resource limitations.

On Implementation of GWC Investments

C6. There are a few CBOs and FBOs which are well organised and cohesive which can participate in GWC investments by executing a peer-monitoring role. Among them are some FADCs, some WRUAs and some FBOs such as CCS and the Catholic Diocese of Meru (Tharaka-Nithi-Deanery) who can also act as a guarantor organisation for the farmers. However, from analysis of the institutions it appears that no single institution can handle and guarantee all the support that the farmer needs to implement SWC.

4.2 Recommendations

R1. Noting that there are many CBOs in the study area that focus on livelihoods but not (or not much) on SWC, that FADCs established by MoA are active in the study area, some have been registered into self-help groups but a few of them are not cohesive while a few are effective and could be useful in sensitisation of the community on SWC issues;

Considering and appreciating that WRMA is installing an institutional setting through WRUAs which has representation and membership from the community (grassroots support); and

Realising that collaboration with many institutions is needed to get *green water* management measures implemented:

It is recommended that a consortium approach be used in implementation of GWC investments in green water management measures/SWC.

R2. Considering the geographical coverage of the Upper Tana catchment it will be necessary to identify specific organisations to form consortium for different parts of the catchment which would be responsible for implementation of *green water* management on a large scale:

It is proposed that the representation would be from CBOs, FBOs, WRUAs and the Ministry of Agriculture⁵.

⁵ It is the opinion of the authors that the lead agency of the consortium should be agreed upon by stakeholders and Project Design team based on further consultations, which build on information gathered in this report, but also on donor's policy direction.

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Annex 1 Institutional Analysis for Green Water Credits in the Upper Tana Catchment

Stakeholders	Roles/Responsibilities (Interests)	Strengths (Comparative Advantage)	Weaknesses (Challenges)	What they can do for the GWC Project
Natural Resource Users				
Water Resources User Associations (WRUAs)	<ol style="list-style-type: none"> 1. Natural resource conservation-identification of areas requiring SWC 2. Community mobilisation 3. Overseeing activities within the sub-catchment 4. Collection of revenue 	<ol style="list-style-type: none"> 1. Legal support 2. Indigenous technical knowledge of the sub-catchments 	<ol style="list-style-type: none"> 1. Illegal water abstraction 2. Ignorance of the community 3. Over use of springs 	<ol style="list-style-type: none"> 1. Implementation of GWC activities 2. Community mobilisation and sensitisation
Kayahwe sub-catchment WRUA	<ol style="list-style-type: none"> 1. Natural resource conservation-identification of areas requiring SWC 2. Community mobilisation 3. Overseeing activities within the sub-catchment 4. Collection of revenue 	<ol style="list-style-type: none"> 1. Legal support 2. Indigenous technical knowledge of the sub-catchments 3. Partnership with tea farmers 	<ol style="list-style-type: none"> 1. Inadequate funds 2. Conflicting policy with CFA with regard to tree planting 	<ol style="list-style-type: none"> 1. Community mobilisation and sensitisation 2. Implementation of GWC activities
Lower Chania WRUA	<ol style="list-style-type: none"> 1. Natural resource protection 2. Community mobilisation and education 3. Overseeing activities within the sub-catchment 4. Collection of revenue 	<ol style="list-style-type: none"> 1. Legal support (registered) 2. Indigenous technical knowledge of the sub-catchment 3. Have confidence of communities 4. Committees trained 	<ol style="list-style-type: none"> 1. Encroachment into public land 2. Slow process of understanding of concept of conservation by the communities 3. Inadequate funds 4. Climate change (drought spells) 	<ol style="list-style-type: none"> 1. Community mobilisation and education 2. Implementation of GWC activities 3. Monitoring and evaluation of SWC activities
Tungu WRUA				
Civil Society Organisations - Non Governmental Organisations (NGOs)				
Technoserve (International NGO)	<ol style="list-style-type: none"> 1. Improvement of livelihoods 2. Management of coffee factories 3. Training of farmers on agricultural practices (including SWC, agronomy and tree planting) 	<ol style="list-style-type: none"> 1. Financial resources 2. Legal status (registered) 3. Qualified and skilled staff 4. Promote empowerment and active participation of communities in rural development 	<ol style="list-style-type: none"> 1. Attitude of the people and politics 2. Labour availability is limited in places 3. Limited finances/poverty 	<ol style="list-style-type: none"> 1. Farmer education and training 2. Linkage of farmers to input keepers

Stakeholders	Roles/Responsibilities (Interests)	Strengths (Comparative Advantage)	Weaknesses (Challenges)	What they can do for the GWC Project
Green Belt Movement	<ol style="list-style-type: none"> 1. Tree planting (indigenous plus exotics) 2. Establishment of tree nurseries 3. Planting of trees in public lands to prevent grabbing 4. Promotion of fruit trees 	<ol style="list-style-type: none"> 1. Established network (Wide coverage) 2. Legal status (registered) 3. Qualified and skilled staff 4. Training on water harvesting, SWC, etc. 	<ol style="list-style-type: none"> 1. Untimely payment of workers 2. Inadequate staff (nursery attendants) 3. Inadequate implements 	<ol style="list-style-type: none"> 1. Supply of tree seedlings 2. Advice on skills (training) 3. Participate on follow-up to see that SWC measures have been carried out.
Hand-in- Hand Eastern Africa	<ol style="list-style-type: none"> 1. Training of farmers 2. Micro-finance 3. Value addition and marketing 	<ol style="list-style-type: none"> 1. Affiliation to Hand-in-Hand International 2. Existence of farmer groups 	<ol style="list-style-type: none"> 1. Only recently established in Kenya 	<ol style="list-style-type: none"> 1. Micro-finance 2. Mobilisation of groups
MURAMATI SACCO Society Ltd	<ol style="list-style-type: none"> 1. Micro-finance 2. Savings and loans 	<ol style="list-style-type: none"> 1. Legal status 2. Well established 	<ol style="list-style-type: none"> 1. Open to everybody 	<ol style="list-style-type: none"> 1. Group financing?
Sustainable Agriculture Community Development Programme (SACDEP- Kenya)	<ol style="list-style-type: none"> 1. Sustainable agriculture 2. Renewable energy 3. Reclamation of degraded areas 4. Youth empowerment 5. Food security 	<ol style="list-style-type: none"> 1. Legal status through registration as NGO 2. Has physical infrastructure 3. Operational systems in place 4. Well trained and experienced human resources 5. Good will of the communities and collaborators 	<ol style="list-style-type: none"> 1. Project based funding limiting continuity after project end 2. Some communities have not taken groups as a vehicle for development 3. Staff turnover 4. Literacy levels at community level affect progress of activities 5. Weather Inadequate funds to meet demands 	<ol style="list-style-type: none"> 1. Training of farmers on soil fertility and SWC 2. Mobilisation of the community
Faith Based Organisations (FBOs)				
Kahuro Division Interchurches Organisation (KADICO)	<ol style="list-style-type: none"> 1. Spiritual nourishment 2. Community mobilisation and education on HIV/AIDS 3. Poverty reduction (orphans, widows) 4. Promote empowerment and active participation of communities in rural development and income generating activities 	<ol style="list-style-type: none"> 1. Major operations in rural areas 2. Knowledge on the ground 3. Wide representation from locations 4. Legal status (registration) 	<ol style="list-style-type: none"> 1. Attitude of the woman not positive 2. High poverty levels 3. Limited market for income generating activities such as rabbit keeping 	<ol style="list-style-type: none"> 1. Partnership in farming, mobilisation and empowerment
Christian Community Services (CCS)	<ol style="list-style-type: none"> 1. Food security and agribusiness 2. Sustainable agriculture practices and organic farming 3. Drip irrigation 4. Environmental conservation 5. Soil and water conservation (tree planting) 6. Microfinance (revolving fund) 7. Income generating activities (Business 	<ol style="list-style-type: none"> 1. Support from Anglican Church 2. Legal status through registration 3. Wide area of coverage 	<ol style="list-style-type: none"> 1. Change of farmers perceptions/attitude from traditional to modern farming techniques 2. Inadequate resource persons 3. Young people dislike agriculture 4. Inadequate financial resources (farm inputs) 5. Uncooperative political leadership 	<ol style="list-style-type: none"> 1. Building capacity of farmers on agricultural and environmental conservation 2. Community sensitisation and mobilisation 3. Can act as a guarantor organisation

Stakeholders	Roles/Responsibilities (Interests)	Strengths (Comparative Advantage)	Weaknesses (Challenges)	What they can do for the GWC Project
	management skills) 8. Water harvesting 9. Training and awareness creation on HIV/AIDS (target young mothers) 10. Community health programme (train CHWs and help them register)			
Diocese of Meru Tharaka-Nithi Deanery	1. Livelihood security (agriculture, food and livestock production, natural resources) 2. Microfinance 3. Community empowerment 4. Civic education	1. Support from Catholic Church 2. Expertise and technological skills 3. Have community support 4. Strong partnerships and collaboration 5. Supportive (friendly) environment	1. Lean budgets for project implementation 2. Few staff 3. Limited reach out due to resource limitations (cannot meet demand for services) 4. Climate change (cannot adhere to seasonal calendar)	1. Support implementation of GWC 2. Capacity building 3. Can act as a guarantor organisation
Community Based Organisations (CBOs)				
Kiamboka Self Help Group Kiamboka Irrigation Project	1. Irrigation farming (horticultural crops) 2. Income generation	1. Legal status through registration 2. Active running committee	1. Community has not fully gotten into the farming idea 2. Financial constraints (Limited access to inputs-seeds, pesticides, fertilizers etc.) 3. Limited advisory staff 4. Limited water storage	1. Participation in SWC activities 2. Enhancement of food security.
Miumo Community Based Organisation	1. Assistance in burials 2. Assistance to people living with disability 3. Agriculture (dairy goats) 4. Grading of feeder roads 5. Spring protection	1. Legal status through registration 2. Information gathering and delivery 3. Labour available	1. Limited finances 2. Destruction of feeder roads by soil degradation	1. Availing labour for SWC
Youth Action for Rural Development (YARD)	1. Income generation for youth 2. HIV/AIDS awareness 3. Environmental rehabilitation 4. Food security 5. Access to information (resource centre)	1. Legal status through registration 2. Good will from farmers 3. Skilled staff 4. Leadership in programming	1. Integration of resource-focused groups 2. Slow uptake of technologies by farmers 3. High demand for services which cannot be met 4. Dealing with resource poor farmers-a big constraint	1. Environmental conservation
Kaganda Focal Area Development Committee	1. Coordination of groups within focal area 2. Organise training of farmers by MoA 3. Improve their livelihoods	1. Legal status through registration 2. Operate in rural areas/community based 3. Common interest groups (Kaganda Focal	1. Poor attendance of meetings 2. Overlap of mandate of FADC with other development committees	1. Community mobilisation/sensitisation

Stakeholders	Roles/Responsibilities (Interests)	Strengths (Comparative Advantage)	Weaknesses (Challenges)	What they can do for the GWC Project
		Area Self Help Group)		
Weithaga Focal Area Development Committee	<ol style="list-style-type: none"> 1. Coordination of groups within focal area 2. Organise training of farmers by MoA 3. Improve their livelihoods 	<ol style="list-style-type: none"> 1. Operate in rural areas/ community based 2. Common interest groups) 	<ol style="list-style-type: none"> 1. High cost of inputs (implements, seeds, fertilizers) 2. Attitude of farmers 	<ol style="list-style-type: none"> 1. Community mobilisation 2. Training of farmers in SWC
Mogoiri North Focal Area Development Committee	<ol style="list-style-type: none"> 1. Coordination of groups within focal area 2. Organise training of farmers by MoA 3. Improve their livelihoods 	<ol style="list-style-type: none"> 1. Legal status through registration 2. Operate in rural areas/community based 3. Common interest groups 	<ol style="list-style-type: none"> 1. Attitude: people view FADC as waste of time (no incentives) 2. Irregular attendance of meetings 3. Inadequate implements 	<ol style="list-style-type: none"> 1. Community sensitisation 2. Participate in implementation (Labour and provision of tools for SWC)
Mogoiri South Focal Area Development Committee	<ol style="list-style-type: none"> 1. Coordination of groups within focal area 2. Organise training of farmers by MoA 3. Improve their livelihoods 	<ol style="list-style-type: none"> 1. Legal status through registration 2. Operate in rural areas/community based 3. Common interest groups (Mogoiri South Avocado Network - MOSANet) 	<ol style="list-style-type: none"> 1. Loss of interest by farmers- drop out and non-attendance of meetings 2. Not transparent and accountable 3. Non funding of CAPs 	<ol style="list-style-type: none"> 1. Not a very active group
Kieni Community Forest Association (CFA)	<ol style="list-style-type: none"> 1. Protection of forests 2. Rehabilitation of forests 3. Poverty eradication and livelihood scheme 4. Income generation activities 	<ol style="list-style-type: none"> 1. Legal status through registration 2. Well established with many groups (>100) 3. Operates in the rural area (Community based) 4. Functioning committee 	<ol style="list-style-type: none"> 1. Inadequate funds for implementation of projects 2. Resource centre not adequately equipped 3. Limited market for tree seedlings 	<ol style="list-style-type: none"> 1. Awareness creation and community mobilisation
Greenland Self Help Group	<ol style="list-style-type: none"> 1. Welfare of group members 2. Tree planting 	<ol style="list-style-type: none"> 1. Legal status through registration 2. Group affiliated to CFA 3. Well established with active committee 	<ol style="list-style-type: none"> 1. Limited sale of tree seedlings 2. Inadequate water for watering the tree nursery 	<ol style="list-style-type: none"> 1. Training of farmers on tree planting 2. Linking farmers to service providers (agricultural extension)
Mugumoini Kugerua Women Group	<ol style="list-style-type: none"> 1. Income generation activities (basket weaving, soap making etc.) 2. Table banking 3. Tree planting (Nursery) 	<ol style="list-style-type: none"> 1. Legal status through registration 2. With active committee 	<ol style="list-style-type: none"> 1. Limited capital for undertaking group activities 2. Inadequate funds to hire labour for SWC measures 3. Limited market for tree seedlings 	<ol style="list-style-type: none"> 1. Mobilisation of other farmers
Ithaga Focal Area Development Committee	<ol style="list-style-type: none"> 1. Coordination of groups within focal area 2. Income generation 3. Table banking (savings) 	<ol style="list-style-type: none"> 1. Legal status through registration 2. Coherent group 	<ol style="list-style-type: none"> 1. Fall out of members 2. Limited capital to start development projects 3. Commitment of members 	<ol style="list-style-type: none"> 1. Implementation of GWC activities- tree planting 2. Community mobilisation and education
Gachege Focal Area Development Committee	<ol style="list-style-type: none"> 1. Coordination of groups within focal area 2. Organise training of farmers by MoA 	<ol style="list-style-type: none"> 1. Legal status through registration 2. Operate in rural areas/community 	<ol style="list-style-type: none"> 1. Inadequate funds 2. High price of inputs 	<ol style="list-style-type: none"> 1. Mobilisation of farmers 2. Implementation of SWC

