

# **Incorporating a Landcare Approach into Community Land Management Efforts in Africa**

## *A Case Study of the Mount Kenya Region*

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### **Abstract**

*This paper reviews the aspect of community based natural resource management approaches, the adoption of environmental conservation (soil and water conservation) technologies and extent and use of farmer innovations within the Mount Kenya region. It is based on a case study carried out within the Mount Kenya region comprising four Districts, namely Embu and Meru South In Eastern Province, Nyeri in Central province and Laikipia in the Rift valley of Kenya. The study presents the current status of natural resource management in the region; it explores the various actors in environmental conservation with particular emphasis on soil and water conservation, afforestation and general land care. Further, it examines community prioritization of constraints in environmental conservation and describes remedial efforts made especially through group activities.*

*Keywords:* Collective action, Landcare, Natural resource management, Livelihoods

### **Introduction**

Aspects of the Landcare movement<sup>1</sup> are examined with suggestions of elements that could be integrated into current community land management efforts. In this respect the report compares the level of home-based (indigenous) natural resource management initiatives with the Landcare approach principles, as understood and practiced in other regions such as the Philippines and Australia. It examines the local institutional capacity in natural resource management, the historical evolution in environmental conservation initiatives, giving suggestions and recommendations on specific aspects in Landcare. In addition, the report examines the policy implications for the successful integration of a Landcare type approach within the Mount Kenya region, and the importance of such an eventuality to this region, given its economic importance to the Kenyan nation.

### **THE MOUNT KENYA REGION**

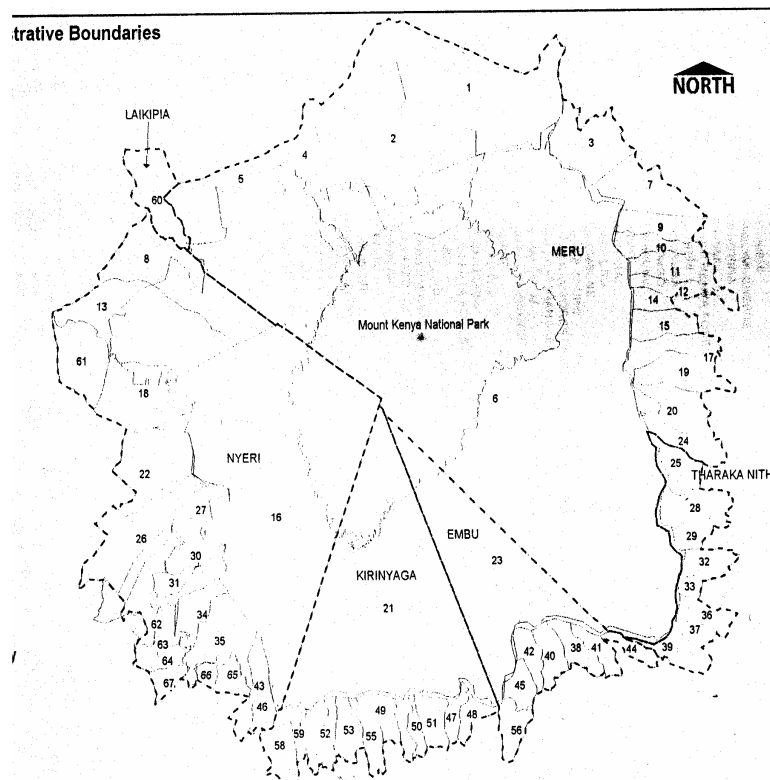
The study of environmental conservation efforts at the farm level hereafter referred to as Landcare, within the Mount Kenya region calls for an understanding of various factors and processes in the region. First, there is need to look at the mountain ecosystem, and its interrelationship with the communities living within this region. Second, an understanding of the historical perspective of human settlement, land use patterns and the socio-economic relevance of Mount Kenya to the communities living within or around it is depicted. Third, a description is presented of processes that have, with time, had a profound effect on the region's ecosystem.

#### *The Ecosystem*

The Mount Kenya region consists of seven districts, namely Nyeri, Embu, Laikipia, Kirinyaga and Meru South, Meru Central and Tharaka Nithi (previously the latter three districts were one, and referred to as Meru before they were split in the mid-1990s. In the study, four of these districts were selected: Nyeri, Embu and Meru South (see fig.1) and were considered representative of the whole region. The Mount Kenya ecosystem is categorized into four broad zones based on vegetation, altitude, land use, and management as shown in Table 1.

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<sup>1</sup> Landcare approach originated from Australia and has spread to other regions such as Philippines see Campbell, 1994 and also Mercado et al. 2001.



**Figure 1:** Districts of Mt Kenya

**Table 1.** Characterization of the Mount Kenya ecosystem

Vegetation / Land use	Agroecology	Altitude (masl)	Area (Ha)	Status	Management
Alpine and nival peaks and moorland	Tropical alpine	>3300	71500	Largely pristine	Kenya Wildlife Service
Montane and sub-alpine forest and bamboo		2500-3300	200871	Generally good quality, patchy degradation	Forest Department (Naro Moru) KWS (Sirimon salients)
Sub-montane forest	Upper Highland	1800-2500		Severely degraded	Forest Department (Nyayo Tea zone)
Mixed small holder agriculture, agroforestry	Lower Highland Upper midland	1200-2400 1220-1800	408300	Human land use, agroforestry practiced	Private and communal land ownership

Source: (Emerton 1996), (Sanyu 1999)

The Mount Kenya region is composed of a forest reserve that covers an area of some 200870.9 Ha, spanning Embu (18398 Ha), Kirinyaga (29215.3 Ha), Meru (53560.6 Ha), Nyeri (60402 Ha) and Tharaka Nithi (39300 Ha). The Forest is one of the largest, most ecologically significant and commercially important natural forest areas in Kenya and is considered among the highest priority forests for national conservation (Wass 1995). The forest has a profound influence on the livelihoods of the communities living within this region. The forest reserve surrounds the 71.5 Km<sup>2</sup> Mount Kenya National Park that contains the second highest mountain in Africa at 5119 M. The three most important and closely linked forest reserves on Mt. Kenya are the Mt. Kenya forest reserve, Imenti and Ngare Ndare forest reserves. The forest presents a rich biological diversity that contains diverse vegetation that includes endemic afro-alpine plant species as well as commercially valuable Juniperous, Ocotea, Olea, Podocarpus and Vitex timber species (Emerton 1996). The forests provide a wide range of fauna including four threatened bird species (Davis 1993). Recent studies (Bussmann 1994) have

found the diversity in flora on Mt. Kenya to be quite high. Some 882 plant species, subspecies and varieties belonging to 479 genera of 146 families were identified.

