Self-sufficiency, ecological stress, and rural poverty in Kibwezi Division, Kenya

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Abstract:

Kenya faces many problems typical of a developing country, including large-scale poverty in rural areas where population growth rates are high and both life expectancy and technological levels are low. Kibwezi is a community situated in a fragile physical environment experiencing rapid in-migration because of land availability. As more and more poor farmers settle the area, there is serious risk of environmental degradation, which only deepens poverty there. Efforts to improve the quality of life in Kibwezi need to focus on {a} the readiness of the population to organize around environmental issues, {b} the extent of people's environmental knowledge, and {c} the varying motivations individuals and groups have for dealing with ecological stress. This project involved cataloguing and categorizing community-based, nationally-oriented, and internationally-sponsored self-help organizations directly or indirectly working with issues of environmental management and resource exploitation in and around Kibwezi.

Acknowledgements:

Introduction:

Kenya has done much since independence in 1963 to earn a reputation as one of Africa's more developed countries. Nonetheless, while 70% of its approximately 30 million people still earn their living directly from the land, less than 20% of the country is arable. Moreover, there is considerable variation in the distribution of the arable, with areas of high potential for agriculture having historically been dedicated to export crop production strongly encouraged by the government. According to the World Resources Institute and the World Bank, the rates of land clearance and cultivation are accelerating in East Africa, chiefly as a result of the continuing commercialization of agriculture often coupled with inappropriate government regulation of land use by smallholders. For example, Thomas-Slayter and Rocheleau note the history of Kenya's Meru District, where government policy prohibiting multiple-use agriculture on land supporting coffee production led to environmental neglect during a period of low prices on international markets (1995, p.27-28). In general, while half to three-quarters of African labor is involved in the agriculture sector, increases in food production in recent decades have actually been accompanied by a decline in per capita food output given the focus on export earnings.

Stories of this sort help explain why most subsistence or small-scale farmers producing for local markets are trying to work medium- or low-potential land, often contributing unintentionally to substantial environmental degradation (Darkoh 1989). One such low-potential agricultural zone can be found in Makueni District, the southernmost administrative area of the region called Ukambani (Rocheleau, Benjamin, and Diang'a 1995; Rocheleau *et al.* 1995). Roughly heart-shaped, it is the homeland of the Akamba nation (85% of all Ki-Kamba speakers live here and 95% of the region's population is ethnically Akamba). Numbering about 2 million, the Akamba were important in the history of efforts made by those on the coast to establish steady contact with the interior, and before Nairobi grew to prominence, the British headquartered their colonial ambitions for East Africa in Machakos, the largest of the Akamba towns. While farming is better there than elsewhere in Ukambani, Machakos District has frequently been a net importer of maize, and as early as 1930 only 5% of the area remained tree-covered, with fully three-quarters of the district showing some evidence of soil erosion (Tiffen and Mortimore 1992). Population pressure had meant the fragmentation of family farms into plots too small to be viable for subsistence, let alone economic production. Subsequent environmental recovery (Tiffen *et al* 1994) came at the cost of culture change including land consolidation and altered forms of household resource management, as well as economic differentiation of the farming population (Murton 1999; Asamba and Thomas-Slayter 1995) following the closure of frontier areas and an end to shifting cultivation.

As a consequence, thousands have been driven down into the broad lowlands of scrub and giant baobab that open to the east. Ukambani straddles three administrative districts (Machakos, Kitui, and Makueni). Makueni District is further subdivided, its middle third called Kibwezi Division, which has an area of about 1,100km^2 and a population of approximately 80,000 centered on Kibwezi town. Most of this population has arrived only in the last 25 years, and although Kibwezi town is located just off the main road from Mombasa to Nairobi, it suffers from the typical lack of services found in many an ex-colony. Situations in the villages surrounding Kibwezi are even worse- without electricity or running water, hygiene and health are severely compromised. About half the population of Kibwezi Division is less than 16 years old, adding to the burdens placed on human survival in a fragile environment. Then, too, the region is notable for government efforts to protect major wildlife, with about 20% of Kitui District attached to the Tsavo East National Park rangelands and so removed from use by farmers.

