
Systematization of the Process of Risk and Opportunity Analysis (ROA) Michimikuru, Kenya November 2008

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1. Project Background and Objectives

Cafédirect plc (CD) and the German Technical Cooperation (GTZ) are implementing a three year Public-Private Partnership (PPP) to adapt smallholders in the tea and coffee sector to changing climate conditions (AdapCC project). The main objective of the joint project is that producer groups of Cafédirect's supply chain have created examples of how to strengthen their capability to cope with the impacts of climate change and of how to improve their access to respective financial and technical support mechanisms.

In order to develop adequate adaptational means it is necessary to analyse information from the field of how climate change is affecting the tea production and which are key drivers of these impacts. This information gathering delivers the base for minimizing risks presented by climate change. AdapCC started its second phase being Risk and Opportunity Analysis (ROA) in February – March 2008 with the project's pilot groups in Nicaragua and in Peru, continued in July – August with the pilot group in Mexico and will terminate this phase in November in Kenya. The ROA process allows prioritising adaptational means by identifying physical and social vulnerabilities of the focal group and risks presented by climate change. This methodology allows evaluating possible losses and damages caused by changing climatic conditions or by natural disasters. Furthermore a better understanding of causes down to root causes of factors that influence the risks of the pilot group and communities is aspired. Being aware of vulnerabilities and being able to estimate tendencies of climate change in a specific region allows deducing possible adaptational measures in order to minimize the risks of negative impacts by climate change. Carrying out these analyses requires participative mechanisms which allow for producers to take the lead in the whole process.

In a first step an approach developed by WWF in Fiji called "Climate Witness" combined with parts of GTZ's tool of Risk Analysis as methodology was adjusted in a pre-event in Kampala with East-African tea producers. In a second step this methodology was applied with Michimikuru tea producers and in a third step results were presented on a regional level.

The ROA process includes:

- Analysis of risks and vulnerabilities of the pilot group as imposed by climate change and climate variability
- Analysis and identification of adaptation means for reducing the identified risks.
- Analysis of feasibility and impact of the identified adaptation means to be implemented by the pilot group

2. Characterization of the focal region Michimikuru and the pilot group Michimikuru

The Michimikuru Tea Factory and Estate are located approximately 280kms North East of Nairobi. It is located 40kms north-east from Meru town. It is 11kms off the main Meru - Maua road and approachable through an unpaved all weather road. However, a contract has been awarded to tarmac it. It is located at 0.3degrees north of the equator and on a longitude of 38 degrees east. It lies on a beautiful 1950m above the sea level saddle on the panoramic Nyambene Hills and within Tigania Administrative District. The hills are covered with lush green tropical forest.

Michimikuru factory is one of the many (60) that are under the management of Kenya Tea Development Agency (KTDA). It produces black CTC teas. Michimikuru is unique in that it qualifies to be about the only one that has a nucleus estate owned by the farmers. It has

approximately 9000 small scale growers and produces an average of 4million kgs of black CTC teas per year. 95% of which is exported to various destinations in the world. The Eastern Produce Kenya (EPK) established the estate and Factory in 1960 but sold it to the local farmers in 1994. A desert like climate starts 10kms north of the Factory and hence there is great vulnerability to climate changes. The area under tea among the farmers is approximately 1700Ha and the tea in the Estate occupies 201Ha. Tea accounts for close to 80% of the household activities and brings in 90% of the family income. The average tea farm per household is slightly less than ½ acre. Michimikuru is one of the few tea factories in Kenya selling tea under the FLO Label. Cafédirect is the main supporter in buying Fair Trade tea.

