

2.5.4 Contribution of Agricultural Marketing Cooperative Society on Climate Change Adaptation: Evidence from Mlimani Ngarashi AMCOS

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Abstract

Climate change is one of the greatest environmental and human development challenges facing the world development sectors including Cooperative development. It threatens to large extent the human health in view to food insecurity, malnutrition and hinders sustainable natural resource conservation for enhanced agriculture productivity. However, changes of temperature, land forms degradation, rainfall variability resulted from human development activities including crop production appears to increase land use conflicts on resource use. Agriculture Rural Cooperative development sector appears to be highly affected with these changes. The conflicts aggravates the socio economic problems including land scarcity due to uncontrolled urbanization impacts on environment, land degradation, loss of biodiversity, infrastructures depletions and water scarcity. However, there is limited knowledge to date on understanding the symbiotic relation of climate impacts on agriculture cooperative development sector. This paper provides empirical data with evidence based to show the linkage and impacts of climate change and rural agriculture cooperative development sector. It considers Agriculture and Marketing Cooperative Society (AMCOS) to provide the evidence for learning. It highlights the historical development of the sector, activities and how these activities influence climate and therefore impacts on cooperative development. The existing nexus between biodiversity loss, ecosystem function, cooperative services and human wellbeing, their impacts and challenges are documented. Likely, institutional and policy aspects, member based climate adaptation capacity are envisaged. Future risks and hotspots for climate change interventions in respect of AMCOS operations are highlighted to provide further lesson of experience in context specific and may be applied to other agriculture cooperative development sector in Sub-Saharan Africa with the same context.

KEY WORDS: *Agriculture and Marketing Cooperative Society, Rural, Agriculture, Urbanization, Food Insecurity, Climate Change*

1.0 INTRODUCTION

Tanzania like any other developing Countries in Sub-Saharan Africa is directly or indirectly affected by climate changes in the global environmental conservation debate. Climate change as a global environmental change phenomenon is one of the big challenges of the World (UNEP, 2002 and IPCC, 2007), which appears affecting agriculture cooperative development sector (Harrison, 1999). Likely, it affects both flora and fauna in terms of loss of biodiversity and land degradation through its parameters change including rainfall and temperature, which influences agriculture sector development and enhanced food productivity. Other parameter, which has adverse impacts of cooperative development include weather changes. It is a fact that the changes in the temporal and spatial distribution of these parameters in Tanzania, Monduli District inclusively, have adversely affected agriculture and food production of farming communities through changes in agro-ecological conditions, and therefore affecting growth and distribution of incomes, demands for agriculture produce and AMCOS development.

The primary functions of AMCOS is dealing with production and marketing of member based crops product and facilitating production in farmlands following cooperative principles of good governance, cooperation, voluntarily and equality. This form of cooperative is important as it put people together and creates a uniform bargaining power to members in terms of prices of their crops and therefore increased the members income and farmers arrears. The success of the AMCOS depends much on members willingness to participate, share commonly feeling and equitable distribution of income. The climate changes indicators impacts such as land degradation and loss of biodiversity affects the sustainability of these cooperative in terms of increasing their productivity and therefore affects members income levels by decreasing the level of productivity in their farm areas based on the type of farming commonly practiced by the farmers, which may have adverse effect to climate through land degradation and loss of biodiversity. Studying the linkages and impacts of climate on cooperative development therefore becomes a demand as a social and economic vehicle towards reduced poverty by understanding the cost and benefits of what farmers are getting, what are they losing in the long-run and the changed climatic conditions in their settlement.

It is inescapable truth that AMCOS has and can play a crucial role in promotion of farm practices that contribute towards climate change mitigation as well as adaptation. Adaptation to climate change for small-scale agricultural producers involves livelihood diversification, in which in this specific context activities of this organization have been documented. The AMCOS can link small and marginal farmers and other rural poor with larger rural/urban/international markets through value-addition, thereby creating off-farm livelihood opportunities for vulnerable rural poor (Haughton, 2001).

In addition, AMCOS helps harnessing traditional rural knowledge on climate change mitigation and adaptation. However, the available literature indicates that under an integrated approach in conservation of resources all sectors dealing with communities have to participate in environmental conservation, cooperatives included (Harrison, 1999). Cooperative members being part of the community depend on the existing natural resources for their livelihood, in which case they have to ensure sustainability of these resources for their development. Causes associated with the destruction of the environment include shifting cultivation, overstocking of domestic animals, deforestation and pollution. One way of ensuring environmental sustainability is the conservation of the available resources with climate adaptation perspectives with land management skills.