Stakeholders	Roles/Responsibilities (Interests)	Strengths (Comparative Advantage)	Weaknesses (Challenges)	What they can do for the GWC Project
	3. Improve their livelihoods	based		
Gathaite Focal Area Development Committee	1. Coordination of groups within focal area 2. Organise training of farmers by MoA 3. Improve their livelihoods through farming and revolving fund	1. Legal status through registration 2. Active group/committee 3. Community based	1. Inadequate funds 2. Inadequate access to markets 3. Many orphans who need their care	1. Implementation of SWC activities 2. Community mobilisation and sensitisation
Karure Focal Area Development Committee	1. Linking farmers with MoA for services 2. Coordination of groups within the focal area 3. Improve livelihoods of members through group farming and IGAs	1. Legal status through registration 2. Functioning FADC committee 3. Community based	1. Inadequate funds (capital to start projects)	1. Implementation of SWC activities 2. Community mobilisation and sensitisation
Kaanwa-Ndumbini Focal Area Development Committee	1. Coordination of group activities within the focal area 2. Linking up with MKEPP's Project Management Committee 3. Rural livelihoods 4. Environmental conservation	1. Legal status through registration 4. Operate in rural areas/community based 2. Common interest groups Community based	1. Slow adoption of technologies 2. Contradicting policies 3. Absenteeism to meetings (attitude issue) 4. High costs of water harvesting activities 5. Lack of office	1. Implementation of GWC activities 2. Community mobilisation and sensitisation
Ntuntuni Focal Area Development Committee	1. Linking farmers with MoA for services 2. Coordination of groups within the focal area 3. Improve livelihoods of members through IGAs (Merry-go-round and dairy goats)	1. Legal status through registration 2. Functioning FADC committee 3. Community based	1. Inadequate funds inhibits progress of the group with regard to merry-go-round and SWC measures	1. Implementation of SWC activities 2. Community mobilisation and sensitization
Government Departments/Ministries, Parastatals and Projects				
Ministry of Agriculture	1. Agricultural extension services 2. Food security 3. Soil and water conservation 4. Support agricultural research	1. Financial and policy support by GoK 2. Good network-Staff up to community level 3. Qualified and experienced technical staff 4. Good collaboration with farmers	1. Weak policy support particularly with regard to enforcement 2. Overload of farmers demand for services 3. Weak response to uptake of technologies by farmers	1. Key partner in implementation of GWC 2. Support implementation of GWC 3. Provision of technical advisory services 4. Capacity building
Ministry of Water and Irrigation	1. Water resources management	1. Financial and policy support by GoK 2. Qualified technical staff	1. Weak policy support particularly with regard to enforcement	1. Key partner in implementation of GWC 2. Provision of technical support
Ministry of Livestock Development	1. Livestock development services 2. Support livestock research	1. Financial and policy support by GoK 2. Qualified technical staff 3. Well established	1. Understaffing 2. Inadequate transport 3. Inadequate office accommodation	1. Provision of technical services

Stakeholders	Roles/Responsibilities (Interests)	Strengths (Comparative Advantage)	Weaknesses (Challenges)	What they can do for the GWC Project
		contacts with farmers		
Mount Kenya East Pilot Project (MKEPP)	<ol style="list-style-type: none"> 1. Community NRM 2. Enhance integrity of Mt. Kenya Ecosystem 3. Rehabilitation of degraded area 4. Capacity building 5. Biodiversity conservation 6. Income generation activities 	<ol style="list-style-type: none"> 1. Uses Community approach 2. Integrated approach to conservation 3. Use of participatory approaches 4. All farm activities geared towards benefits 5. Zone specific interventions 6. Have technical skills 	<ol style="list-style-type: none"> 1. Weak policy support particularly with regard to enforcement 	<ol style="list-style-type: none"> 1. Provision of technical knowhow
KARI-NARL	<ol style="list-style-type: none"> 1. Research (crops and water management) 2. Provision of analytical services 	<ol style="list-style-type: none"> 1. Have technical knowhow (qualified staff) 2. Have biophysical information to act as a baseline 	<ol style="list-style-type: none"> 1. Inadequate funding to get all required data 2. Manpower (shortage of staff and scientists) 	<ol style="list-style-type: none"> 1. Supervision and coordination of activities being carried out by KARI 2. Link between MoA and MoWI on behalf of PS Agriculture
Kenya Soil Survey (KSS)	<ol style="list-style-type: none"> 1. Research (inventory of soils and land use, GIS) 2. Provision of services 	<ol style="list-style-type: none"> 1. Data base (soils and land use) 2. Biophysical data collection 3. Qualified technical staff 	<ol style="list-style-type: none"> 1. Database quite old-little recent data (need for upgrading) 2. Limited staff who can carry out measurements on physical data 	<ol style="list-style-type: none"> 1. Data collection and information delivery 2. Advise on soil management issues in close liaison with extension workers 3. Collaboration with GWC
Water Resources Management Authority (WRMA)	<ol style="list-style-type: none"> 1. Management of water resources 2. Conservation of water resources 3. Water apportionment and allocation 4. Gazetting of water protected areas 5. Protection of wetlands 	<ol style="list-style-type: none"> 1. Legal support 2. Supported by GoK 	<ol style="list-style-type: none"> 1. Low number of staff 2. Little knowledge on data processing, analysis, interpretation and GIS 3. Inadequate financial resources 	<ol style="list-style-type: none"> 1. Key partner in implementation of GWC 2. Mobilisation and capacity building of farmers to form WRUAs
Songa Mbele Community Development Initiative (SoMCODI)	<ol style="list-style-type: none"> 1. Training of farmers on processing and value addition of agriculture products 2. Livelihood improvement 3. Educational tours to advanced areas 4. Merry go round 5. Table banking 	<ol style="list-style-type: none"> 1. Well established group approach (LIP) 2. Skilled and qualified staff 3. Acceptance by the community (Catholic Sister) 4. Training facilities available 5. Financial support by GoK (Ministry of Agriculture) 	<ol style="list-style-type: none"> 1. Large outreach 2. High demand for services from limited staff 3. Religious culture a challenge/barrier 4. Language 5. Inadequate equipment (Existing ones have to be transported) 	<ol style="list-style-type: none"> 1. Training of farmers 2. Farmer mobilisation and awareness creation

Stakeholders	Roles/Responsibilities (Interests)	Strengths (Comparative Advantage)	Weaknesses (Challenges)	What they can do for the GWC Project
Development Partners				
IFDC (International Fertilizer Development Centre)	<ol style="list-style-type: none"> 1. Improvement of food security 2. Stimulation of economic growth through agriculture 3. Capacity building and support of projects 	<ol style="list-style-type: none"> 1. Financial Resource endowment. 2. International fund raising 3. Networking with input suppliers for efficient use of inputs 4. Capacity building of farmers on proper use of agro-chemicals 5. Field demonstrations 	<ol style="list-style-type: none"> 1. Availability of inputs 2. Limited access to credit 3. Limited knowledge of inputs 4. Limited information on sources of agro-inputs and their prices 	<ol style="list-style-type: none"> 1. Bringing together all players throughout the value-chain using cluster approach 2. Implementation of GWC (Contracting service providers to deal with specific clusters)
Private Sector				
Kahuti Water and Sanitation Company Ltd (KAWASCO)	<ol style="list-style-type: none"> 1. Provide water and sanitation services 2. Manage water infrastructure (intake and treatment works) 3. Raise revenue 	<ol style="list-style-type: none"> 1. Legal mandate 2. Financial Support 3. Technical knowhow 	<ol style="list-style-type: none"> 1. Steep topography prone to landslides 2. High costs of maintenance 	<ol style="list-style-type: none"> 1. Partnership in SWC
Monsanto	<ol style="list-style-type: none"> 1. Promotion of conservation agriculture 2. Marketing of products-seeds and crop protection chemicals 	<ol style="list-style-type: none"> 1. Products for marketing 2. Well known products 3. Farmer trust 4. Technical knowhow 	<ol style="list-style-type: none"> 1. Limited manpower 2. Profit-orientation may hinder collaboration 	<ol style="list-style-type: none"> 1. Source of inputs (herbicides and seeds) 2. Capacity building of farmers?
Syngenta	<ol style="list-style-type: none"> 1. Improvement of food security and wealth 2. Environmental protection 3. Marketing of products (herbicides, insecticides, pesticides and seeds) 4. Crop insurance 	<ol style="list-style-type: none"> 1. Products for marketing 2. Technical know-how 3. Financial resources 	<ol style="list-style-type: none"> 1. Limited manpower? 2. Small number of farmers reached <i>vis à vis</i> target 	<ol style="list-style-type: none"> 1. Source of inputs 2. Capacity building of farmers?
Kenya Federation of Agricultural Producers (KENFAP)	<ol style="list-style-type: none"> 1. Deals with farmer groups/Associations and cooperatives 3. Information dissemination on farming and marketing 4. Biogas project 	<ol style="list-style-type: none"> 1. Legal status 2. Farmers trust of the federation 	<ol style="list-style-type: none"> 1. Limited staff? 	<ol style="list-style-type: none"> 1. Mobilisation of farmers 2. Capacity building on leadership and financial management

Annex 2 Mapping of Institutions in the Upper Tana catchment

Civil Society Organisation	Type	Activities	Beneficiaries	Location	Area of Operation
1. Water Resources Management Authority (WRMA)	GoK	Manage, regulate and conserve all water resources	Community at large	Embu and Muranga	The whole catchment
2. KenGen	GoK	Generation of electricity	Community at large	Masinga, Kindaruma, Gitaru, Kiambere dams	Tana River
3. Nairobi City Water and Sewage Company Ltd	Private	Water and sanitation	Community at large	Nairobi, Gatundu North, Ndakaini dam	Nairobi City
4. Kayahwe WRUA	CBO	Natural resource conservation and protection	Community at large (farmers)	Kahuro, Kangema and Muranga South Districts	The whole sub-catchment
5 Lower Chania WRUA	CBO	Natural resource conservation and protection	Community at large (farmers)	Gatundu North, Gatanga and Thika West Districts	The whole sub-catchment
6 Tungu WRUA	CBO	Natural resource conservation and protection	Community at large (farmers)	Meru South and Mara Districts	The whole sub-catchment
7 Technoserve	INGO	Improvement of livelihoods	Farmers (groups)	Kahuro, Gatundu North, Gatundu South Districts	Selected districts
8 Green Belt Movement	NGO	Tree planting	Community at large	Kahuro District	Selected districts
9 Hand in Hand Eastern Africa	INGO	Microfinance and value addition and marketing	Farmers	Thika, Kiambu, Limuru, Kagwangware, Machakos Tala	Selected areas
10 Muramati SACCO Society	Private	Microfinance, savings and loan	Farmers and business people	Thika, Muranga	Towns in central Kenya
11 Kahuro Division Interchurches Organisation (KADICO)	FBO	Community mobilisation and education. Poverty reduction	Community at large	Kahuro Division, Kahuro District	Kahuro Division
12 Christian Community Services (CCS)	FBO	Food security and agribusiness	Community at large (farmer groups)	Regions of ACK	All over the country
13 Diocese of Meru. Tharaka-Nithi Deanery	FBO	Livelihood security	Community at large (groups)	Meru South and Tharaka	Thirteen districts
14 Kiamboka Self Help Group	CBO	Irrigation farming and income generation activities	Community members targeting young people	Kahuro Division Kahuro District	Kahuro Division

Civil Society Organisation	Type	Activities	Beneficiaries	Location	Area of Operation
15 Miumo Community Based Organisation	CBO	Livelihood (agriculture) and spring protection	Community members of the group	Miumo Scheme	Gaturi sub-location, Kirea location
16 Youth Action for Rural Development (YARD)	CBO	Food security and environmental rehabilitation and conservation	Community targeting youth	Mabanda Trading Centre, Gatanga District	Gatanga District, Thika East, Kandara and Kikuyu Districts
17 Kaganda FADC	CBO	Livelihoods and coordination of groups	Community members (farmers)	Kaganda Location Kahuro District	Kaganda location
18 Weithaga FADC	CBO	Livelihoods and coordination of groups	Community members (farmers)	Weithaga Location Wangu Division Kahuro District	Weithaga location
19 Mogoiri North FADC	CBO	Livelihoods and coordination of groups	Community members (farmers)	Mogoiri North Location, Kahuro District	Mogoiri north location
20 Mogoiri South FADC	CBO	Livelihoods and coordination of groups	Community members (farmers)	Mogoiri South Location, Kahuro District	Mogoiri south location
21 Kieni Community Forest Association (CFA)	CBO	Livelihood and protection and rehabilitation of forests	Community members (farmers)	Gatundu North District	Gituamba location Kithokoni location Ndarugu location
22 Greenland Self Help Group	CBO	Livelihood and tree planting	Community	Gatundu North District	Gatundu North and other areas including Nairobi river
23 Mugumoini Kugeria Women Group	CBO	Livelihood and tree planting	Community members (women)	Rwegetha area	Gatanga District
24 Ithaga FADC	CBO	Livelihood and coordination of groups	Community members (farmers)	Ithaga location	Kiriani and There sub-locations Gatanga District
25 Gachege FADC	CBO	Livelihood and coordination of groups	Community members (farmers)	Gachege location	Mire, Wachege, Gakoe and Ndiko
26 Karure FADC	CBO	Livelihood and coordination of groups	Community members (farmers)	Karure location	Nyamangera, Mitero, Igenania and Karure
27 Kaanwa-Ndumbini FADC	CBO	Livelihood and coordination of groups	Community members (farmers)	Kaanwa	Chuka Division, Meru South District
28 Ministry of Agriculture	GoK	Agricultural extension services Soil and water conservation Food security	Farmers and community at large	All districts	Nationwide
29 Ministry of Water and Irrigation	GoK	Water resources management	Community at large	All districts	Nationwide

