LUCID's Land Use Change Analysis as an Approach
for Investigating Biodiversity Loss and Land Degradation Project

Community Workshops As A Participatory Component of Field Research: Examples from Kenya

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The Land Use Change, Impacts and Dynamics Project
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I. INTRODUCTION

Research exploring the root causes and dynamics of land-use and land-cover change in regional and local contexts has expanded greatly in the last two decades. Land-use and land-cover change (LUCC) is a diverse area of study with research focusing on both social and environmental drivers of changes in land use systems and the implications of changing land-cover for both society (e.g., human health, social development) and environment (e.g., habitat fragmentation, carbon sequestration) (International Geosphere-Biosphere Programme 1994). Many social scientists have recognized the importance of methodological pluralism in the investigation of nature-society relationships, including the acceptance of multiple methods, analyses of qualitative and quantitative data, and both positivist and critical approaches to knowledge (Norgaard 1989; Rocheleau 1995). The use of multiple methods is necessary due to the complex nature of land-use and cover change processes and the complexity of local and regional drivers which underlie change (e.g., land tenure systems, entitlements, gender relations, social stratification). The potential for developing a more complex and nuanced understanding of the social processes that underlie land use change may exist in the critical and careful application of participatory social science field methods alongside traditional methods of household surveys, key informant interviews, and remote sensing.

As the use of participatory methods has expanded among social scientists, there is a growing need to critically evaluate the objectives of such methods and the complexities which influence the nature and dynamics of participation in various social contexts. This paper examines current issues in participatory research and evaluates the methods employed in recent research by members of the Land Use Change Impacts and Dynamics (LUCID) project in Kenya. LUCID scientists are engaged in a variety of research activities in East Africa that examine the issues of land degradation and biodiversity loss through analyses of land use/cover changes and their driving forces. An important objective of LUCID research is to share research findings with policy makers, civil society, and local communities in the interest of addressing environmental and development problems.

The first section explores the origins and recent trends in participatory research methodology and evokes contemporary criticism of the set of methods associated with participatory research. A review of literature on methodologies suggests that different paradigms of participatory research have emerged. Each of these entails different processes and levels of involvement from communities that participate in research. This holds great importance for understanding the nature of participation, collaboration and cooption in the production of knowledge and, specifically, the challenges for researchers in the Kenyan context. The second section provides illustrations of issues encountered in the course of community workshops and group meetings carried by out LUCID team members. In the final section, we discuss some of the lessons learned from this research, including a general assessment of the state of pragmatic approaches to participatory research and the potential for contributing both to better social science research and empowerment of local communities.

II. ISSUES IN THE DEVELOPMENT OF PARTICIPATORY RESEARCH METHODOLOGIES

1. Introduction

The origins of participatory research and rural development efforts in developing countries during the 1970s and 1980s are most often traced to Friere's (1973, 1974) educational philosophy, an approach which identified the development of a critical consciousness (*conscientização*) as

central to local people's initiatives to improve local conditions. In this approach poor and marginalized people become aware of social, economic, and social and political relations in which they are enmeshed and the means of acting to redress structures of exploitation, inequality, and exclusion. *Conscientização* involved a process of self-realization of the social realities that marginalized groups confront. Participation entailed a dialogical analysis that allowed people to consider their own place within the webs of social relations that contribute to such problems. As such, participation of marginalized and oppressed peoples in this process of problem-identification was a means of setting in motion a process of solving the immediate and practical problems which they confront. Of equal importance was the notion that self-analysis of development problems would lead to social action and a reconfiguration of power relations within the society. Thus, Friere's participatory methodology identified both practical and transformative dimensions of understanding social systems and addressing rural development problems.

The broader context of the expansion of participatory methodologies relates to the widespread perception of the failure of development projects on both small and large scales by the mid-1970's. New paradigms focused on Integrated Rural Development (IRD) and the implementation of the Green Revolution technologies were increasingly derided as "top-down" approaches to community involvement in new schemes that promised to bring the elusive development sought by the world's poorest. Exclusion and marginalization from the processes of decision-making and the setting of development agendas were seen as primary factors underlying the failure of such initiatives to meet the objectives of poverty alleviation.

By the 1980's, these concerns converged with emerging critiques of expert knowledge and positivism which were seen as inappropriately applied to poorly understood problems of poor and marginalized people (Chambers 1994). The adoption of participatory methodologies by both researchers and development practitioners was fostered by related critical assessments of scientific epistemology and conventional "top-down" approaches to development initiatives in the developing world. These critiques contributed to a growing interest in participatory development and participatory research methodologies in many African, Asian, and Latin American contexts (see contributions to the journal *Convergence;* Cohen and Uphoff 1980; Mbilinyi et al. 1982; Cernea 1983; Campbell 1987). The strength of both critiques has reshaped the approach of outside researchers and practitioners to the communities in which they work, and has created the means of improved understanding of rural livelihoods in the developing world and offers the hope of greater effectiveness in the identification and implementation of development objectives that are broadly beneficial to the most marginal sections of society (Chambers 1997).

As participatory techniques expanded among development practitioners, researchers took note of the power of participation to develop a more complex understanding of the dynamics of local societies. Participatory rural appraisal (PRA) emerged as means of drawing attention to local knowledge and developing understanding of problems facing local people. Chamber's vision of PRA emphasized experiential learning for both research and development practitioners and research participants. Thus, PRA was firmly rooted in critiques of expert knowledge and unequal power relations. For Chambers, such power imbalances have prevented scientists and development practitioners from uncovering aspects of the social experience of poor communities that would have been otherwise obvious in the absence of the obfuscating effects of power (Chambers 1994).

