Mitigation of Climate Change in Agriculture (MICCA) Programme
Background Report 1

Capacity Development Guiding Report for the MICCA Programme in Kenya

Capacity Needs Assessment

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Capacity Needs Assessment

MICCA Programme

Pilot Project:
Enhancing agricultural mitigation within the East Africa Dairy Development (EADD) Project in Kenya

Janie Rioux

Food and Agriculture Organization of the United Nations (FAO)
Climate, Energy and Tenure Division (NRC)

MICCA Programme

FAO

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INTRODUCTION

The capacity needs assessment was conducted by the MICCA Programme in partnership with the FAO country office, the World Agroforestry Centre (ICRAF) and East Africa Dairy Development (EADD) project under the MICCA-EADD-ICRAF pilot project in the Kaptumo Division in the Rift Valley Province of Kenya. The EADD project is promoting zero grazing and improved feeding practices in association with quality breeds as a way to increase milk productivity and income.

The assessment identified entry points and recommendations for capacity development activities and for the promotion of climate-smart agricultural practices and their implementation under the pilot project.

Methodology and approach

The capacity needs assessment was conducted at three levels.

I. National level: stakeholder and context analysis with stakeholders working on climate change related issues from the Ministries of Agriculture, Livestock and Environment, non-governmental organizations (NGO)s, research institutions, and UN agencies;
II. Pilot project/district level: consultative workshop with project staff, extension officers, and district staff from ministries of agriculture, livestock, water, forestry, and environment; and
III. Pilot project area: focus group discussions with farmer groups, interviews with farmers and field visits.

The assessment at national and district levels sought to identify the stakeholders working on climate change issues and the main policies, plans and strategies related to climate change. Also, through open discussions and working groups, the participants were asked about their organization and their individual capacity needs in relation to their climate change work. A check list of questions at the national and local levels, developed by the FAO Capacity Development team and tailored for climate change adaptation and mitigation in agriculture, was used to identify these needs.

In the field, the capacity needs assessment sought to understand the range of current land uses and management practices associated with dairy production. The assessment also considered climate and environment related problems and analysed capacities and needs in relation to the adoption of improved feeding and climate-smart practices.

In Nairobi, a one day workshop was organized to assess the existing situation and related needs for building capacities to address climate change issues in agriculture in Kenya. The participants present were from the Ministry of Agriculture, the Ministry of Livestock, FAO, ICRAF, EADD, CARE, Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), Egerton University and Land O' Lakes.

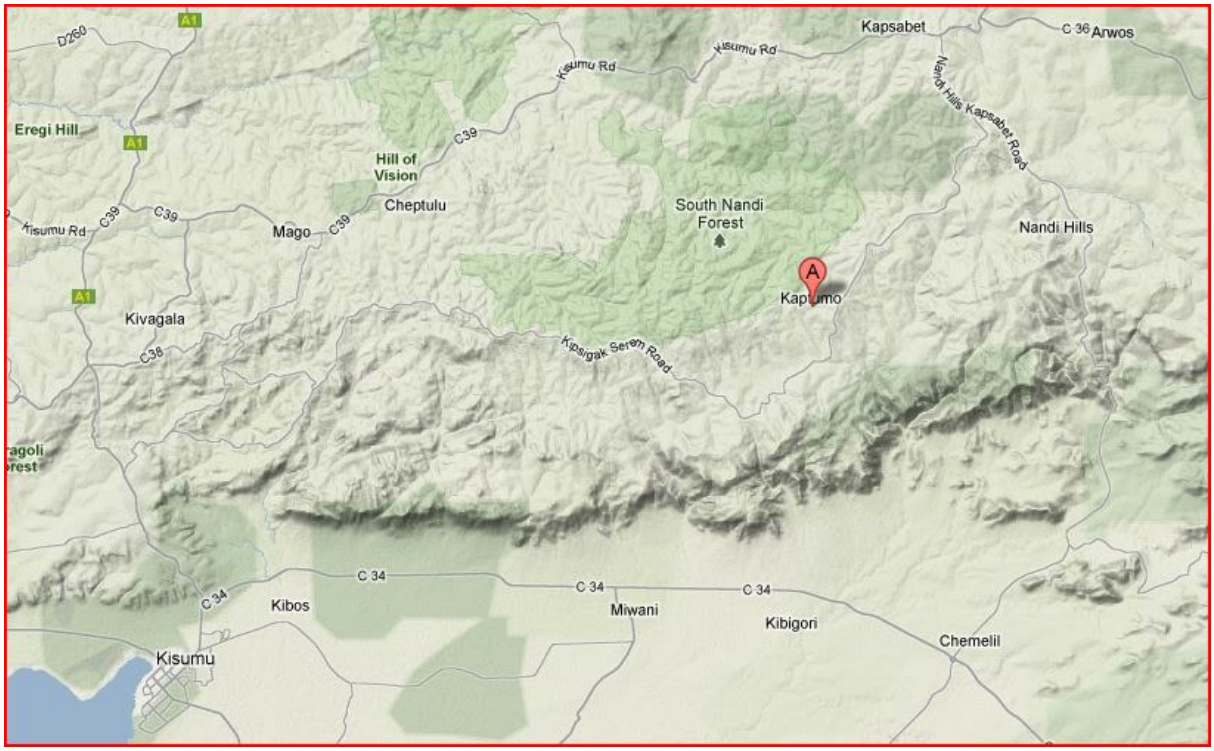
In Nandi South district, a one-day consultative workshop was held with the EADD team leader, the representatives of Kapchumo dairy, the extension officers, and district and division representatives from the Ministry of Agriculture, Water, Environment and Livestock.