Mount Kenya forest forms a major water catchments area from which two of the country's five river basins arise, namely the Tana and Ewaso Nyiro, which together supply water to more than a quarter of Kenya's human population and more than half its land area (Wass 1995) including the five main hydroelectric power sources that in aggregate provide nearly three quarters of national electricity requirements. The recent long drought spells (in 2000) served as an important reminder to the populace of the regions' importance to Kenya's economy as the rivers reduced in volume and the dams' hydroelectric generation capacity plummeted.

## HISTORICAL PERSPECTIVE OF THE MOUNT KENYA REGION: AN EXPLORATION OF THE CONSEQUENCES OF POPULATION GROWTH ON LAND USE

There are some significant factors that have over time influenced the ecology of human settlement within the Mt. Kenya region. This in turn has had an impact on land use, and the human perception of environmental risks and utility and the resultant cultural processes of adaptation. In order to understand the ecology of human settlement in the region, an appraisal of settlements within the surrounding districts is necessary.

Historically, the evolution of settlements in the region had already commenced by the first millennium A.D. This involved major ethnic groups of eastern Bantu and southern Cushites. The subsequent interactions between these communities helped in building societies with complex cultures by blending the cultural traits of diverse communities (Kimambo 1980). The spatial movements laid the foundation for the regional distribution of contemporary communities of Meru, Embu, Kikuyu, Tharaka and Ndoro. The communities manifested different types of land use activities characterized by small-scale farming, animal husbandry and logging.

The onset of the colonial era further influenced land use through the introduction of commercial agriculture that involved large scale and small scale farming of coffee, tea, rice and animal husbandry. This was mainly in Nyeri, Laikipia and Timau in Meru District. The onset of the Mau Mau rebellion and the subsequent use of Mount Kenya forest by the Mau Mau in their struggle against white farmers' alienation of native land, and the annexation of land resulted in the establishment of squatter settlements in the region. These squatter settlements are still prominent in some parts of the study areas such as Nyeri, and had far reaching impacts on land use and the clamor for property rights among the communities.

During this period, the colonial government was concerned with the need for soil conservation within the highlands but though noble an objective, the policy involved coercion, whereby the communities were forced to undertake soil and water conservation measures on their farms. This policy had far reaching consequences and for a long time environmental conservation efforts were viewed first and foremost as tools of colonization and dominion of the community by outsiders even after Kenya became an independent state. Other factors that have had an effect over land use include rapid population growth which has increased the pressure and need for migration leading to incursion into the forest reserves, and resettlement in the surrounding marginal areas of Meru, Laikipia and Embu district either through government initiative<sup>2</sup> or the communities' efforts to eke a living given their increasing sedentary nature.

As shown in Table 2 there has been a tremendous increase in population and this population pressure is manifest in such factors as reduced land holdings per farm families, increasing incidences of human-wildlife conflicts and depletion of resources. The rate of population growth varied between districts with Laikipia having a very high growth rate. This probably could be attributed to the evidently larger area still unoccupied but most of these areas are marginal and hence limiting in terms of the carrying capacity. The case of Laikipia is borne out by the fact that the larger the population growth by birth and through migration, the more the tendency of the communities to settle and lead sedentary lives on fragile and marginal lands. This leads to a vicious cycle of environmental degradation with more and more land being demanded to meet an increasing number of households.

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<sup>2</sup> After independence the government initiated settlement schemes with the aim of resettling local communities who had been confined to Native reserves under the colonial rule. These communities were resettled in trust lands and in former European owned farms.

**Table 2:** Population growth rates for the Mount Kenya Region: 1969-1998

District	Area (Km <sup>2</sup> )	% Total Land area	Population in 1969	Population in 1979	Population in 1988	Population in 1998
Meru*	9922	36.6	596506	830179	1214950	1409373
Nyeri	3284	12.2	360845	486417	695901	661156
Laikipia	9723	35.9	66506	134524	229126	322187
Embu	2714	10.0	178912	263173	394820	449149
Kirinyaga	1437	5.3	216988	291431	416140	457105
<b>Total</b>	<b>27080</b>	<b>100.0</b>	<b>1419757</b>	<b>2005724</b>	<b>2950937</b>	<b>3298970</b>

\* Meru: describes the district before the division into 4 separate districts; Embu includes Mbere as well.

From the table above the general trend is that of an ever-increasing population apart from Nyeri district whose population increased until 1988 where a decline ensued. The marginal and newly settled areas in Laikipia, Embu and Nyeri showed improved tree cover and this was attributed to the habit by the newly settled communities of planting trees on their farms. This phenomenon notwithstanding, the increase in population has also meant reduced farm sizes, which therefore makes it imperative for improved farm productivity per area.

## POLICY AND MANAGEMENT REGIMES IN THE MOUNT KENYA REGION

The livelihood systems of the communities within the mountain region are so intertwined with the mountain that it is imperative to study the evolution of the policy and management regimes within the forest reserves in order to get a glimpse of the reasons and rationale behind specific community actions and behavior.

Communities belonging to the Embu, Kikuyu, Meru and Ndorobo tribes mainly inhabited the Mount Kenya region. The tribes not only derived a livelihood from the mountain ecosystem, but it was also an important cultural and ritual site. The mountain was deemed holy and regarded as the dwelling-place of God, referred to as *Mwene Nyaga* or *Ngai*. The management and use of the forest biodiversity was administered through clan-based groups, and settlements lying adjacent to the forest had priority rights over that part of the forest, and within which areas and activities were allocated to different social and user groups according to their needs and opportunities (Emerton 1995a).