The critical assessments of prevailing scientific epistemology highlighted constructivist and experiential aspects of social science research in which subject-object dichotomies have been questioned (Heron and Reason 1997). Such uneven power relations between researchers and

participants in research were seen as central to the shortcomings of past research on environment and development problems within local communities as in other contexts (Chambers 1994; Little 1994). Critiques pointed toward a participatory empiricism in which the exploration of multiple, situated perspectives was central to understanding changing social landscapes and questions of power within communities. Thus an initial response to these critiques was the identification of the need for exchange or dialogue between researchers and participants through mutual exchange of information, identification of problems, and discussion of potential solutions.

A question fundamental to such strategies is whether the involvement of the community is designed to facilitate genuine participation in the development process or to provide a more effective basis for manipulation of communities by outside institutions. This question continues to have relevance, as a plethora of local political movements have emerged alongside community-based approaches involving government agencies, international and local NGOs, and academics (Escobar 1998).

References to participation as a guiding theme in research and project methodology mushroomed during the 1990's to include the mainstream development efforts of both non-governmental organizations and multilateral institutions (e.g., Bunch 1982; Kumar 1993). As the use of participatory techniques expanded among development practitioners, researchers took note of the power of participation to develop a more complex understanding of the dynamics of local societies. However, as with the notion of sustainability, considerable concerns remained about the consistency in the language and techniques of participation as the notion was employed for achieving different objectives by different kinds of institutions.

2. Paradigms of Participation

In the three decades of widespread use of participatory methods, differences have emerged between those who adopt participatory research as a means of enabling social transformation and those who view it as a pragmatic means to addressing local development issues (Mbilinyi et al. 1982). Despite the use of similar language and techniques, a critical divergence continues to exist between those who used participatory techniques, particularly PRA, for primarily research purposes and those who were more directly involved with helping marginalized groups in society to address inequality and injustice. As Vio Grossi (1981: 44) wrote, the pragmatic perspective:

> ...tended to look at participation exclusively as a way to improve their final product rather than as a tool for developing a process of social transformation. With new words, but old techniques, the separation between subject and object of research persists and the dominant features of such practices continue. An instrument such as PRA, devised for liberation, is thus converted into a new, and perhaps more efficient, tool for manipulation.

For researchers with empirical concerns, participation of loosely-defined communities has been a practical means of creating more detailed assessments and understandings of local social change. Furthermore, it was a means of bringing local people's narratives to bear on the interpretation of data collected using more extractive methods, such as the household survey. Thus, while underlying research questions were determined by the researcher or research team, local perspectives were sought in order to understand the extent to which particular problems effected peoples' lives and to consider potential solutions to the problems. The use of participation as a tool in empirical research that has primarily scientific and policy objectives has been characterized by Leach et al. (1997) as that of the "virtual participant", whereby:

> …the researcher makes her/his identity, biases and interpretive voice explicit and recognizes that such biases are inevitably inherent in concepts used and frameworks of analysis employed. However a critical and reflective stance does not prevent the researcher from reflecting, analyzing and interpreting. On occasions, the research and reflection initiated by the researcher may lead to action. This is seen as another opportunity for learning, rather than something which biases results (Leach et al. 1997, 20).

The "virtual participant" model can be seen as different from purely extractive methodologies in several ways. First, within the limits of the broader research objectives, it seeks to understand qualitative dimensions of social change as framed by study participants. Furthermore, the interpretations and implications identified by the researcher or research team are returned to the communities via forums that allow for further exchange of information between the researchers and local people. This serves an empirical objective of verifying and providing greater detail to the interpretations of the researchers. Returning the results to communities in which data were collected also creates greater transparency of the research process and provides communities with information that may be useful in creating social action. While it is not certain that such action will be necessarily "progressive" in promoting the livelihoods of the most vulnerable, the researchers take a "hands off" approach to the way in which the use of the information plays out in the context of local social stratification and differentiation. This is in contrast to participatory action research which seeks to use the information and analyses developed with local people for the empowerment of the most vulnerable groups (Berardi 2002). In some cases, collaboration between researchers and development practitioners has created joint investigations with both empirical and social action objectives (c.f. Campbell 1984, 1987).

3. Examples of Participatory Research and Development

Early applications of participatory techniques in Kenya showed promise and potential difficulties associated with their application to research on issues central to the livelihood of communities. Campbell's field research in the late 1970s on drought coping strategies among the Maasai of southeast Kajiado District involved both Freirean empowerment and the empirical concerns of research (Campbell 1984, 1987). Then a researcher at the Institute of Development Studies (IDS) at the University of Nairobi, Campbell collaborated with a local literacy organization, the Adult Literacy Team (ALT), that was using Freirean approaches to adult education. The local organization sought to develop an educational process that reflected the social and economic realities of daily life of people in the area. Thus, IDS researchers and ALT development practitioners held overlapping interests in creating a participatory process for cooperative research. The ALT took responsibility for organizing workshops at which drought and land use issues were explored in a manner that allowed participants to freely express and discuss current problems and the origins of those problems. The meetings involved the use of coded drawings to focus the discussion on specific issues and their importance to local livelihoods. Small group discussions allowed in depth discussion of issues. The participatory workshops were deemed a success by ALT and IDS in building a mutual understanding of local problems and potential for addressing those problems.

Attempts to replicate the process in Maasai communities of Narok District were not successful. In this case, there was no collaboration with a respected and well known local organization. Furthermore, the presence of civil servants from the Ministry of Agriculture, with whom the local communities were not on good terms, further dampened the mood of the meetings. Thus, the context of the methods did not permit the same transparent participatory process and sharing of

information and analyses. Nevertheless, the experience in Kajiado provided the research team with an indication that overlapping objectives between research and development projects could produce positive results.