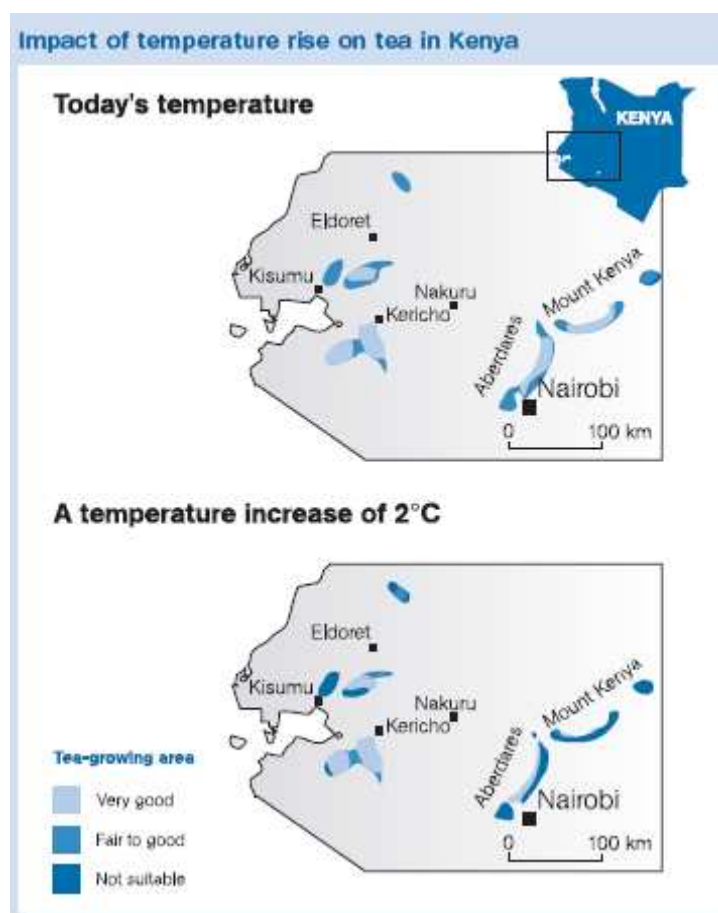
3. Climate Change affecting the African tea production

3.1. Climate impacts on Kenya

There are already proven changes in Kenya's climate which affect the tea production such as delayed rainfall, reduced rainfall, and destructive rainfall. Temperatures have been increasing since the 1950s in a trend that is similar to the global average. In 2008 Kenya has experienced prolonged droughts starting in April when this is supposed to be the wettest month. The country is also suffering from increasing weather extremes and the disappearance of the glaciers leading to the drying up of 26 river streams around Mount Kenya. These changes have already led to harvest losses and food shortages, a loss of biodiversity, landslides, and soil degradation. Pests and diseases for humans, plants and animals are increasing and the availability of water for agriculture and households becomes more and more unpredictable. The diminishing water sources and decreasing and sometimes erratic rainfalls have caused migratory communities to encroach on other communities and private lands, thus sparking bloody conflicts.¹

3.2. Future predictions

The CLIP² regional climate model forecasts a substantial increase in temperatures between 1.5 and 3 degrees C. The June-August season may experience more warming than the December-February season. The average annual rainfall may vary considerably by zone. Based on climate change scenarios³ northern Kenya will experience significant changes in rainfall and temperatures with some places becoming wetter and others drier. These changes will have dramatic impacts on



Source: *Africa up in Smoke*, p. 7, 2005

¹ Sources: Synthesis Report AdapCC, IPCC, AdapCC base line survey 2007

² Climate-Land Interaction Project (CLIP) has simulated the effects of GHG and LUC on the future local and regional climate of East Africa. <http://clip/msu.edu>

³ CLIP analysis and Intergovernmental Panel on Climate Change (IPCC) forecasts

ground cover and vegetation. All areas will see more variability of rainfall, intense storms, droughts and floods.

3.3. Climate Change affecting the tea industry

According to the 4th assessment report of the IPCC (2007) some arid areas will expand due to increased warming, and this is likely to encroach into areas suitable for coffee and tea cultivation. This means that communities earning their livelihoods from tea and coffee face serious threats as their source of livelihood will be disrupted.

If temperature rises by 2°C, large areas of Kenya currently suited to growing tea would become unsuitable. Kenya is the world's fourth-largest tea producer and second-biggest exporter. Tea covers nearly ¼ of the country's export earnings. 3 million Kenyans (10 %) are employed in the tea industry. 400,000 smallholders grow 60 per cent of the country's tea. Massive deforestation due to high energy-intensity of tea processing worsens environmental risks and climate change impacts

In 2007 AdapCC carried out a baseline survey at six sites in East Africa, namely Igara and Mabale tea factories in Uganda, Kiegoi and Michimikuru tea factories in Kenya, Wakulima tea factory and Kilimanjaro coffee union in Tanzania .

Topics discussed with the producers ranged from experienced impacts of climate variability, possibilities to handle these, traditional measures to adapt to changes, access to information and technical as well as financial support:

- ✓ All the six covered factories have shown that they have poor climate monitoring systems. The rudimentary rainfall data collection system appears to be only routine and application mechanisms are hardly there. There is need therefore to consider capacitating them in both personnel and equipment.
- ✓ All factories have played a major role in reducing tree cover for firewood for boilers, without any corrective programmes in place. There is urgent need for them to come up with sustainable programmes, e.g. Contract Forest Farming with people with land on the adjacent bare hills OR replacement of this type of energy source by renewable energy source like mini hydro plants, solar and wind.
- ✓ Corporate Social Responsibility is hardly taken on by the factories and could be enhanced by reaching out to the farmers and helping them in such areas as energy saving programmes like energy stoves, provision of information and sensitisation on climate change.
- ✓ Good agricultural practices which should also address soil conservation and food security are needed (e.g. through the factories' extension services).
- ✓ Information sources on tea farming and weather patterns are missing in the areas (e.g. libraries at the factories).
- ✓ Environmental Impact Assessments on use of firewood for firing tea have not been carried out so far. Corrective measures on tree cover, alternative sources of energy and the totality of the community health and well being should be considered in such studies.