2.0 METHODOLOGY

Case study areas

The study was carried out in Monduli District Councils. It takes Mliman Ngarashi Rural Cooperative Society (MNRCS) in Monduli as a case in point. Considering AMCOS did not mean that other forms of cooperatives have been neglected, but it only gives a distinctive focus of the study where more lessons can be learnt. The focus helped the investigators to have in-depth interviews, in which a total of 75 AMCOS members and individuals were interviewed. Among the total respondents 48 were women and the rest are men.

Criteria for case study selection

For the purpose of focusing the study, four AMCOS were preliminarily selected namely Mwamsera, Mliman Ngarashi Rural Cooperative Society (MNRCS), Urunjari and Sokoni 2 (Table 2.1). In these cases on-spot observation and key informant interviews were done. The intention was to select one AMCOS with adequate activities for in-depth study. The two cases selected for subsequent interviews were selected through purposeful sampling. The selection, also based on consultation held to municipal officials in the two District Council of Moshi and Monduli Districts. The consultation did not provide the overall judgment of the case selection, until when criteria set met with the case in question.

The selection also guided by various criteria including a long and outstanding history of the AMCOS, trends in its achievements, presence of clear organization structure and linkages with other development partners to facilitate the AMCOS development and diversity of activities. Other factor set include nature of the settlements, which depict rapid urbanization rate and potential contribution of AMCOS in improving the social well being of its members, surrounding communities, environmental conservations and climate change sensitivity. Based on the criteria set one AMCOS namely MNRCOS in Monduli District qualify and therefore was selected for in-depth study (Table 2.1; Plate 1). This was relevance in enabling the investigators have a case where diversity of activities of the organization and its impacts to climate change and to members and communities at large depicted. Likely, characteristic and challenges facing cooperative sector in view to AMCOS were documented in view to determine the social and economic impacts of the organization and thus to climate change adaptation.

Table 2.1: Case study selection and criteria set

Criteria	Kilimanjaro Region		Arusha Region	
	Mwamsera	Urunjari	Mlimani Ngalashi	Sokoni 2
Registered cooperative organisation	☐	☐	☐	☐
Organization outstanding historical development trends (More than 20 years of operation)	☐	x	☐	x
Rapid urbanization rate	☐	☐	☐	☐
Trends of the organization achievements	☐	☐	☐	☐
Presence of clear organization structure and	☐	☐	☐	☐
Linkages with other development partners affects climate	☐	x	☐	☐
Diversity of activities, which	☐	☐	☐	☐
Potential contribution of AMCOS in improving the social well being of its members, surrounding communities,	☐	☐	☐	☐
Environmental conservations and climate change sensitivity	x	x	☐	x

Source: Preliminary field study, December, 2010

Data collection, sampling and analysis

Data were collected over one month period spread in six months period. This includes both preliminary field data collection, desk search and on spot investigation. Key informant interviews were carried out in the selected cases so as to establish the historical evolution of activities and developments. This was important to understand the institutional trends in responding to cooperative development and therefore understanding opportunities, constraints and threats potential for or negatively to climate change. The key informants were elderly settlers in these settlements, AMCOS leaders and members, consumers, sellers/marketers and local government officilas in the two Districts. The selection went hand within a consultation to District Development Officers in the two Districts and AMCOS leaders who through purposeful sampling helped to select key respondents. The aim here was to understand the practical problems and establishing indicators for case exploration.



Plate 2.1: Mlimani Ngalashi AMCOS office in Monduli District, December, 2010

Kiswahili language was used to conduct the interviews. The major research question asked reflecting the objectives set includes who are the AMCOS member and activities, how is the decision taking place? How do people access funds for improving their productivity? What are opportunities and challenges of the AMCOS? Why started this AMCOS? What is the historical development trend? How do country policies and legislations provide opportunities or constrain its development? and What are the AMCOS activities, links you have and any climate change adaptation strategies?

Data collected were analyzed using Statistical Package for Social Science (SPSS) and Map info Software. Throughout the analysis, data were differentiated regarding members perceptions, activities, institutions arrangement, nature of activities, potentiality and negative impacts of AMCOS for improving livelihoods of the people and to the climate change adaptation.