In a similar vein, Berger (1993) sought to use participatory research techniques to guide the design of wildlife extension programs in the same areas of southern Kenya. Berger's work also sought to achieve Freire's objective of developing critical consciousness among participants through an exploration of social and economic realities that shape peoples' livelihoods. Its central objective was to understand how local peoples' livelihoods could be linked to conservation efforts that were sought by the scientific and conservation communities and upon which Kenya's lucrative tourist economy depended. While addressing the marginalization of Maasai communities from economic and political processes affecting land rights and conservation was a central concern, the research did not allow the community to identify wildlife conservation as a central priority. Rather the point of departure and objective for the participatory process was "to evaluate participatory education and research methods as strategies for involving the public in wildlife conservation" (Berger 1993: 53). The research process was clearly beneficial in terms of developing dialogue between researchers and the communities that were bearing the burden of wildlife conservation. While basing conservation strategies in the realities of people's livelihood struggles was important, the focus on wildlife conservation as a central objective was determined *a priori* rather than through a participatory appraisal of community priorities. Thus, the research was successful in bringing otherwise marginalized communities into the process of developing conservation strategies. However, the communities did not have the power to identify community priorities that were outside of the realm of wildlife conservation.

Divergence in the objectives of participatory techniques is clearly illustrated by these examples. The adoption of participatory methods by both projects were pragmatic in nature. However, the collaboration between the IDS and ALT teams in Kajiado District highlights the potential for beneficial outcomes when common objectives exist between researchers, development practitioners, and broad sections of local communities.

4. Critical Perspectives on Participation

The rapid expansion in the use of participatory methodologies has raised a number of critical questions for both researchers and development practitioners. The application of participatory methodologies to research investigating the driving forces of land use and cover change also requires careful consideration of the meaning of participation within LUCC-oriented research. Questions of scale, power, and social action are all central in understanding the way that research may be, in a broad sense, beneficial to local people as well as an important tool for improving empirical field research. While it is hoped that both of these objectives will contribute to the recognition of development problems within local communities and among non-governmental organizations and policy-makers, the following themes are fundamental to addressing the needs of both the researchers and the communities that participate in research.

4.a. Understanding local interpretations of driving forces of LUCC

A central objective of LUCC science is to identify driving forces of land use and cover change at multiple scales. As such, at the household/community scale the use participatory techniques can serve an important empirical objective of correcting or refining interpretations of household survey data. Participatory workshops can provide essential caveats and refinements to narratives of change developed through the analysis of survey data. The focus of participatory techniques remains the experiential and local. LUCC researchers require theoretical frameworks that allow them to integrate complex local analyses with an understanding of their intersection with external

forces, in particular changes in the regional political economy that set the stage for local adaptation and change.

4.b. Differentiated communities and the voices of participation.
Researchers and development practitioners view participatory techniques as a means for creating beneficial self-analysis at the community scale, leading to social change. However, the relationship between inclusion in a participatory research forum and beneficial change, particularly for the most vulnerable in society, is not clear. In some cases, marginal groups may wish to avoid participating in such forums given poor relations with or fear of retribution from local elites. In a research context in which the research team may interact with the community for a brief time period, the question of inclusion of marginal groups in the society in research is all the more important. In other cases, participation and investigation of the dynamics of resource use may bring to light power issues that both powerful and vulnerable groups would prefer not be discussed in a public forum.

The experience of community-based organizations and political movements raises complex questions about the nature of community. To what extent is the community heterogeneous in terms of ethnicity, religion, and wealth? How do these characteristics affect the process of framing narratives of changing nature-society relations? How does the community deal with issues of tradition and change? To what extent do the narratives developed in participatory group forums reflect the diversity of lived experience in terms of age, gender, and religious affiliation?

4.c. The context and positionality of participation.
Researchers entering a given community are never the first to introduce the notion of participation as a means to solve local problems. While the approach may seek to be more transparent and inclusive than past efforts, local communities may have difficulty disassociating current research led by outsiders with past research or development efforts. As such, outside researchers must be aware of the positionality of research, no matter how participatory, as created by past experience. Furthermore, facilitation of research by local research assistants, who are often of elevated educational and socioeconomic status, may also make difficult the participation in discussions of contemporary community issues. Finally, local government, which is often the vehicle for organizing research forums, may further shape the way in which local people understand the objectives of the research. The relationship between local administrators and their constituencies as well as their past use of public meetings as a means of gaining cooperation in government initiatives may have important implications for the kind of information provided and the way in which such forums are approached by local people.

III. LUCID RESEARCH: ILLUSTRATIONS FROM COMMUNITY WORKSHOPS

1. Introduction
The Land Use Change Impacts and Dynamics (LUCID) research network is engaged in research that seeks to identify the socio-economic and environmental driving forces and consequences of land use and environmental change. Research sites are located in Kenya, Tanzania, and Uganda. In each site, multiple methods of field research are employed in order to develop an understanding of the driving forces of land use and cover change at multiple scales.

Community workshops were undertaken as a means of collecting data complementary to other kinds of data collection such as household surveys conducted previously within the study areas. It was hoped that the community workshops would provide a clarification of the interpretations of

household survey data. In addition, the research teams were sensitive to the importance of understanding the "community" as a socially and economic differentiated group of people and hoped that the workshops would assist in developing a more complex understanding of the local and regional driving forces of change. Third, it was hoped that the exchange between researchers and local people would lead to the identification of priority needs of mutual interest within these communities. As such, the community workshops served as a means of creating a dialogue between communities, research teams, and some cases, local leaders. Community workshops were undertaken as a means of collecting data to complement other information in a triangulation of findings approach including from household surveys, key informant interviews, remote sensing and other spatial analyses, and plant and soil surveys. The researchers were sensitive to the importance of understanding the "community" as a socially and economic differentiated group of people and hoped that the workshops would assist in developing a more complex understanding of the local and regional driving forces of change. Several workshops are held in each site – during the research process itself to introduce the researchers and to gather community-level LUCC driving forces information, and later following the analysis and interpretation of data. The purpose of workshops is threefold: 1) to help ensure that the researchers are correctly interpreting the data and information that they have gathered 2) to return to the community useful information that has been gathered by the project, and 3) to have the community and local decision makers discuss problems and consider policy and other implications of the information (Maitima and Olson 2001; Olson et al. 2004). This section draws on several examples from community workshops in Kajiado, Embu, Mbeere, and Tharaka Districts to illustrate the advantages and potential difficulties associated with carrying out workshops under such a broad agenda.