As increasing numbers of Kenya's poor settle the area, there is serious risk of environmental degradation, which only deepens poverty there. Therefore, efforts to improve the quality of life in Kibwezi need to focus on {a} the readiness of the population to organize around environmental issues, {b} the extent of people's environmental knowledge, and {c} the varying motivations individuals and groups have for dealing with ecological stress. In collaboration with a local nongovernmental organization (the Foundation Agency for Rural Development), our project involved cataloguing and categorizing a number of community-based, nationally-oriented, and internationally-sponsored self-help organizations directly or indirectly working with issues of environmental management and resource exploitation in and around Kibwezi. Doing so allows assessment of the relative commitments of these groups to sustainable or nonsustainable use of ecological resources in the region, thereby improving awareness of possible points of contact for government and external agencies seeking to help alleviate problems confronting the population (Anderson and Grove 1987; Berry 1993).

Posing the problem:

This research is particularly concerned with how rural Kenyans and other actors involved in the region carry out practices having to do with what is frequently termed "sustainable development". For the purpose of this paper, the frequently quoted definition from the report *Our Common Future* (also known as the Brundtland Report) will be used. This definition states: *"Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs."* Still, a wide-ranging literature now acknowledges that the term is, at best, highly mutable. There are certainly important differences between First and Third World approaches to environmental sustainability (see for example Hay and Haward 1988; Broad and Cavanagh 1993; Foster 1998; Zimmerer 1996). Some

analyses approach environmental issues without a great deal of consideration for the needs of human populations (Naess 1993), others rightly pushing for stronger appreciation of issues of class (Bookchin 1987 and 1990; Faber 1992; Moore 1996; Weston 1986), gender (Biehl 1987; Carney 1996; Stamp 1986; Stephen 1992; Thomas-Slayter and Rocheleau 1995), ethnicity and local history (Bandyopadhyay and Shiva 1989; Bebbington 1996; Guha 1990; Routledge 1993), and so on.

Initially, it is important to note that this term should be allowed to take on a more precise definition depending on the geographical location in which such development is being applied. That is, the particular ecological, demographic, political, economic, and cultural situation of Kibwezi Division, Makueni District makes an individualized approach to sustainable development important. Likewise, within the Division, there is a need to carefully assess differences between state lands, trust lands, and resettlement zones, not to mention between towns and villages and between areas occupied by concentrations of different ethnic groups (Freeman, Lawrence, and Kiilu 2003). For example, we note in later discussion subtle but critical differences in perspective on environmental issues between populations living in the vicinity of Kibwezi Town and those nearby in the trust land area of Mbuinzau Hill. In other words there is not going to be one all-inclusive approach to development that will work well for this place.

This implies that the people of the area are those who, with help from others culturally sensitive to the situation, should be allowed to make the final decisions on how to progress (Stiles 1994). Whether we are speaking of the Kenyan State, international institutions, corporate capital, or the like, the powerful are generally remote from the area both geographically, politically and economically and tend to deploy development strategies that are inappropriate for the area (Bradshaw 1990; O'Brien et al. 2000; Rowell 1996; Scoones 1996). We will have more to suggest later about how this promotes a need to view "sustainability" as a highly flexible term central to many different, often contending discourses on what constitutes regional development in Kibwezi Division, but it is important here to suggest that a focus on localized strategies reveals more about the possibilities of direct action to intervene on behalf of environmental maintenance or rehabilitation (Berry 1989). Local group formation has been widely recognized as a common and effective strategy for rural households seeking to manage ecological crises (Blunt and Warren 1996; Honey and Okafor 1998), though as others have noted elsewhere, there is a need to avoid romanticizing a naïve vision of community activism (see for example Lundy 1999).