4. The process of Risk and Opportunity Analyses (ROA)

The ROA process is aimed at developing adequate adaptation means for the pilot areas by analysing information from the field on how climate change has affected tea production and map out which are the key drivers of the impacts. This participatory approach is build on local knowledge from the producers and aims at identifying climatic threats, vulnerabilities, possible damages and at the same time adaptation options resulting from these. The process is made up by eight steps:

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1	ROA preparation	Forming of the ROA team, agreeing with the pilot group (Michimikuru) on methodology and schedule, establishing contacts with possible partners of governmental institutions, institutions of the private sector, analyzing existing information
2	Data collection on activities at the Local Workshop	Pre-event with key actors of the Kenyan tea sector <i>Objective:</i> Present the activities planned for the Local Workshop and adjust the methodology according to the comments in order to achieve best results, inform key actors on next steps of the process
3	Participatory data collection	Local Workshop with tea producers of affected zones <i>Objective:</i> Identify threats, damages, causes and adaptation options on a participatory basis
4	Linking te ROA process to a regional level	Meetings with institutions and relevant actors <i>Objective:</i> Further data collection in climate change impacts in the region and establishment of relationships with actors that can support the implementation of adaptation options
5	Identification of focal areas to work in	Regional Workshop <i>Objective:</i> share information on climate change effects and vulnerabilities in the Kenyan tea sector, present and discuss the results of the Local Workshop, identify suitable adaptation options, prioritize these adaptation options and evaluate their implementation, agree with the pilot group (Michimikuru) which areas are most important to work in
6	Systematization of results	Documentation of the pre-event, the Local Workshop and the Regional Workshop as well as of meetings with key stakeholders <ul style="list-style-type: none"> ➤ Recommendations for the ROA team ➤ Next steps towards implementation of the identified measures
7	Prioritize the Adaptation Strategy together with the pilot group	Prioritize the activities and elaborate technical specifications for the prioritized measures, taking into account – if necessary – the results of more profound technical studies Develop the concept for implementing the agreed adaptation measures (including the Operation Plan, Cost Structure, Monitoring & Evaluation, logistics etc.) Set up contacts with possible cooperation partners and formalize cooperations
8	Start implementing the identified measures	"Kick-Off" Workshop <i>Objective:</i> Agree on identified adaptation measures and operation plans for the implementing phase, set up a network of partners and cooperations

Preparation of the ROA process in Kenya started in September 2008 and the workshops up to step 5 have been implemented in November of the same year. The following methods have been applied for data collection:

- Participatory methods: workshops, field visits, interviews, discussions
- Other methods: revision of existing information / revisión de datos e informaciones existentes

The ROA process was supported by a national consultant, Julius N Ethang'atha, from IMANI Development (www.imanidevelopment.com) who had already supported the project at an earlier stage and was therefore familiar with the projects' objectives and structure. At the same time the

consultant is a small-scale tea farmer himself forming part of Michimikuru and could therefore deliver valuable information on the tea production in the region as well as on the pilot group. Furthermore a Ugandan consultant, Paschal Nybuntu, participated throughout the whole process in order to learn the methodology for further implementation as well in Uganda (Step 1). AdapCC, represented by the Junior Professional Kerstin Linne, carried out the pre-event linked to a workshop held by Cafédirect in Kampala, Uganda on November 19th (Step 2). With the support of the two consultants the Local Workshop at Michimikuru was held on Nov. 24th and 25th (Step 3) and the Regional Workshop was held on Nov. 26th (Step 5). Besides this Julius N Ethang'atha established contacts with relevant actors and held meetings with them before the workshops began (Step 4).

During the Regional Workshop in Maua the proposed adaptation options were discussed and possible cooperations identified. In a wrap up session next steps towards the implementation were discussed. These steps are: Systemizing the results of the ROA process (Step 6), sharing all information and results of the ROA process with the relevant key actors who participated via a CD, elaborating an Adaptation Strategy for and with Michimikuru (Step 7), identifying fixed contact person at Michimikuru responsible for the implementation of the project on the ground and formalizing this task via a Memorandum of Understanding and elaborating and Operation Plan for the implementation of the identified measures.