2. Kajiado District, 1978, 1996, and 2004

Members of the LUCID team have experience with community workshops during field research conducted in 1978 (Campbell 1984;1987), in 1996, and in 2004. In all cases the workshops served as a venue to return the results of field research to the community, to discuss and evaluate the results and the interpretations of the research team, and for the people at the workshops to brainstorm possible options for them to deal with issues identified as of concern.

The 1978 and 1996 workshops were preceded by an extensive household survey that was carried out among farmers, herders, and farmer-herders. In 2004, the workshops were done after four major research efforts; (1) an extensive household survey of farmer-herders (Wangui 2003), (2) a detailed soil physical and chemical analysis (Gachimbi 2002), (3) water quality analysis in the irrigated areas (Githaiga et, al. 2003) and (4) a land use change analysis based on satellite imagery interpretation (Campbell et al. 2003).

Detailed accounts of the 1978 workshops are found in Campbell (1984), and for the 1996 workshops in Appendix 1 of this paper. The workshop formats were similar at all times. To ensure a balanced coverage of farmers and herders, workshops were held in market centers, in 1996 at Rombo, Illasit, Kisanjani, Isinet, Namelok, and Mbirikani. In 2004 the workshops were held at Rombo, Kikelelwa, Kimana, Isinet, Loitokitok and Kisanjani. During the 2004 workshops, concerted efforts were made to encourage women to attend. Attendance ranged from 35 to 150 people. The proportion of women attending ranged from 3% to 48%. The meetings were led by Maasai trained in workshop facilitation[1].

[1] The workshops in 1978 were led by the Adult Literacy Team from the Catholic Mission in Loitokitok. The members of this team were Anthony Mepukori, Kenny Matampash, Peter Kisopia and Danny Mayani. Mark Kisopia was the senior assistant on the field survey. In 1996 the workshops were led by Daniel

Following the principles outlined by Freire (1974), the study team presented the principal findings specific to each area and also stated the major problem identified in each area. To initiate the discussion, the workshop participants were then asked to address the following questions (i) Is this the problem? (ii) What are the causes?, and (iii) What can we do about it?

Participation provided the local communities with an opportunity to evaluate their own position in the context of the complex social relations that contribute to their problems, and find local solutions to their problems. Loitokitok Division is politically distant from the center of government and consequently it has not been a high priority in government resource allocation. In 1978 one of the key concerns of the people of the area was to promote greater food security in times of drought. The area was recovering from a 4-year period of low rainfall during which many livestock had perished, and food shortage was widespread. At the workshops there was considerable discussion of this issue and frequently participants called for greater government assistance. In response to the question "What can we do about it?" one workshop suggested that the building of a grain storage facility at the local market town, Loitokitok, would permit people to store grain against a future shortage and thus be less dependent upon the purchase of food from traders at a high price. Subsequently this idea was put into action and a grain storage facility was constructed.

The feedback workshops served to illustrate the importance of integrating researchers' finding with local interpretations. At a meeting at Namelok in 1996, the team reported that the results of the household questionnaire survey indicated that the degree to which people shared during the previous drought, resort to social capital, had diminished as compared with 20 years ago. This was challenged by participants and a lively discussion ensued between them and research team.

The finding was, to the research team, consistent with the expectation that as rural societies become more integrated with external systems, so their reliance on local social capital will diminish and that on external sources of assistance increase. The results of the survey provided among the first empirical evidence from Africa that this might be the case. The team was therefore excited to publish these results.

After much discussion one of the participants indicated that, unknown to the research team, an NGO had distributed food in the community three days prior to the arrival of the team to conduct the household questionnaire survey. When the questioning turned to responses to drought and food shortages the interviewees assumed that this survey was a follow-up to the food distribution, and wanting to ensure future assistance from the NGO they had emphasized the importance of external support. In fact, the social capital of the area remained and was an essential component of life.

This example clearly illustrates the importance of the community workshops to the research process. Had the team not returned to discuss the findings then it is probable that a paper would have been written providing among the first clear evidence that as rural societies become integrated into national systems, so local social capital declines in importance. Given the salience of the finding this work might well have influenced policy and other research activities.

Participants of the community workshops involuntarily demonstrated to the researchers that participation is not an apolitical process. Circumstances in the study area had inevitably changed

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Somoire, Paul Ntiati, with Joseph Lempira. By 1996 Anthony Mepukori was Senior Chief. In 2004 the workshops were led by Anthony Mepukori and Richard Supeet.

between 1978, 1996 and 2004. The population had increased and become more diverse both ethnically and in terms of livelihoods. The distribution of population had expanded on the mountain slopes and into the surrounding lowlands, particularly along rivers and around swamps. Irrigated horticulture had become economically important and involved the area into national economic circuits. Further, in 1996, the influence of national politics had resulted in a more restrictive climate for engaging in public discussion, particularly for women. The outcome was that in 1996 women did not attend the workshops, while they had been well represented and were active participants in those held in 1978.

To ensure that women attended the 2004 community workshops, we designed a publicity campaign that would reach women in their spaces. We also designed workshops that were short and we emphasized punctuality. Our hope was that women, whose time is usually committed to domestic and agricultural chores, would afford the time to attend. Even though public discussion was no longer perceived as threatening by 2004, it was still a challenge to get women who attended the workshops to participate. In addition, while in 1978 we were able to divide the participants into small groups to encourage participation by all, in 1996, and 2004 the meetings were held entirely with the group as a whole. This meant that the meetings were structured in a way that might have prevented some voices from being heard.