During fieldwork, focus group discussions were organized with the management of Kapchumo dairy, a group of dairy farmers, and a women's group. In addition, interviews with innovative farmers practising zero grazing and improved feeding practices were conducted, and visits were made to biogas installations and farms.

FINDINGS OF THE CAPACITY NEEDS ASSESSMENT

MICCA-EADD-ICRAF pilot project overview

EADD is active in Rwanda, Uganda and Kenya. In Kenya, it has 21 sites, one of which (Kaptumo) is the site of the MICCA-EADD-ICRAF pilot project. Kaptumo is in the Nandi South District in the Rift Valley Province.



Map: Kaptumo Division is in the Nandi South District of the Rift Valley Region in Kenya. (The EADD Kenya office is based in Eldoret, around 1 hour from Kaptumo.)

In the Kaptumo Division, each farmer has an average of 2 acres and 3 cows. The milk production by farmer ranges from 2-10 litres with an average of 5-6 litres per day. *[The MICCA baseline survey carried out in September 2011 reported that 92 percent of farmers practice cropping and keep livestock (most income comes from family agriculture and livestock), the average land size is 2.2 acres per farmer, average milk cows are 2.4 per farmer, and average milk production is 4-5 litres per day.]*

The Kapcheno dairy company (Kaptumo hub) is composed of 4 315 member farmers, 2 147 shareholders and 1 600 active milk suppliers, of which 50 percent are women. There are 155 dairy management groups (10-15 members each) that work together on milk packaging and bulking with EADD support (access to loans, agro-vet services, breeding services, field demonstrations, transport and pulverisers for chopping fodder).

Extension officers working with EADD mentioned that 40 percent of EADD members/farmers have improved their grazing area with fodder plants such as Rhodes grass, and Napier grass. *[The results from the MICCA baseline survey reported that 64 percent of farmers keep their cattle on paddocks, two-thirds of the farmers feed Napier grass to cows and one-third feed crop residues. The results from an EADD baseline survey in Septemeber, 2009 shows that 50 percent of surveyed farmers in Kenya feed their animal on dry maize stover and Napier grass.]*

The full adoption of zero grazing is currently very low (less than 1 percent), but many farmers (50 percent) are practicing stall feeding to complement natural pasture grazing. The current livestock feeding practices in the Kaptumo Division are split in four categories:

- only grazing (natural pasture all year) - 34 percent,
- mainly grazing with some stall feeding (9 months pasture) - 50 percent,
- mainly stall feeding and some grazing - 15 percent and
- zero grazing (stall feeding only): less than 1 percent.

It was possible to see rotational grazing paddocks during field visits. This practice, however, is limited to only a few farmers.

Picture: Rotational paddock grazing

The land is estimated to be moderately degraded. The main problems are low soil pH, loose and poorly structured soil causing erosion, poor soil fertility and yield decline. Moreover, farmers apply the same fertilizer for tea (specific for foliage development) to maize and don't incorporate crop residues. Previous maize yield was around 20 bags per acre and is now only 5-7 bags per acre. Farmers blame the seeds. Decline in crop yield, caused mainly by land degradation, is also affected by climate variability. *[The MICCA baseline survey reported the following main agricultural related problems: seed diseases from fungus (35 percent), lack of seeds (20 percent), expensive inputs (9 percent), lack of knowledge and training (8 percent) and weather (5 percent).]*

Based on opinions from the agricultural and extension officers (to be verified with climate data), changes in climate and variability can be seen in the drying up of (previously permanent) streams for 3 months, more rainstorms and colder temperatures, which are affecting crop and milk production and causing the disappearance of plant and animal species. Moreover, farmers now grow early maturing seeds (3 months instead of 6 months) to adapt to shorter or more variable growing season. *[In the MICCA baseline survey, the households mentioned that the main changes in climate are more rainfalls (62 percent) and a longer dry season (15 percent). Eleven percent indicated no change. Focus*

group discussions raised the issues of rivers drying up, erratic rainfalls, problems with watering cattle and decreases in soil fertility.]