3.0 RESULTS, DISCUSSION AND SYNTHESIS

3.1 Historical Development of the AMCOS

The study considered Mlimani Ngalashi Agriculture and Marketing Cooperative Society as a case in point. Historically, Mlimani Ngarashi Rural Agricultural Cooperative Society (MNRACOS) is found in Monduli District Council. It is a agricultural farmers association with a composition of six Villages namely Ngarashi, Monduli juu, Mlimani, Rashaine, Oralasha, and Sinoni. This Agricultural cooperative society was established and the same registered in 1984, with registration number no. 2995, which provides its legal mandate to operate.

MNRACOS is located in Ngarashi Division in Monduli District. Ngalashi division is situated along the slopes of Mount Ngarashi, which is potential for Coffee and Banana farming. It was found that, the primary activity of this cooperative society was to collect agricultural products produced by its members and finding potential buyers with better price, which can increase income of the farmers. It was revealed that this uncton was done in order to avoid the middleman whom unmercifully ap-

pears to exploit farmers. The society concentrated on framers' coffee collection although the district has potential crops produced such as Banana and maize. The reasons of not collecting other crops noticed include lack of warehouse (i.e. store/godowns), where these other crops can be preserved for future sales when prices are good in market areas. This Cooperative society has 245 members both of them are Coffee producers.

3.1 The structure of MNRACOS

The society is organized by having the chairperson, one secretary, one cashier and other three workers who are also members of the society. The chairperson is the overall in charge of various activities of the society. She is the one who report to the Board and responsible also for finding better prices to members through negotiating with other cooperative society and interested organizations dealing with market and selling of coffee crops including Kili Café based in Moshi-Tanzania.

3.2 Diversification of AMCOS activities and its impacts

The study observed that various activities are carried out by this cooperative society. The remarkable ones include farming and non farming activities. Farming activities practiced by members includes farming of various crops including paddy, banana, coffee and maize. The monoculture type of farming is practiced. The crop rotation observed to be minimal due to limited land available for farming. Farms which still produce coffee, maize and banana are poorly managed and productivity is low. This situation is attributed to by the fall of coffee price in the world market in the late 1990s. This results some of the coffee farms to be abandoned and therefore increases low productivity and soil infertility (Plate 3.1).

Plate 3.1: An Abandoned Coffee Farm Transforming into bushes



Source: Fieldwork in Monduli District, January 2011

Paddy growing as part of commercial farming is mainly carried out under irrigation system in Ngalashi division areas. A substantial investment has been made by individual farmers to develop a reliable irrigation system for paddy growing in the settlement. See plate 3.2. Paddy produced is processed and sold in Arusha, Moshi and Dar es Salaam markets. Depending on price, some rice is exported to Kenya by individuals under the help of the cooperative society. The farming systems use a lot of water and fertilizer which in turn has adverse effect to climate change in view to land degradation and loss of biodiversity through bush clearing for farming, which appears to influence temperature changes and rainfall availability in the region.

Plate 3.2: A Paddy Irrigation Farm in Ngalashi river stream



Source: Fieldwork in Monduli District, January 2011

The bush clearing for coffee and other type of crop farming by cooperative society members has resulted into clearing of the farmland and bush fire. This habit observed to be common which affects climate and therefore influence temperature changes and rainfall (Refer plate 3.3).

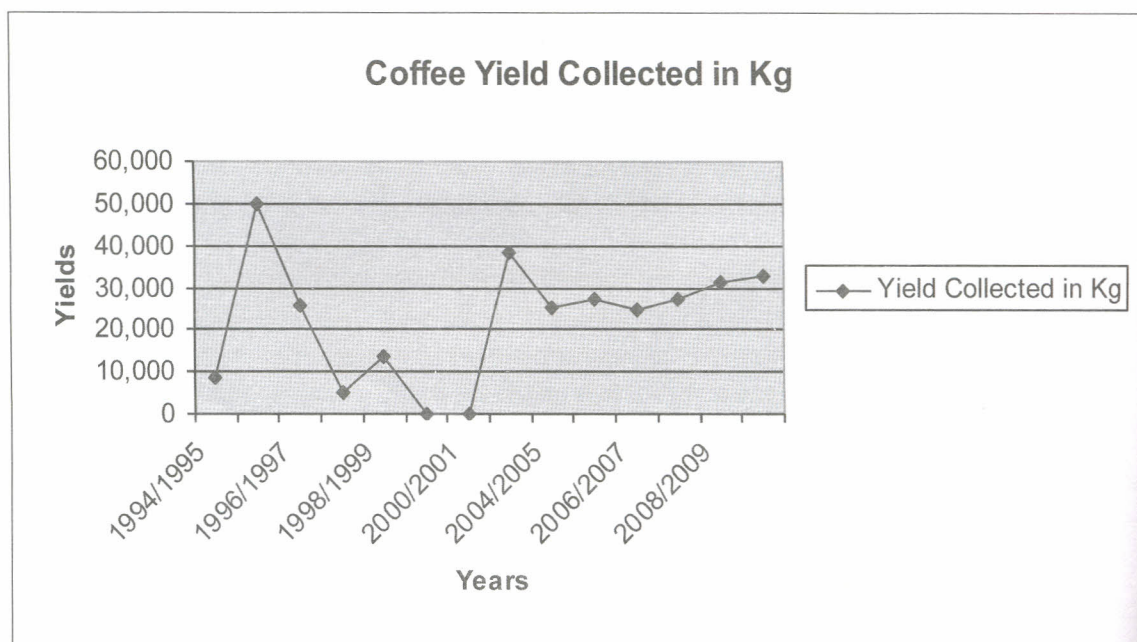
Plate 3.3: Bush fire used in farm preparation which degrade land and biodiversity