During the 2004 workshops at Rombo and Kisanjani, participants were concerned about the deteriorating quality of their soil and water resources. At Rombo, they recognized that processes beyond their geographic area contribute to deteriorating soil and water qualities in their locale. The question "What are the causes?" led to a critical self-evaluation of their role in aggravating the problems. They arranged to have a follow up workshop amongst themselves where they would come up with an action plan on how to protect their soil and water resources. At Kisanjani, concern for soil quality motivated an evaluation of existing local knowledge of farming techniques and soils management(?). Participants identified those among them who had the technical background that would lead to informed decisions on appropriate chemical and organic soil inputs. Workshop participants decided to draw on this local expertise more, instead of relying on expertise from government officials who rarely came to their area. This example highlights the importance of dialogical approach to community workshops. In this case, information provided by the research team served as a catalyst for efforts to mobilize local knowledge for improved environmental management. The interaction also contributed to a clearer understanding of the interaction of local and external drivers of land use and cover change.

By 2004, analyses of satellite imagery had revealed an expansion of both rainfed farming in the highlands and irrigated farming on the lowlands. New fields were obtained from land that had been previously under pasture (Campbell et al. 2003). This change in land use had the impact of changing the gender roles and relations within the household. Women became increasingly involved in livestock production as men's labor was drawn into cash crop production. Increased cultivation and use of agricultural chemicals negatively impacted on soil and water quality particularly in the irrigated areas.

The 2004 community workshops provided an opportunity to integrate the researchers' interpretation of survey data with critical commentary from local people. The immediate result of this exchange of ideas is that researchers and members of the communities came away from the meetings with a deeper understanding of changes in intrahousehod relations. Household survey data on gender division of labor led researchers to conclude that women all over the division were spending more time on livestock production duties than men were. The men reacted to these

results with amusement and denial. They stated that livestock belonged to men, it was men's responsibility to take care of livestock, and that the contribution of men to livestock production was greater than that of the women. The researchers then asked men to clarify their statements with specific examples of duties performed by men and women and a critical evaluation of the time taken for each duty. After a short discussion amongst themselves, the men realized that women do spend more time on livestock production. On several occasions, women spoke out in support of the researcher's finding, but only after the men had indicated agreement. This example illustrates the role that researchers working with quantitative data can have in giving visibility and recognition to the work of an undervalued section of a community.

3. Tharaka District, 2002

Community workshops in Tharaka District were carried out in conjunction with a broader field study of land tenure reform and its impacts on land use and land management (Smucker 2003). The workshops were preceded by an extensive household survey that provided data on socioeconomic characteristics, land tenure, and land use/management practices. An initial series of small group discussions were also carried with farmers to assist in interpreting the survey data. A central objective of the study was to characterize the process of agricultural intensification in Tharaka and to identify primary internal and external driving forces of change as mediated by local changes in land rights.

One of the primary changes identified by the household survey was a significant increase in land under cultivation and labor devoted to crop management. There had been a consequent decline in per capita livestock holdings and a growing dependence of livelihoods on crop production. The intensification of land use required increased commitments of labor to the production process, particularly due to dramatic increase in requirements for weeding labor.

The workshops were held in four locations within the district. Attendance ranged from thirty to eighty participants. Both men and women were present in nearly equal numbers. The context varied to some degree depending on the local officials who were present and additional announcements and discussions that were presented.

Several empirical findings from the household survey were expanded upon and given much greater detail in the workshop forum. Despite frequent crop failures due to insufficient rainfall, farmers complained repeatedly that in good years they had no means of disposing of their crops and were unable to consume what they had. As such, most farmers resorted to selling millet cheaply in local markets. Yet, when Tharaka farmers must purchase food in markets due to drought and crop failure, prices for crops brought in from outside the district can be as much as double what the farmers were paid when they were disposing of their surplus. The discussion clearly pointed to possibilities of improved crop storage as a means of protecting farmers from the vagaries of the local markets. While the household survey identified crop sales as a primary income source and indicated that food purchase in local markets was a primary drought coping mechanism, the workshop format helped to elucidate the cyclical nature of the buying and selling of crops and livestock as related to the drought cycle. As in the previous case, the participatory format, which allowed people to develop their own narratives of change, led to the cooperative identification of common problems and suggested viable solutions.

However, the identification of other elements of change was more complex and pointed toward limitations of participatory community forums. A major change in local production relations that resulted from the increasing need for household labor was the participation of women's weeding groups in wage labor. Such groups challenged norms related to the control of women's labor and

income. Furthermore, while women's groups were a central component of the local adaptation of land use practices, their involvement in women's weeding groups was a contentious issue within some communities. In most communities, women had resisted any formal recognition of the groups out of fear that the organizations could be steered toward other local agendas.[2] However, despite lack of formal structures, the development of women's groups was clearly a central dynamic in the Tharaka response to changing land rights and other pressures to intensify agricultural production. Furthermore, the groups constituted a central component of household coping strategies during drought-related food shortages. In this case, however, such informal groups clearly did not see it in their interest to be formally identified within the community as participants in the research process. In the case of informal women's groups, silence and non-participation in the research process might be equated with a form of power as the groups feared that a broader assessment of the groups' activities could bring about the cooption of the labor of work parties by male community leaders. While women did freely participate in some of the workshops, the issue of women's working groups was not freely discussed in any of the meetings. Such information was only available through key informant interviews.

A third issue further illustrates the situated nature of the research process, even when a broadly participatory and transparent process is adopted. In Tharaka, as in much of Kenya, most public meetings are presided over by local public officials. In some cases, this creates a forum at which local people can confront local leaders with the problems that have been deemed important through collaborative research, thus giving greater legitimacy to calls for government action. However, such meetings can also become a vehicle for local leaders to enact their own agendas or to use research to justify past actions or government policy. A meeting in Tharaka - several months in advance of the 2002 presidential elections in Kenya - was used by the local chief to introduce members and officials of the ruling party. Party officials used their introduction to praise the chief's performance and to rally support for the upcoming electoral campaign of ruling party candidates. The research team had no means of disassociating itself from the overtly political agenda of the meeting. One can only speculate about the impact on peoples' participation in dialogue on the research results and their perception of the research team's political commitments.