The rights to, and use of, the forest was regulated through tribal institutions and norms. Various taboos, shrines and sacred species restricted and predetermined the use and management of certain forest resources and sites within the region. There existed institutional structures among the communities that were the main decision making bodies. They administered and managed the lands and natural resources. For the Meru community, there was the *Njuri Ncheke* council of elders, the *Kiama kia ruru* represented the clan elders in Embu and for the *Gikuyu* there was the clan leader referred to as Muramati and various councils referred to as *Kiama* (M'Imanyara 1992, Were 1986).

The period 1900 to 1930s saw the initiation of commercial forest exploitation, with the coming of the colonialists into Kenya. The East African forest regulation was published and key forests including Mount Kenya were declared Crown land.

The 1930-1980s saw the declaration of Mt. Kenya as a protected area (1932) and formally placed under the control of the Forest Department. Rules and subsidiary legislations were made under provision of the Forest Act of 1942 that permitted local communities to use forest resources without license or fee by virtue of customary rights and practice. The Shamba system<sup>3</sup> was also reinforced within this period.

Increased commercial exploitation of the Mt. Kenya forest continued in the 1980s, coupled with an expanding population within the region and which resulted in severe forest degradation. The resultant government action was to ban and prohibit forest use. The forest management in this period became increasingly restrictive and

<sup>3</sup> The Shamba system is a form of forest plantation establishment system akin to the Taungya system practiced in Burma since the mid 19<sup>th</sup> century in the establishment of teak plantations. The Shamba system involves a form of agroforestry where tree seedlings are intercropped with annual crops until the third year where the crops are phased out.

exclusionary, thus creating tension amongst the communities who questioned, among other issues, the criteria used in awarding logging licenses. The discontinuation of the Shamba system at this point in time further exacerbated the situation. The farm household and the communities at large suffered reduced farm outputs as a result. In this situation, the community could no longer regard the need to conserve the environment as of any importance as the motivation to undertake conservation measures was lacking.

The 1990s experienced a shift in paradigm towards community based forest conservation, with consultation amongst stakeholders, the communities, the forest department and the Kenya Wildlife Service among others. The Shamba system was re-introduced but as non-residential cultivation. Various interest groups and environmental conservation activities have since developed within the region with a view of promoting sustainable utilization of the mountain ecosystem.

The late 1990s and early 2000 saw the emergence of a new issue based on the Government's stated intention to degazette some forestlands and allocate them to the landless people. This issue brought into question conservation *vis a vis* development. Who were to actually benefit from the annexation of forestland? Was there a motivation to conserve and actually improve on the forest ecosystems? These were some of the underlying issues that were brought forth by the degazettment proposal, and which could be a major impediment to sustainable forest management if the communities involved viewed it negatively.

## FRAMEWORK FOR THE ASSESSMENT OF LANDCARE TYPE OF ACTIVITIES WITHIN THE MOUNT KENYA REGION

### *The Need for Incorporating a Landcare Approach into Community Land Management Efforts*

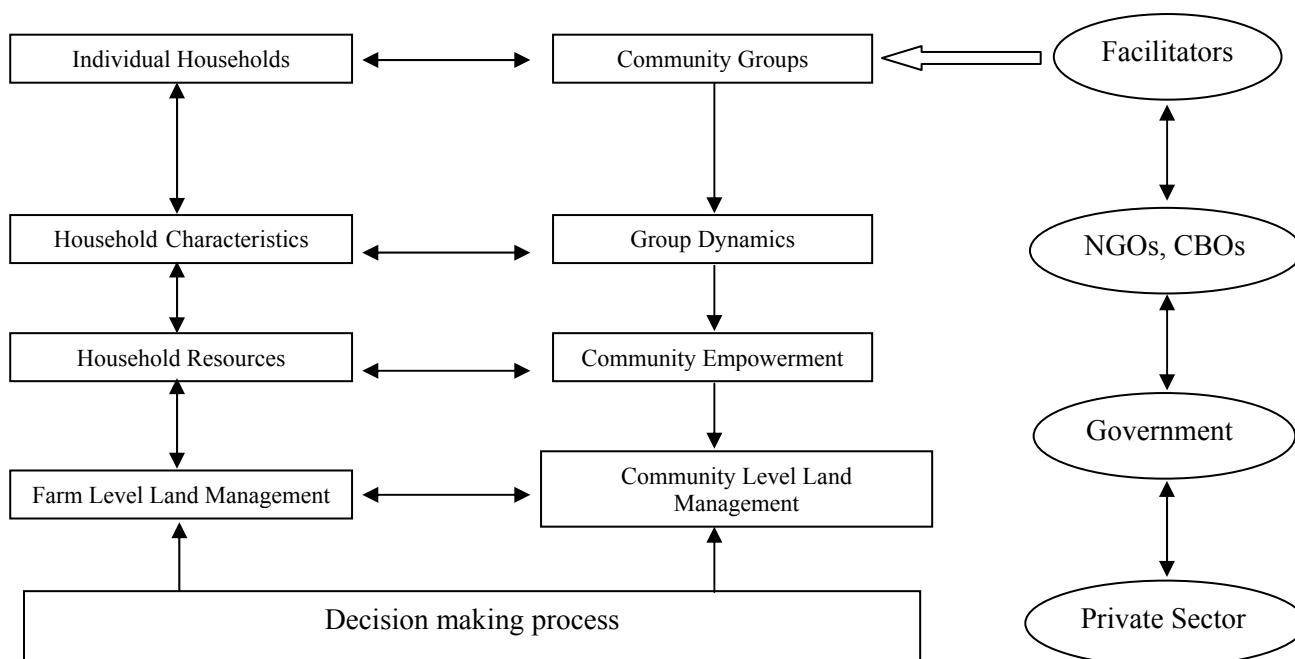
The need for incorporating a Landcare approach is evident in the current situation in the Mount Kenya region. The challenge is for an approach that will not only address various biophysical constraints manifest in the region such as soil erosion, loss of forest biodiversity, and degraded wetlands, but also examine enterprise development choices and skills that affect the communities within the region.