Discussions with extension officers and farmers highlighted the land use changes expected, such as a decline in grasslands, more tea plantations (if price remains good), more fodder production, more deforestation (if tea plantations increase), a reduction in food crops (maize), increases in high-value crops like passion fruit and a diminution of slash-and-burn practices. These land use changes have implications for climate change mitigation, and these will be explored through the Ex-Ante Carbon-balance Tool (EX-ACT). In terms of deforestation, the agricultural officers estimated the actual forest cover at 4 percent, as compared to 10 percent in 2002.

Picture: Deforestation driven by expansion of tea plantations

Policies and stakeholders

At the national level, there is a Climate Change Strategy (April 2010) but no policy, as the environmental policy must be reinforced first. At present, agriculture and livestock policies emphasize natural resources management, not climate change *per se*. Moreover, participants mentioned "that policies don't reflect what is happening on the ground, where there are lots of climate change projects and initiatives". The government has planned to mainstream climate change in Kenya Vision 2030 and focus on adaptation for the mid-term priority 2013-2017.

Key policies and plans (to be completed):

- National Agricultural Extension Policy (NAEP)
- National Agriculture, Land, Environment Plan (NALEP)
- National Environmental Action Plan 2009-2013 (NEAP)
- Draft National Adaptation Programme of Action (NAPA)
- National Appropriate Mitigation Actions (NAMA)- launched in Durban

BOX
LIST OF (SOME) STAKEHOLDERS INVOLVED IN CLIMATE CHANGE MITIGATION IN AGRICULTURE:

- **Government:**
  Climate Change Secretariat at the Prime minister Office, Ministry of Agriculture, Ministry of Livestock, Climate Change Units, Kenya Forest Service, National Environment Management Authority, Ministry of Forest and Wildlife, Kenya Bureau of Standard and Statistics
- **Networks:**
  Agriculture and Livestock Sector Working Group, Kenya Climate Change Working Group
- **Research:**
  Kenya Agricultural Research Institute, ICRAF, ILRI, Kenya Forest Research Institute
- **UN and donors:**
  FAO, United Nations Development Programme (UNDP), United Nations Industrial Development Organization (UNIDO), United Nations Environment Programme (UNEP), International Fund for Agricultural Development (IFAD), Agriculture and Rural Development Donor Group, GIZ
- **NGOs, and civil society organizations and networks:**
  WWF, VI-Agroforestry, Green Belt Movement, Kenya National Federation of Agricultural Producers (KENFAP) (biogas)
- **Private:**
  Tea companies

At the district level, the different Ministries of Agriculture, Environment, Livestock, Water, Forest are represented. However, at the division level, only the Ministries of Agriculture, Livestock and Forest are present. Climate change issues are not yet incorporated into agricultural strategies, but are considered when dealing with environmental issues.

The issue of deforestation is addressed under the Kenya Forest Service within the Ministry of Forestry. There is a current policy by the Ministry of Agriculture that requires all crop farmers to set aside 10 percent of their land for tree cover. The policy should be implemented by the Ministry of Agriculture through its extension officers under the NAEP. However, there is no operational implementation measure in place to support farmers to adopt this requirement and provide a share in the initial investment required. Training and seedlings are sometimes provided. In Kaptumo Division, an estimated 50 percent of farmers have 10 percent tree cover on their land, and only 10 percent have received support.

BOX
KEY DOCUMENTS AND STUDIES

- National Climate Change Response Strategy (2010)
- Vision 2030 (2008)
- Kenya capacity needs assessment on technologies for climate change mitigation and adaptation (2007)
- Climate change thematic report on the national capacity needs self-assessment (2006)
- Draft National Adaptation Action Plan (2011)
- The economic impact of climate change on Kenyan crop agriculture, World Bank (2007)
- Economics of Climate Change in Kenya, Stockholm Environment Institute (SEI) (2009)
- Economic impacts of climate change: Kenya, Rwanda, Burundi Department For International Development (DFID) (2009)

Capacity needs identified

National

Few staff from ministries working on climate change-related issues (agriculture, livestock, environment, water) are knowledgeable and skilled in climate change, especially regarding mitigation. Knowledge and data on greenhouse gas emissions and carbon sequestration for different land uses and management practices are limited.

