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Role of Kenyan Women's Groups in Community Based Soil and Water Conservation: A Case Study

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ABSTRACT

Women's groups projects have played a key role in community development in Kenya. The Mwethya women's groups of Machakos District, Kenya are best known for the role they have played in soil and water conservation activities. The major soil and water conservation activities undertaken by the groups were found to be on farm terracing, tree planting, both in farms and in eroded lands, dam construction and planting of Napier grass on terraces. Training and education was found to be the main factor that motivated the women to undertake conservation activities. Other motivating factors included the provision of tools and other materials for use during conservation, the women's determination to rehabilitate their eroded lands and increase crop production, indirect benefits like fuel wood and water for use in dry seasons. Working as groups also contributed significantly to their success. Lack of funds to buy tools and to pay for the construction of terraces and cut-off drains was a major setback. Poor follow up by extension staff after conservation works was also reported as a problem. It was concluded that women's groups do play a key role in soil and water conservation but their success is mainly dependent on how much training or education they receive and the follow up by extension workers.

INTRODUCTION

Women, particularly rural women, in Kenya, play a very important role in community based development activities, which are very broad and complex. The major activities are agricultural, comprising both food production for home consumption and cash crops to supplement the family income. By 1978, a study by the Kenya Central Bureau of Statistics (CBS) revealed that nearly all adult rural women were engaged in farming activities. This is in addition to other activities, which are entirely the responsibility of rural women, such as fetching of firewood, provision of water for both livestock and home needs, preparation of family meals, and caring for the young children. A study by Holmgren and Johnsson (1987), based in Machakos District, indicated that the average woman spends 1 hour/day fetching water and about 2 hours/day collecting wood, mainly from communally owned sources. Ten years later in 1997, through the Participatory Rural Appraisal (PRA), five Divisions of Machakos District namely, Matungulu, Yathui, Mwala, Masinga, and Central still ranked lack of fuelwood as a major problem. This is because of cutting trees without replacement due to a lack of a clear re-planting policy governing communally owned land. Women in Kenya have, however, participated to some extent in the management and conservation of the resources in their disposal despite not having direct control. This has been possible particularly where women have formed women's groups and addressed any problems affecting them or their community as a group rather than as individuals. Soil and water conservation is one farm activity that has been addressed communally in Kenya through a catchment approach and women's groups have been involved in most of the Districts.

The Mwethya women's groups of Machakos District have been selected for this case study because although they are involved in many income generating activities, they are best known for their involvement in soil and water conservation activities since the 1960s, and particularly after the launching of the Kenya National Soil Conservation Project in 1974 (Ericksson, 1992). Today the valley of Ngelani Market in the Machakos District is one of the most well terraced with well maintained cut-off drains because of their efforts. The Mwethya groups like any other women groups in Kenya are registered under the Ministry of Social Services with a membership of not less than 25 and have defined objectives and activities.

This paper analyzes the soil and water conservation activities of the Mwethya women's groups, identifies the motivating factors towards their success, the challenges and obstacles faced and uses the case study to make suggestions and recommendations on community based soil and water conservation.

METHODS

Semi-structured interviews were administered using a questionnaire to respondents from 14 different Mwethya women's groups from different locations of the Central Division of Machakos District. The choice of the groups was random, but they were uniformly scattered to cover the whole Central Division. The choice of the Central Division was purely logistic, because of the easy access to all the women's groups in the division and the complexity of their activities due to proximity to Machakos town. Two respondents were interviewed from each group (except the first two where only one each was interviewed) on their soil and water conservation activities. The responses were entered per individual respondent to avoid loosing vital differences in responses, between members of the same group. Participatory Rural Appraisal (PRA) reports of 1997 from five catchments in five different Divisions of Machakos District, namely Mwala, Masinga, Matungulu Yathui, and Central were analyzed and soil and water

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conservation related activities ranked high in all divisions. It was, therefore, assumed that a detailed study of any one division would generally reflect what is going on in the other divisions. Information from respondents was then summarized and percentages used to rank or cluster responses.

RESULTS AND DISCUSSION

The responses (Tables 1-6) have been classified as follows: <20%=poor, 20 - 40%=Fair, 40 - 60%=Good, 60 - 80%=Very Good, and >80%=Excellent.