4. Embu and Mbeere Districts, 1998 to 2004

The team's experience in Embu and Mbeere Districts illustrates many of the potential benefits and pitfalls of participatory research discussed above. Participatory community workshops were first conducted in 1996 for a research project that was associated with the Ministry of Agriculture's Extension Service. Follow up research was conducted in 1998 and 2001-2004, again with the support of the Extension Service and the local government (Olson et al. 2004, Mariene 2004). The purpose of the research was to identify the socioeconomic causes of land use and land management changes that were leading to land degradation. Two of the chosen communities were then in the Ministry's soil and water conservation (SWC) catchment program in which the Extension Service had organized terrace construction. Two other communities, a few kilometres from the catchment communities, were chosen to provide a comparison.

In each of the four communities, local government leaders and extension agents called meetings to introduce the research team members, their objectives and their activities (which included household surveys, use of GPS and soil sampling, as well as workshops). These initial meetings were similar to those regularly held by the local government to communicate news (*baraza*), and similar to meetings held by extension agents to organize terracing and other activities. As such, the information communicated and particularly the visible support provided by the government

[2] Similar developments are reported by Rocheleau (2001) in Machakos District, Kenya.

and extension service to the research team was critical in obtaining community permission and cooperation in the research.

Such visible support by the government was indispensable for obtaining the necessary high level of cooperation by the community. It also positioned the researchers as associated with the government and the extension service. This somewhat reduced the outsider status of the researchers (a team composed of an American white woman or man, and well educated young men and women research assistants from nearby divisions) but undoubtedly coloured what community members would say. It also initially affected who attended the workshops, since people assumed that the SWC catchment committee members (mostly old, relatively wealthy men) would be those concerned. In later workshops, the team requested that young people and those that were not necessarily rich attend meetings. Nevertheless, older men tended to dominate the discussions at the workshops especially before people knew the researchers. Separate workshops were, however, held for women. These tended to attract a broader range of community members and participants appeared to be more open in discussing, and arguing and laughing about, community and household level trends and problems. Since the women were mostly originally from other communities and had moved to the researched communities at marriage, they had less knowledge of the history of the area, such as concerning the land allocation process. They did, however, have insights into the effects of male out-migration, labour shortages, and poverty on land management and land degradation.

Once all the LUCID project data and information on vegetation change, soil degradation, wildlife and land use change for the site had been collected and analyzed, a feedback workshop was conducted with a facilitator and several of the scientists including the soil scientist (Mariene 2004). During these workshops, interim results of the research were presented and the community members were asked to confirm the interpretation of the data and provide comments. The community corrected a few interpretations of the data, such as that the initial migration to clear land actually occurred by people moving from the mid-elevation areas (not from the higher elevation areas, which those communities had told the researchers). The workshops were very successful in generating community interest in the research results; indeed one community later instituted rules restricting cutting of trees for fuelwood harvesting and grazing in communal woodlands.

Much critical information was obtained during the workshops that could not have been obtained from household surveys, literature reviews or other sources. The information came from the process of discussion among participants, comparing recollections or interpretations of events, and coming to a consensus. The sharing of maps of land use change, or soil sample or survey analysis results was particularly useful to stir interest in the topic (even if the results were not a surprise to participants). Information particularly useful for land use change driving forces analysis were especially higher level questions such as: the history of land use change in the area, who gained or lost during the land allocation or subdivision process, changes in the use and extent of communal lands, the impact of the changing economy or government programs on the area, and particularly questions of past, current and future trends in land use. Some topics that would be too sensitive to ask in a household survey could be discussed in a generic sense, in an impersonal manner, within a group. Examples include changing gender roles, the lack of labour to accomplish farming tasks, or the future of the next generation.

IV. CONCLUSION

The use of participatory methods, such as feedback workshops and community forums, presents distinct empirical advantages to researchers examining the social dynamics of land use and

environmental change. Participatory methods allow researchers to develop an understanding of critical intersections of social and environmental change through a dialogical process whereby participants frame the central categories and change processes themselves. This was a particular benefit to LUCID researchers because it provided a more complex understanding of the mediation of external political, economic, and cultural processes by households and communities within various local contexts. Additionally, the narratives developed in such forums were essential to understanding how external drivers of change are reflected in decisions emanating from the household level. The LUCID research demonstrates the strengths of such methods in developing an understanding of the dialectic of social structure and human agency that shapes that dynamics land use and environmental change.

However, the realization of these advantages requires sensitivity to multiple dimensions of social stratification and recognition of the situated nature of researcher presence within rural communities. The realities of lived experience offered by people within participatory forums must be understand as representing partial and situated knowledge of the changes in question. Thus, narratives require interpretation with an understanding of differentiation along gender, generational, ethnic, and class lines. Such dynamics may also impact who speaks and who remains silent as such forums and the power dynamics underlying both active and passive participation. Furthermore, the past experience of local communities and the facilitation of research with local organizations and local leaders may play a major role in structuring researcher interaction with the community and, ultimately, the effectiveness of participatory methods. The positionality inherent in a researcher's presence in a community may be shaped by past experiences, the researcher's relationship with local NGOs, community leaders, and political leaders.

In addition to empirical advantages, our experience suggests that pragmatic approaches, such as that of the "virtual participant", can indeed contribute to forms of local empowerment. Where local groups or NGOs are generally accepted, their objectives may be facilitated through a participatory research that offers genuine reflection on fundamental problems facing the community. Furthermore, the research team can present the findings of its investigations in a transparent manner, thus contributing to a more meaningful discussion among local people, development practitioners, and local leaders. We found that communities were particularly interested in the knowing the results of household survey and environmental data analyses which, it was hoped, would inform them in undertaking new local initiatives and in their interaction with local leaders.

Recent emphasis on the need to integrate various kinds of data, each with its own epistemological assumptions, presents a unique challenge to researchers concerned with complex interactions between society and environment. A host of pragmatic problems also face researchers who work in communities whose livelihoods are in decline despite considerable past attention from researchers over the last three decades. Participatory methods can be an integral means of addressing both concerns. They may provide a crucial link between local and external processes of change that is a central objective of LUCC research. They may also contribute to establishing a tradition of transparency and diaological learning between researchers and communities.