Some suggestions for capacity development interventions were proposed during the workshop:

- revisions of current policies to integrate climate-smart agriculture;
- sensitization of policy makers regarding climate change mitigation and supportive policy options;
- bringing together knowledgeable and skilled people in a climate change forum;
- creation of climate change regional networks under the Kenya climate change working group;
- creation of a climate change department that has more power and authority to push for climate change mainstreaming and interventions;
- training on greenhouse gas data collection
- a centralized system to store data on greenhouse gases; and
- adapting the early warning system to address the new and potential impacts of climate change.

To complete the capacity assessment at national level, it is recommended to discuss capacity needs and priorities with: i) the climate change focal point it the Prime Minister's office regarding the support for identifying entry points for integrating climate change mitigation in existing agriculture, forestry and livestock policies, and training policy makers and high level professionals on climate smart agriculture and related policy options (through successful case studies from other countries); and with ii) the Kenya climate change working group.

Overall, there is a need to build sub-national and regional climate change networks to link practitioners together and ensure coordination of climate change projects. Moreover, the NAPA and NAMA are in development (being finalized), so these could provide an opportunity to highlight links between mitigation and adaptation practices.

Project Area

Considering the problems of soil erosion, the decrease in soil fertility and the misuse of fertilizers, as well as the potential for better manure management in dairy production, there is a real need for training on the uses of organic and inorganic fertilizer and soil conservation. Many farmers mentioned the need to access good quality seeds. Few farmers are currently producing seeds to sell to others.

Some others skills and support needed to allow farmers to adopt good agricultural practices mentioned during the workshop include:

- awareness and training on climate change mitigation and its co-benefits;
- field visits and farmers exchanges between sites (demonstration and information sharing);
- training of trainers similar to the Farmer Field School (FFS) model; and
- cost sharing or micro-credit mechanisms.

Zero grazing involves high investment for construction, excavation and materials (poles, roof). The limited availability of water on farms is another constraint to stall feeding.

BOX
ZERO-GRAZING FARM

This farmer has started practicing zero grazing as he had a small land on a slope. He constructed a stall with a cement floor and a roof with some compartments for feeding each cow. He feeds them with pulverized maize stover (given by other farmers), silage and dry grass. He grows Napier grass in pit holes filled with manure. He has also a water tank to water the cows at the farm.

Pictures: Key elements of a zero-grazing farm

The benefits and barriers of different 'good' agricultural practices have been discussed and prioritized with the agricultural and extension officers. Based on these, capacity development needs could be identified (see table on the following page).

Table: Barriers to adoption and related needs for the agricultural practices identified as priority

Agricultural practices	Benefits	Barriers to adoption	Farmer Needs
Zero grazing	Reduced grazing pressure Increased milk production Good for small land size Better manure management Biogas production Fewer diseases and contamination risk between animals	Cost of construction and material for the shed and cement floor Feeding management, labour costs Need for more water, cost of water tanks and water management Need for high quality breeds for higher milk production	Need for loans to cover basic initial labour and construction costs (more milk produced more access to inputs) Need for water tanks, and canalisation system (less than 10% farmers store water) Need to facilitate artificial insemination (now 30% adoption rate)
Agroforestry	Fertilizer plants for fodder and soil nitrogen fixing (they do not compete with other crops for nutrients, and can be used for wood fuel) High value crops e.g. passion fruit Planting trees that are water conserving, no exotic trees	Require manure management for tree establishment Cost and investment: seedlings, labour, management. Lack of awareness, perception that trees are wasting land Wild animal and insect invasion, affecting the crops (animals can hide in the bushy area)	Participatory and scientific assessment of different tree and legume fodder Support passion fruit (or avocado) production with women's groups Create tree nursery for seedling production
Organic Farming (Or conservation agriculture)	Improve soil fertility and decrease soil erosion Soil conservation: maintain crop residue in the field Decreased slash-and-burn practices Additional income as niche market for organic products	Lack of awareness about fertilizer and pesticide uses Accumulation of manure Cost to lime the soil and apply calcium Lack of awareness of value chains	Training on the use of organic agriculture from animal manure and green manure from agroforestry Training on soil conservation practices, and conservation agriculture to increase yield and maintain soil fertility (only 10-15% maintain crop residues in the field, others use them to feed livestock) Water and soil conservation structures Analysis of value chain for organic products

CAPACITY DEVELOPMENT STRATEGY AND PROPOSITIONS

Entry points and partnerships for the MICCA Programme

National Level

At this stage, the capacity needs assessment at the national level was exploratory and should be completed with a more in-deep review of the enabling environment and by individual interviews with relevant key stakeholders working on climate change in Kenya. However, some possible entry points and potential partnerships were identified.