The principles embraced in Landcare such as grassroots institutional structure, a voluntary and demand-driven group formation, and partnership building amongst farmer organizations are imperative for the improvement of the community's livelihoods in the region. In order to inculcate the principles of Landcare within the region, there is a need to determine the extent and level of grassroots institutional innovation in natural resource management, the level of knowledge, the capacity and sustainability of community initiatives. In so doing, intervention measures geared towards strengthening these initiatives and ensuring a sustainable spread effect across the landscape could be initiated and implemented. To achieve the objective of inculcating a Landcare type of approach within the Mt. Kenya region, the following objectives were the guiding factors in the case study:

- Determine the level of home-based natural resource management initiatives and compare with the Landcare approach principles
- Enumerate the number of project-based initiatives in NRM, their constraints and opportunities
- Assess the level of government assistance to communities engaged in NRM
- Assess local capacity in natural resource management and to determine the nature, the means and duration of intervention
- Determine policy implication for a successful integration of Landcare approach in the target areas.

As shown in Figure 2, the decision to carry out appropriate natural resource management measures is an attribute of the individual farm household, the group dynamics and the intervention measures being undertaken by other stakeholders such as the government, NGOs, CBOs and the private sector. In order to establish the grassroots status of institutional innovation in environmental management, there is need to examine the inter-relationships between the various stakeholders. It is also necessary to examine the local level actors as individuals and within groups. Factors such as household resources and group dynamics are reviewed with the aim of establishing any similarity with the Landcare approach as practiced in other countries. The management of resources such as land occurs in different levels, which include the household, group, and community levels,

all of which need to be included in making the Landcare approach operational. The aim herein is to tease out the strong points in traditional land care systems to be incorporated into the Landcare approach.



**Figure 2:** AGILE conceptual framework

The analysis would provide lessons and examples that would inform organizations interested in facilitating the Landcare approach on the best intervention measures possible for the incorporation of the approach into community land management efforts in the Mount Kenya region. It would also inform on the major weak points and strengthen the likelihood of adoption of the approach.

## COMMUNITY PRIORITIZATION OF ENVIRONMENTAL CONSERVATION CONSTRAINTS

### *Individual Farmer Survey*

The study process involved the use of semi-structured questionnaires administered to both individual farmers and farmer groups. The individual farmers in the study area of Embu, Meru South and Laikipia were asked to enumerate the constraints they encountered in the process of on farm land care activities such as soil and water conservation, riverbank protection, fertility improvement and afforestation. The farmers were then asked to prioritize these constraints on the basis of what was most limiting (see Table 4).

The percentage in Table 4 infers to the constraints faced by the farmers and their felt priority within the study sites. From the table small land sizes are a major issue in Embu and Meru South, where slightly less than half of the farmers interviewed considered it a major constraint to their development efforts. In Laikipia, the small land sizes were prevalent in areas suitable for crop production, in terms of rainfall. This was an area closely bordering the mountain. The pressure for land was also evident in areas where irrigation was practiced; in some places the pressure was so high that one household could subsist on an area of 0.5 acres of land. In the three study sites there was a general clamor for land; consequently the land prices were ridiculously high in the open real estate market. Such a scenario presents a situation where any common property land resource is in high demand by individual area members, with the likelihood of degradation occurring. Areas bordering the mountain registered illegal cultivation, hence proving the aforementioned.

**Table 4:** Constraints to environmental conservation articulated by representative farmers (%)

<b>Constraint</b>	<b>Embu</b>	<b>Meru South</b>	<b>Laikipia</b>
Small land sizes	45	35	20
Collapse of societies affecting coffee production	48	50	2
Insufficient water, unreliable rainfall	20	25	65
Lack of knowledge of improved technologies	24	30	46
Lack of germplasm of appropriate fruit and fodder trees	14	34	52
Soil fertility	34	32	34
Farm Inputs	38	28	34
Poor farm incomes and no markets	30	28	42
No credit facilities	44	38	18

The collapse of co-operative societies especially those involved in the production and marketing of coffee and dairy products was considered an issue of the highest priority amongst farmers in both Embu and Meru. In Laikipia there was a greater concern for the performance of their dairy and horticultural societies and groupings. The collapse of these societies heralded a grim period in the livelihood of the farmers whose main earnings depended on marketing their produce through these societies. The effect was the perpetuation of poverty within the area, which, according to the farmers, reduced their capacity to improve production. It also made it difficult for them to engage in labor-intensive Landcare operations such as the creation and maintenance of terraces, cut off drains and other erosion preventive measures.

The consequence of this problem was quite evident in landscapes under cash crops such as coffee, which were left in a state of neglect (see Plate1). The farms that were neglected in turn produced low quality coffee, and hence fetched poorer prices. This scenario set a vicious cycle of poverty and degradation where in order to get money to pay for basic necessities; the farmers have resorted to selling of farm capital such as trees and livestock. The hardest hit by this phenomenon has been common property resources such as forest biodiversity.

The unreliable rainfall and consequent insufficient water for agriculture is experienced in all the three study sites in different areas periodically and the farmers expressed the need to have technologies for water harvesting and also crop varieties that are drought tolerant/escaping. This was especially so in the dryer areas of Laikipia district (see case box 4) and where the farmers were able through groups to adopt water conservation and harvesting technologies. The extraction of water from the main rivers in Laikipia and Embu has also become a controversial subject especially in the drier months when the upstream farmers have been accused of over-extraction of water to the disadvantage of farmers located downstream. A general assessment of the type of irrigation in practice indicated that the irrigation method in use was mainly furrow irrigation, which was very wasteful and more so when the canals were not maintained as was observed in irrigation schemes visited.

### *Farmer Group Survey*

The Landcare approach would be best placed to address problems inferred to by the individual farmers in as far as grassroots institutional structure, group formation and partnership building amongst farmer organizations is concerned. This would provide a platform for addressing area specific issues through collective efforts. The introduction of a Landcare approach would first involve a study of the systems currently in place. A further examination would then take place of groups, their dynamics and the constraints encountered by these groups in their efforts in attaining set goals and objectives.