The study revealed that this cooperative society has a diversity of other non-farm activities. These include financial service rendering to cooperative members. This observed to be important which enable members to get loans from the organisation with minimal interest rate and returns the loan during harvest or after selling their coffee. The modality of payment is flexible, which indicates the need for strengthening the funds to enable to give credit to others. It was noted that until January, 2011 when the field work was undertaken by the investigators, a total of Tshs 45 millions owned by the organization and available for lending to members. The inter-linkages of the farming and non farming activities which are coffee production and marketing and financial service provision to members appears to build trust and sense of ownership and benefit to the members who have difficulties to access financial institutions including banks.

In addition, the trends of coffee production differ from year to year. It appears since the trade liberalisation the production has been fluctuating and this been affected by the changes of price of the coffee. The trends of coffee productivity are as presented in Figure 3.1.

Figure 3.1: Shows Commercial Farming Production by Crop



The other non-farm activity is that the cooperative have built a factory, which used for coffee curing. In collaboration with Kill Café, the France government has facilitated the construction of this coffee curing factory. The factory cures the coffee immediately after buying from members. After having pure coffee, the transport to the Coffee curing in Moshi, with already a grade assigned. This reduces the cost but also reduces the loss. The challenges are that the factory requires a substantial amount of water, which cost the society. The deep well project may help to reduce the cost and therefore benefit the members more. However, threatens to environmental conservation observed to be a problem, which requires more attention.

In additional, the society plays a great role in providing farm implements to farmers, who pays this after selling their coffee crops. The modalities of farmer paying this farm implements is flexible. This involves after selling their crops (PC1 which is coffee grade one and PC Spesheli which high quality coffee products which fetch high price from the international market). In 2010 the price of PC 1 and PC Spesheli as presented in the table 3 after all cost has been deducted. The deduction costs from farmers are as presented in Table 3.5 as observed during the field work conducted in January 2011.

Table 3.5: Trend of payments for Coffee farmers

	PC I	PC Spesheli
First payments to farmer	1,000	1,000
second payments to farmer	200	400
Farm implements	96.77	96.77
Total	1,296.77	1,496.77
Amount reimbursed to the AMCOS	2,372.09	2,698.15
Operational cost charged (handling, bags, freight, levy charged)	1,075.32	1,201.38

3.3 Role of different partners in strengthening Cooperative Society development

The Agricultural Marketing Cooperative Society namely, MAMCOS primarily was established purposely to collect coffee, maize, beans, millets, and wheat from its members and subsequently pass it over to the Arusha Cooperative Union (ARCU). The ARCU was responsible for curing and selling the coffee product within and outside Tanzania until the year 2000. Due to increased coffee mismanagement and increased corruption of the top leaders, bureaucracy increase and late payment to coffee farmers, Mlimani Ngarashi Cooperative society entered into a collaboration with different organizations to facilitate the society in its functions and therefore achieving its goal of servicing its members at high quality, while reducing poverty. These organizations include Kili café Moshi, Technoserve and Association of Kilimanjaro Special Coffee Growers. Other actors noticed playing a great role in the cooperative society development include Department of Cooperative Development in Monduli District and COASCO.