Soil and Water Conservation Activities Undertaken by the Women's Groups

The activity that was most popular was terracing of individual farms (Table 1). The terraces were mainly (>90%) the "Fanya Juu" type. "Fanya Juu" terraces are constructed by scooping soil to the upper side of the slope, which forms an embankment on which trees including fruit trees, or Napier grass is planted. This explains why the planting of trees and Napier grass on farm terraces and cut-off drains also received good responses, 57.7 and 50% respectively. Banana and fruit trees establishments on terraces indicated low responses individually but when both are considered as fruits, we got a combined response of 34.6%, which was fair. The combined utilization of terrace and cut-off embankments indicated that all respondents used them in one way or other. The channel created by the scooped soil in a "Fanya Juu" terrace is designed to act like a cut-off drain, to hold or transport runoff water out of the field. This water can be directed to a dam or river or be allowed to infiltrate thus increasing water availability for the crops to the lower side of the slope. Cut-off drains serve the same purpose of receiving and re-directing runoff water, but it received only a fair 30.8% response. This might be that once "Fanya Juu" terraces are used, there is no need for a cut-off drain. Also cut-off drains are only useful in intercepting runoff at the upper most part of the slope and thus farms on the lower, less sloppy land may not require them. Fanya Juu terraces and cut-off drains are the most expensive and difficult to construct or maintain, nonetheless they were the most preferred by these women groups because of their ability to conserve water. The third most popular activity was the planting of trees in farms (57.7%), which is a true reflection of the high demand of fuel wood in the District. This was followed by dam construction and bank maintenance, including the making of circular and trapezoidal bunds for water conservation (53.8%). This indicates that water conservation was very important to the Machakos District groups as they are within the arid-semiarid lands (ASAL) of Kenya. Fifty per cent of respondents recorded planting trees on eroded land, which was mainly communally owned. This was a good indicator of the observed successful rehabilitation and reforestation of communally owned land by the groups. About 34.6 and 38.5% of the respondents established fruit and forest tree nurseries, respectively. This meant that others had to buy seedlings.

Only 19.2% of respondents reported gully control and construction of gabions, but this does not mean the women groups did not pay attention to these activities. The two activities were always done on a communal basis, on sites pre-selected by extension staff. According to the extension staff, the limitations in undertaking these tasks were mainly finances to purchase necessary materials, otherwise, the women groups were very keen and always ready.

Table 1. Soil and water conservation activities undertaken by different women groups shown as % for Respondents of each activity compared to total Respondents

Activity	% of Total Respondents
Terracing of individual farms	88.5
Planting of trees in farms	57.7
Dam maintenance and bank protection (i.e. planting of nappierand trees, scooping sand filled earth dams and making circular and trapezoidal bunds)	53.8
Planting trees in eroded land	50.0
Nappier grass on terraces	50.0
Forest tree nurseries	38.5
Fruit tree nurseries	34.6
Cut-off drains	30.8
Gabion construction	19.2
Gully control	19.2
Banana establishment on terraces	19.2
Fruit trees on terraces	15.4

The Factors that Motivated the Women's Groups and those that Contributed to the success in their conservation activities

Training, education, and advice from the extension staff was rated the greatest motivator by a show of excellent response (96%) as well as the best contributor to their success in conservation (84.6%) (Tables 2 and 3). The need to conserve their badly eroded land ranked second as a motivator (61.1%), and 46.2% were motivated by the declining productivity of their soil. Only 42.6% respondents

Table 2. Responses for each factor compared to total respondents

Motivating Factors	% of Total respondents
Training, education and advice from extension staff	96.1
Area was badly eroded with gullies, top soil lost and bare	61.5
Provision of polythene-bags, seeds and nursery materials by government	57.7
Concentration of dam water for use in dry seasons using terraces, cut-off drains and waterways	57.7
Declining soil productivity	46.2
Raising of fodder for animals on terraces	42.3
Provision of tools from government	34.6
Good follow-up and advice from local administrators and leaders	30.8
Good group leadership and co-operation among members	23.1
Expected benefits e.g. increase in yield	23.1
Trees for fuel-wood and construction	23.1
Demonstrations from neighboring groups and national tree planting activities	19.2

recorded that their own self-realization for the need to conserve was a factor that contributed to success.

