

## CAPRI WORKING PAPER NO. 25

### ASSESSING THE FACTORS UNDERLYING DIFFERENCES IN GROUP PERFORMANCE: METHODOLOGICAL ISSUES AND EMPIRICAL FINDINGS FROM THE HIGHLANDS OF CENTRAL KENYA

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**OCTOBER 2002**

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## **ABSTRACT**

This paper examines the performance of rural groups in Kenya and addresses the methodological issues and challenges faced in doing this, and presents the empirical evidence regarding various hypothesized explanatory factors for relative performance levels. Eighty-seven groups and 442 households were surveyed using several approaches. Various performance measures were tested. Both descriptive analysis and regression models were used to gain a better understanding of the group-level and household-level factors that explain performance.

Collective action is desired and practiced for a large number of tasks. The findings highlight the incredible number, diversity and dynamic nature of groups in the highlands of Kenya (and we suspect this finding is not terribly unique to this region). Assessing and comparing performance across a range of group activities is wrought with difficulties related to measurement and standardization. Focusing on groups undertaking similar activities makes it easier to delve more deeply into performance drivers.

The empirical analysis focused on the effect of group structural variables (e.g. its size) on performance. We found that choice of performance measure and level at which it is measured (e.g. household, group) matters when it comes to trying to explain the variability in that measure. An analysis across different types of groups engaged in exactly the same activity (tree nurseries) found that predicted group performance was not linked to any easy-to-measure group characteristic, implying that for this task dissemination need not be targeted towards particular types of groups. Looking more broadly at a range of activities, we found that structural factors had varied results.

**KEYWORDS:** collective action, natural resource management, technology adoption, institutions, Kenya, calliandra

# **Assessing the Factors Underlying Differences in Group Performance: Methodological Issues and Empirical Findings from the Highlands of Central Kenya<sup>1</sup>**

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## **1. INTRODUCTION**

Collective action is widely recognized as a positive force for rural development in Africa. Groups enable individuals to empower themselves and to increase benefits from market transactions. Getting together with others also can allow individuals to better cope with risk, particularly when neither the private sector nor the government provides any ‘safety nets’ or insurance against risk. Literature that has documented the large number of local groups across Africa attests to their popularity among rural populations. It is hardly possible to find a development organization, research organization or governmental program that does not attempt to work with community-based organizations in pursuance of rural development goals. But are groups uniform in their effectiveness and performance across different types of activities? Who benefits from group activities and which ones? Are there certain structural factors or characteristics of

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<sup>1</sup> Paper presented at the CAPRI workshop on Methodologies for Studying Collective Action, Nyeri, Kenya, 25 Feb-1 Mar, 2002. The authors wish to thank Brent Swallow, Steve Franzel, Rossalyn Gichimo, Charles Wambugu, Festus Murithi, and Charles Lyamchai for their technical inputs and logistical support for the study. We also thank the many field collaborators in Central Kenya who provided extremely thoughtful insights about collective action. Lastly, we thank the participants at the CAPRI workshop and the reviewers Amy Poteete and Ruth Meinzen-Dick for their helpful suggestions.

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groups that contribute to or inhibit effective performance? How should group performance be measured? Given the keen competition for household and project resources, providing evidence on these and related questions can help in strengthening groups and in finding better ways for external organizations to support and collaborate with them. The study of how rural collective action performs is growing but still relatively small. Thus, there are significant methodological hurdles as well as empirical gaps to overcome.

This paper aims to contribute to both the methodological and empirical gaps in the literature related to the performance of groups. First, some of the key concepts in measuring and assessing group performance and some findings from the literature are discussed. These lead to the development of our guiding hypotheses. We then present our approach to investigating group performance in the central highlands of Kenya, and some of the issues and challenges encountered in surveys that covered 87 groups and 442 households in all. The analytical methods used to assess performance of groups and to analyze the factors affecting group performance are described and the results presented and discussed. The main lessons for research methods and for clients of empirical information are summarized in the concluding section.

## 1.1 ISSUES AND CHALLENGES RELATING TO MEASUREMENT OF GROUP PERFORMANCE

There are a number of ways to assess performance of groups. Measuring the outputs or direct benefits is arguably the most important step, for these are what directly influence the welfare of group members. In central Kenya, common types of direct

benefits include cash or credit from merry-go-rounds or risk-coping groups, improved livestock breeds, animal fodder, household goods, knowledge, and spiritual uplifting. Some of these can be difficult to quantify, so proxy measures may need to be identified to reflect such benefits. How well groups are functioning will definitely affect their ability to generate benefits, and measurable factors reflecting this include contributions by members, violations of rules, major conflicts, enactment of formal rules, and decision-making procedures. Our surveys attempted to capture both direct benefits as well as an assessment of factors influencing how well groups function.

The manner in which the performance variables are assessed matters. Three major types of methods are respondent assessment/appraisal, direct measurement, and enumerator assessment. The first is the one typically used in socio-economic surveys. It has the advantage of being able to obtain measures that reflect the valuation of the beneficiary. It also allows for assessments to be made for a wide range of performance indicators. Direct measurement is useful for some aspects of performance, especially where quantification is sought and the benefit is both durable and visible, for example, new livestock breeds or seedlings produced. Enumerator assessment, on the other hand, is most relevant when attempting to assess the *quality* of tangible outputs (e.g. nursery quality, watershed quality). The advantage of enumerator assessment is that he/she may have specific skills in assessing quality not shared by all respondents, and the method can be standardized so that the resulting values can be compared across respondents.

A final aspect that needs to be taken into account when assessing performance concerns the unit of observation. Measures can be enumerated at the group level, using as respondents several group members assembled at the same time. This has advantages

of allowing for discussion and in probing variations in detail. There are potential disadvantages of the group discussion approach as well. First, it may be more difficult to quantify contributions and benefits at this level, unless these are equally shared among all members. Secondly, some responses may not be quite candid if group leaders are present. Thus, another important approach is to measure performance variables at the individual member level. The advantages are basically the disadvantages of the group-level approach, i.e. it now becomes possible to capture differing individual benefit levels, and candid responses are more likely. A disadvantage of this level lies in the potential biases that arise with the selection of non-representative members. Whether such selection biases have actually occurred is often very difficult to assess.