Table 5 illustrates the various constraints that farmer groups felt were an impediment to attaining their objectives. As indicated in the table, among the problems that groups face in the study areas are those that are common to the three areas and these include the following:

- The need for dissemination and training in new knowledge and skills other than dependence on creating awareness only, without supportive activities that would ensure the adoption of technologies at the farm level. A Landcare approach would best be adopted if it aimed to fill this gap through information sharing and networking amongst the farmers, researchers, extension staff, Church organizations, other NGOs and the private sector.

- There was also concern amongst the groups on how best to create awareness and involve the rest of the local community in their conservation efforts. This issue was also related to the need to scale-up their group activities and involve more members of the community. Some of the groups initiated some unique methods (discussed under specific case study examples).
- There was a general request for soil conservation and tree nursery propagation tools, which stressed the need for addressing capital needs and evaluating possibilities of availing credit.
- The need for availing appropriate germplasm and addressing the issue of markets was stressed both by the farmer groups and also by individual farmers. The question herein would be to what extent would the principles of the Landcare movement provide a forum for addressing such issues. The availability of market information for the farmer groups, information on sources and costs of germplasm demanded at the farm level, if provided through the Landcare system, could serve to entrench the approach as a useful tool in sustainable development.
- Motivation among group members was often dependent on the priorities of the groups at inception, and how these priorities changed with time. Leadership was also a major factor in the development of the groups. Where there lacked a general consensus on how to elect leaders, the resultant wrangles created such disharmony within the groups that they disintegrated. The need for training on group dynamics and management skills among group leaders was therefore clearly evident. This is an area that facilitators in Landcare could seize in order to improve on the groups' performance.
- The marketing of farm products was considered by the groups to be a weak aspect of the groups' development. An assessment of the situation showed that there was a big need for the diversification of products for the market and also the use of packaging and quality control to enhance their value.

**Table 5:** Constraints experienced in conducting group activities in the study sites\* (rank 1-10, one being the highest score)

Constraints	Embu	Meru South	Laikipia
Lack of motivation among group members	6	5	
Leadership wrangles	5		
Members reluctant to adopt new and unproven ventures (too risky)	7	7	6
Getting new knowledge/skills and creating awareness	3	4	1
How to involve the local community	3	5	2
Provision of high quality germplasm		2	3
Markets for their products	1	1	5
Capital to purchase tools (i.e. tools for soil conservation, grafting, etc)	2	3	4
Unable to expand group activities and operations	4	1	

\* The figures in the table represent a ranking of constraints amongst interviewed farmer group members. The constraints that were mentioned by most farmers was ranked first and given number 1, while that with least respondents was ranked lowest.

The constraints illustrated in this chapter have resulted in a considerable number of the groups being inactive while others have had a very short lifespan. During the study, it became evident that the communities in the study area considered group activity very important in their daily endeavors. The development and improvement of the groups in terms of their capacity to attain set goals and their sustainability was considered to be of high priority among group members that were interviewed. In this regard, some of the groups were even able, through their meager resources, to send some of their leaders for training on courses they perceived pertinent to their interests (see Plate 2 which shows group members displaying certificates of group sponsored courses attended).

## LOCAL INITIATIVES IN CONSERVATION

The examination of the nature and purpose of groups involved in community development their dynamics and prioritization of environmental conservation issues is necessary and important, since through such an exercise,



opportunities are discerned and applied and handicaps are identified and avoided. This exercise will hopefully inform the Landcare approach development process relevant to the Mt. Kenya region.

### *Typology of Groups Interviewed within the Mount Kenya Region*

An examination of the registers in the department of social services in the study areas revealed a variety of groups registered. The registers showed a large number of groups involved in various socio-economic activities within the study area. These groups could be classified in various ways, but for the purpose of this study, they are classified as follows:

1. Composition of group members: For example based on age are youth groups, or that based on gender could be women's groups.
2. Classification of groups based on type of enterprises they are involved in: examples of this grouping include self-help groups; jua kali groups; user groups and environmental conservation groups.
3. Classification based on group's location and extent of spread, for example specific area based groups as opposed to groups that have larger representation over a wide area.
4. Classification of groups based on the main activities undertaken by the group. This includes beekeepers, herbalists, soil and water conservation groups, goat keepers etc.

Though a large number of groups nominally exist within the study areas many among them were either dormant or non-existent. On enquiry it became apparent that though the rate of group formation was high, the rate of group disintegration was equally high. Some groups were formed for a particular short-term purpose and on achieving their objectives they wound up. Other groups were formed and after a short time they disintegrated due to various constraints.

During the case study the groups surveyed were divided into three clusters(see tables 6, 7 and 8). There were those groups that were involved in a variety of activities, which included conservation initiatives, while the second cluster had environmental conservation as their primary objective. The third cluster consisted of user groups, which were groups heavily dependent on the region's natural resources.

**Table 6:** Cluster of groups involved in various activities, self help groups inclusive

Group Name	Location			Group Activities	Partnerships
	District	Division	Location		
Kiawanja	Embu	Nembure	Gaturi	Agroforestry Organic farming Fish Farming Beekeeping Home economics	Kenya Institute of Organic Farming (KIOF) trained some of the members. Funds for the training was from group
Mungano Welfare association	Meru south			Built, stores and shops at the local market center, Beekeeping, Dairy Goats Agroforestry	1. Trained in agroforestry through ICRAF and Ministry of Agriculture. 2. Assisted by Farm Africa (NGO) to purchase and keep dairy goats
Embu East Horticultural association	Embu	Kyeni, Runyenjes & Central		Agroforestry Fruit/vegetable processing Soil and water conservation	Trained through GTZ & Ministry of Agriculture
Mutirithia	Laikipia	Central	Matanya	Tree nursery and silkworm production	Received information through the Ministry of Agriculture
Meru-Fruit growers	Meru			Fruit production and marketing Environmental Conservation	None