Civil Society Organisation	Type	Activities	Beneficiaries	Location	Area of Operation
30 Mount Kenya East Pilot Project (MKEPP)	GoK	Community NRM Ecosystem management and biodiversity conservation Livelihood	Community (farmers)	Embu	All Districts East of Mt Kenya (Meru County, Kirinyaga County, Tharaka-Nithi County and Embu County)
31 KARI-NARL	GoK	Research (crops and water management)	Farmers and community at large	Nairobi	Nationwide
32 Kenya Soil Survey	GoK	Research (Inventory of soils and land use, GIS)	Farmers and community at large	Nairobi	Nationwide
33 Songa Mbele Community Development Initiative (SoMCODI)	GoK	Training of farmers on processing and value-addition	Farmers (in groups)	KARI-Thika	All over the country
34 International Fertilizer Development Centre (IFDC)	DP	Improvement of food security Simulation of economic growth through agriculture Capacity building	Farmers and input suppliers (agro-dealers)	ICIPE Nairobi	Over 20 districts
35 Sustainable Agriculture Community Development Programme (SACDEP Kenya)	NGO	Sustainable agriculture Reclamation of degraded areas Food security	Communities (farmers)	Thika	Selected districts
36 Kahuti Water and Sanitation Company Ltd (KAWASCO)	Private	Provision of water and sanitation services	Communities	Kahuti	Kangema and Kahuro Districts
39 Monsanto	Private	Marketing of products (seed and herbicides) Conservation agriculture	Farmers	Nairobi	Countrywide
40 Syngenta East Africa Ltd.	Private	Micro-insurance (Kilimo Salama) Conservation agriculture	Farmers	Upper hill, Nairobi	Semi-Arid areas Laikipia
41 Kenya Federation of Agricultural Producers (KENFAP)	Private	Information dissemination on farming and marketing	Farmer groups and associations	Nairobi	Nationwide

Annex 3 Description of Institutions Surveyed for Green Water Credits

The following are some case studies from interviews conducted during the Institutional Survey for Green Water Credits (GWC) in Kayahwe, Lower Chania and Tungu sub-catchments and elsewhere with various institutions (CBOs, FBOs, NGOs and Government Departments and Projects, Development Partners and Private Sector).

Box 1

Water Resources Management Authority (WRMA)

The Water Resource Management Authority (WRMA) is a state corporation under the Ministry of Water and Irrigation established under the Water Act 2002 and charged with being the lead agency in water resources management.

WRMA's mission is "to manage, regulate and conserve all water resources in an effective and efficient manner by involving the stakeholders, guaranteeing sustained access to water and equitable allocation of water while ensuring environmental sustainability".

The Water Act 2002 stipulates the duties of WRMA to include:

- Water apportionment and allocation,
- Catchment protection and conservation,
- Water resource assessments and conservation,
- Delineation of catchment areas,
- Gazetting water protected areas,
- Protection of wetlands,
- Gazetting water schemes to be state and community owned,
- Establishing Catchment Management Strategies (CMS), and
- Collecting water use and effluent discharges.

In order for WRMA to undertake its stipulated responsibilities, the Act provides for decentralised and stakeholder involvement. This is implemented through regional offices of the Authority based on drainage basins (catchment areas) assisted by Catchment Area Advisory Committees (CAACs). At the grassroots level, stakeholder engagement is through Water Resource User Associations (WRUAs).

For the Upper Tana catchment the WRMA office is at Embu with sub-offices in Kerugoya, Muranga and Meru.

With regard to activities related to soil and water conservation WRMA deals with removal of water unfriendly trees within water bodies, establishment of tree nurseries, wetland reclamation and rehabilitation through planting trees, construction of soil and water conservation measures (terraces, gabions, retention ditches and cut-off drains) through awareness creation, promotion of proper farming methods through field days on demonstration farms, promotion of efficient/alternative sources of energy to control the cutting down of trees and promotion of roof rainwater harvesting in public institutions

WRMA provides the following services to her target group:

- Trainings about management of water resources: water conservation, spring protection, importance of wetlands, riverbank protection, riparian areas, fauna and flora conservation.
- Project proposals and approvals: roof water harvesting, storm water harvesting, subsurface dams.
- Groundwater investigation for general public: availability of groundwater, identification of groundwater aquifers, supervision of groundwater developments/borehole drilling.
- Monitoring of riverflows, water quality and effluent discharge quality and regulating groundwater and surface water abstraction.

Collaboration

WRMA has established a network through which stakeholders have been mobilised and through which a collaboration arrangement with water producers and users has been established. WRMA collaborates with the following stakeholders within Tana river basin: Tana and Athi Rivers Development Authority (TARDA), Kenya Electricity Generating Company (KenGen), Mount Kenya East Pilot Project for Natural Resources Management (MKEPP), NEMA, Coast Development Authority (CDA) and various other government organisations (Forest Service, Ministry of Agriculture, Public Works Department and Kenya Wildlife Service).

Challenges/ Weaknesses

The following are challenges (weaknesses) of WRMA:

- Low number of staff;
- Little knowledge on data processing, analysis, interpretation and GIS; and
- Inadequate financial resources to meet demands.

Source: Interviews and Website.

Box 2

Water Services Trust Fund (WSTF)

WATER SERVICES TRUST FUND (WSTF) is a State Corporation established under the Water Act 2002 with the mandate “to assist in financing the provision of water services to areas of Kenya which are without adequate water services”. The organisation is guided by the Trusts Deed of 26th April, 2004 and nested in rapid, proactive and innovative measures stipulated in its core values of accountability, transparency, good governance, teamwork, equity, fairness, honesty, integrity, customer focus, and life-work balance. WSTF is one of the water reform institutions, and acts as a basket fund for mobilising resources and providing financial assistance towards capital investment costs of providing Water Service and Sanitation (WSS).

The Trust Fund's mission is “to provide financial support for improved access to water and sanitation in areas without adequate services”. According to the Trust Deed, WSTF's mandate incorporate supporting capacity building activities and initiatives that aim at enabling communities to plan, implement, manage, operate and sustain water services - by creating awareness and disseminating information regarding community management of water services, and encouraging their active participation in implementation and management.

Water Services Trust Fund strategy has, to date, rested on the fact that the development of water sector in Kenya has been constrained by limited funding, and planning that do not respond to increasing population and emerging trends such as institutional weakness, poor management, limited water resources, knowledge and choice of technology.

WSTF through the support of the Ministry of Water and Irrigation and its development partners has continued to provide financial support to the “water poor” communities in rural, urban and water catchments areas of Kenya. The water poor are defined according to the national poverty survey report “Geographical Dimensions of Well-being in Kenya” and the criteria include: (i) the Poverty Index; (ii) level of investment in water and sanitation infrastructure; (iii) access to quality water services; and (iv) sanitation coverage levels.

Since the establishment of the Fund in 2004 it has financed over 300 projects throughout the country in urban, rural and water catchment areas. The projects are as follows:

- Urban Projects: 79 urban water and sanitation projects nationally serving 723,641 Kenyans at a cost of KSh 727 million.
- Water resources projects: 100 water resources conservation projects at a cost of KSh 63 Million. These projects are funded through Water Resource User Associations (WRUAs) in partnership with the Water Resources Management Authority (WRMA).
- Water resources and conservation projects were initially financed with the support of the Swedish International Development Agency (Sida) and are currently financed with the support from the Government of Finland.
- Rural water projects: 270 rural community water and sanitation projects with a target population of 1.3 million. Out of these 164 were funded through Community Project Cycle (CPC) and 107 through Community Based Organisations and NGOs countrywide. These projects have been funded by support of the Government of Finland and Kenya Water and Sanitation Programme (KWSP).
- UNICEF Wash Programme: 737 community water and sanitation projects at a cost of KSh 444 Million with support of UNICEF and expected to benefit 441,750 people in 20 ASAL areas.

WSTF Future plan

WSTF is reviewing its 2008-2013 Strategic Plan. WSTF targets to implement water, sanitation and water resource projects to reach a total population of 2.31 million Kenyans. The project totals are expected to cost KSh 4.5 billion.

Achievements

From 2008 -2011 WSTF has assisted a population of approximately 3.5 million Kenyans.

To date WSTF has 1,230 projects under different stages of development, 662 are completed and 568 are under implementation and approval stages.

WSTF was adequately and well supported with a total funding of KSh 3.3 billion over the last 7 years and consistent technical and financial support from SIDA, DANIDA, GTZ, and GoK.

Lessons learnt

- Communities are empowered and are expressing demand
- There is need to build capacity in water management
- There is need for promoting transparent, accountable and good governance in project implementation

WSTF and WRMA (2009) published the Water Resource Users Association Development Cycle (WDC) which is a transparent process designed to provide technical and financial support for community based activities in water resource management. The WDC is based on the Integrated Water Resources Management approach which recognises that water resource management cannot be done properly without involving different components such as:

- Institutional capacity;
- Technical knowledge;
- Financial resources;
- Stakeholder participation;
- Coordination and collaboration.

WDC recognises that conserving catchments and engaging in water resource management activities is a long-term process that requires continuous participation by many stakeholders involving different kinds of interventions. WDC has therefore been designed to foster a long-term relationship between WRMA and the WRUAs to continuously build WRUA capacity to implement integrated water resource management activities.

The WDC outlines the conditions for applying for funds, the eligible activities, the funding ceilings, and the appraisal of the WDC applications, contract and release of funds, implementation, reporting and monitoring. The WDC also clearly spells out the role of the institutions and stakeholders involved with respect to WDC process.

WSTF provides grants to WRUAs which have met specified conditions for implementation of activities eligible for WDC funding such as conservation and rehabilitation of catchment and riparian areas, strengthening WRUA management systems, etc. The following funding ceilings have been set according to whether the WRUA has proven itself capable of utilising and accounting for funds properly:

- KSh 1 million for newly established WRUA with no proven track record;
- KSh 2 million, 5 million or 10 million for mature WRUA with proven record of accountability.

In addition there is an upper ceiling of KSh 50 million to any one WRUA over a 10-year period.

Source: Interviews, WSTF Publications (Daily Nation, Friday June 10, 2011) and WSTF Strategic Plan 2008 - 2013.

Box 3

Mount Kenya East Pilot Project for Natural Resources Management (MKEPP)

The Mount Kenya East Pilot Project for Natural Resources Management (MKEPP) was conceived and formulated by the Government of Kenya (GoK) following which the International Fund for Agricultural Development (IFAD) was approached for assistance in funding the project.

The project design is based on a conceptual framework in which poverty is clearly identified as the core driving force to environmental degradation, which ultimately generates more poverty. The overall objective of the project is to reduce poverty through improved food security and income levels of farmers and rural women. This is by promoting effective use of resources, improving access to water and introducing better farming and water management practice for sustainable use of land and water resources.

The project uses a mix of both the top-down and bottom-up approach in planning, implementation, monitoring and evaluation. The project implementation period is 2004 to 2011.

Location

The MKEPP activities funded by GoK/IFAD are initially being implemented in five selected river basins namely: Kapingazi and Ena (in Embu and Mbeere Districts), Tungu and Mutonga (in Meru South and Maara Districts), Kathita and Mutonga (in Imenti North and Tharaka Districts), Rupingazi and Ena (in Mbeere District), Kathita and Kithenu (In Meru Central and Imenti South Districts). These river basins were selected on the basis of the following: (i) high concentration of the poor people, (ii) low perennial riverflow, (iii) high number of abstractions with high water use inefficiencies, (iv) diverse agro-ecological zones, and (v) diverse use of water (irrigation, urban and heavy domestic). The GEF funded activities are being implemented in protected areas comprising Mount Kenya National Park and the Mount Kenya Forest reserve.

Project components and activities

MKEPP intervenes through five main components:

- Water resources management: supporting activities geared towards river basin management and community water; river water data collection and management, water resources studies, development of river basin management plans formation of water users associations and river users associations and rehabilitation of existing water supply systems.
- Rural livelihoods: activities include on-farm soil and water conservation, support to income generating activities and marketing.
- Environmental conservation: activities under the component are geared towards addressing environmental degradation in the project area and promote sustainable management of natural resources.
- Community empowerment: activities are designed to empower local communities to take charge of their development according to their needs through strengthening the capacity of CBOs.
- Project Management and Coordination.

Impact and achievements

The major achievements and impact of the project include the following:

- Improved catchment conservation through formation of water resource users associations;
- Improved access to domestic water and water for irrigation;
- Improved farm forestry and school greening programmes;
- Improved food security and incomes as a result of adoption of technologies;
- Improved soil and water conservation;
- Improved participation of local communities in decision making processes.

Strengths/ Comparative advantages

- Uses community approach
- Integrated and participatory approach to conservation
- All farm activities geared towards benefits
- Zone specific interventions
- Have technical skills

Challenges/Weaknesses

- Weak policy support particularly with regard to enforcement of existing policies
- Inadequate funds for the project to support implementation of SWC by many smallholders in Upper Tana catchment

Source: Interviews.