5. The results of the pre-event in Kampala, Uganda, on Nov. 19th and 20th

The Pre-Event took place in Kampala, Uganda, on Nov. 19th and 20th as part of an annual meeting organized by Cafédirect to reflect on the achievements and downfalls of the past year. In the presence of several representatives from three tea-producing countries (Kenya, Uganda, Tanzania) Kerstin Linne presented the methodology for the Local Workshop⁴ as elaborated so far. After a quick question session the participants then had time to think over the planned local workshop and the activities to be implemented before starting to further adjust this methodology the next morning in groups. The main suggestions gathered are as follows:

- Include “processing activities” in the Seasonal Calendar focussing on agriculture
- Include “social activities” and “local markets” in the Seasonal Calendar focussing on social events
- Include actuals in all Seasonal Calendars (this year vs. normally)
- Start with the “Time Line”, then “List of Plants and Animals” and then “Seasonal Calendar”
- Give practical examples before starting each activity

Although not thought very feasible to carry out all the activities within two days, emphasis was put on carrying out six activities on Day 1 and four on Day 2 of the Local Workshop. It may be advisable to extend the local workshop to three days according to funds and availabilities of participants. Altogether all participants agreed on the overall concept of the Local Workshop and were in favour of this methodology.

⁴ This methodology is based on the WWF's” Toolkit: Climate Witness”, combined with GTZ's Risk Analysis tool and already adjusted according to experience with this methodology in Latin America. Address annex for detailed information on the methodology.

6. The results of the Local Workshop in Michimikuru on Nov. 24th and 25th

The Local Workshop was held on November 24th and 25th at Thananga Leaf Base at Michimikuru. Using Julius N Ethang'atha's experience and knowledge of local traditions it was decided that the approach should start with Michimikuru's whole community in order to enhance ownership of the project process and ensure sustainability after the end of tenure of the project period. The methodology applied here gives an opportunity to the participants to get an understanding of root causes and factors that influence their climate related risks. When participants identify vulnerabilities, they are able to estimate tendencies of climate change in a specific region. This allows deducing possible adaptation measures in order to minimize the risks of negative impacts by climate change.

The Local Workshop was structured into two days with the local community so that they, at their own level, can identify the physical and social vulnerabilities of the community and the risks presented by climate change at Michimikuru. This process started with an opening which involved 230 elected farmers who represent the 9000 plus tea growers and consisted of recital of poems on environmental management with a special emphasis on the beautiful Michimikuru area by Michimikuru secondary school students, of song and dance by a women group on the good news of a possible better environment where food security is assured and of the Michimikuru people shouting that they are ready for the change. Cafédirect sponsored shooting of a documentary on Michimikuru which coincided with the workshops. The aim of this four hour opening was to gain wider ownership of the process. This first day then proceeded with a selected 25 individuals drawn from the management of the factory, the directors of the company, some young graduates and women representatives. This group worked on the details of the analysis which came up with an action plan on the second day.

The objective of this workshop was to find out the degree to which the tea production is being affected by climate change already and which tendencies can be identified to affect the production in the future. Based on this adaptation options were identified and prioritized during the workshop.

As results from this two-day exercise Michimikuru identified and prioritized three values shared by everyone:

1. Education
2. Environment
3. Food Security and Sufficiency

Based on these three shared values the team identified and elaborated on six main problems⁵:

1. Lack of money
2. Deforestation
3. Lack of alternative energies
4. Lack of environmental education
5. Crop failure
6. Tea monoculture

These results served as input at the Regional Workshop and will be the base for choosing which adaptation measures to be implemented within the frame of the AdapCC project.

⁵ The term "problem" refers to vulnerabilities, threats, and negative effects related to climate change. This participatory based approach takes up the wording of the producers and puts identified "problems" into a wider context and wording in a second step being the Adaptation Strategy.

The results of the Local Workshop are presented as developed by the producers themselves. Identified “problems” are to be divided in several levels according to direct and indirect relations to climate changes or variabilities. Most of the identified problems are to be understood as vulnerabilities of the region and / or the production system, which in some cases may be caused by mismanagement of land. Only under the identified problem of “Crop failure” many direct climate related issues such as water availability, rainfall patterns and temperatures are hidden and were partly identified by the producers through a thorough root cause analysis.