In summary, assessing the performance of groups is made difficult by any of the following factors:

1. Certain types of outputs simply cannot be quantified or even be assessed to the point of comparison or ranking (e.g. where goal is spiritual uplifting).
2. Outputs stated by a group may not be recognized by or accrue to certain individual members of the group.
3. Some types of contributions by the group or members are difficult to quantify or aggregate.
4. The timing of contributions may not match the timing of the benefits making it difficult to assess the net return or efficiency of performance of group activities.
5. In addition to activity-specific tasks or contributions, how are other group obligations to be assessed to evaluate efficiency -- are meetings considered to be transactions costs or do people derive utility from them?
6. Different groups operate on different scales. Is a group that operates on a larger scale a better performer than one that operates on a smaller scale?
7. Can subjective assessments of success of activities be compared across groups and activities?

8. Potential indirect indicators of group performance that are easier to measure (e.g. longevity of group, increases in group size, adherence to rules) may not be theoretically sound.

## 1.2 LESSONS FROM THE LITERATURE

The literature on collective action, and increasingly on social capital, is large. A surprisingly small segment of it covers empirical studies in the developing world, perhaps because this research is so challenging. What we have attempted to do is to pull out empirical studies that have looked specifically at performance relating to village-based rural groups.

Performance, of course, can be measured in many ways. Benefits from groups are diverse and are realized at the individual / household level, the group level, and even supra-group level, e.g. a community. Thus, performance may be measured in many ways and analytical approaches to understanding patterns of performance are equally varied.

Beginning with household-based studies, Narayan and Pritchett (1997) found that investments in social capital (defined as frequency of group membership and characteristics of groups) have a much larger effect (5-8 times) on household incomes than investments in human capital such as education in rural Tanzania. They also conclude that group performance was positively influenced by communities' past ability to organize cooperatively. A number of studies have tried to examine how membership in a group may affect individual or household welfare indicators. The World Bank Local Level Institutions (LLI) studies from Bolivia, Burkina Faso, and Indonesia is perhaps the best known of these (Grootaert, 2001). In that study, the authors try to isolate and quantify the effect of different forms of social capital on asset accumulation and

expenditure. In particular, they examined the effect of heterogeneity of the groups to which individuals belonged, the number of groups, and active participation in decision-making. They find that social capital does contribute to welfare, especially among the poor, and that among social capital dimensions, heterogeneity of group has a particularly positive impact. Similar positive relationships between income and group membership are reported in Haddad and Maluccio in rural South Africa (2002), Mushi (2000) for rural Tanzania and La Ferrara (2002) for women in the slums of Nairobi.

Studies that have examined performance at the group level have often targeted specific types of groups in assessing performance. One type of activity that lends itself to quantification is micro-finance. Sharma and Zeller (1997) analyzed the factors related to loan defaults by groups in Bangladesh. Default rates increased with higher loan amounts, a greater proportion of males in the group, and with lower reliance on farming by group members, among others. Group size *per se* was not important. De Haan (1999) and de Haan et al (1996) examined the performance of dairy goat groups in Kenya. Among the indicators studied were birth rates and pass-on rates between groups and the adoption rate among individuals. Pass-on rates were highly related to improved incentives and the governance structure of the group while adoption rates were positively influenced by the density of associations among group members. In Kenya, Hambly (2000) studied the longevity of women's tree planting groups and found that non-performance (i.e. collapse) of groups was related to inequitable social structures.

Straddling between group and supra-group level analyses are many of the studies that look at management of common property resources. Baland and Platteau (1996) present a good review of the driving forces behind improved collective action for natural



resource management. Some direct group performance indicators are discussed for management of fishing stocks, forests, and irrigation, although this is not the focus of the book. Irrigation is one area where considerable progress has been made in assessing the effectiveness of group management. There are good summaries of indicators for the effectiveness of group management for irrigation in Molden et al. (1998) and Dayton-Johnson (2001), and Bardhan (2000) provides an analysis of group performance in irrigation. Similarly, Tachibana et al (2001) and Sakurai et al. (2001) offer both indicators of forest management and analysis of alternative management regimes (e.g. formal user group vs. state management) on these indicators.

Krishna (2001) found evidence in 60 villages in Rajasthan, India, that high stocks of social capital were necessary but not sufficient for community development. Social capital could not be transformed readily into large benefit flows unless communities were well connected with the State and with markets. This ‘transformation function’ is particularly important in developing country contexts where connections are weak because of a combination of physical factors (poor roads and telephones), political factors (weakly organized parties), and social factors (large cognitive distance between villagers and government officials). He concluded that social capital can often lie dormant in such situations because people in villages do not have information or connections. They can act collectively, but they do not know how to target collective action effectively. The role of local networks and organizations in local economic development were also studied in the Andes (Bebbington, 1997), in Honduras (Pender and Scherr, 1999), and in Uganda (Pender et al, 2001). While Bebbington’s findings are consistent with Krishna’s, Pender’s work in Honduras found mixed effects of local organizations on natural

resource management and his work in Uganda did not find a link between number of local organizations and a variety of natural resource and welfare indicators.

In summary, there have been a number of papers that have attempted to assess group performance. Some gaps still remain. First, how can one quantify some types of group outputs – those that may relate to intangible outputs or whose outputs may differ according to beneficiary? Some self-help groups may fit in this category. Second, how can one compare different types of outputs across groups – what can be the common currency or numeraire? Finally, what role should costs or contributions play in assessing performance? Existing studies have focused strongly on gross gains rather than net gains from groups or collective action. We shall discuss how we managed (or not) to deal with these challenges.

## **2. DEVELOPMENT OF HYPOTHESES AND APPROACH**

The original goal of this research project was to study how people come together for collective action in innovation, marketing, and natural resource management. Thus the preliminary hypotheses dealt with reasons why different types of collective action emerge. As the teambuilding progressed, however, the researchers were steered into additional areas of focus through a demand-driven process that consisted of a series of consultations with stakeholders from government, NGOs, private sector and farmer groups. Interests emanating from these ‘advisors’ were less on formation of groups per se, than on the performance of groups. They challenged the study team to help identify factors behind success and failure of collective action, be they structural, procedural, or otherwise. Stakeholders felt that such information would not only be highly useful to the

participating groups themselves, but also valuable to the many organizations (including government) that work with groups.

In this paper, we present some descriptive evidence on the nature of groups and their emergence, because understanding what they are trying to do and the context in which groups are operating is critical to understanding how well they perform. However, the main analytical focus remains evaluating group performance and understanding the factors that affect it. The hypotheses tested in this paper are developed from both a review of the literature and from the even stronger beliefs emerging from the stakeholder meetings:

1. Quantitative indicators of performance are available at both group and individual levels.
2. Group performance of a new activity is better the more related is the new activity to previous activities of the group.
3. The addition of new activities to an existing group will compromise the effectiveness of both the existing and new activities.
4. Group performance is better for smaller groups and mixed-gender groups, *ceteris paribus*.
5. Group longevity is a measure of success and will be positively related to performance.

