

Gender, soil and water conservation in Machakos district, Kenya

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Abstract Gender mainstreaming is crucial in soil and water conservation initiatives. The existing technologies though, as designed, are expected to be gender neutral, lead to gender differences at the adoption stage. This was confirmed during a study conducted in Kathekakai settlement scheme, Machakos district where despite both men and women participating in soil and water conservation initiatives, women's efforts to adopt the recommended technologies were hampered by their limited access to authoritative information and lack of control over land. Women though playing major roles as farmers (64.6%), could not make key decisions on land use. Previous reports indicate that the women in Machakos district contributed significantly to soil and water conservation efforts in the mid 1980's leading to terracing of over 70% of the district. Gender mainstreaming efforts need to be enhanced for achievement of sustainable and effective soil and water conservation for improved agricultural production and livelihoods.

Key words: Gender mainstreaming, men, women

Introduction

Gender refers to the socially constructed roles, responsibilities, rights power, needs and constraints of men and women within a given society. Gender demarcates responsibilities between men and women in social, political and economic activities. Unlike sex that is biological, universal and static, gender is dynamic, changes over time and varies between different cultural communities (IFAD, 2003). In agriculture, gender issues cuts across all areas of crop and livestock value chains from the producers to the consumers (FAO, 1998).

Kathekakai settlement scheme, Machakos district, lies at the end of agro-ecological zone 4 and 5 in Kenya. The soil type, is predominantly luvisols (brown, sandy clay to reddish brown sandy clay to clay), with low inherent fertility leading to low crop and livestock production. The area experiences irregular bimodal (short and long) type of rainfall with an annual mean of about 700 mm. The area experiences high temperatures and regular periods of drought even during the rainfall seasons killing all the vegetation leading to land being left bare. The topography of the area is sloppy and during the periods of too much rainfall, the floods carries away most of the soils to the valleys bottoms, leaving the sloppy areas bare resulting in severe inter-rill, rill and gully erosion (Critchley, 1991, Khisa *et al.*, 2002).

Machakos district is well known for soil and water conservation. Small-scale farmers in Kathekakai settlement have slowly been adopting various soil conservation practices including "fanya-juu" and "fanya chini" terraces and planting of cover crops and trees. Fanya juu simply means throwing the soil up the slope from a ditch to form an earth embankment or bund. Several of these terrace banks are made across a field, on the contour, and over

time the land between the bunds levels off. The field then develops the characteristic "steps" of bench terraces, conserving the soil and rainwater between the terrace bunds by preventing soil and water to run down. The *fanya- chini* also commonly known as "cut-off" involves throwing the soil from the trench to lower side forming a ditch. This ditch helps to control excess overland flow (Gachene, 1999; Khisa *et al.*, 2002). Tree planting contribute to environmental improvement, adaptation to climate change. It also provides timber for building, firewood, charcoal and income through sale of such products. A study was conducted in Kathekakai settlement scheme using gender perspective approaches to identify gender related concerns; who does what work, who has access and who control what in soil and water conservation practices. This paper highlights the gender issue and the roles of women and men in the adoption of soil and water conservation practices as an aspect of agricultural development in the Kathekakai settlement scheme.

Methodology

The study site was selected based on the fact that the areas was part of the last settlement scheme under the Kathekakai settlement, and had not benefited from the government soil and water conservation efforts. Both secondary and primary data were collected through literature review, individual household and key informant interviews using a checklist, semi-structured questionnaires, focus group discussions. Gender related data was also collected by use of gender analysis tools. All data was disaggregated by sex and gender, and was analysed using SPSS statistical package and excel. Descriptive statistics (frequencies, percentages and means) and data exploration were used.

Results and Discussion

Social-economic characteristics. A total of 61 individual household (35.6%) men and women (64.4%) participated in the study. Most (68%) of the households were male-headed (MH), while (25%) were male-headed but female managed (MHFM) and (7%) female-headed (FH) households (Table 1). The results further indicated that the main occupation for 90.0% (64.6% women and 25.4% men) was farming (Table 2). From these observations it can be concluded that community depends on agriculture for a living, and thus the importance of soil and water conservation in the region. Both men and women in the area participated in different social groups involved in agricultural activities. Groups have been recognized as important assets for women in terms of social capital that further their empowerment (Quinsumbing and Pandolfelli, 2009). Women lack the necessary collateral and freedom to access credit from formal institutions (NALEP, 2009). But through the groups, they are able to access small loans which though in most cases are too small to manage any meaningful and sustainable enterprise ventures. Women groups through concerted effort give the women an opportunity to provide mass labour to achieve intended results. During the implementation of the National Soil and Water Conservation (NSWCP) Project in Machakos district (GoK, 1979), women groups played very significant role in soil and water conservation, leading to over 70% of the arable land in district being terraced (Kamar, 1998).