**Table 7:** Cluster of groups involved primarily in environmental conservation activities

Group Name	Location			Group Activities	Partnerships
	District	Division	Location		
Nyageri catchment project	Embu	Nembure		Soil conservation measures, growing of traditional crops	Collaborated with KARI on traditional crops production and received assistance from Ministry of Agriculture at initial stages
Shuma Horticultural group	Laikipia	Central		Earth pan digging, and irrigated horticulture	None
Muconoki dairy farmers	Embu	Kyeni		Tree nurseries, agroforestry and dairy	None
Nyarigino Self-Help group	Laikipia,	Central	Nyarigino	Water Pan Construction Beekeeping Organic farming Sunflower farming	KIOF, in terms of information, Semi arid project (Dutch) gave materials on a cost sharing Basis
Nyarigino Biogas project group	Laikipia	Central	Nyarigino	Zero grazing dairy cows Biogas units construction	Technical assistance through Agriculture Ministry

**Table 8:** Cluster of groups (user groups) who derive benefits directly from Mount Kenya Forest reserve

Group Name	Location			Group Activities	Partnerships
	District	Division	Location		
Meru herbalist group	Meru South			Tree nursery, herbal medicine	Technical advice from forest department
Buvori bee keepers association	Embu	Manyatta		Fish ponds, bee keeping	Kenya Wildlife Service (KWS)

### *Characteristics of Groups Interviewed*

The groups illustrated in Tables 6, 7 and 8 represent many of the groups interviewed in the study. Other than the activities illustrated in the tables, the groups interviewed were also evaluated in terms of the following characteristics: what prompted the group formation, election of group leaders and registration of the group with the social services department, group constitution or existence of group by-laws, and group ownership of property. At least 15 groups per study site were interviewed hence a combined total of 45 groups in the entire area.

**Table 9:** Aetiology of groups and their performance

Characteristic	Own Initiative		External Initiative	
	Solve problem	Development	Solve problem	Development
Reason for group formation				
% Of groups surveyed	40	15	15	30
% Indicated as performing*	23	4	13	18

\* This was an indication of whether others had heard of the group, and if so if the groups continue to carry out activities.

Though not conclusive, the sample of groups interviewed in the case study gave an indication of their nature and dynamics, through an evaluation of various group characteristics. As illustrated in Table 9, sample groups were evaluated in terms of what stimulated their formation and whether the groups were still in business by the

time of the survey. This mode of survey was meant to give an indication of the impression the members of the community had of specific groups and their activities. It was not aimed at gauging the groups' performance *per se* since this would have involved a more in depth study, as more parameters are needed as expounded in Mushi (2000); Hambly (2000) and Haan (1999).

The groups were broadly divided into two categories, those that were formed through the members' initiative and those that were formed as a result of external stimuli such as sensitization on particular issues, or infusion of aid for a particular purpose. The two broad groups were also further divided into two sub-categories. These were groups initiated for the purpose of addressing particular problems that afflicted the members, and on the other hand groups formed for the purpose of addressing general development issues. The category of groups formed through external initiative was likewise divided into two sub-categories on the basis of the nature of the members' priorities.

In Table 9, the groups that were initiated by the members to solving specific problems indicated a higher than 50 percent of the groups surveyed in this category. This was phenomena was due to the fact that the members prioritized the group activities highly and were thus able to invest more of their resources to group activities. The limiting factor in this sub-category was the resource endowment of individual members. Groups formed through own initiative but for the general development purposes among the members were not construed to perform well because it more often relied on members' resource surplus, which was almost non-existent. The groups that were formed through external initiative but worked towards meeting the immediate needs of the members performed quite well and the few incidences of non-performance were attributed to either the cessation of assistance where members' contribution were not significant enough to enable successful group activities. The groups initiated externally to address development issues in the community performed averagely well and this depended more on particular group approach used and dynamics of the groups.

Most of the user groups were registered with the Social Services Department. This was as a result of the requirement by government ministries for the groups to be registered, if they were to be recognized and assisted. As such most of this groups in this cluster were registered and also possessed a constitution or by-laws. Likewise, most groups belonging to the self-help cluster were registered and this was mainly because most were income generation oriented and as such they needed to have bank accounts and officially recognized as a group. Slightly fewer than 50 percent of the groups in the environmental activities cluster were registered. Of the registered environmental groups 75 percent were active groups. This therefore gave an indication that for this cluster, groups that were registered and had a constitution were more committed to group aspirations and hence inclined towards good group performance. Though the majority of the user group cluster was registered, few held regular election of their leaders. The environment group cluster and the self-help groups that elected their leaders regularly also were very active as seen in the table. This was likely due to the fact that groups that were active and productive were also attractive to potential leaders. It may also be that good leadership provided a better environment for group performance.

## NATURE OF INTERVENTIONS AND INVOLVEMENT IN ENVIRONMENTAL CONSERVATION IN THE MOUNT KENYA REGION

Within the region there are various activities of government, and quasi-government (such as the Horticultural Crops Development Authority (HCDA); ministries of natural resources, The Kenya Wildlife Services (KWS), research institutes such as Kenya Agricultural Research Institute KARI, International Centre for Research in Agroforestry ICRAF, International Centre for Insect Physiology and Ecology ICIPE, the local government, and NGOs and CBOs operating within the region. The aim of this activity was to deduce the level of interaction and the level of influence they wielded in the development and growth of group activities. The following observations were made on the issue of communication of innovation across groups, networks and attempts by NGOs, government and other institutions to foster innovation diffusion:

- In some cases farmer groups that had undergone training such as fodder propagation by ICRAF readily adopted dairy goats production that was advocated by another organization, Farm Africa (see Box 1). Hence, information availed to the groups earlier created conditions that were conducive to adoption of particular technology.

- Some of the groups that were formed in the catchments approach project of the Ministry of Agriculture under SIDA sponsorship later moved on with their activities and involved not only the Ministry but also other organizations (see Box 2). The level of interaction between the organizations was not conclusively determined, but the indications were that it was minimal.
- There was good co-operation between the user groups such as the herbalists and the forest department (See Box 3).