In order to test these hypotheses, the overall approach involved two separate data collection exercises. The first exercise identified a common task that a range of groups were doing and for which performance was thought to be quantifiable. A recent multi-institute effort in central Kenya met these criteria. A large number of groups have been attempting to establish nurseries of *Calliandra calothyrsus*, a fodder tree that produces high quality animal fodder and is a particularly good source of feed for dairy animals. A

sample of these groups, as well as individual group members, was interviewed. The second exercise chose four Case Study sites and inventoried and interviewed a sample of groups from each site. In each of these sites, a census of households from one village (interviewing both the female and male adult members where possible) was conducted. The census approach aimed at enumerating participation of different household members in collective action, which could then be later linked to group-level information. The datasets emerging from these two exercises are described in the following sections.

## 2.1 THE CALLIANDRA GROUP EXERCISE

The inter-institute National Agroforestry Research Project, based at Embu, has been working with farmer groups in the dissemination of fodder trees in central Kenya since the early 1990s (Franzel et al, 1999). These groups were initially identified with the help of extension and NGOs and had volunteered to participate in establishing tree nurseries. Among the many groups that agreed to try establishing Calliandra nurseries (about 120 in total), 40 were selected in order to assess nursery performance and to elicit a range of information about each group. The population was stratified on the basis of group purpose and on geographical location. A roughly equal number of dairy groups, catchment groups<sup>8</sup>, and general self-help groups (including women's groups) were selected randomly after this stratification. These 40 groups are spread across a wide and diverse landscape, covering six different districts in Central Kenya.<sup>9</sup> In September 1999, prior to distribution of the seedlings, we visited each of the nurseries and collected

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<sup>8</sup> These were originally formed by extension to coordinate soil and water conservation efforts in "catchments", or village clusters.

<sup>9</sup> The six districts were Nyeri, Maragwa, Kirinyaga, Embu, Meru Central and Meru South.

information on inputs, management, and nursery outputs. In 2000, this was followed up with monitoring of new seedling production and distribution and a detailed questionnaire on group characteristics, history, procedures, and other activities. Finally, we supplemented this with interviews of three to four members from each group, resulting in a total of 151 household-level surveys completed. These were aimed at gauging the performance of the seedlings on-farm.

The study of Calliandra nursery groups was conceived in order to overcome some of the hurdles involved in evaluating group performance. By focusing on one particular activity (production of seedlings), being undertaken by many and different types of groups performance comparisons across these groups became feasible. First, it was relatively straightforward to assess the quantity of outputs – seedlings. Second, information was available on the quantity of seed originally given to each group, so the number of seedlings produced per quantity of seed received could be determined. Third, it was easy to trace and follow up the distribution of the seedlings to group members. It then became possible to quantify the number of seedlings received, planted, and that survived on members' farms. For each of the above intermediate steps, the outputs were distributed at the same time, making recall and quantification efforts easier. As for quality, the research team was well acquainted with nursery and tree planting and could thus easily distinguish between high and low quality of management of the nursery and the Calliandra on farms.

One problem in the selection of this type of activity is that it is very prone to climatic and biological risks, particularly water shortages and pest infestation. The first is normally not an issue at the nursery stage, because nurseries are typically established

near water sources, but it may become a critical factor for survival rates of Calliandra on farms. The second, however, is critical at the nursery stage. Thus we also made use of some intermediate measures of performance. There was also a limitation of our performance assessment related to how the nursery activity was initiated. In order to reach a large number of groups with limited seed supply there was an upper limit on the quantity of seed distributed to interested groups during the first season. Thus while ‘less than average’ performances could still be distinguished, it may have been that some groups could have generated much higher numbers of seedlings (i.e. performed even better) had supply constraints not been in place.

A major drawback of relying on the Calliandra groups exercise to understand the factors behind the performance of collective action is that the groups studied are not necessarily representative of collective action in the region. First, the majority of activities undertaken by groups in central Kenya are not highly related to tree nurseries and planting. Second, the Calliandra groups had volunteered to accept this new activity and as such, there may be some selectivity bias within the sample.<sup>10</sup> Below, we demonstrate the ways in which this special sampling is not representative. Third, the individual group members selected for interviews could not be done completely randomly as we had to rely on lists of households from group leaders. As a result, members of the executive committee appear to be over-represented.

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<sup>10</sup> They are likely to be relatively well functioning groups and above-average in terms of performance.

## 2.2 THE CASE STUDY EXERCISE

The four Kenyan Case Study sites were selected after stratifying the region by agro-ecological zone. The reason for choosing this stratification variable was based on the hypothesis that the forms of collective action used by people would be different depending on agricultural potential. For instance, stakeholders suggested that collective action in the more favorable zones might be skewed towards income-generating activities, while groups in the more climatically risky environments would be biased towards coping strategies. We also wished to avoid sites where there was a major development project that might have influenced the natural development of collective action. Thus, two sites were selected in high potential zones (Kirinyaga, Nyeri) and two in less favorable zones (drier portions of Meru Central, Embu). We began with discussions with key informants and several group leaders to enhance our understanding of the history of collective action in the area, and how collective action is used in each of the sites. This was followed by a household census at one village per site. In total, 442 household interviews were conducted. They included detailed information on both the husband's and wife's involvement with groups (where both were present). This household survey also served the purpose of helping to identify the broad range of groups in the area. For this exercise, the concept of group was somewhat formal, in that the group had to have a name and a defined leadership. Thus, we did not collect information on the many types of informal social arrangements. We also focused on the more "bottom up" groups rather than cooperatives or associations, which are more formal federations that farmers belong to for production and marketing of coffee or tea, for

example.<sup>11</sup> We used this master list to then select groups to interview. We interviewed 87 groups in total from the same four sites, using a rather comprehensive questionnaire covering aspects of history, structure, leadership, decision-making, contributions, and benefits.

The Case Study approach carried out in four sites first attempted to identify the full range of collective action undertaken through groups. In central Kenya, this turned out to be quite ambitious. Most adults belong to groups, and often belong to more than one, especially when the formal coffee cooperatives and tea factories are included. Similarly, there are a surprisingly large number of groups and they each appear to take on multiple activities. Many of the activities are ongoing, and benefits may not yet have been realized, which makes assessment of both the benefits and the corresponding costs problematic.