RESULTS OF THE LOCAL WORKSHOP AT MICHIMIKURU⁶

Problem / Vulnerability	Adaptation Option	Steps / Sub-activities	Time-frame	Resources	Responsibilities / Partners
Lack of money	Sustainable farming practices	<ul style="list-style-type: none"> ▪ Sensitization ▪ Irrigation ▪ Suitable alternative food & cash crops 	2 – 3 yrs	<ul style="list-style-type: none"> ▪ Technical Staff ▪ \$ Funds 	<ul style="list-style-type: none"> ▪ Michimikuru Tea Factory ▪ AdapCC ▪ KENFAP ▪ Min. of Agriculture

Problem / Vulnerability	Adaptation Option	Steps / Sub-activities	Time-frame	Resources	Responsibilities / Partners
Lack of alternative energies	Work harder	Good education, employment	0 – 1 yr	<ul style="list-style-type: none"> ▪ self-committment 	<ul style="list-style-type: none"> ▪ Michi ▪ Producers ▪ AdapCC ▪ CNA ▪ Min. of Agriculture ▪ Fair Trade ▪ KENFAP ▪ Min. of Energy
	Seek information from experts	Identify experts, feasibility studies	0 – 1 yr	<ul style="list-style-type: none"> ▪ experts 	
	Educate people on the topic	Identify focus group, cost analysis, fund raising, trainings	0 – 1 yr (module)	<ul style="list-style-type: none"> ▪ experts ▪ \$ funds 	

⁶ Results presented as elaborated by the participants

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Problem / Vulnerability	Adaptation Option	Steps / Sub-activities	Time-frame	Resources	Responsibilities / Partners
Lack of environmental education	Good agricultural practices	Demonstration, field days, farm field school, onfarm research, incentives	2 – 3 yrs	<ul style="list-style-type: none"> ▪ skilled technical staff ▪ \$ funds 	<ul style="list-style-type: none"> ▪ Michi ▪ AdapCC ▪ KENFAP ▪ Min. of Agriculture ▪ NEMA ▪ KFS
	Partner-ships in environmental education	Proposal to potential partners, community participation	1 – 2 yrs	<ul style="list-style-type: none"> ▪ partners ▪ \$ funds ▪ facilitators 	

Problem / Vulnerability	Adaptation Option	Steps / Sub-activities	Time-frame	Resources	Responsibilities / Partners
Crop failure	Plant more trees	Check water availability, identify right species, plant on the hills, trainings	2 – 3 yrs	<ul style="list-style-type: none"> ▪ experts ▪ \$ funds 	<ul style="list-style-type: none"> ▪ Michi ▪ KFS ▪ Min. of Agriculture
	Plant certified seeds	Identify adequate species, identify location, buy	0 – 1 yrs	<ul style="list-style-type: none"> ▪ tech. advice ▪ \$ / seeds ▪ committm. 	
	Prepare land early & well	Plough, harrow, lining	0 – 1 yrs	<ul style="list-style-type: none"> ▪ committm. ▪ \$ funds 	

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Problem / Vulnerability	Adaptation Option	Steps / Sub-activities	Time-frame	Resources	Responsibilities / Partners
Tea monoculture	Crop diversification	Baseline study, identify suitable species, GAP trainings, set up extension service, stable trading relations + markets	2 yrs	<ul style="list-style-type: none"> ▪ experts ▪ \$ funds ▪ committm. 	<ul style="list-style-type: none"> ▪ Michi ▪ KENFAP ▪ Min. of Agriculture ▪ NEMA ▪ Min. of Energy
	Enhance env. conservation	Trainings	2 – 3 yrs + ongoing	<ul style="list-style-type: none"> ▪ experts ▪ \$ funds 	

As mentioned the above named problems are not necessarily directly climate related. Nonetheless the producers linked their “lack of money” back to climate issues identifying inadequate rainfall and an increase in pests and diseases as causes leading to the climate being one of the root causes of this particular problem. The “lack of alternative energies” is leading to deforestation in the area, also caused by a strong focus on a tea monoculture, and to a loss of biodiversity. At the same time these effects weaken the ecosystem of the region and make it more vulnerable to negative impacts of climate change. Identified effects of deforestation are soil erosion, change of weather patterns (especially regional temperatures rising), an increase in natural calamities such as strong winds and landslides, the emergence of new pests and diseases, low water levels in the rivers and lower precipitation. The identified “lack of environmental education” leads to further weakening the ecosystem and increasing its vulnerabilities towards climate change even more. Soil erosion, anthropogenic pollution of water and air and over exploitation of natural resources are some of the identified effects. “Crop failure”⁷ was identified as partly being caused by climatic conditions. Poor rainfall and diseases and pests along with poor fertilizer application and a lack of education on good agricultural practices lead to crops not giving the expected outputs. The last identified problem “tea monoculture” was found to be driving deforestation and pollution as well as increasing diseases. Furthermore this lack of diversification leads to malnutrition and endangers food security in the area. As shown, two problems, “lack of money” and “crop failure” were linked back to being caused by climatic conditions, whereas the other four identified problems were linked to affecting the ecosystem further and therefore making it more vulnerable to future climate variabilities. In fact, it can be said that inadequate rainfall, an increase in pests and diseases caused by rising temperatures together with poor fertilizer application lead to what the producers referred to as “Crop Failure” causing their “Lack of Money”.