Box 4

Kayahwe Water Resource Users Association (Kayahwe WRUA)

Kayahwe WRUA was formed in the year 2008. It was first registered as a community based organisation with the Ministry of Gender, Sports, Culture and Social Services in the year 2009. The WRUA was later registered as an association in the same year. The WRUA has also registered with WRMA for collaborative management of water resources within the sub-catchment. The WRUA was formed by the community members and other stakeholders after initial sensitisation meetings by WRMA. It was formed to address water resources problems within Kayahwe sub-catchment.

Kayahwe WRUA sub-catchment extends from Kahuti in the north extending southwards to Kaganda bounded by Kiruri to the west and Mukuyu to the east. It covers the following Administrative Districts: 80% of Kahuro, 20% of Kangema and 15% of Kiharu. The sub-catchment straddles Murarandia, Mugoiri, Wangu, Kiharu and Kanyenyaini Divisions covering seven locations. Kayahwe sub-catchment has an estimated population of 157,175 persons. It has 4000 registered members with about 110 self-help groups.

Kayahwe WRUA sub-catchment is drained by Kayahwe river which has its source from Kiruri location in Kangema District flowing downstream to Gaitega where it drains into Maragua river covering an approximate distance of 65 Km, an area of 155 km². Kayahwe river is served by; Gaitango, Kanumira, Kaihungu, Muriuri, Gicobo, Raini, Kahuaga, Kiriti, Kwarau, Tundumu, Thumara, Kambogo, Iria, Wariga, Kariara, and Itare tributaries which forms a dendritic drainage pattern. Besides the tributaries the sub catchment has several springs, wetlands, boreholes and dams.

The sub-catchment has three zones i.e. Upper, Middle and Lower. In the Upper zone Tea, Livestock farming and Quarrying is practiced. In the Middle zone Coffee, Horticulture, Fish, Livestock and Subsistence farming is practiced while in the Lower zone Quarrying, Horticulture, Fish, Livestock and Subsistence farming is practiced.

Kayahwe WRUA Sub Catchment Management Plan (SCMP) targets the following:

- Create awareness on management units and classification of the water resource;
- Create awareness on roles and responsibilities of the WRUA.

The Water Act 2002 “encourages and facilitates” the establishment and operation of Water Resource Users Associations as forums for conflict resolution and co-operative management of water resources. Therefore the participation through involvement of all stakeholders in water resources management is key to access development and use of the water resources.

Kayahwe WRUA has been sensitised about water sector reforms, their roles and responsibilities, roles and functions of WRMA and CAAC. The WRUA has been inducted on financial management and procurement though further training is required and especially on leadership and integrated water resource management. The WRUA management has been inducted on areas of collaboration with relevant stakeholders in water resource management. The WRUA does not have its own office but operates from a rented office at Kahuro town. The WRUA have no office facilities for efficient running of its activities. To address these issues there is need to train the WRUA management committee on leadership skills, integrated water resource management approaches, fund raising skills/techniques stakeholder collaboration, among others.

Kayahwe WRUA is actively involved in water resource management activities although it has inadequate operational budget. The WRUA proposes to meet its operational budget through levying from approvals for water permits as per the cost of the application, Membership fee and subscriptions ((KSh 100 per individual member, KSh 30,000 for service providers, KSh 5000 for institutions and KSh 10,000 for Coffee Factories). The WRUA has just developed an SCMP using NRM (P) funds. To meet the SCMP investment budget the WRUA proposes to be writing proposals to WSTF, NGOs, CDF, LATF and other possible funding Institutions.

The WRUA has a management committee of 20 members which comprises 11 men and 9 women among them 3 youths. The management committee meets four times a year but usually meets almost every month.

Strengths/ Comparative advantages

- Legal support
- Indigenous technical knowledge of the catchment

Challenges/Weaknesses

- Illegal water abstraction
- Ignorance of the community
- Unsustainable use of springs

Source: Interviews and Kayahwe SCMP.

Box 5

Lower Chania Water Resource Users Association (Lower Chania WRUA)

Lower Chania WRUA was formed in the year 2008. It was first registered as an Association with the Attorney General in the year 2009. The WRUA is also registered with WRMA and have signed an MOU for collaborative management of water resources within the sub catchment. The WRUA was formed by the community members and other stakeholders after initial sensitisation meetings by WRMA. It was formed to address water resources problems within the sub-catchment.

Lower Chania sub-catchment stretches from Kimakia/Kieni forests in the north extending southwards to Blue Post Hotel in Thika bounded by Flyover-Mang'u -Thika Road to the west and Thika-Gatura -Kimakia Road to the east. It covers the following administrative districts: 30% of Gatanga, 60% of Gatundu North, 15% of Thika West and 2% of Nyandarua South. The sub-catchment straddles across Mang'u, Chania, Kariara, Gatanga, Thimuru, South Kinangop and Thika Municipality Divisions covering 19 locations. Lower Chania sub-catchment has an estimated human population of **144,258** persons.

Lower Chania WRUA sub-catchment is drained by Chania river which enters the catchment at Ragia location in Nyandarua South District flowing downstream to the confluence of Thika and Chania rivers behind Blue Post Hotel. It covers an approximate distance of 50 Km, and area of 750 km². Lower Chania river is served by; Kariminu, Nyakibai, Mataara and Kimakia, as the main tributaries all forming a dendritic drainage pattern. Besides the tributaries the sub-catchment has several streams, springs, wetlands, boreholes, and dams.

The management committee is made up of 20 members drawn from representatives of Upper, Middle and Lower zones and also representatives of the various water projects. The WRUA has four sub-committees i.e. procurement, monitoring, finance and management committee to ease its control and effective implementation of proposed activities and general management of the WRUA as an association.

Water quality in this sub-catchment has been on the decline over the years due to increase in both point and non point sources of pollution. Within Lower Chania sub-catchment pollution occurs at different levels. The main point sources of pollution within the sub-catchment includes but not limited to effluence from agro-based industries like coffee factories and car washing. Non-point pollution occurs when surface run-off collects pollutants from the surface in to a water body.

Lower Chania WRUA has been sensitised about their roles and responsibilities, institutional frame work, water sector reforms, roles and functions of WRMA and CAAC. The WRUA has been inducted on procurement financial management though further training is required and especially on leadership and integrated water resource management skills. The WRUA management has been inducted on areas of collaboration with relevant stakeholders to ensure effective water resource management. The WRUA does not have its own office but are hosted at Ng'ethu Water Works. The WRUA has no office facilities for efficient running of its activities. To address these issues there is need to train the WRUA management committee on leadership skills, integrated water resource management approaches, fund raising skills/techniques stakeholder collaboration, among others and establish a fully operational office.

Lower Chania WRUA is actively involved in water resource management activities although it has inadequate operational budget. The WRUA proposes to meet its operational budget through membership fee and subscriptions and initiation of income generating activities. To meet the SCMP investment budget the WRUA proposes to be writing proposals to WSTF, NGOs, CDF, LATF and other possible funding Institutions.

The WRUA has a management committee of 20 members which comprises 14 men and six women among them three youths. It has 150 groups.

Strengths/ Comparative advantages

- Legal support
- Indigenous knowledge of the sub-catchment
- Partnership with tea farmers

Challenges/ Weaknesses

- Conflicting policy with Community Forest Association (CFA) with regard to tree planting
- Inadequate funds

Source: Interviews and Lower Chania SCMP.

Box 6*Tungu Water Resource Users Association (Tungu WRUA)*

The Tungu WRUA was formed in June 2007 by all Tungu stakeholders under the facilitation of WRMA. It was formed to solve the problems which were being experienced as at that time i.e. illegal abstraction, water scarcity, pollution from factories, and public institutions, river banks cultivation, soil erosion and encroachment of riparian areas.

Tungu falls under Mutonga drainage area. Tungu river originates from Mt. Kenya forest and flows a distance of about 25 kilometres before its confluence with Nithi. It drains into Nithi which later drains into Mutonga. Tungu has thirty-seven tributaries and several springs. Main tributaries are: Thamia, Bwee, Mitheru, Kurugucha and Nkurumbaci. The sub-catchment has a population of 59,033 people within an area of approximately 111 km², therefore the population per km² is 531.83 persons.

Tungu WRUA was registered with Ministry of Gender and Social Services in 2006 and later registered by Attorney General's office in 2010. It has a Management Committee comprising 13 members. Executive members include Chairperson, Vice-chairperson, Secretary, Vice-Secretary, and Treasurer and vice treasurer. The gender representation is adequately catered for, there are: eight men and five women among them two youths. The WRUA is divided into four zones. Each zone has 15 committee members with three members from each zone in the main WRUA. The Main WRUA committee meets quarterly (at least four times a year).

The WRUA has signed an MOU with WRMA and has a certificate of registration from WRMA. The WRUA in conjunction with other stakeholders have developed a Sub Catchment Management Plan through participatory approaches.

The catchment is divided into five zones: Forest zone, Tea zone, Coffee zone, Tobacco/Cotton zone and Grazing zone.

Soil and water conservation

The WRUA has embarked on construction of soil and water conservation structures (terraces) on farms of individuals who are willing to undertake conservation measures, a situation that has greatly improved soil quality and water retention thus increasing output from their farms.

MKEPP has assisted the WRUA

- To set-up tree nurseries (five operational) plus individual nurseries
- Purchase of tree seedlings for the WRUA (over 20,000 seedlings planted over the basin in riparian strips)
- Training on water and sanitation in schools

Sources of Income

- Membership fees and subscriptions
- Sale of tree seedlings
- Water abstraction fees
- The WRUA has also received financial assistance from WSTF for capacity building

Strengths/ Comparative advantages

- Legal support (registered)
- Indigenous technical knowledge of the sub-catchment
- Have confidence of communities
- Trained committees

Challenges/ Weaknesses

- Encroachment of public resources
- Slow process of understanding of concept of conservation by communities
- Inadequate funds
- Climate change (droughts)

Source: Interviews and Tungu SCMP.

Box 7

Catholic Diocese of Meru, Tharaka-Nithi Deanery

The Catholic Diocese of Meru covers thirteen districts in two counties: Tharaka-Nithi County (Meru South, Mara, Tharaka South and Tharaka North Districts) and Meru County (Imenti South, Imenti North, Meru Central, Buuri, Tigania East, Tigania West, Igembe North, Igembe South and Mikinduri Districts). The Diocese has field offices (Deanery) in Igembe, Imenti and Tharaka -Nithi. The Diocese has also sub-offices (Parish) as a lower organ after Deanery. The field office of Tharaka-Nithi Deanery was opened in 1994.

The Diocese of Meru Development Office (Caritas Meru) is the social development arm of the Catholic Diocese of Meru.

The Diocese of Meru established the social development programme so as to complement the pastoral work in providing development services to the poor and in minimising the uses and effects of poverty across the Diocese. Over the years the Social Development Programme jointly with communities has undertaken water projects, community based rehabilitation activities, health, education, microfinance, agriculture and food security programmes.

The Caritas Meru in its Strategic Plan January 2009 - December 2013 identified "Sustainable Agriculture, Livestock development and emergency response" as one of its priorities. The services offered to community include:

- Agriculture
- Microfinance
- Community empowerment
- Civic education

The agriculture aspect is included in the livelihood security whose objective is to enhance the livelihoods of the rural community. It focuses on the following:

- Food production
- Livestock
- Natural resource use/management including soil and water conservation.

The natural resource use/management deals with the following activities:

- Soil and water conservation
- Promotion of fruit tree farming
- Environmental rehabilitation (tree nursery establishment)

The livestock improvement includes:

- Restocking
- Training on livestock production and management
- Upgrading (dairy goats)
- Training on pasture management (including fodder trees)

The emergency response component deals with the following activities:

- Linking relief with some form of development
- Forming groups and carrying out food for work

The approach used is "group approach" which is community based and targets the vulnerable. The Deanery works closely with the GoK departments (Agriculture, Livestock and Water). In SWC they train TOTs on laying and construction of soil and water conservation measures. The TOTs are given tools and equipment to be able to provide services to farmers, The Deanery also carries out demonstrations to enhance skills of the leaders. They also conduct education tours for the ToTs.

The Deanery has linkages with the Kenya Agriculture Productivity Project (KAPP) and Njaa Marufuku Kenya (NMK) of the Ministry of Agriculture. Since 2002 the Deanery has been in partnership with World Food Programme (WFP) in Tharaka on food-for-asset (FFA) where the Deanery gives vouchers to farmers and they identify vendors who can redeem them. In 2011 the WFP has partnered with Equity Bank and agent outlets have been established in Tharaka with 5250 beneficiaries who are monitored to ensure that they meet the expected targets before they are recommended for payments (vouchers).

Strengths/ Comparative advantages

- Support from Catholic Church
- Expertise and technological skills
- Have community support
- Strong partnership and collaboration
- Supportive (friendly) environment

Challenges/Weaknesses

- Lean budgets for project implementation
- Few staff
- Limited reach out due to resource limitations (cannot meet demand for services)
- Climate change (cannot adhere to seasonal calendar)

Source: This study interviews; CARITAS Meru Strategic Plan January 2009 - December 2015; Catholic Diocese of Meru 5 Years Strategic Plan 2011-2015.

Box 8

Kahuro Division Interchurches Organisation (KADICO)

The Kahuro Division Interchurches Organisation (KADICO) is a faith based organisation which was started in 2005. It has representatives from seven church organisations from locations in Kahuro Division, Kahuro District. There are 16 representatives (7F, (M)). It is registered as a self-help group with the Department of Social Services.

The organisation has a chairman, secretary and treasurer. The committee meets every month.

KADICO was established to undertake the following activities:

- To identify drop out children from schools;
- To address issues of high poverty levels (food insecurity) in the Division;
- Awareness creation on HIV/AIDS.

To address the issue of poverty the churches started giving special offering in order to help the needy children. KADICO also approached St. Johns in Nairobi (a NGO in Pangani) for funding and got KSh 215,000. Some of the money was put aside for entrepreneurship for orphans (tailoring, mechanics and hair salon). Another donation from a man from the Philippines was used to buy dairy cows which were given to homes with orphans. Mothers and grandmothers were empowered so that they can help the orphans; they also used part of the money to train children on basic computer skills.