**Box 1.** Self-help groups: Mungano Welfare Association, Meru South

The Mungano Welfare Association is a self-help group that has 19 members, 10 of whom are women. The group was formed 10 years ago, and was aimed at income generating activities such as beekeeping. The group later used some of the proceeds generated from these activities plus members contributions to venture into real estate. They bought a piece of land at the local market and built shops that they rented out. Other than the aforementioned activities, the group was also involved in agroforestry, where they kept a nursery of multipurpose trees that included fruit trees and fodder trees, which they sold, to individual members and the community at large. They were trained in agroforestry through ICRAF and as such when Farm Africa and other development NGOs announced their intention to assist farmer groups to develop a dairy goat enterprise, the group readily embraced this development. This was in spite of the fact that they had small land units but developed the requisite fodder banks to feed the dairy goats. Mungano Welfare Group was given five goats: one billy and four ewes. These were looked after collectively and any time the ewes gave birth to females, these were distributed to individual members. The milk was consumed in the members' homes and the surplus sold locally.

**Box 2.** Environmental conservation groups: Kinyuru Group, Meru South

The Kinyuru group was the offshoot of the Ndaithu catchment committee that was involved in soil and water conservation under the catchment approach of the Ministry of Agriculture. Though currently material assistance from the Ministry was not forthcoming the group has continued with conservation activities and also diversified into some income generating activities such as merry-go rounds, buying grain during glut periods and selling in times of a short fall, and keeping a fruit and tree nursery.

**Box 3.** User groups: Meru herbalists

The Meru herbalists did not rely on forest materials 100 percent but were engaged in propagating supplements on-farm. They displayed a wealth of knowledge in the conservation and propagation of various tree species. They evidently were instrumental in influencing other community members of the need for environmental conservation. The herbalist groups were joined through an association that transcended all the districts of the larger Meru.

#### **Box 4.** The Embu county council environmental committee

The committee working through Local Authority Transfer Funds (LATIF) and using the Local Authority Service Delivery Action Plan (LASDAP) have since the year 2000 engaged in community-based participatory approaches in environmental conservation as opposed to previous initiatives that were leadership based (i.e. councilors came up with project proposals for their communities at ward level). In the new approach, meetings are initiated at ward level where stakeholders are involved in prioritizing development action plans, and which are thereafter sent to the council (district level) for deliberation and disbursement of the funds. In the new dispensation, the council provides the capital needed for the projects while the communities' contribution is in terms of unskilled labor and in some cases such as construction of springs and wells, the communities also are expected to provide locally available building materials e.g., hardcore or ballast.

Currently, Mr. A.G. Kiogoro, who is the technical officer in charge of environment at the council, noted that there were various activities that were earmarked for implementation by the communities. These environmental conservation activities that were within the Embu County Council mandate areas included the following:

- Enhancement of tree planting activities within council markets. This was done in collaboration with the Ministry of Environment and Natural Resources, where tree seedlings were produced in their nurseries. The council also owns one nursery at the district headquarters and is able to sell tree seedlings and ornamentals to the locals at market prices.
- The construction and rehabilitation of some rundown springs and wells, with the local community committees expected to take over their management. Members of the local committee included the local councilor, the administrative officer and the public health officer as ex-official members.
- In this project, various activities were undertaken through the local committees such as tree and grass planting within the well. This project involved construction and/or rehabilitation of 20 wells and 20 springs, which meant that there were to be two of each in every ward.

There was a network made up of farmer groups that were involved in horticulture and in particular fruit trees. These farmers had been trained in the Farmer Trainer Extension approach (see Box 5). The opportunity herein is to take advantage of the networking created through this system where farmer groups joined into area specific units and formed an association in the region comprising of representatives of the units. This phenomenon was both witnessed in Embu (Embu East Horticultural farmers) and in Meru (Meru Horticultural Farmers Association)

## **Discussion**

### **EMERGING ISSUES IN THE INTEGRATION OF A LANDCARE APPROACH IN THE MT. KENYA REGION**

Landcare is viewed as a movement led by the grassroots to foster improved livelihoods and environmental management, and spreads through social energies of individuals, communities and supporters. It is considered as a basis for autonomous farmer-led organizations concerned with the long-term health of the land (Garrity et al, 2001). The following issues were deemed important to the integration of the Landcare approach in the Mount Kenya region:

- The study confronted a complex situation in conservation farming within the Mount Kenya region. There were good examples in conservation, and also areas that needed urgent attention. The general observation was that poverty was a major factor in environmental degradation. The fall of market prices for cash crops such as coffee, traditionally the main source of income in the region, made matters worse. Farms earlier fully conserved were abandoned and the need to indulge in soil conservation activities had to assume secondary importance.