Training and/or education was a means by which the women understood better their erosion problems and the need to conserve, and thus were motivated to implement conservation measures. In spite of observing their badly eroded land and declining yield, there was need for education for meaningful implementation to occur.

Concentration of dam water for use in the dry seasons, using terraces, cut-off drains, and waterways was reported as a good motivator (57.7%) and 46.2% respondents listed it as a contributor to their success. The success observed in terracing of farms (Table 1) was therefore influenced to some extent by the need to collect and conserve water.

Provision of nursery materials and tools were also good motivators and 42.6% of the respondents, listed it a factor that contributed to their success.

Other motivating factors were the direct benefits like raising of fodder (42.3%) expected crop yield increases (23.1%) and trees for fuel wood (23.1), while 38.5% respondents believed their success was linked to these direct benefits.

Full participation and cooperation among group members was considered a reason for success by 80.7% of the respondents, some (26.9%) attributed it to good leadership within the group and a minimal 3.8% recorded support from spouses. The high rating given to participation and cooperation is a good indication that there was better success when women came together than when they worked on their farms individually. This is also supported by their actual performance on the farms whereby members from the same group performed almost equally while performance between groups varied.

Main Problems and Setbacks Encountered by the groups during implementation

The main problems encountered were lack of funds to buy tools (76.9), to pay for digging of terraces and cut-off drains (50%) and thus free the women to do other things within the list of their multiple roles, and to buy different types of seedlings (11.5%) (Table 4). About 50% of the respondents also attributed poverty resulting in over-dependence on donations as a setback because they could not implement their activities at their own pace. Donated tools assisted a lot but they were not sufficient.

Poor follow-up visits by extension staff was reported (50%) as a problem that affected their progress. This is because a follow up would assist with advice on new activities. A problem of lack of new ideas after a project was accomplished was also reported (23%).

The poor and unreliable rainfall of Machakos also resulted in a shortage of water in the dry season for tree-seedling and nappier establishment, and a persistent food shortage. This reduced the speed by which the women could have completed their projects, because they had to pay attention to the family food needs first.

Other problems included the multiple roles that left them with less time than they would have wished to spend on soil conservation (7.7%), and poor leadership was reported by some groups (26.6%).

Table 3. Factors that contributed to the success of conservation activities by the women's groups shown as percentage of respondents for each factor compared to total respondents.

Responses for each factor compared to total respondents	
Close advice, supervision and visits by agricultural extension staff	84.6
Full participation and co-operation among members	80.7
Need for cattle water in dry seasons	46.2
Material support or availability of tools from Government through extension staff	42.3
Self-realization and motivation on need to conserve by members	42.3
Saw indirect benefits of soil conservation e.g. fruit, bananas, nappier for livestock, fuelwood, etc.	38.5
Encouragement and follow-up by local administrators and local leaders	26.9
Good leadership in groups	26.9
Competition among groups for benefits and awards e.g. tools	19.2
Seminars/training at the start	15.4
New women groups with different activities	7.7
Acquired skills in terracing	3.8
Support from husbands	3.8

Tables 4. Main problems and setbacks encountered by groups while undertaking soil and water conservation shown as % of responses compared to total respondents.

Main Problems/Setbacks	% of Total Respondents
Lack of funds to buy tools	76.9
Lack of money to pay for terracing and digging cut -off drains to safe time for other activities	50.0
Poor follow-up visits by extension officers after project completion	50.0
Poverty among members resulting in dependence on donations	50.0
Poor leadership	26.9
Lack of new ideas after completion of old projects	23.0
El-ninno rains washed away nurseries	19.2
Completion of already existing projects	19.2
Misunderstandings among members	15.4
Poor rains and lack of food	15.4
Lack of money to buy seedlings when ready for those without nurseries	11.5
Lack of seeds and diversity of seedlings	
Shortage of water during the dry season for tree seedlings	11.5
and nappier crop irrigation	7.7
Multiple roles of women resulting in conflict between group and individual commitments	7.7
Inactive members in the group	3.8

Suggestions for Improvements by Respondents

Education and training through seminars and workshops was the most highly recommended suggestion for both women (84%) and the community (92.3%) (Table 5 and 6). Women's groups highly valued the training and education they were getting from the extension staff. Many (76.9%) still felt the training should focus on the groups to particularly educate members on individual benefits, not just the community benefits. Another 76.9% and 57.7% felt that there was need for follow up supervisory visits both at the

community and women group level, respectively. Periodic project evaluation was proposed to improve both women's groups activities (57.7) and community-based conservation (73%).