Strengths/ Comparative advantages

- Major operations in rural areas
- Knowledge on the ground
- Wide representation from locations
- Legal status (registration)

Challenges/Weaknesses

- Attitude of the woman not positive
- High poverty levels
- Limited market for income generating activities such as rabbit keeping

Source: Interviews.

Box 9*Christian Community Services (CCS)*

The Christian Community Services is a NGO affiliated to Anglican Church in Kenya (ACK); Its headquarters is in Nairobi. CCS operates all over Kenya in 30 Dioceses. The Thika Diocese operates in six districts (Gatundu North, Gatundu South, Gatanga, Thika East, Thika West and Rurik). The Thika Diocese covers the Lower Chania sub-catchment area.

The activities carried out by CCS include the following:

- Food security and agri-business
- Sustainable agriculture practices and organic farming
- Drip irrigation
- Environmental conservation
- Soil and water conservation (tree planting)
- Microfinance (revolving fund)
- Income generating activities (business management skills)
- Water harvesting (runoff on-farm)
- Training and awareness creation on HIV/AIDS (target young mothers)
- Community health programme (train CHWs and help them register)

Strengths/ Comparative advantages

- Support from Anglican Church
- Legal status through registration
- Wide area of coverage

Challenges/(Weaknesses)

- Change of farmers perceptions/attitude from traditional to modern farming techniques
- Inadequate resource persons
- Young people dislike agriculture
- Inadequate financial resources (farm inputs)
- Uncooperative political leadership

Source: Interviews.

Box 10*Songa Mbele Community Development Initiative (SoMCODI)*

The Songa Mbele Community Development Initiative (SoMCODI) is a project funded by Ministry of Agriculture. It has its office at KARI Thika. SomCODI means; moving forward. It started in 1989 with 10 groups It was founded by Sister Veronicah Thiga who is currently officer-in-charge. The mission of SoMCODI is to work with the vulnerable communities in eradicating poverty and improving their livelihoods through utilisation of locally available resources. SoMCODI's main objective is to eradicate poverty through empowering communities to increase value of the available resources.

The project activities include the following:

- Training of farmers on processing and value addition of agriculture products (cassava, yoghurt etc.)
- Livelihood improvement
- Educational tours to advanced areas
- Merry-go-round
- Table banking

SoMCODI is currently working with 300 groups with 8000 farmers located all over the country. It has trained 45 ToTs and 3134 farmers. It works with already formed groups. It conducts two 5-day trainings per month. SoMCODI has been given two staff from Ministry of Agriculture.

Strengths/ Comparative advantages

- Well established group approach
- Skilled and qualified staff
- Acceptance by the community (Catholic Sister)
- Training facilities available
- Financial support by GoK (Ministry of Agriculture)

Challenges/ Weaknesses

- Large outreach
- High demand for services from limited staff
- Religious culture a challenge/barrier
- Language
- Inadequate equipment (Existing ones have to be transported)

Source: Interviews.

Box 11*Sustainable Agriculture Community Development Programme (SACDEP-Kenya)*

Sustainable Agriculture Community Development Agency (SACDEP-Kenya) was registered in 1992 as an NGO (now it regards itself as a Kenyan Indigenous Development Agency). The organisation is based in Thika Municipality where a head office and an Agriculture Development Training Centre have been constructed. It works in Thika, Gatanga, Gatundu North and South Districts and has expanded to other areas.

SACDEP's mission is to facilitate sustainable development for communities in Kenya and East Africa Region who unfortunately have low access to resources to enable their livelihood improvement advance through sustainable agriculture principles and practices.

- SACDEP works with smallholder farmers in sustainable agriculture
- It works through formal groups (15-30 members) which are registered
- SACDEP uses various projects to reach farmers. There are five active projects spread in 15 districts in four provinces (Rift Valley, Coast, Eastern and Central).

SACDEP also conducts training on:

- Water harvesting and soil and water conservation
- Livestock upgrading
- General gardening

Strengths/ Comparative advantages

- Legal status through registration as NGO
- Has physical infrastructure
- Operational systems in place
- Well trained and experienced human resources
- Good will of the communities and collaborators

Challenges/ Weaknesses

- Project based funding limiting continuity after project end
- Some communities have not taken groups as a vehicle for development
- Staff turnover
- Literacy levels at community level affect progress of activities
- Weather
- Inadequate funds to meet demands

Source: Interviews.

Box 12

Ithaga Focal Area Development Committee Group

The Ithaga Focal Area Development Committee (Ithaga FADC) was started by NALEP in September 2009. The focal area covers two sub-locations (Kinani and There) in Kiereini location. Originally the FADC had 16 members representing four blocks (Ifuteti, Gathugu, Ithere, and Gutti) The FADC was registered with the Social Services in 2010. The Executive Committee comprises seven members (four male and three female). The committee meets whenever there is an important issue to deal with.

The activities of the group are:

- Table banking (Merry-go-round: Each member contributes KSh 50 after every 14 days). The money collected is loaned to members at 10% interest.
- Keeping of local poultry: 2 birds per member. The birds are being upgraded with Kenbrew cocks.
- Growing of orphan crops: cassava, sweet potatoes and yams.
- The group is raising money to start activities on artificial insemination and open an agro-vet shop

On being asked what SWC interventions were being carried out in their farms, the group mentioned the following:

- Napier grass strips and grass strips
- Bench terraces, *fanya juu*, cut-off drains
- Check dams
- Roof water harvesting
- Gabions using plastics
- Mulching (Tea area)
- Riverine protection
- Tree planting
- Ridging and furrow
- Road water harvesting for tea

The common implements used for SWC are: Fork *jembe* (KSh 1500-2200); Shovel/Spade (KSh 300-400); *Panga* (KSh 150-600); Leveling board and string (string KSh 50-100). Maintenance of SWC measures is regularly done (e.g. removal of soil from trenches). Casual Labour costs KSh 200 per day (5 working hours).

Strengths/ Comparative advantages

- Legal status through registration
- Coherent group

Challenges/ Weaknesses

- Fall out of members
- Limited capital to start development projects
- Commitment of members

The group appeared to be cohesive and visionary and could be useful in implementation of GWC particularly in sensitisation and overseeing the activities of farmers in SWC.

Source: Interviews.

Box 13

Mugumoini Kugeria Women Group

The Mugumoini Kugeria Women Group is a community based organisation established in 2007. It was registered with Department of Social Services in April 2007. It has 20 members all of them being women.

The activities of the group are as follows:

- Weaving of baskets (*ciondo*) targeting export market
- Table banking (for group members)
- Tree nursery (600 tree seedlings). Members plant some of the seedlings while they sell some for income generation

With regard to soil and water conservation the group mentioned the following measures which they undertake in the area: bench terraces; *fanya juu* and *fanya chini*; microcatchment for bananas; tree planting; grass strips. They also use farmyard manure from cattle, poultry and pigs. The group mentioned the advantages of SWC as (a) prevention of loss of soil fertility (improved crop performance) and (b) increased production. The group has been trained on lay-out of SWC measures by Ministry of Agriculture extension staff.

Strengths/ Comparative advantages

- Legal status through registration

Challenges/ Weaknesses

- Limited capital for undertaking group activities
- Inadequate funds to hire labour for SWC measures
- Limited market for tree seedlings

Source: Interviews.

Box 14

Youth Action for Rural Development (YARD)

The Youth Action for Rural Development (YARD) is a community based organisation started in 2000 but registered in 2002. The mandate area: Most of its projects are confined within Gatanga District but some are in Thika East, Kandara and Kikuyu Districts.

YARD works with community on issues related to:

- Agriculture & Environmental rehabilitation and conservation;
- STI/HIV/AIDS awareness creation and behaviour change;
- Information transfer (have set-up a resource centre);
- Income generating activities for youth out of school;
- Community training, mobilisation and education.

Strengths/ Comparative advantages

- Legal status through registration
- Good will from farmers
- Skilled staff
- Leadership in programming

Challenges/ Weaknesses

- Integration of resource-focused groups
- Slow uptake of technologies by farmers
- High demand for services which cannot be met
- Dealing with resource poor farmers a big constraint

Source: Interviews

Box 15

Kaanwa-Ndumbini Focal Area Development Committee

The Kaanwa-Ndumbini Focal Area Development Committee (Kaanwa FADC) was started in 2004/2005 but registered as a self-help group in 2005. THE FADC has 15 members (five female and 10 male). Eight members of the FADC come from Meru South District and seven members come from Mara District. The committee was elected in 2007. The FADC was established with support of MKEPP.

The FADC was established to (a) Coordinate activities in the focal area, and (b) link up with MKEPP project management committee. The activities of the FADC are linked to the four components addressed by MKEPP, namely:

- Water (springs, earth dams, fish pond and water harvesting)
- Environment (school greening programme, spring protection, tree nursery, riverine protection)
- Rural livelihood (rehabilitation of cattle dips, artificial insemination, soil and water conservation. Road surface water harvesting, community markers for SWC, fodder farming, fruit trees, poultry keeping, Value addition and livestock diseases).
- Community empowerment (development of community action plans, conflict management, financial management, constitution making, and gender mainstreaming).

Strengths/ Comparative advantages

- Legal status through registration
- Functioning FADC
- Community based

Challenges/ Weaknesses

- Slow adoption of technologies
- Contradicting policies
- Absenteeism to meetings (attitude issue)
- High costs of water harvesting activities
- Lack of office

The FADC works closely with the Tungu WRUA. The group appears to be cohesive with good leadership and could be used in implementation of the GWC activities.

Source: Interviews.

Box 16

Gathaite Focal Area Development Committee

The Gathaite Focal Area Development Committee (Gathaite FADC) was started in 2009 and registered as a self-help group on 12th May 2009 with the Department of Social Services. The group had originally 20 members from four blocks but at present there are 17 members (10F, 7M). The group meets at least once a month.

Activities

- Farming
- Community action plan (landslide rehabilitation; environmental conservation-tree planting; tree nursery)
- Soil and water conservation (*fanya juu* and bench terraces)
- Road water harvesting
- Livestock keeping (dairy goats and rabbits)
- Crop production (coffee, avocado, macadamia, tissue culture bananas, arrow root etc.)
- Table banking (group has KSh 80,000; they give loans at 10% interest)

The group has benefitted from funding from Women Enterprise (KSh 50,000 in 2010 and KSh 100,000 in 2011). The group has been trained by staff from the Ministry of Agriculture on farming and SWC, livestock management, environment, financial management and proposal writing.

Strengths/ Comparative advantages

- Legal status through registration
- Active group/committee
- Community based

Challenges/ Weaknesses

- Inadequate funds
- Inadequate access to markets
- Many orphans who need their care

Source: Interviews.

Box 17*Karure Focal Area Development Committee*

Karure Focal Area Development Committee (Karure FADC) was started in 2010 in Karure location, Mangu Division of Gatundu North District. It has 16 members (eight female and eight male), four from each of the four blocks (Nyamaangera, Miteero, Igegania and Karure). The group is registered as a self-help group with the Social Services Department. The committee meets once a month at the Chiefs camp.

The FADC links farmers MoA for services, it assists the community to reach agricultural destiny, and carries out group farming (TC bananas, rabbits, indigenous crops – e.g. sweet potatoes -, pumpkins etc.).

The FADC has been trained by MoA extension staff on the following:

- Group formation and group dynamics
- Commercial agriculture (farming as a business)
- Farm management
- Nutrition
- Livestock keeping
- Environmental conservation (agroforestry)
- Water harvesting

The group carries out group marketing of produce such as TC bananas.

Strengths/ Comparative advantages

- Legal status through registration
- Functioning FADC committee
- Community based

Challenges/ Weaknesses

- Inadequate funds (capital to start projects)

Source: Interviews.

Box 18*Kaganda Focal Area Development Committee*

Kaganda Focal Area Development Committee (Kaganda FADC) started in 2009. The FADC comprises four blocks (Gathabara, Gathiru, Tambaya, and Mutuango). Each block is represented by five members. The group has been trained on the following:

- Livestock keeping (cattle, dairy goats, poultry and rabbit)
- Coffee planting, pruning and spraying
- Soil and water conservation
- Napier grass
- Water harvesting
- Marketing
- Use of pesticides

The focal area ended in July 2010. In January 2011 it registered as a self-help group with 16 members. Its main activity is revolving funds. It meets every second Thursday of the month.

Strengths/ Comparative advantages

- Legal status through registration
- Operate in rural areas/community based
- Common interest groups (Kaganda Focal Area Self Help Group)

Challenges/ Weaknesses

- Attitude: people view FADC as waste of time (no incentives)
- Irregular attendance of meetings
- Inadequate implements

Source: Interviews.

Box 19*Miumo Community Based Organisation*

The Miumo Community Based Organisation was established in 2003 and registered with the Social Services Department. It has 400 members with a committee of 12 people (five female and seven male). It is located in Gatari sub-location in Kirea location, Kahuro District.

The CBO was originally organised to give assistance to burial to members. However, the activities of the group are extended to agriculture for people with disability (eight dairy goats bought for KSh 60,000 with one buck); Spring protection and rehabilitation of a deep gully at Kamaguta, Miumo Scheme. The group is also involved manual grading of roads in their area.

Strengths/ Comparative advantages

- Legal status through registration
- Information gathering and delivery
- Labour available

Challenges/ Weaknesses

- Limited finances
- Destruction of feeder roads by soil degradation

Source: Interviews.

Box 20

Technoserve

Technoserve is an International NGO. Its objective is to improve livelihoods. In Kahuro District it works with farmers belonging to Kahuhia Coffee Society. It advises on management of factories, and wet mill management. It also trains farmers on appropriate agricultural practices (soil and water conservation, agronomy and tree planting). It works in groups and presently it deals with 15 groups. Field interventions started in May 2010. It has seven staff (excluding those dealing with wet mill).