In any event, Kenya in particular has a well-established tradition of *harambee* or communal self-help (for an example within the Akamba region, see Hill 1991). Also, as elsewhere in the Third World, local organizational efforts in Africa often take on a particular gender focus inasmuch as the overwhelming majority of survival tasks involving natural resources involve women's labor (Barker 1989; Barrett and Browne 1991; House-Midamba 1996; Rocheleau 1987; Schroeder

and Suryanata 1996; Thomas-Slayter and Rocheleau 1995). Typically, such labor is only poorly remunerated at best, so the focus of our project was to find out about the environmental concerns that women and other marginalized peoples of the area are dealing with on a daily basis. The number of groups that have been formed in and around Kibwezi Town is enormous, but even though the scope of this study involved interviews with just 26 groups, given that the average membership of each group was 20 and that average family size in the area is 5, the environmental issues discussed below can reasonably be said to impact a population of about 2600.

A three-tiered question set was used for the initial group interviews. The primary question set asked for a description of the group's purpose, history and activities, as well as the demographics of its membership. The secondary question set focused on more in-depth detail about group function. Two areas of interest were investigated. The first dealt with the approach that the group was taking in attempt to increase each member's standard of living. Our second interest was to find out about the group's resource base. The tertiary question set involved inquiries into burdens faced by the rural poor. In an attempt to find out what concerns were facing each group, unstructured interviews were used initially to allow individuals and groups to speak to all concerns (environmental and others). After the first interview process was complete, all of the concerns directly or indirectly related to the natural environment were compiled. Together there were fifteen such concerns, about which we will have more to say in detail later.

Levels of organization, determinants of commitment, and critical environmental issues

After the initial group interviews took place, it became apparent that there were four rather distinct levels at which social groups organize around environmental issues. Also, a group's commitment to focus on environmental issues, in order to improve quality of life, depended on three overlapping characteristics. Each of these observations needs to be elaborated before proceeding to discussion of the environmental concerns identified by the groups interviewed.

To begin with, distinctions need to be made between at least four levels at which groups operate and interact (Esman and Uphoff 1988). While some groups are so small or limited in geographic scope of activity as to be recognizable only at a particular level, other groups frequently operate at multiple scales. Nonetheless, it is possible first of all to notice the prodigious number of small groups focusing on local self-help projects, frequently of an ethnic character (Mbula and Tiffen 1992). Some of these groups are little more than extensions of household enterprises formed by related families or lineages, while others may represent the interests of farm neighborhoods, villages, or town quarters. Many are target-

oriented, seeking to achieve a particular development objective beyond the achievement of which the group's future existence remains uncertain. This can be the case either for very small groups or for substantially larger undertakings like an occasional *harambee*. Others are survival based, focusing for example on low-tech farming training, while still other self-help groups may have profit-seeking motives that encourage members to focus beyond mere survival in an ecologically challenging region.

Self-help groups (especially when organizing a *harambee* or similar call for voluntary donations to a specific cause) often jump up a scale of organizational size, operation, and influence as community-based organizations. As is the case elsewhere in Africa, some Community Based Organizations (CBO's) are intensely patrimonial (Lawrence and Titilola 1998), perhaps to the point of absurdity, marshaling resources for projects that duplicate aims and achievements of neighboring communities when collaborative efforts would make more sense. Other CBO's are less obviously representative of the community in which they are found, often walking a tightrope as they claim to seek an improved future for everyone in a place like Kibwezi while facing limitations of how well they can secure change for large numbers of people at any moment. This is certainly the case of our collaborating organization, the Foundation Agency for Rural Development which, since it tries to avoid ethnic or locality affiliation, contends for example with backlash from some elements of the community for seeking funding from a British aid agency with a chequered history in the area. In any event, CBO's include such groups as funeral associations, water supply associations, and adult literacy associations, as well as "civil" cooperatives such as rural savings and loan associations, grain storage and marketing cooperatives, and other producer groups.