At the end of the two-day-workshop the producers came up with action plans in order to tackle the identified problems (see tables above).

⁷ Crop failure as referred to by the producers does not necessarily have to mean a complete failure of the crop but an immense loss of yield and therefore of income.

7. The results of the Regional Workshop in Maua on Nov. 26th

The Regional Workshop took place on November 26th at the Maua Basin Hotel in Maua and there were about 40 participants from various regional institutions participating. The participants were organized in groups in order to revise and possibly adjust the adaptation options identified by the producers and in order to identify possible cooperations between AdapCC and regional institutions. The results of the group work are as follows:

(1) Inadequate / Lack of money

Mr. Kinyua - Branch Manager Equity Bank Maua, as rapporteur stated the group developed further options for solving this problem:

- Agribusiness, kitchen garden (farming for money)
- Value addition
- Medicinal plants
- Small scale businesses (posho mills, bodaboda, kiosks)
- Artificial fishponds
- Self help groups
- Availing affordable and appropriate credit facilities

(2) Lack of alternative energy

Mr. Simon Mwangi, Estate Manager Michimikuru Tea Co. as rapporteur stated the group developed further options for solving this problem:

- Creation of awareness and information (barazas, workshops, media and education materials)
- Poverty reduction (economic empowerment)
- Change the ignorance within the culture to a positive attitude towards change, education and exposure

(3) Deforestation

Mr. Ndambiri- District Service Officer as rapporteur stated the group developed further options for solving this problem:

- Intensify campaign on tree planting
- Intensify efficient technologies on utilization of forest products
- Advocate affirmative action for land ownership
- Awareness creation on promoting positive cultural beliefs
- Capacity building
- Harmonizing and customizing policies
- Identify and promote other appropriate sources of energy (e.g. biogas)
- Identify and adopt appropriate technology

(4) Lack of environmental education

Mr. Miaka Abraham – District Environmental Officer, Tigania, as rapporteur stated the group developed further options for solving this problem:

- Networking/partnership with relevant stakeholders
- Up scaling indigenous knowledge of the community
- GAP (e.g. crop rotation)
- Functional Government legislation (Forest act)
- Capacity building (barazas, field demonstrations)
- Active community development
- Formation of community based environmental groups

(5) Crop failure

Dr. Wafula CEO KARI Embu, as rapporteur stated the group developed further options for solving this problem:

- Plant more trees (improve soil water infiltration, control erosion, plant right species, adopt appropriate tillage practices, improve soil fertility, plant trees on hills and do trainings)
- Introduce appropriate irrigation and water harvesting technologies
- Enterprise diversification (intercropping, alternative crops, relay cropping-sequential planting at various times, mixed farming, enterprise shifting and capacity building)
- Planting certified seeds of appropriate cultivar (select a basket of recommended options for the locality, adopt conservation farming, prepare seedbeds suitably, establish own farm tree nurseries, and prepare land early and well, select appropriate tools)

(6) Tea monoculture

Dr. Bore Researcher at Tea Research Institute as rapporteur stated the group developed further options for solving this problem:

- Crop diversification (kitchen garden, alternative crops, GAP and mulching)
- Enhance environmental conservation (identify alternate energy sources - use efficient systems, soil conservation management systems - soil cover - improve soil fertility, intercropping tea with agro forest trees)
- Livestock farming (enhance zero grazing, trainings, poultry keeping and develop bee keeping)

Further more general concerns and comments where raised by the participants:

- Sustainability after the end of the project was questioned
- Promotion of advocacy and publicity of climate change issues in the region is necessary
- Benefits for the communities of the forests surrounding them need to be promoted
- Opening carbon trading to communities is necessary
- Taking ownership and internalizing climate change issues needs to be done by the communities
- The encroaching Sahara desert is a concern
- There is mutual trust in doing the right thing by climate change mitigation
- Partnership, active participation, genuine communication and deliberate climate change campaigns are needed
- A change of mindsets of all stakeholders is necessary
- Mitigation efforts need to involve all sectors (governmental, parastatal, NGOs etc.)
- The whole ecosystem needs to be considered in all actions and experts need to be involved
- Research on early maturing crops for highlands needs to be carried out
- Development of crop genotypes that are suitable for all areas are necessary