Because of this diversity, the data collection methodology relied more heavily on open-ended questions that were not coded *a priori*. For instance, in order to be able to quantify or value outputs of groups, it was necessary to first obtain precise information about the nature of each output. At the group level, information was collected on an activity basis, requesting information on all group activities undertaken within the past five years. Attempts were made to ascertain the specific output/benefit, the number of members benefiting, and the quantity received by each member. A similar structure was used to assess contributions of members in delivering these outputs. Groups were asked to rate the completed activities on the basis of whether they were highly successful,

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<sup>11</sup> Because of a rather loose interpretation, it may be that our sampling population of groups may be incomplete. Cooperatives and associations are permitted to take out loans and to operate across districts and they are more scrutinized by the government.



successful, or not successful. Lastly, performance-related indicators that were not tied to specific activities included the groups' assessment of major factors behind success of activities, and the identification of benefits that non-members receive from the group.

At the household level, an inventory was made of all groups that adult members in the household currently belong to, or had belonged to within the past five years. This was intended to provide a population of existing groups in the site, to identify groups that may have disbanded, to identify individual exit from groups, and lastly to provide the sampling frame from which more detailed questions on individual experience with groups would be sought. Information was collected on experiences of the husband and wife in up to two groups/cooperatives/associations, with preference given to groups. In similar fashion to the group survey, we asked questions on benefits from, and contributions to, specific activities of the group. We also asked for subjective ratings of group success. Finally, respondents were also asked their preferences for collective versus individual action related to a number of innovation, marketing, and NRM activities.

An important goal of the census approach was to enumerate a significant number of the members belonging to each of the groups enumerated. In doing so, we would integrate data from both surveys to better understand which individuals actually benefited from different types of groups and to what degree.

Some of these approaches did not work out as planned: 1) Taking inventory of all participation in groups did not fully succeed in finding disbanded groups - individuals may have not remembered these well or were reluctant to provide information on them, not knowing our motives; 2) Matching of group and individual data was difficult because

of mismatch in surveying and naming conventions of groups<sup>12</sup>. Groups do not follow administrative boundaries and we found a large number of individuals belonging to groups that were outside our enumeration area; 3) Quantification of benefits and contributions was very difficult, time consuming, and not ranked in order of importance; 4) While the husband and wife knew about each other's participation, the wife knew more, and neither was in a position to answer detailed questions about the other. Where one was not available for interviewing, it was not possible to collect detailed data on that person; 5) Group responses are thought to be biased in some cases due to the domination of leaders among the respondents; 6) Individual respondents were sometimes not precise on group size and composition due to difficulties in recollection, and the fact that these may change frequently; 7) It was difficult to find a common denominator (unit) for time over which contributions and benefits could be measured; 8) There were a large number of activities found which tested the ability of enumerators, respondents, and analysts to arrive at comprehensible results. We cannot address all these issues in detail. However, we highlight two important issues: 1) the activities reported to have taken place in the past five years by the groups (about 80 groups contributed answers to this), and 2) quantification of performance variables.

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<sup>12</sup> A few respondents noted that they did not know the real name of the group to which they belonged.

### 3. RESULTS

#### 3.1 BRIEF DESCRIPTION OF GROUPS IN CENTRAL KENYA

##### 3.1.1 *Calliandra Groups*

Among group types, we selected 15 self-help groups, 13 catchment groups, and 12 dairy goat or cattle groups. This is not at all representative of the distribution of groups on the ground. For example, catchment groups, and to a lesser extent, dairy livestock groups are over-represented in this sample. A chief difference between these groups and those enumerated for the Case Study exercise is that about half of the Calliandra groups had been formed with strong input from external agencies (the catchment groups and many of the dairy groups). Of the 40 groups, 12 (30%) reported having changed their purpose, or emphasis of activity, since inception. The average age of groups was 3.6 years, with only 2 formed more than 10 years prior to the survey. A second notable difference between the Calliandra groups and the Case Study groups was that the size of the Calliandra groups was considerably smaller (with an average of 20 members in 2000, compared to 40 members for the Case Study groups). This may be explained by the sampling procedure and the fact that catchment groups were purposely kept relatively small. Women chair 11 of the groups, and some are more heterogeneous than others. For example, dairy groups tend to have older members. Some have members that are relatively similar in gender, age, education, while others are quite diverse. As was found with the Case Study survey, most of these groups had formal features – registration, bylaws, or constitutions. Thirty five percent of the males and 47% of the females interviewed also reported belonging to other groups.

### 3.1.2 Case Study Groups

The Case Study involved 87 group surveys, but most of the data we present reflects the responses of 82 groups, due to missing data for 5 groups. Table 1 displays the frequency of purposes for which these groups were originally formed.

**Table 1—Purpose of groups at inception**

Stated purpose of group at inception	Frequency
General self help/empowerment	17
Provide assistance during hardships	16
Loans/merry-go-round	13
Building household assets	13
Enterprise and marketing	10
Farming and NRM	10
Dairying	7
Total Number	86

Source: Case study group survey

The categories are somewhat fuzzy since the degree of precision about their purpose differed slightly across group respondents. Self-help and risk-coping were the two most frequently cited purposes for group formation. Other common purposes were merry-go-rounds and credit plans, building of household assets (ranging from utensils to water tanks), enterprise and marketing (e.g. of coffee or milk), improved farming or soil management, and within this latter category, improved breeding for dairy animals. Table 2 lists the activities reported to have taken place in the past 5 years by the groups (about 80 contributed answers to this).

**Table 2--Frequency of activities undertaken by 81 case study groups in Central Kenya**

Activity	Frequency	Activity	Frequency
Assist members during hardship	44	Allocation of water	1
Merry-go-round	39	Hiring of society's vehicles	1
Buying goods	21	Making/selling table cloths	1
Tree nurseries and planting	15	Zero grazing	1
Saving and credit	11	Poultry keeping	1
Buying goats	10	Constructing coffee factory	1
Cash contributions	10	Sewing machine and knitting	1
House construction for renting	4	Clearing of mud/stones	1
Wedding assistance	3	Terrace construction	1
Constructing water tanks	3	Communal work	1
Processing and marketing coffee	3	Constructing pit latrines	1
Bee keeping	3	Distribution of food	1
Farming	3	Growing of french beans	1
Bank savings	2	Renting of coffee farms	1
Buying and selling livestock	2	Renting of land	1
Constructing wells	2	Buying and selling milk	1
Digging cut-off drains	2	Buying farm tools	1
Paying school fees	2	Buying iron sheets	1
Pig rearing	2	Buying water tanks	1
Horticulture	2		
Making cooking stoves	2		
Prayer	2		
Provision of AI/vet services	2		

Source: Case study group survey

In total, 205 activities are mentioned and as can be seen there were as many as 43 distinct ones (even after conducting some aggregation).