In 2003 the Society started collaboration with Technoserve and Kili café Moshi, which are non-governmental organization dealing with improving farmers' activity as a mean for poverty alleviation. Kili café Moshi and Technoserve entered in collaboration with the society and plays a great role on how best members can produce and sell their coffee product. Since that time, these organizations noticed helping the society in the following areas of capacity building:

- Teaching the cooperative society member involving in coffee farming on how to produce high quality product up to product auctioning,
- Training members and leaders on entrepreneurship, marketing, product add values of their crop products,
- Facilitating the cooperative society getting a loan to build the Coffee processing unit,
- Facilitating the cooperative society to collect coffee from its members to get marketing channels abroad. In this respect, it was noticed that the coffee of the cooperative society is exported abroad by KiliCafe which Technoserve Plaid. This found to be an important role for the society in establishing the linkages and collaborations with other institutions, who can strengthen their activity and therefore reaching its target in poverty reduction for their members.

As a result of improving quality after deducting operation costs, contribution for the building and payment of loan installment (See Table 3.5), members has managed to pocket US\$ 1.50 per kg as compared to previous US\$ 0.40 – 0.6 per kg. This is an added advantage in the way that members' incomes have increased.

Kili Café Moshi also appears to play a key role in providing training. The type of training provided frequently to farmers includes that related to coffee production including farm husbandry, price negotiations and preparations of account books. Likely, it plays a key role in buying, curing and grading coffee from the cooperative society. COASCO plays a key role in financial auditing of the cooperative financial transactions. Other actors namely Association of Kilimanjaro Special Coffee Growers (AKSCG) observed playing a great role to find loans from different financial institutions and bring to the society at a reasonable interest rate. It also plays a great ole in finding market for

the society product selling at a good price abroad. The local authority through Department of Co-operative Development, plays a great role in advisory services on how coffee best can be produced, selling and returns distribution.

In addition, Mlimani Ngarashi cooperative society has formed a strong collaboration with other Rural Producer Organization for the purposes of gaining the higher price. This include the Association of Kilimanjaro Special Coffee Growers (AKSCG), which plays a great role in trying to solicit and mobilize loans from various financiers to support the society members to produce better products and secure market for commodity. AKSCG sold and sells coffee through the coffee auction system as well as direct to the end user which is being regulated and managed by the Tanzania Coffee Board (TCB). The Society thus operated like all primary cooperative societies collecting coffee from its members, making advancement through funds advanced by AKSCG and finally making final payment (if any) an receipt of the proceeds from Mlimani Ngarashi Cooperative Society Limited.

3.4 Triggering factors affecting AMCOS Operations and their Sustainability

Trade liberalisation

For over 16 years prices for coffee have been declining in value terms mainly due to fall of quality which could not compete in a World free market. As a result of producing poor quality coffee in a competitive market, members failed to get high and reasonable prices and they continuously began coming poor year after year. the price of coffee from 1999 to 2003 ranged from United State dollar 0.40 - 0.50 per kilogram. This has observed to be disincentive to members to involve in coffee production to a large extent. In turn, other farm activity such as maize was adopted (See Plate 3.5) to address the rift. Some of the farms were converted into maize and residential areas (See Plate 3.6). All these involves tree cutting, which used to preserve soil and reduce soil erosion in the areas. As the results it appears there is increasing soils erosion which enhances land degradation and loss of biodiversity which affects rainfall availability and temperature changes and therefore climate change. The weather changes appears has influenced changes in seasons and reduced rainfall compared to the past years particularly in the 1980's and 90's.

Plate 3.4: Maize and Banana Farm in Monduli, from one of the society member



Source: Fieldwork in Monduli District, January 2011

Plate 3.6: A Coffee farm being converted into residential and maize farm land with tree clearing



Source: Fieldwork in Monduli District, January 2011

Price changes of coffee product

In terms of the Marketing Channels (Structure) the role of the Cooperative Sector was to reduce the middleman. In this case the Collective Action through the AMCOS and AKSCG was meant to:

- Reduce the number of coffee handlers/ buyers between the farmer/member and the final consumer or importer of the product from Tanzania. Enhance collective bargaining through collective action of members in the different primary societies.
- Reduction of unit cost for individual farmers.

This was based on the promise that since an individual farmer's volume of production is low, combined collection would had to optimal use of transport and handling services.