Beyond self-help and community-based organizations are those local groups that have a more intimate connection to nongovernmental organizations (NGOs) (Howes 1997; Kaluli 1992). Some NGOs are national in origin and scope (the Kenya Women's Finance Trust, for example), while others are internationally based and operate in many different countries simultaneously. In and around Kibwezi, a number of local organizations owe their establishment, their continued existence, or both to interaction with these NGO's. The advantages enjoyed by such local organizations is that they often have multiple project sites, funding, and access to publicity and government attention not ordinarily available to rural groups. The distinct disadvantages of such an existence include the compassion fatigue of outside donors and the willingness of such donors to presume privileges in setting agendas for specific projects.

Of course, such national and international organizations also operate on the rural landscape on their own. Activities of groups like CARE, AMREF, Catholic Relief Services, ARIDSAK, and others include drilling boreholes for increased water access, planting and managing forested areas, promoting small-scale rural enterprise, and so forth. In terms of headquarters, management, technical staff, funding, and special resources, these organizations are hardly local, but their day-to-day presence in the community requires at the very least the use of local

people for labor. Likewise, many of these organizations undertake training initiatives with local populations, though again there are issues of effectiveness and consistency of effort over time. For example, CARE has come and gone and returned to Kibwezi more than once, and in setting up a demonstration farm to promote mechanized capital-intensive chemical farming, the University of Nairobi expropriated thousands of acres of land, leaving thousands of local people divested of their very means required to take advantage of the techniques being showcased.

In general, it should be emphasized that any given individual is likely to belong at one time or another to more than one organization focusing directly or indirectly on environmental issues. For that matter, the significant mobility of populations in the region and the persistence of allegiance to ancestral locations (Freeman, Lawrence, and Kiilu 2003) also needs to be appreciated when considering what it means for an organization to claim a certain membership focus on any particular environmental issue. Therefore, there is a fair amount of interaction between self-help groups, community-based organizations, local groups sponsored to some degree by outside NGO's, and national and international NGO's and official institutions. This is certainly taken advantage of by the Kenyan government in its efforts to transfer more responsibility for rural development to civil society, together with more accountability for project failures, especially through elaboration of an ever-more complex bureaucracy of organizational registration and operation rules (Lawrence and Mwanzia 2000; Nyang'oro 2000; Widner 1992). Such moves are not, of course, limited to Kenya or Africa generally, as there is a growing trend toward official manipulation of informal organizational activities of all sorts (Hesseling 1996).

Regardless of operational scale, our observations also showed that a group's commitment to focus on environmental issues in order to improve quality of life depended on three things in particular. Foremost was the readiness of a group's membership to organize around environmental issues. Several reasons for such readiness exist. The level of contact with environmental is a large player. As was stated previously 70 % of Kenyans earn their living directly from the land. This dependence on the land holds true for the people of this region. This means that many individual's, and the groups that they are in, well-being in linked directly to the environment's ability to allow the people to produce agricultural goods. Since only 20% of the county is arable, group members are compelled to improve overall environmental conditions. Land ownership issues must also be considered in a group's readiness. Along with ownership of land comes the responsibility to be a caretaker of the resource. In addition, the length of ownership, thus increased contact with the land promotes a better understanding of place.

A second strong influence on the level of commitment any group might have to addressing local environmental issues involved the extent of each member's environmental knowledge. Depending on an individual's level of formal education, he/she may not have any training in environmental issues. It is understood that no environmental training exists within the primary school setting

(equivalent to grades 1 through 8). As mentioned above, a member's level of contact with the environment promotes environmental knowledge in several ways. Beyond formal education, there are several external sources of information available. A primary source of information comes from information sharing or training offered by other social groups such as KEFRI, FARD, ARIDSAK, K-REP, and others. The level of access to such informal educational material must also be considered. One's level of access can be limited by one's level of formal education, distance to these organization's work site, such organization's level of outreach/advertisement, et cetera. It is also crucial to recognize the forms and extent of indigenous environmental knowledge (Warren et al. 1995).