Table 3 shows that men and women agreed on certain reasons for joining groups, but differed on others. A similar percentage of men and women prefer groups centered on the provision of assistance during hardship, and gaining access to piped water. However, men have a strong preference for groups formed around an objective of gaining access to markets, while women feature much more in the groups that want to purchase household items.

**Table 3--Reasons why people join groups by gender (%)**

Reason	Men		Women	
	N	%	N	%
For assistance during emergencies	44	29.5	76	29.3
Gain access to markets	53	35.6	7	2.7
Purchase household items	10	6.7	101	39.0
Gain access to piped water	15	10.1	38	14.7
Other	27	18.1	37	14.3
Total	149	100.0	259	100.0

Source: Case study household survey

Most groups were formed autonomously, with only 17% formed with strong involvement of external organizations (often with cash or material injections). Farming groups were by far most likely to be initiated by external organizations (50%). Most of the groups surveyed had been established since 1990 (81%) and 48% were established since 1995. This pattern could be consistent with the argument that groups have

relatively short finite lives or with the argument that collective action may be on the increase due to increased incentives (e.g. HIV-AIDS, more volatile markets, increased NGO attention to working with groups). It is difficult to know whether this represents a trend that will extend into the future or not. The data below show that there is considerable appreciation of and demand for collective action, but whether these desires are transmitted through new group formation or mutation of existing groups is not yet known with certainty. There is some support for the latter argument by the sheer diversity of activities undertaken and that existing groups seem to build on their past experiences by taking on new activities rather than forming new groups.

Average group size at inception was 36 members and this increased to 45 members by the year 2000. At both points in time, women comprised about two-thirds of all members. As many as 42% of groups were exclusively comprised of women, and this was constant over time. The size of groups was not highly related to group purpose, with the exception that the average number of members was higher in self-help groups as opposed to farming/NRM groups (with an average of 57 members compared to 20). Groups self-appraised themselves as highly heterogeneous, apart from gender and occupation (farming). Between 80 and 90 percent of groups classified themselves as having diversity in age, education, religion, wealth level, and kinship. The groups are considerably formalized in the sense of having by-laws (95%), having bank accounts (74%), being registered (72%), and having a constitution (63%). All but one has regularly scheduled meetings for general members, and 72% of executive committees meet regularly. In terms of decision-making, general members discuss and decide upon most major issues in almost all of the groups. There is more variation in the initiation of

new activities, rules, and members, with about two-thirds of groups encouraging all members to do so.

There are a large number and diversity of activities undertaken by the groups. Within the past five years, the groups reported having undertaken 205 activities, 43 of which could be identified as distinct. Groups do take on several activities, and this makes the analysis and comparison of performance very complicated. Further, many groups appear to be interested in building on existing social capital. Table 4 shows that a large number of activities are not highly related to original group purpose. However, it also appears that groups that begin with income and marketing goals generally stick to these types of activities. Other groups appear to regularly migrate into new areas.

**Table 4--Activities of groups by group type**

Purpose at Origin	Number of Groups	Total number of activities reported	% related to original purpose
Coping with hardship	16	40	40.0
Farming & NRM	10	24	58.3
Loans and merry-go-round	13	29	51.7
Dairying	7	14	35.7
Self and group empowerment	17	36	*
Household asset building	13	34	41.2
Income and marketing	10	28	78.6

Note: \* not possible to evaluate as the category is defined as encompassing a variety of activities

Source: Case Study Group Survey

Table 5 gives some indication as to the motivation for types of activities undertaken by groups. For many types of actions, the figures show the percentage of



households preferring to act collectively, whether in a formal group, or more informally with family or friends, as opposed to acting individually.

**Table 5--Household preferences for collective versus individual action**

Activities	% of hhs relying on collective action	Activities	% of hhs relying on collective action
purchasing inputs	22.0	selling livestock	7.2
obtaining agricultural information	33.0	obtaining tree seeds	16.4
processing crop output	55.4	raising tree seedlings	21.9
selling crop output	32.2	obtaining firewood	9.3
obtaining livestock feed	17.9	obtaining water	26.3
breeding livestock	28.6	caring for children	16.0
obtaining health services for livestock	30.2	meeting funeral expenses	97.8
acquiring livestock	14.6	meeting wedding expenses	98.6
selling milk	46.4	enhancing spiritual well-being	89.5

Source: Case study household survey

Collective action is overwhelmingly desired for helping with large expenditures such as funerals and weddings and for spiritual well-being. There is fairly strong interest in collective action for processing crop output (55% of households), selling milk (46%), acquiring agricultural information (33%), selling crops (32%), breeding livestock (30%), and obtaining water (26%). At the other extreme, there is a strong preference for individual action in selling livestock, obtaining firewood, and acquiring livestock.

Quantification of performance is a very important issue; however, previous tables suggests that quantification will be challenging when applied across such a large number of diverse purposes at inception and activities. That indeed is the case. Tables 6 and 7 provide information from the group and individual Case Study surveys as to our ability to quantify contributions or benefits.

**Table 6--Types of contributions and benefits by gender categories**

Type of contribution	no. Men	no. Women		Type of benefit	no. Men	no. Women
Cash, quantifiable by amount and time	33	132		Cash, quantifiable by amount and time	32	66
Cash, quantifiable by amount only	40	41		Cash, not quantifiable	43	21
Cash, not quantifiable	21	49		Loans	17	24
Labor, quantifiable by amount and time	4	3		Credit on farm inputs	13	2
Labor, not quantifiable	30	51		Building household assets	0	98
Ideas on improving group	12	30		No benefits shared	34	60
Other	38	31		Other	54	44

Source: Case study household survey

**Table 7--Quantification of benefits of activities from 87 groups in Central Kenya**

Outcome	Number of cases	Percentage of cases
Quantifiable in the form of cash	42	23.1
Quantifiable in the form of materials valued	31	17.0
Non-quantifiable type of benefit	14	7.7
Not quantifiable due to insufficient information	95	52.2
Note: Benefits were not reported for many of the ongoing activities		

Source: Case Study Group Survey

As can be seen, the proportion is very low. The group level data show that only about 8% of benefits could be classified as non-quantifiable on conceptual grounds. But the majority of cases (52%) were benefits that are not quantifiable for lack of precision on quantities or time periods. There is somewhat greater success at the household level, where among cash benefits, 61% of cash benefits and 52% of cash contributions were quantifiable. As for the reliability of these responses, we have further noted a large discrepancy between contributions and benefits reported both by groups and individuals. These discrepancies range from a factor of two to seven and result from difficulties in distinguishing between actual and potential beneficiaries (such as when payments are made upon death of a relative) as well as recording the exact frequency of contributions.