Technoserve offers linkage of farmers to input keepers (agro-vets).

Strengths/ Comparative advantages

- Financial resources
- Legal status (registered)
- Qualified and skilled staff
- Promote empowerment and active participation of communities in rural development

Challenges/ Weaknesses

- Attitude of the people and politics
- Labour availability is limited in places
- Limited finances/poverty

Source: Interviews.

Box 21

Greenbelt Movement

Greenbelt Movement is a NGO involved in environmental matters particularly tree planting. In Kahuro District it is involved in planting indigenous trees in public lands to avoid grabbing. It is also involved in promotion of fruit trees (mangoes and avocados). In Mogoiri South location Greenbelt has assisted five self-help groups to come together to form Mogoiri South Avocado self-help group (MOSANET) which has sold 25 tonnes of avocados at KSh 350,000.

Greenbelt operates with staff (Green Ranger mandated to two Locations-Kiria and Mogooiri). Each Green Ranger has two networks (Kiria and Mirichu) each manned by a Green Volunteer. Each network has five groups and each group has established a tree nursery. The networks are registered with Social Services Department as self-help groups.

The Greenbelt Movement staff work in collaboration with the administration and church organisations. They pay KSh 5.00 for every indigenous tree planted and has survived.

Training of chairpersons of the Green Volunteer is carried out in Nairobi at their headquarters in Langata.

Strengths/ Comparative advantages

- Established network (wide coverage)
- Legal status (registered)
- Qualified and skilled staff
- Training on water harvesting (SWC etc.)

Challenges/ Weaknesses

- Untimely payment of workers
- Inadequate staff (nursery attendants)
- Inadequate implements

Source: Interviews.

Box 22*Mogoiri North Focal Area Development Committee*

The Mogoiri North FADC was established in 2008. It has 16 members (seven female and nine male) from four blocks (Gitaru, Mbari ya Hiti, Gitiri and Kiboi) each represented by four members. The committee acts as community watchdogs in implementation of community action plans, It meets once a month. The committee has been trained on: human rights; HIV/AIDS; emerging crops; farming as a business; livestock management-dairy cattle, poultry, beekeeping; farm records; compost and farmyard manure management; fish rearing; rabbits; bananas; coffee sweet potatoes; cassava; kitchen garden and energy saving devices. The FADC was registered with Social Services Department in 2009.

The FADC has the following activities for income generation:

- Kitchen garden
- Rabbits
- Kenbrew hens
- Tissue culture bananas (at least five per member)

Strengths/ Comparative advantages

- Legal status through registration
- Operate in rural areas/community based
- Common interest groups

Challenges/ Weaknesses

- Attitude: people view FADC as waste of time (no incentives)
- Irregular attendance of meetings
- Inadequate implements

Source: Interviews.

Box 23*Kiamboka Self Help Group*

The Kiamboka Self Help Group was initiated in 1990s in order to pre-occupy young people. It started with three tree nurseries and acquired beehives. It eventually became Kiamboka Irrigation Project covering 100 farms. It uses sprinkler irrigation with water tapped by gravity from Muriuru river, The crops grown are cabbages, tomatoes, onions, maize and beans.

The operations of the irrigation project have been going on for the last one and half years. It is managed by a committee of 13 members (eight female and five male). The committee meets at least once in three months. There is a running sub-committee which meets more often.

Strengths/ Comparative advantages

- Legal status through registration
- Active running committee

Challenges/ Weaknesses

- Community has not become fully committed to farming
- Financial constraints (limited access to inputs-seeds, pesticides, fertilizers etc.)
- Limited advisory staff
- Limited water storage

Source: Interviews.

Box 24*Mogoiri South Focal Area Development Committee*

The Mogoiri FADC was started in 2005. It was registered with Social Services Department in 2005. The committee comprises 16 members (six female and ten male) from four blocks (Ndutuni, Kiria, Gathiru, and Murichu) with each block represented by four members. The core task of the FADC is to coordinate activities of CIGs within the focal area. They make arrangements for the groups to be trained. The FADC has received training from Ministry of Agriculture extension staff on food crops and how to lay out SWC measures. The FADC has a network swelling avocados (MOSANet). The FADC has not been meeting regularly and is not very active.

Strengths/ Comparative advantages

- Legal status through registration
- Operate in rural areas/community based
- Common interest groups (Mogoiri South Avocado Network-MOSANet)

Challenges/ Weaknesses

- Loss of interest by farmers- drop out and non-attendance of meetings
- Not transparent and accountable
- Non funding of CAPs

Source: Interviews.

Box 25*Kahuti Water and Sanitation Company (KAWASCO) Ltd*

Kahuti Water and Sanitation Company (KAWASCO) Ltd provides water and sanitation services in Kangema and Kahuro Districts over an area of about 300 km². The company manages the intake and treatment works. It raises revenue from provision of water and sewage services.

KAWASCO has a board of directors nine persons (three female and six male), a general manager who is the chief executive officer and staff. It started its operations in 2006. KAWASCO is involved in planting of trees. KAWASCO pays fees to WRMA. It operates in four phases:

- Phase 1&3 - Tuttu
- Phase 2 - Rwathia
- Phase 4 - Ichiche

Treatment of water in phase 1, 3, and 4 is minimal (chlorination only). In phase 2 there is alum treatment and alum dosing goes up during the rains.

Strengths/ Comparative advantages

- Legal mandate
- Financial support
- Technical know-how

Challenges/ Weaknesses

- Steep topography prone to landslides
- High costs of maintenance

Source: Interviews.

Box 26

Kieni Community Forest Association

Kieni Community Forest Association (CFA) was established in 2006. The Kieni CFA is formed by amalgamation of seven CFAs from the buffer zone of Gituamba (two CFA), Kithokoni (three CFA) and Ndarugu (two CFA) locations. The CFA has 21 committee members (seven female and fourteen male). It was registered with the Registrar of Societies in 2007. The committee meets once every three months. The CFA comprises many self-help groups (over 100 groups).

The CFA has the following programmes:

- Protection of the forest
- Rehabilitation
- Poverty eradication and livelihood scheme (started in 2009) 100 hectares have been cleared and 180,000 indigenous species planted

The CFA is involved in recruitment of new members; Forest Management Plan; resource centre; and establishment of a tree nursery for the CFA. Other activities include dairy goats, fish farming, tree nurseries, rabbits and beekeeping. CFA operates about 5 km from the forest. The CFA is a beneficiary of NRM project funds from World Bank.

Strengths/ Comparative advantages

- Legal status through registration
- Well established with many groups (>100)
- Operates in the rural area (community based)
- Functioning committee

Challenges/ Weaknesses

- Inadequate funds for implementation of projects
- Resource centre not adequately equipped
- Limited market for tree seedlings

Source: Interviews.

Box 27

Greenland Self Help Group

Greenland is a community based organisation which was started in 2006 and registered with Social Services as a self-help group in the same year. The original membership was 15 (five female and ten male). However, in 2007/2008 the membership increased to 20 (seven female and thirteen male). The members contribute KSh 100 per month. The monthly contribution was increased to KSh 200 in 2010. The committee meets once per month.

The group is involved in tree nurseries. They have built a screen house (using funds from NRM Project) where they are multiplying bamboo seedlings. The bamboo is for planting along Ndakaini dam and also along Nairobi river. The group sells tree seedlings to people from the area as well as from outside: Thika, Jomo Kenyatta University and Forest Department. The group is also involved in farming.

Strengths/ Comparative advantages

- Legal status through registration
- Group affiliated to CFA
- Well established with active committee

Challenges/ Weaknesses

- Limited sale of tree seedlings
- Inadequate water for watering the tree nursery

Source: Interviews.

Box 28*Gachege Focal Area Development Committee*

The Gachege Focal Area Development Committee was formed in 2010. It had 16 members (eight female and eight male) with an Executive Committee of 5 members (three female and two male). It has four blocks (Mire, Wachege, Gakoe and Ndiko). It was registered with Social Services in December 2010. The committee meets once a month.

The activities of the FADC include: groundnuts; poultry, rabbits; tissue culture bananas; beekeeping and vegetables. They are also involved in merry-go-round. One member of the group has given them a plot to build a greenhouse.

The FADC has been trained by Ministry of Agriculture staff on:

- Beekeeping
- SWC measures and soil erosion
- Soil fertility
- Marketing
- Record keeping
- Time management
- Farming as a business
- Composting

Strengths/ Comparative advantages

- Legal status through registration
- Operate in rural areas/community based

Challenges/ Weaknesses

- Inadequate funds
- High price of inputs

Source: Interviews.

Box 29*Hand-in-Hand Eastern Africa*

Hand-in-Hand Eastern Africa is an International NGO affiliated to Hand-in-Hand International in UK, India, Brazil and South Africa. It has offices in Thika, Kiambu, Limuru, Kawangware, Machakos and Tala. The Thika office was started in September 2010.

The NGO is offering services to farmers (NALEP groups) on:

- Training and mobilisation
- Savings
- Microfinance education
- Value addition and marketing

Strengths/ Comparative advantages

- Affiliation to Hand-in-Hand International
- Existence of farmer groups

Challenges/ Weaknesses

- Only recently established in Kenya

Source: Interviews.

Box 30*MURAMATI SACCO Ltd*

MURAMATI SACCO Society Ltd is a financial institution which has its headquarters in Muranga. It deals with savings and loans. It is open to any adult Kenyan willing to join the SACCO. One share costs KSh 10.00. Minimum shares for membership is shares worth KSh 100. The maximum share is 100,000. MURAMATI SACCO started 18 years ago.

Strengths/ Comparative advantages

- Legal status
- Well established

Challenges/ Weaknesses

- Open to everybody

Source: Interviews.

Box 31*Ntuntuni Focal Area Development Committee*

The Ntuntuni FADC was formed in 2007/2008 comprising 20 members from the southern part of Tungu River. The FADC has registered CIGs on dairy goats (30 members) and rabbits. The group meets three times a month to monitor activities (mainly dairy goats and merry-go-round. The group charges KSh 50.00 for the buck to serve dairy goats.

The group has been trained by MKEPP on: soil and water conservation; tree planting; infiltration ditches; water harvesting; income generating activities; dairy goats; poultry; and drip irrigation.

The following SWC measures are carried out in the FADC area:

- Bench terraces, *fanya juu*
- Grass strips along contour
- Trash lines
- Cut-off drains/retention ditches
- Tree planting along boundary
- Microcatchment for banana
- Riverine/River bank protection through planting of indigenous trees
- Ridging (maize, sweet potatoes, potatoes)

It was noted that the benefit of SWC measures is to prevent soil loss; increase productivity and improve soil fertility. Laying out soil conservation measures would take three people about 20 to 30 minutes at an estimated cost of KSh 150.00. Labour for making 10 metres of *fanya juu* is KSh 300.00

Napier grass, Kericho grass and Calliandra are used as stabilisers. Maintenance of the SWC measures are carried out by the farmers themselves.

Challenges/ Weaknesses

- Inadequate funds inhibit progress of the group with regard to merry-go-round and SWC measures.

Source: Interviews and discussions with Franklin Gitare Member of the FADC.

Box 32*International Fertilizer Development Centre (IFDC)*

The IFDC is an international public organisation started in USA in 1973. In Africa its physical presence was in Rome, Togo in 1986 and in 2009 in East and Southern Africa. It addresses issues related to soil fertility and agricultural development and fertilizer technology (capacity building in product knowledge - fertilizers, seed, and agro-chemicals). It is spread all over Africa. It has its headquarters for North and Western Africa in Ghana and East and Southern Africa in Nairobi.

IFDC works closely with stakeholders; national and regional institutions; COMESA Project in eight landlocked countries in Eastern and Southern Africa. IFDC has regional and country based projects. In 2009 IFAD funded a three year project "Extending-Agro Dealer Networks" (EADN) which is implemented in parts of Kenya, Uganda and Tanzania. It targets to improve agro-dealer access to modern production technologies and yield -enhancing inputs such as fertilizers, improved seed and crop protection products. EADN supports smallholder farmers' efforts to increase their productivity.

IFDC trains agro-dealers on agro-inputs product knowledge to transform them to service providers. Trains them on business management and backstops them on technology transfer approach. IFDC reaches farmers through crop demonstrations. In collaboration with Ministry of Agriculture IFDC supports field days. IFDC involves stakeholders such as Equity Bank in all trainings and facilitates linkage meetings for stakeholders.

In Kenya IFDC operates in over 20 districts where there are existing IFAD projects (Central Kenya Dry Area Project, MKEPP, and Small Horticulture Marketing Project (SHOMAP). IFDC has trained staff from KENFAP in Mukurweni, Kirinyaga South, Nyandarua, Central Meru, Meru South, Imenti and Nyanza.

All players-producers, marketers, transporters are to be brought together. Kenya National Agro-dealers Association (KNADA) - some small agro-dealers have joined KNADA. 600 agro-dealers are already trained.

Strengths/ Comparative advantages

- Financial resource endowment
- International fund raising
- Networking with input suppliers for efficient use of inputs
- Capacity building of farmers on proper use of agro-chemicals
- Field demonstrations

Challenges/ Weaknesses

- Availability of inputs
- Limited access to credit
- Limited knowledge of inputs
- Limited information about sources of agro-inputs and their prices

Source: Interviews and discussions

Box 33

Syngenta Foundation Kenya

Syngenta Foundation Kenya is housed in the Syngenta East Africa Ltd's premises in Upper. It works with Syngenta East Africa as a partner in collaboration with various ministries of GoK. The organisation began its activities in Kenya in 2009 working with farmers in the arid and semi-arid areas of Laikipia in Kenya. The project "scaling up Laikipia" was a combination of conservation agriculture via Syngenta Foundation Laikipia project, extension methodology and expanded scope via the Syngenta Foundation global and broader solution through new partnerships in a bid to:

- Increase productivity and income of pre-commercial farmers
- Reach more farmers
- Provide a complete on-farm solution

The objectives are to:

- Raise small farmer productivity and food security; strengthen links to markets
- Reach 10,000 smallholders by end 2011 assuring adoption of technology and engagement in value chains

The Syngenta Foundation for Sustainable Agriculture Kenya is dealing with micro-insurance to smallholder Kenyan farmers through "Kilimo Salama (Safe Agriculture)".