NAPA and NAMA

More work, greater emphasis and heightened interest are being directed to climate change adaptation. Considering this, it is essential to highlight the linkages between adaptation and mitigation to show that some mitigation practices also help farmers to adapt to climate change and increase the resilience of the agricultural production system. A starting point could be to review the NAPA and NAMA and prepare a policy brief on the linkages between proposed adaptation strategies and practices and mitigation practices under the umbrella of climate-smart agriculture.

It is crucial to partner with UNDP on their EU-UNDP Climate Change Capacity Building Programme for Kenya. The Programme will strengthen national capacities to 1) develop and establish greenhouse gas inventory management systems; 2) measure, report on, and verify greenhouse gas emission inventories; 3) identify opportunities for NAMAs in the context of national development; and 4) design low-emission development strategies (LEDS). The project document for Kenya will be ready in early 2012, and the Programme will operate for four years.

Network for climate change mitigation

Multiple projects and stakeholders are working on climate change in Kenya in ways that seem uncoordinated. The activities are being implemented by a variety of different groups. There is a need for a more coordinated approach and sharing of knowledge and information. An online forum or a sub-network under the climate change working group could help:

- enhance the exchange of experiences on climate change mitigation among stakeholders and policymakers;
- improve intersectoral coordination between the environment, agriculture and livestock sectors; and
- enhance access to information generated by different stakeholders.

A noteworthy application of Google (funded through the Google Foundation) is the Google Earth Adaptation Layer developed for Kenya. The adaptation layer is part of the weADAPT platform for climate change adaptation. This platform's objectives are to increase practioners' access to information and their capacity to share their work with the climate adaptation community at different scales, including decision-makers as well as donors and the media.

Training and knowledge generation

The following training suggestions are proposed (these should be discussed with the climate change focal point for their precision and priority):

- provide training on climate-smart practices to the climate units in government ministries and to the Kenya working group on climate change;
- support the government in collecting and storing data on greenhouse gas and carbon sequestration;
- develop climate change seminars and short courses for policy makers in partnership with a national university (using some of the EC/FAO e-learning modules on climate change and food security);
- make an inventory and mapping of climate change projects in the country (similar to the Google Earth Adaptation Layer); and
- demonstrate the climate change mitigation potential of different sustainable land management practices to convince policy makers of co-benefits using EX-ACT

A main component of the pilot project, which is led by ICRAF, concerns measurements of greenhouse gas emissions and carbon sequestration. This component requires capacity building, and ICRAF has started training national and local experts on greenhouse gas emissions measurements and land health surveys. These experts will then monitor greenhouse gas emissions for different land uses and management practices and measure carbon sequestration in the pilot project area. The methodology will be standardized for replication in other locales and will increase in-country capacity to measure greenhouse gas emissions and carbon sequestration. The land health survey requires the training of experts on soil sampling and global positioning systems.

Project Level

Based on the findings from capacity needs assessment at local level, the five best entry points for MICCA are to promote and provide support and training on:

1. tree and legume fodder;
2. tree nurseries for trees that have economic potential;
3. soil conservation;
4. water harvesting and storage at the farmhouse; and
5. biogas development for active milk suppliers to repay zero grazing-related investments.

Tree and legume fodder

To support EADD's efforts to improve feeding practices while increasing tree cultivation in farming systems, MICCA could raise awareness on the benefits of these practices and support technical training on integrating tree and legume fodder in dairy farming. These would bring multiple benefits: fodder, improved soil fertility and firewood. *[From the EADD baseline survey results, the main reasons for not adopting fodder trees and legumes on farms, are: lack of awareness of benefits (54 percent), lack of technical information (51 percent) and the unavailability of planting materials (32 percent). Focus group discussions carried out in the MICCA baseline survey highlighted that the quality of feed is low because of a lack of knowledge on the production and storage of fodder, a lack of seeds to produce more maize to provide surplus as fodder and a lack of knowledge on which crops they should and could apply manure to boost production. The survey also showed that one-third of farmers plant and harvest trees, and three-quarters plant and protect trees, mainly indigenous trees (37 percent), eucalyptus (19 percent), cypress (18 percent) and blue gum (17 percent), Tree fodder such as gravelia, and fruit trees are very limited, 3 percent and 1 percent respectively.]*