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Appendix
Reports from the Feedback Workshops in the Loitokitok Area, 1996

Workshop I (Rombo Group Ranch)

This workshop was held at Rombo shopping centre on 8th August, 1996 and 33 members of the community, including Senior Chief Anthony Mepukori attended. Farmers, herders, and Group Ranch leaders were represented in this meeting.

Food shortage emerged as the major issue for the Rombo area. Conflicts over water were also reported to be on the increase. The farmers were saying, "Herders are destroying our crops as they look for water." The herders on the other hand were saying, "Farmers are using up our water." Both groups were saying, "Wildlife is a problem."

Those present agreed that hunger and poverty were the main problem in the area. They also noted that land use conflicts between cultivators, pastoralists, and wildlife were on the increase.

Community's perception of the causes:

(1) Influx of immigrants to the area. Some of them are cultivating large tracts of land, e.g. 30 acres.
(2) Lack of appropriate land use planning
(3) Wildlife population is increasing in settled areas due to water shortages in other parts of the group ranch
(4) Over-cutting of trees is leading to less rainfall and accelerated soil erosion
(5) Irrigation is leading to overextraction of water from rivers and to their pollution by pesticides
(6) People lease their land regardless of what is going to happen to it since they need money [poverty]
(7) Money from land leases is often used to purchase additional cattle. [resulting in more pressure in the grazing areas]
(8) Most landowners do not stay on the land. They keep migrating with their livestock and do not oversee the use of their land. [Big differences in the condition of lands belonging to resident and non-resident owners are observable.]
(9) Wildlife is now a threat to crops, livestock, and human life.
(10) The Group Ranch is seen as nobody's land. Haphazard cultivation and problems such as too many cattle tracks are common.
(11) Three quarters of the Group Ranch has too many elephants.
(12) Land use conflicts are intensified by increased herding and cultivation.
(13) The token money coming from the KWS is inadequate and pastoralists are disadvantaged.
(14) Productivity in the old shambas is very low. For tomatoes, only 6-10 crates per acre are being harvested from old lands while 600 crates per acre can be harvested from virgin lands.

Solutions proposed by the community:

(1) Dialogue between landowners and leasers to reafforest the land
(2) Improved extension services
(3) Electric fences around cultivated areas
(4) Appropriate land use planning and zoning by Group Ranch committees [clearly delineate grazing and cultivation areas]
(5) Identifying other sources of income for the community.
(6) There should be an emphasis on the production of adequate food.
(7) There is need to harmonize land leasing procedures.
(8) Leasers should not be allowed to cut trees for charcoal. They use the same to pay land rents.
(9) Landowners should ensure that trees are planted on the land they have leased out.
(11) We request an electric fence around the privately owned cultivated areas.
(11) The Group Ranch management should act to minimize conflicts between herders and cultivators.

Workshop II (Illasit Area)

The workshop was held on 8-8-96 at Illasit Primary School and was attended by 27 members of the community. According to the February, 1996 survey lack of food was cited as the major problem in the area. The community also expressed fear that the land will not be able to support their children in the next 20 years was prevalent. The workshop participants saw hunger as a consequence of environmental degradation.

Perceptions on the causes of environmental degradation and hunger:

(1) Decreasing farm sizes
(2) Soil fertility decline
(3) Soil erosion has increased
(4) Woodland/bush decline
(5) Population increase
(6) Overgrazing in the dry season, cattle are brought back to the farm lands to feed on crop residues and available grass
(7) Those leasing land for farming are not taking good care of it to ensure long term sustainability
(8) “Droughts are more frequent nowadays”, said an elder who settled in the Illasit area in 1958
(9) Lack of suitable seed varieties
(10) Cutting down of trees
(11) Mono-cultural cropping (maize and beans are the dominant food crops)
(12) Water shortage.

Solutions proposed:

(1) Educate people on the need for sustainable land use practices that will cater for the needs of present and future generations.
(2) Crop rotation needs to be encouraged.
(3) Longer periods for leases (e.g. 4-5 years instead of 1 year) but with very specific conditions on tree protection and planting are necessary.

(4) The leasers and landowners should fully educate each other on their rights and obligations. For example, landowners should not see the planting of trees by tenants as their way of laying ownership claims on the land.
(5) The community needs to adjust some cultural practices so that those that are good for the environment are encouraged, e.g. diversifying eating habits - maize and beans only vs. meat only.
(6) Plant trees along the boundaries and hedges. Proper choice of species is necessary, e.g Grevillea is preferred over Croton.
(7) Construct terraces in steep areas
(8) Follow the agricultural practices recommended by agricultural extension officers.
(9) Protection of water catchments, e.g. Illasit spring.

Workshop III (Kuku Group Ranch)
The workshop was held at Kisanjani on 9th August, 1996 and was attended by 39 members of the community.

Water shortage was cited as the major problem in the area. Herders said the shortage of rainfall and the expansion of agriculture to river banks is reducing available water supplies. Farmers on the other hand said that water is inadequate for farming. They saw cattle and wildlife as a problem. The group agreed that water shortage was a major problem for the community. In general, they felt that better farming methods were needed. They also noted that the proposed subdivision of the Group Ranch poses a major challenge to the balanced use of the land in future.

Causes of the problem:
(1) Diversion of the Nolturesh River to the Nolturesh water pipeline
(2) Expansion of farming activities
(3) Wildlife destruction of crops and predation on livestock.