As at the end 2010, membership in AKSCG and participation in its activities made it possible for members to tag benefits of cooperation. However combined impact of liberalization and would market reduced the impact of the Union on the individual farmers earnings as previously Union challenges explained. The earning tends and deductions are as presented in Table 3.7

Table 3.7: Cost reduction elements from farmers after selling their coffee crop

	PCT KGs 26,569	PC SPESHELI
Export price	(3582.66)	(3,001.30)
Advance payments	(1400.00)	(1,200.00)
TACRI levy	(22.72)	(22.72)
District levy	(61.76)	(61.76)
Coffee curing - Rafiki	(31.98)	(31.98)
Store charges	(36.81)	(36.98)
Bank charge	(6.55)	(6.19)
Interest on Over Draft	(2.44)	(2.27)
Honoraria to committee	(16.75)	(16.75)
Marketing- AKSCG	(150.59)	(150.59)
Starburcks Centifa fee	(1.23)	(0.84)
Cashew F.L.O.	(7.04)	(6.65)
Loan to curing industry	(37.38)	(37.58)
Reserve fund	(45.40)	(45.40)
Transportation charge	(56.46)	(56.46)
Society levy	(500.00)	(250.00)
Total	(2,377.28)	(1,926)
Surplus to farmers	1,201.38	1,075.30

Cooperative society champion

Existence of a long service leader since its inception, observed has facilitated the existence of this cooperative society. Vast experience she has and various types of training has attended facilitated her to be visionary on looking how to advance the cooperative. The motive behind include her own motivation and the struggle for poverty alleviation to members of the society. The not loosing up habit was the motivation for the success and survival of this cooperative society.

Institutional Collaboration and training

The collaboration of Mlimani Ngalashi cooperative society with other organizations appears to help its existence and survival for the long time in the market and production of coffee in the region. The linkages created by the society and the type of training provided by these organization and marketing information helps to reduce trust of members to the organization. This factor observed contributed to large extent on the sustainability of the members and therefore its continuity

Diversification of cooperative society activities

The diversification of having various activity owned by the cooperative members as alternative income generation observed created a conducive environment of the members and building trust to the society. The financial rendering service, where members can get loan from the same cooperative society and return loan during the selling of their crops has build this trust. Although it appears financial not viable as the money rendered stays for long time ,but it provide benefit for the farmer who have no means of accessing funds from financial institutions including Banks where crops can not be used as a form of financial mortgage. Similarly, the existence of milling machine owned by the society appears to enhance members' income and survival and therefore enhances poverty reduction. A better service renders to members and the society at large facilitates its sustainability.

Thus, the study indicates that the impacts of cooperative society have a strong linkages and connections with its survival and sustainability, climate change based on its activities operations and improving the social wellbeing of the members. Careful integration of these factors needs to be considered as incentives to enhance community development in a view to safeguard present and future generation interests.

3.5 Existing linkages and impacts of AMCOS activities on climate change

The existing nexus between biodiversity loss, ecosystem function, cooperative services and human wellbeing and their impacts to climate effects in this study observed to be strong. The study revealed that coffee crop is perennial crop, which takes more that three year to be harvested. It requires tree for shade, which also enables its survival and productivity (See Plate 3.8). The farm preparation involves clearing of tree, bush firing (See Plate no. 3.3.), which all affect the ecosystem including land degradation and biodiversity loss. The tree cutting due to farming activity has been resulted loss of traditional medical plant, which in most cases claims to be found near their residential and in farm areas. Likewise, these tree losses have affected temperature changes and rainfall availability in the settlement. The tree in farms helped to reduce soils erosion, currently the study noticed increased water flows and erosion especially during rain season. All these affects climate change and the wellbeing of the people in term so health, income levels and means of life style changes.

Due to increased impacts of climate change resulted from loss of tree, increased population , which turns the farmlands into residential, cooperative society member appears to adopt and engage in other livelihood activities and coffee farm are no longer their central focus of their survival. Member

are involving in fishing, timber in the Ngalashi Mountain, hunting wild animals, which all have effects to the social wellbeing of the people and the climate change. The education provision to members and to the society at large may be important to risk the future climate hotspot.

Plate 3.8: Coffee farm with tropical tree provide shade and therefore adopt to climate change effects to crop husbandry



Source: Fieldwork in Monduli District, January 2011

In addition, commercial farming in Monduli Township describes areas that are used for horticulture, floriculture, fish farming and coffee plantations. These farming activities comprise disjointed farming lots and idle land degraded. They are run by peasants and are concentrated in north western side and central areas of the settlement. The average farm size is between 0.5-2 acres. Horticulture is carried out at small-scale farms mainly around water sources, and within residential plots as part of household backyard gardening. This alternatives activities also observed to have impact on the environment and therefore to climate change.