- The issues related to improved technology transfer and adoptions are numerous as ably articulated in literature (Fujisaka 1991, Hudson 1991, Magnalinao 1996). As such attaching reasons for the adoption or non-adoption of soil conservation within the study areas is a complex situation given cases where adjacent farms were managed very differently (see Plate 7). This situation ultimately led to the question of what factors promote the adoption of soil and water conservation within the study area.
- In the study it was evident that the communities valued group activities and many individuals joined groups for various reasons. Group activities were used to fulfill various aspirations be they economic or social. In this situation, groups would be assets when considering Landcare activities within the region. The typology of the groups presented had the following characteristics that attest to the opportunity that groups bring to the Landcare approach in the region:
- Farmer group activities that were supported by some NGOs or church organizations in terms of training and capital investment. The importance of some of the groups is that the interventions sponsored by the NGO was development related i.e. groups that kept dairy goats in Chuka (Meru south), but through their own initiatives they were able to develop fodder nurseries for their members as well as having joint Landcare activities such as terracing since it was labor intensive. The questions as to why indulge in soil conservation and afforestation activities were answered by the farmers as the need to conserve and improve their smallholdings as well as diversify productivity. Asked as to what they felt they needed most, they answered that they needed seedlings of high quality fodder, fruits and some medicinal trees that they used to have but have long since disappeared from their area.
- The second group was unique in two districts, mainly Laikipia and Embu, where the local authorities have been involved in conservation activities, whereby farmer groups have gotten together with sub locations and asked for funds based on various proposed activities. These activities have involved water catchments, drainage of flooding areas and also development of small-scale tree nurseries.
- The third has been Landcare activities sponsored by the Ministry of Agriculture. The interest here is the fact that most of the activities were initiated some time back (since the mid 1980s up to the mid-1990s) but then funding ceased. My main interest here is the farmer groups that persisted with group activities and especially conservation activities. Most of them have utilized the knowledge they acquired to develop good small-scale commercial nurseries. Others charge fellow farmers for activities such as tree fruit grafting (usually Ksh 15 per tree: a farmer can graft/ topwork up to 30 fruit trees in one day). This category of group was spread almost evenly in the four districts and could be a good starting point in the development of Landcare. In line with this suggestion, a description of the soil conservation catchment approach as practiced by the Ministry of Agriculture with funding from Sweden is documented and strong points for Landcare approach highlighted.
- The fourth set of groups was the most intriguing: these were farmer groups involved in Landcare activities without any sort of intervention from NGOs, government or other external agencies. When I asked for reasons why they formed the groups and undertook the activities, several things became evident. First, some groups were formed as a response to a particular problem within the community. In this regard I was able to visit groups formed in order to develop water catchments and provide the water to households. I also visited a group that was able to develop a water pan (shallow dam) that provided them with water for human and livestock consumption. The Government at 11 million Kenya shillings cost this dam. When the group approached the officials there was no money available. The group opted to construct the dam using manual labor and locally available materials and the total cash required amounted to only Ksh150 000. The group members donated this amount. The dam has been in existence for the last two years without any evidence of siltation. The membership in this group consisted of 45 farmers. Secondly, some groups were formed through felt needs but with the championing of some individuals who had prior training in soil conservation through KARI and ICRAF. Still other groups evolved from small enterprises and moneymaking groups (merry grounds) into larger groups that included Landcare activities. Some of the activities included tree nurseries. Some groups in Embu had got a trainer to train them at a cost on tree propagation techniques and had a big nursery, where they propagated various types of trees. Interestingly enough, these trees were not for sale but for the members' own use. On enquiring why, the response was that availability of the desired germplasm was not easy and they quickly told me that excluding transport, the cost of

say a mango seedling is Ksh 120 while from their nursery they collect mango seeds for free in the market-place, and on planting are able to graft with a scion from a high quality fruit costing Ksh 5 so they are able to cut the cost all the way from Ksh 120 to around Ksh 20 for one seedling. The fourth motive for spontaneous group formation were collective marketing strategies. Among these groups, organic farming was their main activity and this centered their activities on Landcare. Most of these groups are located in Laikipia and Embu. The final reason for group formation came from a group of herbalists who were mainly concerned with the maintenance and propagation of indigenous trees, shrubs and herbs. They were able to point out some tree species which were in danger of being wiped out: incidentally some of these species are currently found in areas which are undisturbed by environmental unfriendly human activities.

## POLICY IMPLICATIONS FOR THE SUCCESS OF A LANDCARE APPROACH

From the case study, it is also evident that in order for Landcare technologies to be readily adopted, there was need to have what I could term as carrier technologies which need not necessarily be conservation related but which would address pertinent issues or constraints considered to be of high priority. An example of this would be fruit production technologies geared towards income generation and which blend well with nursery production and ultimate soil and water conservation. Farmers who were involved in rainwater harvesting readily accepted soil and water conservation technologies. The farmers who were keeping dairy animals under zero-grazing conditions were very eager to acquire fodder and practice soil conservation and fertility improvement.

There is a very big potential in the mobilization of communities for Landcare activities within the Mt. Kenya area and in Africa in general. What is needed is an identification of technology packages that would be region-specific, define and involve collaborators and initiate networking for information exchange. The importance of the Mt. Kenya region first to the nation and also to the international community, it being a World Heritage Site, calls for concerted efforts in conservation. There is need for policies by government that encourage sustainable initiatives for the community within the region. There is also need for a clear land use policy that integrates and complements the forest policy.

Perverse policies need to be evaluated in terms of the resultant landscape. An example is the increase of kerosene prices, which results in the shift towards an increase in the use of wood fuel such as charcoal. It is also necessary to involve all stakeholders in conservation within the region, since the off site costs from soil erosion and eventual sedimentation will become more and more severe and very significant and eventually affect the viability of public investments such as dams for electricity generation. It will therefore be prudent in this case to involve such corporations as Kengen and Kenya Power and Lighting so that they will allocate funds as incentives to conservation for the farmers in this region. But for this, a framework is needed for the accountability and proper utilization of these funds. The Landcare approach provides a good opportunity for such an eventuality.

Policy gaps and mismatches also play a significant role in environmental degradation. In the Mt. Kenya region, charcoal making was practiced widely amongst the farming community. The study revealed that the charcoal making was mostly done to generate quick cash to solve pressing and urgent needs such as paying for school fees in times when other farm incomes are insufficient. The issue of charcoal making is complex within the region in that making and transporting of charcoal is considered illegal whereas use of the same is sanctioned. This situation has given rise to exploitation of producers through poor prices from transporters and large-scale merchants. The technology in use for the charcoal recovery is poor and only managing twenty per cent recovery and is thus wasteful (see plate 8).

In such a scenario it would be prudent to legalize charcoal production under various conditions, the most important being that the production system should be environmentally friendly, hence the technology for the production of the charcoal should be efficient. Farmers should therefore be encouraged to grow tree species suitable for charcoal making, and the policy environment should be conducive for the communities to partake in benefit sharing of common resource pools in the region.

The Landcare movement in this respect would serve to accelerate the implementation of community initiatives that are environmentally friendly. This would be done through prioritizing community needs, providing dialogue and building trust between the community, government, non-governmental organizations and the private sector.

Another policy issue that needs to be invoked is the granting of land rights (tenure) to farmers close to the forest reserves that should be subject to the recipient farmers' adopting prescribed Landcare practices and measures. The issues of subsidies and incentives to effect wider participation and adoption of conservation technologies should also be explored.

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