Provision of tools was highly recommended (84.6%) for performance improvement of women's groups, but only a few respondents (25.2%) recommended tools for the general community-based conservation work. This difference in response was investigated further and it was observed that the respondents believe success in implementation can only be achieved through the organized groups, not through community mobilization. They however still felt it was important for the whole community to be trained to appreciate the importance of conservation, that the benefits are theirs, and to encourage more groups to participate in the implementation. The provision of tools was mainly suggested because of poverty in the area as a result of persistent droughts, which made it difficult or impossible for farmers to meet the family food needs let alone buy tools for conservation work. Soil conservation was considered secondary to immediate family needs, and because of limited resources, most respondents felt external support was necessary to hasten its success. Food for work was also suggested as a suitable incentive (34.6%) as a way of supplementing the family's primary needs while undertaking soil conservation.

Table 5. Suggestions on how women's groups can be best involved in soil and water conservation shown as percentage of respondents compared to total respondents

Suggestions	% of Total Respondents
Training group leaders and members on soil conservation benefits	84.6
Provision of working tools by government and non-governmental organizations	84.6
Members should be educated to realize the benefits are theirs as well as the community's	76.9
Advice and frequent follow-up visits by extension officers	57.7
Involving administration e.g. chiefs in follow-up supervision after completion of project	34.6
Motivating members through tours, shows, awards, demonstrations, food for work, etc.	34.6
Women's groups to periodically evaluate their projects i.e. through SWOT analysis and introduce new ideas	34.6
Good selection of leaders and training in leadership and management skills	26.9

Table 6. Suggestions on improvement of community based soil and water conservation shown as percentage of respondents to total respondents.

Suggestions	% of Total Respondents
Education/training at community level through seminars and workshops	92.3
Frequent follow-up visits by extension officers	76.9
Identification of past problems and addressing them first through the Participatory Rural Appraisal	73.0
Stable economy	61.5
Members realizing importance of soil conservation as theirs	50.0
Competition among groups to be encouraged	38.4
Motivation through shows, visits and demonstrations	34.6
Provision of working tools and material support needs	25.2
Good leadership and co-ordination of members	7.7
Women support from their husbands	3.8

CONCLUSIONS & RECOMMENDATIONS

1. Soil and water conservation extension should focus on training and education as a way of helping individuals or groups understand their problems better and identify and formulate solutions.
2. Provision of relevant support, particularly tools, should be considered by governments and/or any non-governmental or development support group. This is because with the limited resources of a rural farmer, an important activity like soil and water conservation can be given less priority than it deserves. Soil and water conservation benefits are also not just limited to an individual's farm, but they affect the whole environment and so other beneficiaries should contribute e.g. conservationists, environmentalist or government. If this is openly discussed and clearly understood by all, then the use of incentives in soil and water conservation can be promoted.
3. Good leadership within the groups and community is essential in any community-based activity. The training sessions should therefore consider training in aspects of leadership and management skills, in addition to training on conservation.
4. Community ownership of projects is vital to its success. Methods such as participatory rural appraisal (PRA) should therefore be used to ensure the community is involved right from the beginning. It is also important to define that "community" as the implementing community, e.g. where women are the implementers they should be identified and be trained.
5. Implementation of soil-water conservation through group work rather than individual activities should be encouraged.
6. Conservation activities should be broadened and integrated with other pressing community needs. Observations from this study indicate that the success of the Mwethya groups was not necessarily because they were going for conservation as such, but, they were able to identify solutions for other problems e.g.: they constructed a lot of "Fanya Juu" terraces and cut-off drains as a way of harvesting water and directing it to dams for future use; they also planted trees on the terraces to solve their needs for fuelwood and poles for construction, planted nappier for animal feed, and bananas and fruit trees for food and cash supplements.
7. Project evaluation by technical extension staff with the implementers and owners of the project and follow up visits should be in-build in the extension system.
8. Motivation through competitions and appropriate rewards are important because man is naturally competitive and is propelled by rewards.

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