BOX
AGROFORESTRY- CHARACTERISTICS AND USES OF PROPOSED TREE AND LEGUME FODDER

TREE FODDER

***Gravelia*:**
fast-growing evergreen tree used for fence and furniture; stems used for honey production; drought resistant; can be grown along maize in agroforestry system

***Faidherbia Albida*:**
legume tree: highly resistant to drought; used for raising bees; seed pods and foliage used for livestock fodder; wood use for construction; nitrogen fixation and erosion control; sheds its leaves in the rainy season; good for agroforestry

***Calliandra*:**
pea family; shrub and small tree; can easily be pruned

***Leucaena*:**
legume family; shrub and tree used for green manure, charcoal, soil conservation and livestock fodder

***Sesbania*:**
pea family; used in alley cropping to increase soil nitrogen content

LEGUME FODDER

***Desmodium*:**
herbaceous legume; tenacious plants; used as natural insect and weed repellent in maize and sorghum cropping, as living mulch and green manure because of their soil nitrogen fixing capacity and for animal fodder

***Lucerne/Alfalfa*:**
perennial fodder legume; rich in protein; highly digestible fiber; improves soil quality by fixing nitrogen; resilient to drought.

Fruit tree nurseries

Growing fruit trees, such as passion fruit and avocado could be an income-generating activity within the diversified farming system and support some of the improved dairy farming required investments.

The EADD extension officers supported the formation of groups to train women on improved feeding practices for dairy production. Once involved in a group, these women have started to diversify their activities and created a tree nursery where they grow tea and passion fruit seedlings. MICCA could provide training and support to the 1 600 active milk suppliers and dairy management groups about seedling production, tree planting, forage production and storage, soil conservation, water storage and manure management.

Soil conservation

Land degradation caused by soil erosion, declining soil fertility, temporary drying of water sources and overgrazing were mentioned as agro-environmental problems in the area. Considering the linkages between sustainable management of natural resources and productive farming system, it is important to support soil and water conservation practices by encouraging conservation agriculture, improved soil cover, crop rotation, intercropping, no tillage, no farming on slopes, no planting of exotic trees, terracing, planting of pineapple in horizontal rows on slopes and reforestation on hill tops and slopes. *[The MICCA baseline survey reported that 90 percent of farmers know about conservation agriculture, and 84 percent practice crop rotation.]*

Picture: Women's group tree nursery for tea and passion fruit seedlings

The impacts of climate change perceived by farmers are related to agriculture and livestock production, which depend on natural assets. Farmers currently trying adaptation strategies to avoid soil erosion are building terraces. *[From the MICCA baseline survey, the impacts of climate change as experienced by farmers are reduced production and yield (30 percent), death of livestock (15 percent), decrease of milk production (13 percent), destruction of crops (12 percent) and erosion (7 percent). Farmers are trying to adapt to these impacts by building terraces to avoid erosion (10 percent), reducing herd numbers to use less land and fodder while improving milk production of the smaller herds (10 percent), changing the type of crops cultivated (8 percent), changing planting practices (7 percent), building sheds for the protection of livestock (7 percent) and growing feed (5 percent) .]*

Water harvesting and storage at the farmhouse

In association with stall feeding, farmers will receive support and training for water harvesting and storage at the farmhouse.

Biogas and manure management

There is a strong synergy with zero grazing (fully or partial) and manure management for renewable energy production from biogas. One farmer interviewed demonstrated that biogas is technically feasible with 3 cows under semi-zero grazing. Investment costs in a small biogas digester can be repaid by the increased in milk production from improved feeding practices of dairy cows (and improved breeds). MICCA through EADD extension officers and local and national biogas service providers, could support training on biogas and manure management. When farmers are involved in stall feeding, a feasibility study could be conducted to target those farmers more able to engage in biogas. They could then become farmer models and train others to ensure sustainability. [*The results from the MICCA baseline survey reported that 99 percent of households use wood as their main energy source.]*

Picture: Biogas production through manure management

Implementation approach

In the pilot project's Kaptumo hub, there is one extension officer and 10 community extension service providers. These extension officers should be trained on climate-smart agriculture and on specific climate-smart practices, such as tree and legume fodder on farms and other proposed climate-smart practices (see points above). Most probably, national and international consultants would support them in training and technical implementation steps.