Strengths/ Comparative advantages

- Products for marketing
- Technical know-how
- Financial resources

Challenges/ Weaknesses

- Limited manpower?
- Small number of farmers reached *vis à vis* target

Source: Syngenta foundation⁶

Box 34

Ministry of Agriculture

The mandate of the Ministry of Agriculture (MoA) is to promote and facilitate production of food and agricultural raw materials for food security and incomes; advance agro based industries and agricultural exports; and enhance sustainable use of land resources as a basis for agricultural enterprises.

The mission of the Ministry of Agriculture is to improve the livelihoods of Kenyans by promotion of competitive agriculture through creation of an enabling environment, provision of support services and ensuring sustainable natural resources management.

Agriculture Department has been divided into five Directorates for effective service delivery: Directorate of Crop Management; Directorate of Policy and External Relations; Directorate of Agribusiness and Market Development; Directorate of Extensions, Research Liaison & Training; Directorate of Agricultural Engineering Services.

The Ministry of Agriculture has offices at the District and Divisional levels with staff representing various departments. The extension staffs of MoA are represented at location level by frontline extension workers.

Strengths/ Comparative advantages

- Financial and policy support by GoK
- Good network
- Staff up to community level
- Qualified and experienced technical staff
- Good collaboration with farmers

⁶ <http://www.syngentafoundation.org/index.cfm?pageID-674>

Challenges/ Weaknesses

- Weak policy support particularly with regard to enforcement
- Overload of farmers demand for services
- Weak response to uptake of technologies by farmers

Source: MoA website, Strategic Plan and interviews.

Box 35*Ministry of Water and Irrigation*

The Ministry of Water and Irrigation (MoWI)'s goal is to conserve, manage and protect water resources for socio-economic development. MoWI's mission is to facilitate management and development of water resources for national development.

The Mandate of the Ministry is formulation, review and implementation of policy on the water sector, the irrigation and drainage sector and in the reclamation of degraded lands for sustainable development of Kenya. The functions of the MoWI are:

- Water and Sewerage Services Policy
- Water Resources Management Policy
- Water Quality and Pollution Control.
- Dam Construction Schemes
- Flood Control and Land Reclamation
- Waste Water Treatment and Disposal Policy
- National Water Conservation and Pipeline Corporation
- Kenya Water Institute
- National Irrigation Policy
- National Irrigation Board (NIB)
- Water Services Regulatory Board
- Water Resources Management Authority
- Water Appeal Tribunal
- Water Services Boards
- Water Services Trust Fund
- Public Water Schemes and Community Water Projects

The Ministry has offices up to the District level.

Strengths/ Comparative advantages

- Financial and policy support by GoK
- Qualified technical staff

Challenges/ Weaknesses

- Weak policy support particularly with regard to enforcement

Source: Ministry of Water and Irrigation Website and Strategic Plan.

Box 36*National Agriculture and Livestock Extension Programme*

The National Agriculture and Livestock Extension Programme (NALEP) is jointly implemented by the Ministry of Agriculture (MoA) and the Ministry of Livestock Development (MoLD).

Background Information

- Formulated in 1999 as a reform programme to implement the National Agriculture Extension Policy (now National Agriculture Sector Extension Policy- NASEP).
- NALEP is an off-shoot or successor of the former National Soil and Water Conservation Programme.

- It is a strategy to implement NASEP and, therefore, a component of NASEP - IF
- It focuses on up scaling good lessons learnt from the precursor programme and impart them to all the extension services
- Catchment approach is precursor to the focal area extension approach that NALEP promotes.
- NALEP, therefore, up scales the successes of the catchment approach to all extension services.

NALEP's mission is to provide and facilitate pluralistic and efficient extension services for increased production, food security, higher incomes and improved environment. Its purpose is "Pluralistic, efficient, effective and demand-driven extension services are promoted and functional" The specific objectives of NALEP are:

- To institutionalise demand-driven and farmer-led extension services.
- To increase the effectiveness of pluralistic provision of extension services.
- To increase the participation of private sector in providing extension services.
- To empower farmers to take charge of Project Cycle Management of extension projects.
- To develop accountability mechanisms and transparency in delivering extension services.
- To facilitate commercialisation of some of the agricultural extension services

The Sida-supported Kenya National Agriculture and Livestock Extension Programme (NALEP) Phase I was from 2000 to 2005. Currently NALEP is operating in Phase II which will end in December 2011. NALEP uses the Focal Area Approach for providing extension services.

NALEP's strategy to achieve its goal is through formation of Focal Area Development Committees (FADCs) in focal areas which comprise 2000 to 6000 farmers. In each focal area NALEP in collaboration with farmers carry out a participatory rural appraisal which identifies development problems at community level culminating in development of Community Action Plans (CAPs). The CAPs are expected to act as bargaining tool for the FADCs to mobilise and access resources and also to assess their rural development over time. NALEP extension staff taking into account the prevailing technical challenges faced by agriculture in the focal areas identifies 'viable agricultural enterprises which have potential of improving agricultural yields and boosting household food security and incomes. NALEP then brings together interested farmers into common interest groups (CIGs) to address specific enterprises. Some of these CIGs are involved in soil and water conservation activities.

Strengths/ Comparative advantages

- Policy support
- Multi-sectoral approach to extension
- Programme has built on past experiences
- Qualified and experienced staff
- Precise work plans and budgets
- Demand-driven extension and bottom-up planning

Challenges/ Weaknesses

- Fragmentation of districts puts a demand on staff and financial resources
- Delay in release of funds due to bureaucracy in the government financial cycle

Source: NALEP Website and interviews.

Box 37

Kenya National Federation of Agricultural Producers (KENFAP).

Kenya National Federation of Agricultural Producers (KENFAP) was established in 2002 as a revival of the former Kenya National Farmers Union (KNFU). The mission of KENFAP is "to empower its members to make informed choices for improved sustainable livelihoods".

KENFAP operations are guided by a 5-year strategic plan (2008-2012) "Enriching the farmers' voice".

Currently, KENFAP has six strategic objectives to guide its operations. They are strategically factored in for implementation within the current 5-year's strategic plan with close monitoring and evaluation of results on quarterly basis. The evaluation is based on clearly defined result indicators, jointly developed by stakeholders. These objectives include:

- To enhance the capacity of the federation, staff, leadership and membership for informed decision making, improved effectiveness and increased operational competence;
- to foster the interests of farmers by stimulating beneficial policy changes through lobby and advocacy and focus on

<p>adoptable research through requisite engagement in research dialogue;</p> <ul style="list-style-type: none"> - to realise an information and communication system, capable of responding to the operational and structural needs of the federation, membership and the sector; - to build the financial sustainability of the organisation and enhance member operational autonomy for improved response to its needs and service delivery; - to promote and sustain mutually remunerative partnerships through operationally efficient structures and participation in global debate; and - to improve benefits from agricultural value chains by promoting objective engagement of women, youth and redressing environmental, HIV/AIDS, gender and other cross cutting concerns. <p>KENFAP manages several projects among them, a biogas project. Membership of KENFAP comprises farmer groups, commodity associations and cooperatives which are involved in agriculture. Both small-scale and large-scale farmers are targeted as members. The services provided to its members are:</p> <ul style="list-style-type: none"> - Capacity building - Information dissemination - Market linkages - Awareness creation on climate change issues, gender and HIV/AIDS - Demand-driven extension and - Advocacy for farmers <p>Strengths/ Comparative advantages</p> <ul style="list-style-type: none"> - Legal status - Farmers trust of the federation <p>Challenges/ Weaknesses</p> <ul style="list-style-type: none"> - Limited staff

Source: KENFAP website and interviews by (Elemans 2011) and the study Team.

Box 38

Ministry of Livestock Development

<p>The mandate of the Ministry of Livestock Development (MoLD) is “to promote, regulate and facilitate livestock production for socio-economic development and industrialization of the country. Its goal is to improve the livelihoods of Kenyans through sustainable livestock development. The mission of the Ministry is ‘to create a favourable legal framework for the sustainable development of the livestock industry, and to provide support services that increase productivity, value addition and market access for the sub-sector products”.</p> <p>The MoLD’s second strategic plan for the period 2008 - 2012 ties with the objectives of the Vision 2030 Strategy and the Medium Term Plan (2008-12) and integrates additional strategies to address short-term constraints and for implementation of key flag-ship projects outlined in Vision 2030. During this strategic plan, the MoLD’s benefit to the country will be increased productivity through efficient delivery of services in the livestock sector. To achieve this MoLD has identified five strategic objectives namely:</p> <ul style="list-style-type: none"> - Develop appropriate policy and legal environment - Increase livestock productivity through provision of widely accessible inputs and services to farmers and pastoralists - Enhance investment in the livestock sector - Increase market access of livestock and livestock produce - Enhance institutional efficiency and effectiveness in service delivery <p>The Ministry has three major departments through which services are delivered: Department of Veterinary Services; Department of Livestock Production; and Department of Administrative Services. The staffs of the Ministry are involved in implementation of the National Agriculture and Livestock Extension Programme (NALEP).</p> <p>Strengths/ Comparative advantages</p> <ul style="list-style-type: none"> - Financial and policy support by GoK - Qualified technical staff

- Well established contacts with farmers

Challenges/ Weaknesses

- Understaffing - The Ministry has an aging staff of only 5264 staff out of authorized establishment of 14,740 because it has not recruited since 1988 thus creating acute succession management challenges
- Inadequate transport
- Inadequate office accommodation

Source: MoLD Website and Strategic Plan and interviews.

Box 39

Kenya Agricultural Research Institute (KARI)/National Agricultural Research Laboratories (NARL)

The Kenya Agricultural Research Institute (KARI) is a premier national institution bringing together research programmes in food crops, horticultural and industrial crops, livestock and range management, land and water management, and socio-economics. KARI promotes sound agricultural research, technology generation and dissemination to ensure food security through improved productivity and environmental conservation.

To contribute, together with its partners, agricultural innovations and knowledge towards improved livelihoods and commercialisation of agriculture through increasing productivity and fostering value-chains while conserving the environment

In its strategic plan for 2005 - 2015 KARI's strategic goals are as follows:

- Integrated crop value chains fostering commercialisation of agricultural enterprises;
- Integrated livestock value chains fostering commercialisation of agricultural enterprises;
- Sustainable and integrated management of natural resources for agricultural production;
- Institutional arrangements for enhancing concerted action for development and uptake of technologies and innovations; and
- Capacity and competence building for integrated agricultural research for development.

Research Programmes

- Food crops research on cereals, root and tuber crops, legumes and pulses
- Horticultural and industrial crops research on flowers, vegetables, fruits, fibre crops, herbs and spices
- Animal production and range research on dairy, beef, small ruminants, poultry, pigs, pastures and fodder crops
- Animal health research on livestock diseases
- Socioeconomics and biometrics for crop, livestock and natural resources including impact assessment, priority setting, market and policy research
- Land and water management which includes soil fertility, survey and conservation; vegetation survey; agroforestry, irrigation and drainage biotechnology research for crops and livestock improvement including development of livestock vaccines and diagnostic kits
- The Kenya Arid and Semi-Arid Lands Programme (KASAL) focusing on developing site specific agricultural technologies for farmers and livestock keepers in the arid and semi-arid lands

Cross-cutting non-research programmes

- Foundation Seed and Germplasm conservation
- Agricultural Research and Investment Services (ARIS)
- Agricultural Technology and Information Response Initiative (ATIRI)
- Information and documentation services focusing on information technology and content delivery, organisation, repackaging, marketing, maintenance and archiving

KARI has research centres located in all over the country. Among the research centres of interest to Green Water Credit is the National Agricultural Research Laboratories (NARL) located at Kabete. NARL undertakes research on land and water management which includes soil fertility, survey and conservation; vegetation and land use survey. NARL also offers laboratory analytical services.

Strengths/ Comparative advantages

- Have technical know-how (qualified staff)
- Have biophysical information to act as a baseline

Challenges/Weaknesses

- Inadequate funding to get all required data
- Manpower (shortage of staff and scientists)

Source: KARI website and Interviews.

Box 40*Kenya Soil Survey*

The Kenya Soil Survey (KSS) is part of KARI-NARL and is mandated to carry out research on Land and Water Management; Soil Survey and conservation; Vegetation and Land use Survey. KSS has also a well-established Geographical Information System (GIS) and a soils and land use database.

KSS has collaborated and is collaborating with Green Water Credits in inventory of soil and water conservation practices.

Strengths/ Comparative advantages

- Data base (soils and land use)
- Bio-physical data collection
- Qualified technical staff

Challenges/ Weaknesses

- Database quite old-little recent data (need for upgrading)
- Limited staff who can carry out measurements on physical data

Source: Interviews.

Box 41*Farm Concern International*

Farm Concern International (FCI) is an Africa-wide Market Development Agency, which promotes pro-poor marketing models and strategic alliances to enhance economic growth among poor communities in various countries in Sub-Saharan Africa. FCI has designed and tested market innovation landscapes that seek to address market barriers in Africa. In developing and implementing market oriented programmes across Sub-Saharan Africa (SSA), FCI's market development initiatives have been benchmarked along private sector market development approaches with the aim of enhancing the competitiveness of the poor in the market place. The FCI Pro-Poor Business Models have enhanced sustainability and profitability of farming enterprises in Africa. FCI is currently supporting the commercialisation and market access to millions of smallholders in Sub-Saharan Africa. It is operating in ten countries in SSA.

Farm Concern International has evolved into a pro-poor market development icon in Sub-Saharan Africa currently facilitating trade for over 50 crops and 10 species of livestock and fisheries. With its headquarters in Nairobi-Kenya, FCI operates various country offices in Tanzania, Uganda, Malawi, Mali, Ghana, Mozambique, Zambia and Burundi.