3.6 Institutional and policy aspects on climate change and AMCOS operations

Currently, the settlement experiences drought. The drought occurrence observed caused by increased human activities including cutting tree for timber, coffee farms and increased alternative farming systems such as maize and banana which do not require tree shade. This indicates the increasing food insecurity in the area, which affects the social well being of the local people and society members.

The increasing population also observed to be a landmark for the land use changes over the past years. The increasing population has added pressure on land occupation as the result residential development observed to be important. It important to note that, the land for coffee production remains constant and cooperative member society remain the same as are the one who owned land in the settlement. The increasing population, while land remain constants calls for policy intervention and land use planning, which may designate land for various uses, which may act as rational for community development.

The study shows that Mount Kamolonike, primarily was meant for environmental conservation. Presence of unwritten norms guided by Maasai elders helped to conserve this forest land along to this mountain. People involve in Coffee farming while not involving in deforestation along this mountain which played a key role in environmental conservation, biodiversity conservation and rainfall attraction. The changing of the farming systems to other alternative strategies including timber in this mountain and other activities such as maize and beans farming in the would have been coffee farming lots have affected climate of the settlement as well as increased deforestation to greet extent. This demand more policy actions to redress the gap while safeguarding the environment. Training of investment policy, population policy, water policy and other land development policy observed to be a demand.

3.6 Challenges Facing Mlimani Ngarashi Cooperative Society operations

Some of the remarkable challenges observed to face the society are based on economic, technological, political and social aspects. These challenges include but are not limited to the following

- Inadequate support provided by the Monduli District Council in terms of training, and funds to strengthen the organization operations. It appears that the department values much animal husbandry due to the nature of residents who reside in the settlement who are pastoralist in nature and therefore coffee production seems not a priority in the District. The District council only collects tax without training the same and facilitating the coffee productivity. In this way the coffee production remains to be decision of the members not a government priority in terms of support
- Disincentive to farmers caused by increased bureaucracy and heavy dept of the coffee to the Arusha Cooperative Union. Until to date it was notice that the coffee farmers still claim a total of Tshs. 37 Million equivalent to USD 36 million Dollars. This created the bad start of the society, which eventual has regain its trust to farmers after having a good and outstanding financial record and returns to farmers. This facilitated after linking with other organizations and putting aside the Union.
- Most of the members are the same and are now too old. Children, have got their owned alternatives in town and are not involving in coffee farming activity. This change of life style of the peasant family has affected the coffee production as the elders have no enough energy to involve in intensive coffee farming. It was found that most peasant use labour in their farms and pays much, which can help their family
- The coffee farm implement argued to be too high. The study noticed the increased cost in coffee plant rearing, which involve a lot of farm implements and requires strong support, subsidies and care, the situation which most of the elders with big farms ranging from 2 hectares and above do not meet. This affects the productivity and incomes of the majority of society members
- Increased government tax deductions. It was noticed that at every stage, the coffee package has deductions including from storage, sack and in auctions. All these places involved tax deductions.

3.7 Member based climate adaptation capacity and challenges

The effectiveness and efficiency of the Mlimani Ngarashi Cooperative Society noticed to be affected by climate change including changes of temperature and rainfall resulted from increased land degradation and loss of biodiversity. These seem to influence the level of productivity and income levels of cooperative members and therefore their livelihoods. In order to work for sustainable development understanding responses of AMCOS to climate rehabilitation and associated institutional context becomes a demand in world development agenda.

Cooperative institutions including AMCOS have a vital role in mitigating the impact of natural disasters and climate change. As democratic, participatory organizations of rural poor, based on the principles of social cohesion, self-help and equity, AMCOS can be highly effective in preparing the rural poor to respond climate change by creating conducive framework, which member has been following. The society in collaboration with other organizations including Technoserve and Kill Café, at village-level has started providing formal education on forest conservation, working with village and Sub Ward committee to prevent deforestation and encouraging members to engage more in coffee farming as will require tree planting. Already, 130 members has been participated in the training and agreed to involve in coffee production as well as planting tree which may redress climate change. This observed important as will help to increase food security, income levels and therefore environmental conservation for the present and future generation

Impact of climate variability on natural resources result in challenging survival problems for the rural populations that depends on natural system equilibrium for their daily livelihoods. Strategies for adaptation to various aspects of societal vulnerability centre on responses to shocks that can take the form of slow change, or rapid and extreme events. Crop rotation and good practise in farm husbandry observed to be o prime importance of the Agriculture and Marketing Cooperative Society to adopt on climate change and its vulnerability. Planting of tree, which is encouraged by the society and training provided to coffee farmers attest.