Possible cooperation areas were indentified:

- **Ministry of Agriculture:** - an earlier study shows malnutrition in the area. The ministry is ready to work closely with Michimikuru to offer expertise in diversification of crops.
- **Ministry of Livestock Development:** - the Ministry is ready to offer expertise in developing livestock and livestock products with Michimikuru community.
- **Climate Network Africa (CAN):** - the Organization is ready to offer update information through publications.
- **KENFAP:** - the Organization is prepared to register Michimikuru as one of its members. Michimikuru should benefit from their educational programmes.
- **MOA:** Environmental Department - will introduce Michimikuru to MAP (Medicinal and Aromatic plants) project. The DEDO pledged to support and work in collaboration with Michi to manage and conserve the environment.
- **TRFK:** - doing a continuous collaboration with Michii on various research aspects and projects. Trained staff of Michii on pruning and machinery handling and management (Dr. Bore). They are prepared to do more.
- **KARI:** - resource directed but working on opportunities to develop early maturing and tolerant varieties plus traditional crops deemed to be getting extinct. There is need to sensitize farmers on water conservation and harvesting. The institute is prepared to work with Michimikuru when invited to do so. (Dr. Wafula)
- **ASAL:** - They are ready to collaborate with Michimikuru in capacity building and improvement on tree cover.
- **KFS:** - will continue to support and boost in wood fuel. They will be ready to offer training and planting materials. It is noted that this is the only region around where tree cover is high and seedlings are readily available in the market. (Mr. Ndambiri). There is a threat of serious effects on monoculture as a result of emergence of diseases and pests which will hinder the sustainability of farming activities. They will also work closely with Michii to counter forest destruction and promote conservation.

8. Developing the Adaptation Strategy with Michimikuru in Kenya

The project will focus on a couple of main working areas for developing specific adaptation options. These measures are divided as follows:

- Short-term technical solutions for reducing the vulnerabilities of the producers and of the tea ecosystem for being able to manage climate related risks (no-regret measures)
- Short-term technical solutions for adapting the tea production and its processing to climate variability (no-regret measures)
- Long-term strategies for improving framework conditions for adapting to future climate risks and for capacity building

Furthermore the project is built on two transversal pillars:

1. Sensitization, creation and dissemination / exchange of experience
2. Access to long-term technical and financial support mechanisms, e.g. via the generation of carbon credits and others

In order to transfer lessons learnt and developed instruments throughout the tea sector in Kenya and beyond it is very important to cooperate with a regional institution for anchoring this information. As possible cooperation partners in this task the project identified the Kenya

Agricultural Research Institute (KARI) as well as the Tea Research Foundation (TRC) throughout the ROA process with Michimikuru. Furthermore IMANI Development offering consultancy to tea cooperatives and already a partner of Michimikuru was identified for supporting this task. The Kenya Tea Development Agency counting 450.000 tea producers as members also showed great interest in the project's results.

9. Next steps and recommendations

After the regional workshop the following next steps were agreed upon:

Activity	Date	Responsible
Disseminate CD with ROA information to participants of regional workshop	15th Dec. 2008	Julius
ROA Systemization	12th Dec. 2008	Julius, Kathleen, Kerstin
Agree on project coordinator within Michimikuru under the Unit Manager per MoU	15th Jan. 2009	AdapCC, Michimikuru
Agree adaptation strategy	15th Jan. 2009	AdapCC, Michimikuru
Develop Operational Plan on measures to be implemented	15th Feb. 2009	Michimikuru (with support of AdapCC)
Start implementation	1st March 2009	AdapCC, Michimikuru

Taking into account the results of the local and the regional workshop AdapCC proposes to consider the following working areas for Michimikuru's Adaptation Strategy⁸:

1. Capacity building

OBJECTIVE: Michimikuru tea producers are sensitized for climate change issues and apply the necessary activities within the production to minimize their vulnerabilities towards climate related risks.

- Environmental education
 - Capacity building in water management
 - Capacity building in pest management
 - Capacity building in fertilizer application
 - Capacity building in sustainable forestry
- Capacity building in Good Agricultural Practices for strengthening the tea ecosystem

2. Water management

OBJECTIVE: The producers apply an efficient water management within their production.

- Exploration of enhanced water storage possibilities

⁸ The herein proposed components for the Adaptation Strategy will be specified and further elaborated on in the Adaptation Strategy itself.