The range of activities differed among groups and between men's and women's groups. Cash and labor were the major contributions, and women's groups were involved in a wider range of activities than were men's groups, hence deriving different types of benefits. Building household assets was the major objective of women's groups and cash shared from merry-go-rounds was mainly channeled back to the household. Group loans

were mainly used for paying school fees and these were to be paid back with interest. To cope with unforeseen circumstances such as illness and death, some groups agreed on a fixed annual amount that each member should contribute, while a few provided for a fixed amount to be paid out from the group account in event of illness or death. Some groups have accumulated assets for collective use — for example, two groups purchased plots for future development, and another co-operative society owns 60 acres of land where a processing factory is located. Another ten groups generated income by renting out buildings located on their plots, and ten groups had acquired equipment/materials such as water pumps, pipes, and sewing machines. Livestock keeping (goats and bees) was undertaken by eleven groups. In addition to the provision of private benefits, some groups also acquired assets in common. The data indicate that 25 or 29% of groups had acquired some type of asset or equipment, including land, livestock, buildings, and/or water equipment.

## 3.2 ESTIMATES OF PERFORMANCE OF GROUPS

### *3.2.1 Calliandra Study Groups Performance*

The number of useful performance measures we were able to derive is much higher for the Calliandra groups than for the Case Study groups. We have constructed six performance measures from the group survey and three from the household survey. At the nursery stage, the three measures are: 1) an index of inputs applied to the nursery, 2) an enumerator rating of nursery quality, and 3) the number of Calliandra seedlings produced per member. At the on-farm stage, the three measures are: 1) an index of management tasks applied to the seedlings by the household, 2) an enumerator rating of

the quality of the seedlings growing on the farm, and 3) the survival rate of the seedlings. For each of the measures originating from the household survey, we calculated the mean level for each nursery group in order to create a group-level variable.

The input index was calculated by averaging input contributions across individuals involved in the nursery. The variable could take values between 0 and 4 and our range was from .25 to 3.5. The management index was calculated by simply adding the number of tasks applied on-farm and then averaged across the four farmers of the group. The management index could range between 0 and 12, but our data show the actual distribution to be between 2.5 and 9.25. Enumerators rated nursery quality as poor, fair, good or very good. We assigned quantitative values from one to four to these ratings, which were used in determining mean values for the three or four households within each group. There was significant variation in these ratings, with 17 nurseries (43%) being rated as good or very good, and the remaining 57% rated as fair or poor. From the household survey, sixteen groups received an average quality rating (averaged across the individual respondents from the group) for the transplanted Calliandra above three (i.e. good). The average number of Calliandra seedlings per member was 235, which was identical to the median number of seedlings per member. Individuals had between 41 and 636 seedlings.<sup>13</sup> The mean seedling survival rate was 47%, with only one case of complete failure (that is, all surveyed members of the same group had complete failures). About one-fourth of groups had an average survival rate of under 30% and another one-fourth had survival rates in excess of 70%.

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<sup>13</sup> Approximately 500 calliandra trees are required to provide year-round supplemental feed for one dairy cow.

Table 8 shows the correlation among these different performance measures.

While it was expected that they would be strongly related, we found that this was not universally true.

**Table 8--Correlations among performance measures for groups involved in Calliandra nurseries n=40**

Variable	Input index for nursery	Nursery quality rating	Calliandra seedling per member	Management index on-farm	Calliandra quality rating
Input index for nursery					
Nursery quality rating	.0788 p=.629				
Calliandra seedling per member	.0853 p=.601	.2376 p=.140			
Management index on-farm	.3449 p=.029	.1716 p=.290	.2817 p=.078		
Calliandra quality rating	.1541 p=.342	.1980 p=.221	.3480 p=.028	.5456 p=.000	
Survival rate of seedlings	.1330 p=.413	-.0259 p=.874	.1349 p=.407	.4116 p=.008	.6744 p=.000

Source: Calliandra group and household surveys

The strongest correlations were among the household-level measures. The correlation coefficient between average Calliandra quality and average survival rate was .67, for instance. On the other hand, none of the measures from the group survey were significantly correlated with one another. This is especially surprising for the input index – nursery rating correlation, which is very low. It is expected higher inputs levels (management intensity) should lead to better performance or quality of the nursery. The

group and individual indices of management and inputs were strongly linked to each other, which would be expected since it is essentially the same people involved in both activities. Comparing performance variables at household and group levels, we found that Calliandra per member (from group survey) was highly positively linked to the on-farm management index (from household survey) as well as to the quality of Calliandra seedlings rating (from household survey). The survival rate, arguably the most important ‘bottom-line’ performance indicator at the household level, was not linked to any nursery performance indicator.

### *3.2.2 Case Study Groups Performance*

We begin by looking at structural and functional variables that may be linked to performance. Changes in group size may reflect the performance of a group in the sense that it seems reasonable to expect that where performance is low, members are more likely to drop out. An increase in membership was reported by 15 groups, while eight groups had declined in membership. On average, the size of groups had increased. Group conflicts were reported by 69% of groups. Occurrence of conflicts was not highly linked to many group structural variables, except that they were less likely to occur in older groups, those making smaller cash contributions, and those formed for farming-related purposes. Groups were asked to report on the frequency of rules violations. The majority of these incidences were related to lateness or absence for group meetings (128 incidences reported) followed by lateness or absence of contributions (43 cases) and issues of misconduct (27 cases).

With respect to member contributions to group activities, cash contributions were by far the dominant type of input. Cash was cited for 151 activities, while materials (22)

and labor (18) trailed far behind.<sup>14</sup> Given the difficulties reported above concerning quantification of these contributions, we are unable to yet report on the level of contributions stemming either from group or individual responses.

A simple, though crude, method of performance assessment is the groups' own subjective rating for each activity where benefits were produced. As shown in Table 9, the vast majority of activities undertaken by groups were rated 'highly successful' or 'successful'. Only about 10% of activities were assessed as 'not successful' by the groups.