Gender issues in adoption of soil and water conservation practices. The results indicated that 86.2% (55.2% MHH, 25.8% MHFMH, and 5.2% FH) of the household had adopted the different soil and water conservation practices. It was observed that among the MH-FM household (25.8%), all the households had adopted soil

and water conservation practices. This indicates that, though there were no significant differences between the households, women managed households were more responsive to soil and water conservation practices. Women are efficient in the areas of food security, sustainability and resource management (FAO, 2010). Out of the 84.7% of the adopters only 3.4% had no education, the rest had different education levels. Out the 52.5% of the respondents with primary education, 44.1%, while 30.5% out of 35.6% of those with secondary education and all those who had tertiary education (6.8%) had adopted the technologies. This shows that the level of education has a role to play in the adoption of agricultural technologies/innovations as earlier reported (Bett, 2004). On the overall (76%) of the households reported to be experiencing soil and water erosion on their farms despite having adopted the technologies. Most of the respondents (71.7% - 30.2% men and 41.5% women) reported the constraining factors to include high capital requirement, limited technical information 17.0% (1.9% men and 25.1% women) and high labour requirement (9.4% -3.8% men and 5.7% women). Women (1.9%) reported of diminishing land size or perceived wastage of land. The respondents of reported of limited access to technical information and most 58.1% (46.4% women and 11.7% men) of them depend on farmer to farmer sources. There were no significant differences between the men and women on the factors contributing to land degradation, with 31.6% (21.1% men and 10.5% women) reporting of soil and water erosion due to lack of road run-off water harvesting. Most of the road run-off water is left to move freely without any control measures, taking away lots of soil especially after heavy rains. Others responses included lack of effective soil and water conservation practices (24.2%), complete absence of soil & water conservation measures (12.1%), untapped water from the roof catchments (6.3%), land clearing (5.3%)

Table 1. Household characteristics by gender.

Respondents	Average age (Yrs)		Level of education (%)			
			None	Primary	Secondary	Tertiary
Male	35.6	49.0	0.0	13.6	20.3	1.7
Female	64.4	39.0	5.1	39.0	15.3	5.1
Total	100.0	49.4	5.1	52.6	35.6	6.8

Table 2. Respondents occupation by gender.

Occupation	Gender of respondent		Total responses (%)
	Male (%)	Female (%)	
Farmer	25.4	64.6	90.0
Formal employment	2.0	0.0	2.0
Casual labour	4.0	2.0	6.0
Artisan	2.0	0.0	2.0
Total responses (%)	34.0	66.0	100.0

Table 3. Activity profile.

Activity	Type of gender			
	Own		Hired	
	Men	Women	Men	Women
Establishment of terraces (laying)	x	0	x	0
Digging of terraces	x	x	x	x
Planting of traditional crops on the terrace embankment	0	x	0	x
Planting crops/trees in the terrace ditch	x	x	x	x

Key: 0 = No participation x= Participation

Table 4. Access and control profile in soil and water conservation.

Resources	Who has access		Who has control	
	Men	Women	Men	Women
Land				
Own	√	√	√	√
Family	√	√	√	0
Rented	√	√	√	0
Livestock	√	√	√	0
Labour				
Family	√	√	√	0
Hired	√	√	√	√

Key: 0= No access/control √ = Access and control

and cutting down of tree (4.2%), respectively. Only women (4.2%) identified overgrazing, a major cause of soil erosion. The fact men own and value livestock more than crop farming is a possible explanation as to men's ignorance on effects of overgrazing. There were no significant differences between men and women, and 34% of the respondents identified the *fanya-juu* terraces as the most effective practice. Others practices included; use of farm yard manure (23%) and *fanya-chini* (17%), planting of trees and fodder crops for livestock. There were no significance differences between men and women in the identification of the most adopted soil and water conservation. The results, therefore, indicate that both men and women have the same understanding about soil and water erosion and hence both men and women should have equal opportunities in soil and water management.

Gender roles, access, control of soil and water conservation resources. The study established that both men and women participated in the implementation of soil and water conservation practices. Establishment of the terraces was a male dominated activity, though women were involved in the digging and planting of traditional crops on the terrace embankment (Table 3). These crops include cowpea, pigeon pea, pumpkins and sweetpotato that are culturally classified as women crops. The results further indicated that although both men and women had access to the resources, women had no control over family land and livestock (Table 4), a gender disparity that

constraints women effort towards soil and water conservation. These gender disparities are caused by both legal and cultural practices that limit women land-rights, but are bound to change with the new constitution that gives men and women equal rights to land ownership and other resources (GoK, 2010). Women as key players in combating land degradation through conservation of natural resources (Cecile 1992) need to have equal access and control over resources needed for sustainable agricultural production and development. Food and Agricultural Organisation (FAO, 2010) also reports that, if women had the same access as men to resources such as land, technology and training, it would be possible to feed 100 -150 million more people worldwide (CTA, 2011).

Conclusion

Gender mainstreaming is crucial in soil and water conservation initiatives. The existing soil and water conservation technologies though expected to be gender neutral, resulted to gendered implications during adoption in farming systems and within communities. Both men and women lacked authoritative information especially in laying out of terraces. Though there was gender involvement in the adaptation of soil and water conservation and climate change technologies, women faced gender specific constraints. This was due to lack of control over resources, a factor that hinders adoption of agricultural technologies. Women participation in social

groups enhances access to resources such as communal labour and capital needed for establishment of water conservation practices. Such groupings should be strengthened and all gender inequalities addressed to enhance women participation in soil and water conservation not only as labour, providers but as key stakeholders in agricultural development and decision making.

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