- Exploration of potential of irrigation systems

3. Pest Management

OBJECTIVE: Attacks of pests and diseases decrease and the tea is less vulnerable to them.

- Regulation of the application of pesticides
- Natural pest / disease control
- Enhanced soil fertility

4. Forest cover

OBJECTIVE: The forest cover in the focal region is maintained and measures for amplification are in place.

- Stop illegal logging on community level
- Tree nurseries for local species
- Identification of alternatives for construction
- Identification of alternatives for energy generation for processing the tea
- Long-term sustainable forest management

Due to the problems identified by the producers along with their causes and effects, AdapCC came up with this first proposal for Michimikuru's Adaptation Strategy.

Project resources and possibilities (human and logistical resources of Michimikuru and AdapCC)

AdapCC is planned for a duration of three years, which allows for creating examples of possible technical and non-technical measures to adapt to climate change which can be disseminated and applied in further tea regions of Kenya and beyond. The project will be developed within the framework of Michimikuru's strategic long-term orientation.

After both institutions approved the measures to be implemented the Adaptation Strategy and the Operation Plan for its implementation will be drawn up and a monitoring system installed.

Michimikuru needs to assign one continuous contact person for the implementation of the adaptation options with their producers. This contact person will be the single entry point of information from the AdapCC team and will be responsible for the implementation. Disposing time as well as motivation for coordinating activities on the ground are essentials for this contact person. Michimikuru will need to institutionalize this contact person's position within the cooperation's personnel in order to enable implementation of adaptation measures. The contact person will be chosen by Michimikuru and a Memorandum of Understanding for agreeing on their position will be drawn up between Michimikuru and AdapCC.

Relations to other organizations and institutions

The following institutions - other than Michimikuru and AdapCC - were identified important for working on adaptation to climate change with Michimikuru: KARI, TRC, the Ministry of Agriculture via the District Environment and Land Development, KTDA and IMANI Development. Further local and regional institutions may be incorporated in the process regarding their interest and necessity of the project.

ANNEX

LIST OF CONTACTS ADAPCC

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LIST OF PARTICIPANTS AT THE LOCAL WORKSHOP

Name	Age	Position
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2. S.M. Mwangi	47	Estate Manager Michi
3. Mathew M. Kirema	25	
4. Julius Murerwa	25	
5. Margaret Kaome	35	Tree Nursery Supervisor
6. Abraham Kailemia	44	Agroforestry Consultant
7. Francis Gakula	46	Board – Chairman Michi
8. Silas M. Nigimbuku	48	Board Member Michi
9. Geoffrey Murerwa Thirinja	40	Fairtrade Chairmann / Acc.
10. Samuel Mutiga	48	CFA Eastern Produce
11. Cecilia Mithika	52	Women Leader
12. David K. Akwaru	40	TESA
13. Julius Nganga	39	Agronomist
14. Gilonga A. Baarw	30	
15. Stephen M. Abaiki	58	
16. Richard Mutuma	34	TESA
17. Mary N. Murungi	40	Committee TMOS
18. Joanina K. Mantara	48	Women Leader
19. Muriira Ibayu	47	FUM
20. George E. K. Aswaya	59	Board Member
21. Paul Muriira Itabari	40	TESA
22. Tabitha Maithima	45	Women Leader North
23. Janet Miriti	38	Women Leader East
24. Bertha Ntoruru	50	Women Leader Central
25. Alois Mutembe I.	38	TESA

LIST OF PARTICIPANTS AT THE REGIONAL WORKSHOP

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Abreviations

CD	Cafédirect
GTZ	German Technical Cooperation
PPP	Public Private Partnership
AdapCC	Adaptation to climate change
ROA	Risk and opportunity Analysis
KTDA	Kenya Tea Development Agency
KFS	Kenya Forest Service
MOA	Ministry of Agriculture
ASAL	Arid and semi arid Lands
CAN	Climate Network Africa
KENFAP	Kenya National Farmers and Agricultural Producers
KARI	Kenya Agricultural Research Institute
TRFK	Tea Research Foundation of Kenya
DEDO	District Environmental Development Officer
TARDA	Tana and Athi Rivers Development Authority
NEMA	National Environmental management Authority
GAF	Green Africa Foundation
FUM	Factory Unit Manager
FSC	Field Services Coordinator
TESA	Tea Extension Services assistant
CTC	Cut Tear and Curl – A type of tea manufacture
EPK	Eastern Produce Kenya Company
FLO	Fairtrade Labeling Organisation
Baraza	Open yard public meeting
Boda Boda	Adopted to denote taxi by bicycle or motorbike