**Table 9--Group appraisal of success by activity undertaken**

	% highly successful	% successful	% not successful	Number of cases
Most recent activity	56.6	38.2	5.3	76
2 <sup>nd</sup> most recent	44.8	44.8	10.3	58
3 <sup>rd</sup> most recent	71.9	28.1		32
4 <sup>th</sup> most recent	60.0	26.7	13.3	15
5 <sup>th</sup> most recent	50.0	16.7	33.3	6

Source: Case study group survey

Among those judged to be not successful, the great majority were activities whose success was highly dependent on external factors. For example, uncertain rainfall and markets are critical for the farming, tree planting, renting, and coffee selling activities. On the other hand, common activities around which many groups had formed, such as merry-go-round groups, hardly reported any failures. One interesting question is whether

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<sup>14</sup> Note that certainly some labor is required in all activities, if for no other reason than to attend general meetings. But this variable sought only information on labor dedicated to specific tasks necessary for achieving an output.



group performance improves over time. We conducted two separate tests. The first was a chi-square test between the success of groups (3 categories) and old versus new groups (using a cutoff year of inception of 1995). There was no statistical difference and in fact it was the older groups that were more likely to report an unsuccessful activity. Second, table 9 also shows no support for this hypothesis, as the ratings for activities do not show improvement over for more recent activities.

Related to this analysis is the status of group activities. Among the roughly 200 activities reported, 73% were ongoing, 22% were completed, and only 5% had been abandoned. The abandoned activities (ten in all) are distributed across many types of activities, with no pattern emerging.

There are also ‘public goods’ generated from groups, from which non-members also benefit. From the groups’ own perspective, 41% mentioned that their group benefited non-members. The most common ways in which groups benefited outsiders was through support during hardship (just under half), followed by seedlings, and access to improved goat breeds (through buck service or direct sale).

### 3.3 FACTORS RELATED TO GROUP PERFORMANCE

#### 3.3.1 *Calliandra* Groups

Using each of the six performance variables described in section 3.2.1 (from the group survey: nursery inputs index, nursery quality, number of seedlings per member; from the household survey: management index, seedling quality, seedling survival rate), three separate regression models were tested. The first model examined the effect of location and structural variables for the 40 groups. The second model added functional

variables such as the level of formality of the group and characteristics of the group leader. The final regression added characteristics of group members to ascertain heterogeneity and wealth levels. Table 10 displays the list of variables and notes the cases where coefficients had statistically significant relationships.

**Table 10--Regression results on various performance measures for the Calliandra nursery groups**

Explanatory Variable	Dependent Variable (Performance Measure)					
	Group Survey (n=40)			Household Survey (n=151)		
	Index of inputs on nursery	Nursery rating	Calliandra per member	Index of management on farm	Rating of Calliandra	Survival rate of Calliandra
Geographical location			+, -			
Age of group						
Dairy group			+			
Catchment group			+			+
If group purpose changed over time			+		+	+
Size of group		+, -				
Age of chair						
Male chair			-			
Level of formality of group			-			
Age diversity of group				+		
Proportion of members with secondary education						
Degree of democratic decision making						
Value of livestock of group members				+		

Note: A plus sign means a positive relationship significant at a .10 level. A minus sign means a negative relationship at a .10 level or below. A plus and minus sign for size of group means that the relationship is concave, initially positive until a point where it becomes negative. Finally, a plus and minus sign for geographical location means that some locations have positive and others negative relationships between each other

Source: Calliandra group and households surveys

As can be seen, very few variables turned out to be significantly related to performance of Calliandra in the nursery or on individual farms. Moreover, adjusted R-square values were generally quite low (the exception was when the dependent variable was Calliandra per member). Geographical location had far less effect than expected given the drought that hit the region during 2000 (i.e. nurseries at different locations within the region were affected almost to the same extent). The most important variable appeared to be whether group purpose (or activity emphasis) changed since inception. Groups who had taken on new directions performed better on three of the six performance measures. Catchment groups performed better according to the Calliandra seedlings per member and survival rate performance measures, especially compared to self-help groups, although this did not hold for all regression models. This result is not so surprising since the catchment groups received substantial training from extension on a host of farming-related activities. No other explanatory variable had a significant effect on more than one dependent variable.

The implications of this analysis are two-fold. First, choice of dependent variable clearly matters in one's interpretation, because they do not appear to follow similar patterns of relationships with possible explanatory variables. Second, and despite the first implication, the prediction of Calliandra performance is not significantly linked to any easy-to-measure indicator. In other words, this analysis does not support targeting dissemination towards particular types of groups.

### *3.3.2 Case Study groups*

When asked what the major factors leading to success or failure of group activities were, respondents mentioned ability to contribute the required amount of cash

as the major factor (37% of responses). Following were issues of cooperation among group members (18%), leadership (13%), adherence to rules (12%), and external factors (12%). Such a large proportion of responses related to cash may reflect the relatively vibrant cash economy in central Kenya (at least in comparison to some other rural settings in Africa) and is in congruence with the large number of activities that are based on cash contributions. We have much less information on factors relating to success or failure of Cooperative Societies. But these are featuring daily in Kenyan newspapers, which report that the majority of members typically have limited information as to how decisions are made and funds are spent. Surviving coffee Cooperative Societies appear to be much smaller than the original (larger) ones that were broken up into smaller units due to mismanagement problems.

In exploring further the factors behind group performance, emphasis was placed on the link between group structural and functional variables (as explanatory variables) and the group's self-assessment of degree of success of an activity (the dependent variable). Table 11 shows a cross-tabulation between level of success and group purpose.

**Table 11--Incidence of highly successful group activities by purpose of group formation – number and (percent)**

Purpose at Origin	Very successful activity		# Cases
	No	Yes	
Hardship	3 (18.8)	13 (81.2)	16
Farming	6 (60.0)	4 (40.0)	10
Lending/merry go round	9 (64.3)	5 (35.7)	14
Dairying	1 (14.3)	6 (85.7)	7
Self help	12 (75.0)	4 (25.0)	16
Asset building	5 (38.5)	8 (61.5)	13
Income	4 (44.4)	5 (55.6)	9
Significance level of Chi-square = .01			
Source: Case study group survey			

Groups formed in order to cope with hardship and those involved in dairying were the most likely to have had a “very successful” activity. In contrast, the groups the least likely to report “very successful” activities were the self-help, merry-go-rounds, and farming groups. Most likely to report an “unsuccessful” activity were merry-go-rounds and farming groups, as well as asset-building groups (but not self-help groups – they tend to have mainly “successful” activities rather than activities rated at either extreme). We also tested for the effect of a number of other factors on groups’ self-assessment of performance, using bivariate techniques. Hardly any of the structural or functional variables were strongly linked. One notable finding was that groups claiming a very successful activity were more likely to be registered (61%) than those who did not have such a strong appraisal (33%).