The mission of FCI is "To build pro-poor market development initiatives and commercialisation of poor households in Sub-Saharan Africa for enhanced community empowerment". Its vision is "Commercialised African households with increased incomes and better livelihoods".

In Kenya FCI deals with producers in Central Province (Nero, Morang's, Katarina, Kirinyaga, and Thika); Western Province (Kaka mega); Nyanza Province (Kisi); Eastern Province (Embu, Meru, Mokena, Mbeere) and Coast Province (Mombasa, Killifish, Malindi, Taita).

FCI notes the following **challenges** inhibiting increased participation of smallholders along value chains:

- Farming communities though investing in farming, experience huge produce and financial losses due to low participation along value chains and minimal integration into marketing systems
- Lack of a collective marketing minimises optimal levels of value chain partnerships
- Lost livelihoods decreases poor households purchasing power eventually limiting their ability to purchase inputs or trigger commercialisation
- Production-led commercialisation as opposed to market-led systems results into increased post-harvest losses due to limited market shares

FCI uses the following pro-poor market innovations:

- Market-led development approaches
- Evolving social African villages to commercial villages through the Commercial Village Approach
- Private sector strategic business partnerships with Commercial Villages®
- Develop communities into respectable business/market players
- Commercialisation and market access creates a demand for other development initiatives like technologies
- Increased returns to farming is an incentive to adopt improved production systems and village-based resource conservation

FCI applies Commercial Village Approach at rural and peri-urban levels which entails:

- Market-led approach
- Market Research and Value Chain Analysis aimed at identifying opportunities that offer smallholders a comparative advantage.
- Business partnerships with potential buyers developed prior to commercializing smallholder production systems
- Commercial Villages are established to respond to actual market demands
- Commercial Villages are developed and based on village systems enhancing sustainability of any programme interventions
- Community Based Technical Experts is aimed at developing village 'experts'

FCI wins pro-poor markets through:

- Identification of viable business opportunities for smallholders and for communities with limited access to resources
- Analysing and identifying private sector players and traditional markets with procurement and purchase systems which offer market opportunities for smallholders
- Building entrepreneurship and marketing capacity of smallholders through enhanced, practical and business-oriented training methodologies
- Market exposure and exchange visits for smallholders
- Facilitation of business forums and partnerships between smallholders and Value Chain Players
- Building sustainable partnerships between smallholders and value chain players
- Increasing competitiveness of smallholders and enhancing their participation in the marketplace
- Smallholder women commercialisation, providing access to markets and initiating viable approaches to access financial services
- Systematic commercialisation of African Villages and strategically linking them to market players
- Facilitating access to markets, access to revenue and development of internal savings and lending approaches
- Application of household approach to commercialization, resulting in increased household involvement in commercial agendas for men, women and youth
- Increasing capacity of the private sector to do business with poor communities and supporting the sector to prioritise economic interventions for corporate social responsibility

Potential Collaboration with GWC

- Partnership in aspects related to encouraging farmers to grow crops that would give them a good return and linking them to markets

Source: Interviews and FCI website.

Box 42

Monsanto

Monsanto is an International Agricultural Company that deals with sustainable agriculture. It applies innovation and technology to help farmers around the world produce more while conserving more. It sells seeds, with traits developed through biotechnology and crop protection chemicals. They offer:

- High-yielding conventional and biotechnology seeds on the market;
- Advanced traits and technologies that enable more nutrition and durable crop; and
- Safe and effective crop protection solutions.

Monsanto Kenya has its headquarters in Nairobi at Tusky's Head Office Complex, Mombasa Road.

Strengths/ Comparative advantages

Products for marketing

Well known products

Farmer trust

Technical know-how

Challenges/ Weaknesses

Limited manpower

Profit-orientation may hinder collaboration

International reputation tarnished by association with GMOs

Source: Monsanto Website and interviews (Elemans 2011).

Annex 4 List of Persons Interviewed/Contacted

Date	Name	Organisation/Institution	Telephone
6th April 2011	Muthoni F. Livingstone	Project Manager, MKEPP	0722-596987
	Boniface M. Kikui	Agricultural Officer, MKEPP	0723 305269
	Paul Njuguna	NRM Officer, MKEPP	0722889362
	Eng Koome	Water Resources Expert, MKEPP	0720804169
6th April 2011	Francis N. Gachuga	Technical Manager, WRMA Embu	0723-743908
	Peter Nguvu	WRMA, Embu	22682794
	Elijah Mbugua	DAO, Kahuro District	0721304114
	Joseph Gaturuku	Deputy DAO, Kahuro District	0721777552
13th April 2011	Dr Patrick Gicheru	Centre Director KARI=NARL	0722465642
14th April 2011	Dr Peter Macharia	Head, Kenya Soil Survey	0722539273
19th April 2011	Wilson Gachungi	Secretary, Miumo Community Based Organisation	0713820179
	Josphat Kanyingi	Chairman, Kayahwe WRUA	0722590863
	Gachane Kibucha	Chairman Kaganda Focal Area Development Committee	0712965238
20th April 2011	Alice Mugechi	Technoserve	0720636287
	Kenneth Njuguna Kaniaru	Chairman, Waithaga FADC	0724341839
	John Mbogoro Mwangi	Green Belt Movement	0727257127
	Ngugi Kabucha	Chairman Kiria Network, Green belt Movement	
21st April 2011	Joseph Mwangi Kanyotu	Chairman, Mogoiri North FADC	0712592743
	Pastor Stephen Macharia	Chairman, Kahuro Division Interchurches Organisation (KADICO)	0723743909
	Rev. Charles Kiragu	Chairman, Kiamboka Self Help Group	0720514165
	Eng. Ephantus Kamau	General Manager, Kahuti Water and Sanitation Company (KAWASCO)	0722451288
22nd April 2011	Waituika Michire	Chairman, Mogoire South FADC	0723982164
29th April 2011	Philip T. Karuri	Project Leader, EADN/IFDC Kenya Country Representative	725864333
	Eng Boro Gathuo	Private Consultant	0722760489
3rd May 2011	Joyce Njau	DAO, Gatundu North District	0733445322
	Felistus Wairegi	Agri-business Development Officer, Gatundu North District	0735874234
	Mary Njine	DAO, Gatanga District	
4th May 2011	John N. Nyaga	DAO, Thika West District	0722404698
	Joyce Roitore	M&E Officer Thika West District	
	Nicholas Mokaya	DAO Meru South District	0723856041
9th May 2011	Peter Macharia	Christian Community Services (CCS)	0722277523

Date	Name	Organisation/Institution	Telephone
10th May 2011	Robert Mwangi Michael Nganga Salome Wanja Kuria Patrick Mbugua Jeremiah Maina Karago Vincent Mungai Kimani James K. Njuguna Joyce Njoki Gichea	Secretary Community Forest Association Secretary Greenland Committee member Greenland Committee member Greenland Vice-Chairman Lower Chania WRUA Chairman, Gachege FADC Committee Member Gachege FADC Committee Member Gachege FADC	0718039360 0712244103 0726801728 0716238649
11th May 2011	James Waweru Edward Chege Kariuki Monica Wambui Rafael Rebo Francis Kamau Simon Njau Lucy Wanja Kigio	Chairman, Githaite FADC Secretary, Githaite FADC Treasurer, Githaite FADC Chairman, Karure FADC Vice-Chairman Karure FADC Committee member, Karure FADC Committee member, Karure FADC	724450600 0733534700
12th May 2011	Sister Veronica Thiga Paul Waweru Ellena Wanjiru Justin Makoi	Songa Mbele Community Development Initiative (SoMCODI) Hand in Hand Eastern Africa Hand in Hand Eastern Africa Hand in Hand Eastern Africa	0722780096
12th May 2011	Wilson M. Kimweya	Sustainable Agriculture Community Development Programme (SACDEP-Kenya)	0720389619
13th May 2011	Emma K. Ngugi Patrick Kamau Beatrice Muthoni Simon Ngaruiya Christopher Kamau	Chairlady, Mugumoini Kugeria Women Group Chairman, Ithaga FADC Group Treasurer Ithaga FADC Group Secretary, Ithaga FADC Group Youth Action for Rural Development	0720121464
16th May 2011	Eng. Quentine Mwakiranga Franklin Gitare	District Agricultural Engineer, Meru South District Member, Ntuntuni DADC	0722797326
17th May 2011	Octavious Nyaga David K. Magambo Rosemary Mukawanyaga Regina Kanyua Mpuhia Justin Kinyua Ngaine Elias Mbae Elizaphan Riungu	Chairman, Kaanwa- Ndumbini FADC Chairman, Sub-WRUA Zone 4 Vice-chairlady Kaanwa-Ndubini FADC Committee member Kaanwa-Ndubini FADC Chairman, Tungu WRUA Secretary, Tungu WRUA Chairman, Tungu WRUA, Mara District	0728476963 0725709248 0717515336
18th May 2011	Jotham Ngurwe Sarah Muthoni	Community Marker Community Marker	0713415406 0718701620
19th May 2011	Delifina Njagi Katheru	Farmer, Kogoti village, Karingani Location	
20th May 2011	Zachary Gitonga Ephantus Mpuhia Joel Kithure	Farmer Kathangani village, Karingani Location Farmer Kathangani village, Karingani Location Livelihood Programme Coordinator, Diocese of Meru, Tharaka-Nithi Deanery	0736590477 0725821663
2nd June 2011	Paul Kaburu Nteere Jamleck Mutegi Margaret Kathare Josephat Gitembu 17 members of the Group (10M, 7F)	DAEO Tharaka South Division Divisional Agribusiness Officer Field Officer, Tharaka-Nithi Deanery, Diocese of Meru Chairman Nkuuni/Kithukioni Food for Assets Group Farmers in Kamanyaki Location interviewed in a Focus Group Discussion	0720769916 0727707884

Date	Name	Organisation/Institution	Telephone
3rd June 2011	Kinyua Njeru Peter Kinyua Samuel Njeru Farmers, Kamarandi Location, Nthigirani Village 15 (10M, 5F)	DAEO Evurore Division, Mbeere Norh District Frontline Extension Officer Kamarandi Location Agribusiness Development Officer, Evurore Division Farmers along Mutonga River interviewed in a Focus Group Discussion	0721587770
26th July 2011	Eng. Boniface Mwaniki Eng. Peter K. Ngubu	Regional Manager WRMA Embu WRMA Embu	0722457573 0722682794
2nd August 2011	Tom Bonyo David Nyantika Mikael Segerros Daphne Muchai	NALEP Coordinator NALEP Programme Advisor Deputy Head, Agribusiness Partnership and Lobby KENFAP	0733920195 0735398317 0733973831
3rd August 2011	Eng. Peter O. Mangiti	Director Land Reclamation & Head, Donor Coordination Unit, Ministry of Water and Irrigation	0722522584
3rd August 2011	Eng. Jacqueline K. Musyoki (Mrs) Phanuel Matseshe	Chief Executive Officer, WSTF Quality Assurance Manager, WSTF	0722386317 0722720788
4th August 2011	Mumbi Kimathi	Strategy & Partnerships Director Market & Chain Analyst, Farm Concern International	+254-20- 4444031
4th August 2011	Phyllis Mungai	Markets & Development Research Farm Concern International	0715411834

GWC Reports Kenya

GWC K1	<i>Basin identification</i>	Droogers P and others 2006
GWC K2	<i>Lessons learned from payments for environmental services</i>	Grieg Gran M and others 2006
GWC K3	<i>Green and blue water resources and assessment of improved soil and water management scenarios using an integrated modelling framework.</i>	Kauffman JH and others 2007
GWC K4	<i>Quantifying water usage and demand in the Tana River basin: an analysis using the Water and Evaluation and Planning Tool (WEAP)</i>	Hoff H and Noel S 2007
GWC K5	<i>Farmers' adoption of soil and water conservation: the potential role of payments for watershed services</i>	Porras IT and others 2007
GWC K6	<i>Political, institutional and financial framework for Green Water Credits in Kenya</i>	Meijerink GW and others 2007
GWC K7	<i>The spark has jumped the gap. Green Water Credits proof of concept</i>	Dent DDL and Kauffman JH 2007
GWC K8	<i>Baseline Review of the Upper Tana, Kenya</i>	Geertsma R, Wilschut LI and Kauffman JH 2009
GWC K9	<i>Land Use Map of the Upper Tana, Kenya: Based on Remote Sensing</i>	Wilschut LI 2010
GWC K10	<i>Impacts of Land Management Options in the Upper Tana, Kenya: Using the Soil and Water Assessment Tool - SWAT</i>	Hunink JE, Immerzeel WW, Droogers P, Kauffman JH and van Lynden GWJ 2011
GWC K11	<i>Soil and Terrain Database for the Upper Tana, Kenya</i>	Dijkshoorn JA, Macharia PN, Huting JRM, Maingi PM and Njoroge CRK 2010
GWC K12	<i>Inventory and Analysis of Existing Soil and Water Conservation Practices in the Upper Tana, Kenya</i>	Muriuki JP and Macharia PN 2011
GWC K13	<i>Estimating Changes in Soil Organic Carbon in the Upper Tana, Kenya</i>	Batjes NH 2011
GWC K14	<i>Costs and Benefits of Land Management Options in the Upper Tana, Kenya: Using the Water Evaluation And Planning system - WEAP</i>	Droogers P, Hunink JE, Kauffman JH and van Lynden GWJ 2011
GWC K15	<i>Cost-Benefit Analysis of Land Management Options in the Upper Tana, Kenya</i>	Onduru DD and Muchena FN 2011
GWC K16	<i>Institutes for Implementation of Green Water Credits in the Upper Tana, Kenya</i>	Muchena FN and Onduru DD 2011
GWC K17	<i>Analysis of Financial Mechanisms for Green Water Credits in the Upper Tana, Kenya</i>	Muchena FN, Onduru DD and Kauffman JH 2011



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Ministry of Agriculture



Water Resources Management Authority



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