Solutions proposed by the community:
(1) Land subdivision is necessary for proper land management.
(2) Determination of water potential in the area and the implementation of equitable distribution arrangements
(3) Diversion of water from the Nolturesh pipeline to the Group Ranch
(4) Drilling of boreholes in strategic locations
(5) KWS should intensify problem animal control
(6) KWS should provide compensation for life and property
(7) Construction of dams and pans to harvest rain water
(8) Create awareness on better land husbandry among landowners
(10) Construction of modern lion proof livestock bomas.
(11) Create a follow-up committee to ensure these recommendations are implemented

Workshop IV (Kimana Group Ranch)
This workshop was held at Isinet on 9th August, 1996 and there were 27

community members in attendance.

According to the survey, problems in Kimana revolved around issues of land-use change. Drought and food shortages were cited as a major problem. There was severe competition for scarce resources (especially water); farmers and herders were concerned about the impacts of wildlife on their livelihoods. Some farmers saw the sanctuary as a negative development as it is protecting animals that will destroy their crops; some members were concerned that income from the sanctuary would not get to them. 70% of the farmers were pessimistic about the land's ability to support the community in the next 20 years. In the case of herders, 50% were pessimistic.

In general, the community agreed that food shortage and drought are the main problems. Other problems related to competition between livestock, farming and wildlife were also cited.

Causes of the problem:

(1) Rains are not falling in adequate amounts nowadays
(2) Wildlife is competing severely with livestock and crops
(3) Water shortage
(4) Marketable products from this area are too few
(5) Water from the swamp is salty and leads to high salinity in cultivated plots
(6) Poor access roads
(7) Lack of market for horticultural products
(8) Soil erosion
(9) Malaria is a major health problem.

Solutions proposed by the community:

(1) Problem animal control - electric fence to keep animals off
(2) Education for both adults and the young on appropriate land use practices. Applied training for older people to enable them use land better was the preferred option.
(3) Lining of canals to maintain water
(4) Grading the access roads
(5) Provision of credit facilities
[There were a number of small traders in the group]
(6) Improvement of health facilities. The nearest dispensary is at Kimana Salient. We need a dispensary in Isinet.
(7) Improved marketing channels and better price information flow for our products

_ We should establish an effective marketing cooperative. In the past, marketing cooperatives have collapsed due to lack of accountability and transparency.

_ We should explore the potential for supplying horticultural products to local lodges

Workshop V (Namelok Area)
This workshop was held at Namelok shopping centre on 10th August, 1996. There were 45 members of the community in attendance. The Namelog area is inhabited by members of Kimana, Olgulului and Imbirikani Group Ranches.

The major problem in this area according to our survey was drought and hunger. On being asked whether land can sustain population in the next 20 years, 75-80% of the respondents were pessimistic. Drought coping mechanisms reported in a similar survey 20 years earlier included among others eating wild fruits, hunting and food storage. These strategies did not feature prominently in the 1996 survey. New drought coping mechanisms were mentioned in the 1996 survey - namely famine relief food and purchasing food from the markets. 30% of herders and 40% of farmers said they could do nothing about drought and famine in the area.

Community's perception of problems: A community leader pointed out that relief food was being issued at the time of our survey (February, 1996) and this may have given the impression that the community is highly dependent on it. He argued that only the poorest people were given relief food. He noted that community interdependence is the main drought coping strategy. The community agreed that frequent droughts, famine, and competition from wildlife have changed people's traditional coping strategies. They agreed that drought and hunger were the major problems for them.

Causes of Drought and Hunger:
(1) Lack of rainfall
(2) Wildlife menace (elephants & gazelles)
(3) Lack of market
(4) Poor prices for farm produce
(5) Lack of sufficient water due to population increases
(6) Lack of all weather roads
(7) Lack of diversification crops and other enterprises
(8) Lack of agricultural extension services
(9) Decrease in areas under woodland (an effect of population increase)
(10) High costs of farm inputs
(11) Livestock diseases
(12) Farming skills are not well developed. Immigrant farmers in the area are doing better than locals.

Solutions proposed by the community:
(1) Carry out a market feasibility study for farm produce
(2) Protection of water catchments
(3) Electric fences around cultivated areas.
(4) Being responsive to technical advice
(5) Culling or translocating some elephants
(6) Continued benefits sharing from wildlife
(7) Locals should effectively participate in cultivation
(8) Destocking of livestock through selling them when they are healthy

(9) There is need for increased food storage - centralized and individual stores should be considered
(10) Use traditional early warning systems to prepare for droughts - e.g. a major drought should be expected every 10 years, erratic short rains are often a sign of poor long rains ahead, livestock behaviour can also show when the seasons are likely to be bad [one speaker said that the animals actually look sad]
(11) Grading and repairing of rural access roads so they can be used in all weather conditions
(12) Lining of irrigation canals
(13) Children education

Workshop VI (Imbirikani Group Ranch)

The workshop was held at the Imbirikani shopping centre on 10th August, 1996. Eleven community members including the Group Ranch Chairman and some committee members attended.

The group was informed that according to the February survey, the major problem in the area was hunger and poverty. 40% of the respondents said nothing could be done about it while 61% said they wanted to keep more livestock as a way of coping with drought and hunger. The participants agreed that drought was the major problem. They explained that they keep more cattle during the good years so more can survive in drought years. Group ranch members reported that in 1995, many animals were moved to Makindu due to drought. The livestock contracted trypanosomiasis and many animals died.

Summary of the main causes of drought and hunger:

(1) Livestock diseases
(2) Wildlife menace especially hyenas
(3) Lack of sufficient water. Long distances have to be covered to get to the existing water points.
(4) Concentration of water on one part of the Group Ranch - along the Nolturesh pipeline
(5) A very strong attachment to cattle that prevents the community from selling
(6) Improper utilization of the land

Solutions proposed:

(1) Diversion of Nolturesh pipeline water to the Chyulu area
(2) Diversification of sources of income through timely destocking and investing in other enterprises
(3) Education of children so that they can get employment and non-farm income to support themselves and their extended families
(4) Subdivision of group ranch
(5) Change of attitudes towards cattle and move towards a market system
(6) Enforcing proper grazing cycles in the Group Ranch
(7) Provision of acaricides to control livestock diseases