To make stronger inferences on the importance of certain structural variables, logit regressions that attempt to explain the observance of very successful activities (model 1) and unsuccessful activities (model 2) were run. Table 12 displays these results.

**Table 12--Logit regression results explaining group appraisal of success**

Variable	Group Had a Very Successful Activity (model 1)	Group Had an Unsuccessful Activity (model 2)
Constant	129.50 (1.38)	105.41 (1.04)
Index of similarity of members	.307 (1.14)	-.369 (-0.88)
Year group started	-.065 (-1.39)	-.054 (-1.07)
Number of members at start	.066* (2.11)	.043 (0.82)
Number of members at start squared	-.0004* (-1.96)	-.0004 (-0.85)
Group with income purpose	-1.193 (-1.17)	1.061 (0.70)
Group with lending purpose	-2.363* (-2.48)	
Group with asset building purpose	-1.327 (-1.33)	1.530 (1.16)
Group with general self help purpose	-3.184* (-3.21)	
Group with non-dairy farming purpose	-1.991* (-1.99)	1.999 (1.53)
Groups with lending or general self-help purposes		.248 (0.20)
% of observations affirmative	52.0	16.0
% of affirmative observations correctly predicted	69.2	98.4
% of non-affirmative cases correctly predicted	66.7	8.3

Note: Base and omitted group purpose is hardship groups.

Source: Case study group survey

In interpreting these results, it should be noted that no dairy or self-help group reported any unsuccessful activities, and all the dairy groups reported having only very successful activities. As a result of these perfect correlations, the data required some manipulation before the regressions were run.<sup>15</sup>

Compared to hardship groups, merry-go-rounds, self-help, and farming groups were less likely to have had a very successful activity (as demonstrated in Table 11). The size of group turned out to be an important explanatory variable. We found a non-linear relationship, suggesting that middle-sized groups were more likely to have experienced a very successful activity than either very small or large groups. These results are in line with a number of studies (see Agrawal and Goyal, 2001 for a case study and literature references) questioning Olson's theory (Olson, 1965) about the relationship between group size and performance.

The results of the second regression, where the dependent variable was the incidence of unsuccessful activities, suggest that none of the explanatory variables are statistically significant (recall though the link between dairy and self-help groups and likelihood of success). One of the reasons for this result may be that there were very few cases of unsuccessful activities (13), making it difficult to determine statistical evidence of any particular relationships.

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<sup>15</sup> First, all dairy groups were dropped from the regressions. Since there were only 7 dairy groups, it did not pose a problem. It was more of a problem to drop self-help groups from model 2 because of the relatively high number of such groups (16). These were therefore grouped together with merry-go-round groups that essentially had similar purposes and engaged in many of the same types of activities.

#### 4. CONCLUSIONS

A good portion of the paper was devoted to methodological issues surrounding our ability to measure group performance (Hypothesis 1). The preponderance of evidence would suggest that it is not straightforward to quantify group performance, and that attempting to triangulate information from group and individual respondents is also difficult. The ‘census’ approach to documenting the number, variety and diversity of groups probably raised more questions than it answered, and did not allow us to get at some issues we intended it for, such as learning about failed or disbanded groups as well as currently existing ones.

Focusing in on a particular group activity allows a more rigorous measurement of group performance at different levels (household, group, community), but a large sample is needed to see statistically significant factors explaining those performance measures. For example, we were able to develop and assess performance indicators for one specific type of collective task, the production of Calliandra tree seedlings. But even in this case, we found the choice of indicator is critical, since several hypothesized relationships between performance measures did not materialize. In our view there remain great challenges in assessing performance of groups whose tasks are diverse, when the timing of contributions and benefits differ, and whose outputs may be components of larger and/or longer-term goals (e.g. provision of piped water, breeding of livestock). While this region may be somewhat unique compared to other areas in Africa in terms of the number and diversity of groups, we suspect that such approaches taken elsewhere would encounter similar challenges.



The case study evidence suggests that groups are very dynamic and take on many new activities. This supports the notion that so-called ‘bonding social capital’, in the form of trust between members, is critical and more valued than the option to form new groups with different skill mixes. The preference of existing groups to shift into new activities, instead of forming new groups, may work especially well in the central Kenyan context, where group sizes are quite large and the membership diverse, allowing for a wide range of expertise.

The large number of activities made it difficult to assess and compare group performances. Looking simply at group self-appraisal we found no pattern in the success of activities over time, nor by how different the activities were from original purpose of the group. Unsuccessful activities were mainly those that were risky, i.e. dependent on climate or markets. In sum, it seems as if all types of groups were able to take on a diverse set of activities and do them well. One caveat is that the number of on-going activities of groups is very high in relative terms and thus this analysis should be revisited in a few years.

More analytical progress was made for the groups engaged in the same tree nursery activity. We empirically tested the effect of several different factors on group performance. Group performance was measured by six different management and output related variables – such as seedlings per member, survival rates of trees on farms, inputs into the management of the nursery. Explanatory factors included group location, size, age, purpose, if the purpose had changed over time, level of formality, age diversity of members, proportion of members with secondary education, degree of democratic decision making, and value of livestock of the group members. The factors that showed

up as significant at explaining variation in group performance for at least two performance measures were purpose of group (catchment groups performed better) and if the group purpose changed over time (groups that had taken on new directions performed better). Otherwise, different factors were statistically significant for single measures of performance only, making it difficult to draw strong conclusions regarding which factors best explain group performance.

We also tried to assess the factors related to qualitative indicators of performance of group activities (e.g. successful, unsuccessful) for the full range of groups found in our case studies. There is some evidence that group size matters – in some of the analyses, performance was highest for middle-sized groups, as opposed to the smallest or largest ones. This conforms to an opinion expressed by many of the stakeholders present at the very first planning workshop for the collective action project. We did not find that performance was linked to variation in diversity of members. There may well be complex patterns here (e.g. homogeneity is preferred for certain types of purposes, heterogeneity for others), but looking at all the activities together, there were no strong effects. Likewise, the age of a group was not linked to performance in any of the multivariate analyses. New groups and old ones were equally likely to perform well.

In this paper, we did not delve into detail about how different functional aspects of groups influenced performance. These include leadership qualities, decision-making processes, or contributions of members. Such variables may affect performance. However, as a start, we have investigated the largely structural variables that are ‘predetermined’ (hence, not endogenous) and which are easily visible to organizations working with groups. Therefore, the next steps are to examine the possibility for

quantifying inputs and outputs from a wider range of group activities and for the performance indicators we do have to undertake a more rigorous analysis of their relationship to the 'harder- to-observe' group functioning variables.

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