All the training provided by MICCA could be channeled through the active milk suppliers (1 600 farmers) and dairy management groups (155 groups with 10-15 members each), as these have also access to loans and the means to engage in agricultural investment activities. These groups can be used for the training of trainers in a similar way of the FFS approach, in which model farmers facilitate the learning process of their peers. *[From the MICCA baseline survey, it was shown that there are two zones and categories of farmers in the project area with different characteristics, assets and capacities. One group has more land, more cattle and are poorer and less informed, while the other group has less land, less cattle, richer (cash from tea and dairy) and more informed.]* These differences in zones and farmer profiles should be taken into account when promoting and implementing the proposed climate-smart practices.

Moreover, as half of the EADD active milk suppliers are women, it is important to consider gender in the capacity-building activities and the implementation of the selected climate-smart practices. It is suggested to share the guide on integrating gender into climate change developed by FAO and the CGIAR CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) with extension officers involved in the EADD project at the Kaptumo site. They could then conduct a rapid field assessment with men and women to identify their respective capacities to engage in the selected climate-smart practices promoted by MICCA. *[The MICCA baseline survey highlighted that 50 percent of decisions on agricultural practices are made by men only, 25 percent by both men and women, and 25 percent by women only]*

In terms of raising awareness and promoting knowledge exchange, MICCA could support farmer exchanges and field visits (to visit farms of innovative farmers and model farmers). *[From the MICCA*

baseline survey, it seems that only 4 percent of households are involved in the project for training and gaining knowledge, as their primary interest is to gain access to loans (37 percent) and improve income (24 percent).] Therefore, it is important to connect the capacity-building activities with the process of accessing loans, so that people can actually implement what they have learned and ensure that the awareness raising and training highlight the links between the climate-smart practices and improved incomes.

Policy relevance and partnership

The entry points proposed (1 and 2) would also support the implementation of the policy for increasing trees on farms (10 percent of farmland). In combination with scientific advice from ICRAF and forest officers, consultations with farmers could be organized to identify preferences in tree and legume plants, mainly for fodder, but also for construction materials, firewood; and to determine the economic value of the fruits. Other traits that it would be important to characterize in the tree species would be the time required to establish seedlings, growing times, water and manure requirements, tolerance to drought and complementary functionality with the existing cropping systems.

The Green Belt Movement is in the process of implementing a BioCarbon Fund Pilot Project in Kenya. Collaboration with this project, especially sharing information on knowledge and experience in reforestation, training and women's empowerment, might be of considerable value. Another noteworthy partner is VI-Agroforestry, which is working on reforestation and soil carbon monitoring in East Africa.

CONCLUSIONS

Although done quite rapidly, the capacity needs assessment at national and project levels draws a portrait of the existing situation in terms of capacities and stakeholders involved in addressing climate change mitigation in agriculture. Moreover, it provides the MICCA Programme team with entry points and proposals for the capacity development component and related activities.

These results and proposals, in addition to the results of the baseline survey and the EX-ACT analysis, will be the basis for discussions about the planning of the MICCA-EADD-ICRAF pilot project in Kenya.

ANNEX 1

Capacity Assessment Checklist Tailored to Climate Change Mitigation and Adaptation in Agriculture at the National Level

Where Are We Now?
Where Do We Want To Be?

Dimension 1: enabling environment

Policy and legal frameworks

- What supportive policies and other national strategies exist for climate change and agriculture (addressing mitigation, adaptation and land use change)? Note the name of the Policies or Regulations that exist, year of enactment, year of the most recent revision, current status and planned developments.
- Do national climate change and/or agriculture policies define objectives, and priorities enabling the successful implementation of climate-smart agricultural practices[1]?
- Do the climate change and/or agriculture policies include outlines of measures for the implementation of climate change activities within the agricultural sector?
- Do climate change and/or agriculture policies define the institutional set-up for the implementation of climate change activities within the agricultural sector?
- Do climate change and/or agriculture policies define roles, responsibilities and rights for policy implementation?

Policy commitment and accountability frameworks

- Which international agreements in the realm of climate change has the country subscribed to?
- To what extent are such international commitments in the area of climate change actively implemented?
- To what extent and how does the country participate in international fora or debates on climate change?
- How are political commitment and support to climate change and climate-smart agriculture (both mitigation and adaptation) demonstrated?

Economic framework and national public sector budget allocations

- Are there national sources of funding to support the implementation of measures for climate-smart agricultural practices?
- To what extent does the legislation reveal contradictions or areas of overlap in responsibilities among agencies involved in climate-smart agricultural practices?