Thirdly, groups and individuals within any given group, have varying motivations for dealing with ecological stresses present in the area. Again, the level of contact that a group has with the environment and the groups overall focus is very telling. Also, the type of relationship promoted with the environment must be considered. Each group has its own mission towards achieving more of either economic incentive versus environmental incentives. Geographical location also comes into play. Issues such as access to water and markets, land quality and land ownership all fall under locational concerns.

The applicability of these three traits can be applied in a very telling manner. When examining each group individually, we were able to determine where each group located itself in regard to its commitment to work with issues concerning environmental management, resource conservation and/or exploitation in the Kibwezi Division. The geographic localities specifically worked within again are Kibwezi Town and the nearby Mbuinzau Hill community. These communities were selected for research focus because of previous contact by BSU faculty and because the issues studied are particularly severe there.

Having identified types of organization and key determinants of commitment to addressing environmental issues, eight groups were then revisited to conduct a directed ranking exercise (Hammel 1962; Weller and Dungy 1986). In this exercise, a list (see below) was presented that included fifteen items voiced during previous interviews with the groups as particularly relevant when considering environmental issues in Kibwezi. Items were listed in no particular order and lists were presented in both English and Ki-Kamba to facilitate access by non-English speakers. The exercise was conducted in two stages, the list being presented for consideration by individual members and then by a group as a whole for consideration. For purposes of this paper, analysis will focus on the responses of individuals given the larger sample size for consideration.

How would you rank the following environmental issues? Utonya kuvanga maundu aya ata ma kuu twikalaa?	
A. Low-potential land	A. Nthi ite nzeo kwa uimi
B. Tree-cutting for charcoal	B. Kutema makaa
C. Pests	C. Iinyu / Ngulu (Midudu ya indo na maleu)
D. Farming techniques	D. Nzia sya uimi
E. Displacement	E. Kutham'wa
F. Land registration	F. Kuandikithya muinda
G. Agricultural extension	G. Unyaiikya wa Uimi
H. Overgrazing	H. Kuithya kwingi
I. Water	I. Kiw'u
J. Population	J. Wingivu wa andu
K. Marketing	K. Uthoosya
L. Roads/Transportation	L. Maleiu
M. Education	M. Kisomo
N. Nutrition	N. Miile (maliu maseo)
O. Access to bank accounts	O. Inandu / Uii wa Mbesa

Since a lot of how people reach decisions, about their relationships with natural resources for example, has to do with the contexts (cultural, economic, political, etc.) in which they find themselves, the primary objective of the exercise was to discover how various groups and their members ranked these issues in terms of relative importance. Anthropological research has shown that directed ranking or its more open-ended equivalent, "freelisting", are simple but powerful ways of generating insights into how members of a particular culture or subculture process information about the world, what they consider meaningful and what they dismiss as trivial or even fail to consider at all (Romney and D'Andrade 1964; Henley 1969; Trotter 1981; Gatewood 1983 & 1984; ICMR et al. 1993). Three assumptions are involved in analysis of the results of this sort of exercise:

{1} the responses of greatest significance to informants are those which appear earlier on any single list, {2} the responses of greatest significance to informants are those which appear more frequently among all lists, and {3} informants attach greater significance to particular associations between responses on a list.

While full analysis of the exercise awaits completion, some important observations can already be made. Three populations were focused on for the analysis of the results generated from the directed ranking exercise. These populations are group members in Kibwezi, Mbuinzau, and the combined total of both populations. After completing the initial round of analysis it was determined that the sample size of individual rankings for Kibwezi was too small and biased due to the limited number of individual group members revisited. However, these rankings could be applied to the combined total of both populations.