3.8 Future risks and hotspots for climate change adaptation in respect to AMCOS operations

The study reveals a great role played by Mlimani Ngalashi Agricultural cooperative society in climate change adaptation. These among others centres on type of farming practices as well as non-framing activities which in one way or another facilitates the climate change adaptation. Paradoxically, it was noted that key hotspot for climate change noted include increased land degradation, bush fire, increased urbanization rate, which affected settlement development patterns and use of natural resource as well increased demand for energy and timber. These hotspots observed to be commonly affecting the climate which needs attention to both stakeholders interested in cooperative development as well sustainable environmental management. Thus there is a need to increase awareness rising to local farmers involving in Coffee and Banana farming for enhanced their productivity, but also to increased income to the members.

4.0 POLICY REFLECTIONS, WAY FORWARDS AND CONCLUSIONS

Change in land cover typically does not occur as a sudden transformation, but rather as a continuous process of degradation, where degradation id defined as a persistence decrease in the capacity of land

to deliver ecosystem services. Inadequate attention of the cooperative society involving in coffee farming in the settlement and the impacts of the negligence has brought purely local problems, brought about by resource management. Changes of rainfall, atmospheric circulation, dust aerosols, surface albedo, loss of biodiversity and the displacement of people no longer able to sustain a livelihood in the degraded land are some of the remarkable impacts noticed which calls for special attention.

The accelerating loss of biodiversity due to increased deforestation and coffee farming among locations in the district and among the major plants and animal groups are also a factors enhanced climate change in the settlement. Wild species protected areas, with a focus on the sustainable use of natural resources and viable level of use of biodiversity use of plant species by people is a demand to protect some areas and enhance productivity and human wellbeing.

The district has experienced climate variability as a normal phenomenon. It experiences fluctuations in climate or deviation from the long term meteorological average over a certain period of time, for example, over specific month, season or year. Period of drought and floods, warmth and cold have occurred interchangeably. Respondents argues that floods, droughts and other weather extremes, which have hash and damaging effects on agriculture, livestock, wildlife, tourism., health, water resources and the many socio economic sectors that form the core of the societies' basic livelihood survival are common. Adaptation to inter-seasonal variability in rainfall is thought to be a useful tool for improved capacity to respond to decadal climate change, the need to increase confidence in medium term forecasts is an important and practical objective to improve crop productivity and reducing climate risks effect to coffee farmers and the societal as a whole

It is a fact that rainfall pattern is linked to land surface conditions, through mechanisms such as the changes in surface albedo that result from reduced vegetation cover. The deforestation, which in most cases appears changes the climate, provides a feedback and a feedback mechanism for land use-policy enactment and enforcement

As a way forwards the following recommendations were proposed

- Engagement of dialogue (or debate) of various actors on improving agriculture productivity through enhancing cooperative societies development. This may help to enhance new knowledge and traditional knowledge on farming practice and support requirements for improved life of farmers while safeguarding natural resources,
- Capacity building of coffee farmers in the locality through training
- Increases farm implements and subsidies to coffee farmers
- Warehouse receipt systems and Community– add value to by product of farmers is preferred
- Involvement of different actors is essential. However, policy to coordinate the cooperative societies activities and monitoring system need to be in place and enforced

CONCLUSION

The synthesis of the study results indicates that there is a strong positive and negative impacts exiting between AMCOS activities on climate change, food supply and its sustainability. Loss of biodiversity, land degradation and increased populations are some of the notable detrimental challenges and links, which affect cooperative development. Increased scarcity of land for farming due to increased population and changes of crops prices are other remarkable challenges. Likely, many natural resources including fish, firewood, timber, medicinal plants, and wild foods are increasingly scarce due to patterns and trends in biodiversity loss and land degradation. These results calls for a strong policy debate and practical interventions for enhanced sector development while reducing climate detrimental effects caused by the climate change. To cab the rift, policy dialogue and integration of different development partners on climate change impacts in view of cooperative development sector appears to be important. This sounds to safeguard the interest of indigenous people and members who are suffering from climate change in context specific and in other Sub-Saharan Africa Cities in general where AMCOS operations exist.

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