[1] Climate-smart agriculture is defined as: Agriculture that sustainably increases productivity, resilience (adaptation), reduces/removes greenhouse gases (mitigation), and enhances achievement of national food security and development goals.

Dimension 2: organizations

Motivation

- Which ministries/departments have the mandate to work on climate change and on agriculture/land use issues? Are their mandates clear?
- Which other important national and international institutions (multilateral, bilateral, civil society organizations (CSOs) and NGOs) exist in country working on climate change and climate change/agriculture/land use?

Strategic, organizational and management functions

- To what extent and how do the concerned national agencies collaborate?
- Is there a mechanism for ensuring coordination, information exchange and effective policy implementation? If yes, please clarify it.
- Which ministries/agencies participate and at what level?
- What are the strengths and weaknesses of such mechanisms?

Human resources

- Are the ministry/department staff at central level adequately prepared to deal with climate change and specifically climate change/land-use change issues?
- What is most needed at central level to improve knowledge and skills on climate change and specifically climate change/land-use change issues? (e.g. workshops on specific topics, training, guidebooks.)

Knowledge and information

- To what extent are existing policies and regulations on agricultural mitigation accessible (in printed, online formats, etc.) and easy to understand?
- To what extent are the ministry staff, rural civil society and private sector knowledgeable about the existing legislation on climate change and agriculture/land-use change?
- Are there mechanisms for knowledge sharing at the Ministry levels?
- Are staff of relevant agencies adequately informed on global climate change issues?
- Which data is available at national level on emissions from the agriculture sector and more specifically on crops/livestock/agriculture production sectors for carbon/non-CO2/greenhouse gas inventories?
- Which Tier level is used for carbon accounting? Does reporting of carbon stocks from the agriculture/land-use sectors take place?
- Do any calculations at national level exist on the mitigation potentials of crops/livestock/agriculture productions sectors?

Dimension 3: individual

Job requirements and skill levels

- What types of skills are needed at central level to integrate climate change concerns into agricultural policies? (e.g. to attend international climate change negotiations)
- Which types of skills are missing at national level to support data collection on emissions from the agriculture sector and support the national greenhouse gas inventories?

Competency development

- What types of learning opportunities and further education already exist and are needed to develop appropriate competences in the area of greenhouse gas accounting/climate change negotiations?

ANNEX 2

Capacity Assessment Checklist Tailored to Climate Change Mitigation and Adaptation in Agriculture at the Local District Level

Where are we now?
Where do we want to be?

Dimension 1: enabling environment

Policy and legal frameworks

- What agricultural and forestry policies consider climate change mitigation and adaptation aspects and address land use change at the province/district /local level?
- Do climate change and/or agriculture policies include concrete measures at the local level for the implementation of climate change activities within the agricultural sector?

Policy commitment and accountability frameworks

- How is political commitment and support to climate change and agriculture mitigation demonstrated at the local level?

Economic framework and national public sector budget allocations

- Are there sources of funding to support the implementation of measures for climate smart agricultural practices at the local level?

Dimension 2: organizations

Motivation

- Which ministries/departments at local level have the mandate to work on climate change and on agriculture/land use issues? Are their mandates clear?
- Which other important national and international institutions (multilateral, bilateral, civil society organizations (CSOs) and NGOs) exist in the district working on climate change and climate change/agriculture/land use?

Strategic, organizational and management functions

- To what extent and how do the concerned agencies collaborate at the regional/local level, also with non-governmental institutions?

Human resources

- Are the ministry/department staff at local level adequately prepared to deal with climate change and specifically climate change/land-use change issues?
- What is most needed at decentralized level to improve knowledge and skills on climate change and specifically climate change/land-use change issues? (e.g. workshops on specific topics, training, guidebooks)

Knowledge and information

- To what extent are the communities and farmers knowledgeable about climate change issues related to agriculture?

- Is there knowledge among farmers on mitigation and adaptation practices?
- Are there existing mitigation or adaptation practices at local level that should/could be scaled up within the local context?

Dimension 3: individual

Job requirements and skill levels

- What type of skills are needed at decentralised/local level to integrate climate change concerns into agricultural policies? (e.g. to attend national climate change conferences/workshops, to analyse agriculture data relevant for mitigation and adaptation)
- What type of support or capacities are needed at local level for farmers to take up mitigation/adapation best practices into their current activities?

Competency development

- What type of learning opportunities and further education already exist and are are needed for communities and farmers to develop appropriate competences in the area of adopting adaptation/mitigation practices?