Results from Mbuinzau will be examined first. The sample size for Mbuinzau is 75 people. As stated above, the responses of greatest significance to informants are those that appear more frequently among all lists. From the results, the top five most frequently ranked issues were: Education (M), Tree Cutting for Charcoal (B), Low Potential Land (A), Water (I), and Land Registration (F). Next, calculations were done to determine the significance of particular associations between these five most frequently ranked issues. The assumption here was that a list on which items M and B appeared, say, first and fourth (a distance of three ranks), was one that emphasized a closer association of these two issues than a list on which they appeared second and seventh (a distance of five ranks). In order to examine the associations between responses, the mean standardized distances between the five most frequently ranked issues over all lists was determined. In doing this, the top five associations between issues were made apparent. For the Mbuinzau community the top five associations are between Tree Cutting for Charcoal and Water (B and I), Education and Water (M and I), Education and Tree Cutting for Charcoal (M and B), Low Potential Land and Land Registration (A and F), and Tree Cutting for Charcoal and Low Potential Land (B and A).

Next, the results from the combined population of both Kibwezi and Mbuinzau will be examined. In order to obtain proper results we had to first standardize the populations for the whole set. In other words, we had to determine how many people of the Mbuinzau sample are equivalent to one person in the Kibwezi sample. To calculate this, the number of individuals in Mbuinzau was divided by the number of individuals in Kibwezi (75 Mbuinzau individuals / 24 Kibwezi individuals = 3.125). The result is that each Kibwezi individual needs to be multiplied by 3.125. The resulting sample size of this combined grouping was 150 people. From the results the top five most frequently ranked issues were: Education (M), Tree Cutting for Charcoal (B), Low Potential Land (A), Water (I), and Marketing (K). As before, calculations were then done to determine the significance of particular associations between these five most frequently ranked issues, now for the entire population; namely those between Tree Cutting for Charcoal and Water (B and I), Education and Water (M and I), Education and

Marketing (M and K), Education and Tree Cutting for Charcoal (M and B), and Tree Cutting for Charcoal and Low Potential Land (B and A).

Environmental issues most closely associated with one another in rank order...	
...in Mbuinzau alone:	**...in Mbuinzau and Kibwezi:**
Tree Cutting for Charcoal & Water	Tree Cutting for Charcoal & Water
Education & Water	Education & Water
Education & Tree Cutting for Charcoal	Education & Marketing
Low Potential Land & Land Registration	Education & Tree Cutting for Charcoal
Tree Cutting for Charcoal & Low Potential Land	Tree Cutting for Charcoal & Low Potential Land

Categorization of groups in relation to environmental sustainability

Overall, interview and participant observation research in and around Kibwezi, as well as analysis of the directed ranking exercise just discussed, suggest a continuum of groups in relation to environmental sustainability. Generally speaking, this continuum ranges from groups that are focused on ***environmental*** sustainability to those that are focused on ***economic*** sustainability. It is important to make several observations about such a continuum at the outset. First of all, a group's position along the continuum is relative to a variety of influences, suggesting that it may either advance along the continuum over time or even reverse position, perhaps more than once during its organizational history. Second, there can be significant differences between a group's position and the position of individual members. Third, it should be understood that economic sustainability need not be equated with a logic emphasizing continuous growth of productive activity; in other words, in may be enough for a group that it maintains profitable use of resources. Fourth, at the other end of the spectrum, groups that emphasize environmental sustainability do not necessarily avoid seeking economic profit in the use of ecological resources. What differentiates groups along the continuum is their willingness to accept environmental degradation as an outcome of their socially, economically, politically, and otherwise contextualized activities. With all this is mind, the four types of groups identified are defined and exemplified below.

1. Non use / Conservation

Defined: A volunteer organization focused on the protection, preservation, and/or restoration of wildlife and natural resources such as forests, soil, and water.

    Group Example: Twone Mbee (in Mbuinzau)

    Reason: Planting of trees for conservation of soil, attraction of rainfall, conservation of environment.

2. Sustainable Livelihood

Defined: A volunteer organization with little motivation towards economic profitability from environmental resources. Also focused on education of others within a community towards ways to live in a less impacting way.

    Group Example: Ukuno Organic Farmers (in Kasayani)

    Reason: Teaches members Biointensive Organic Agricultural (BIA) methods to make use of less land.

3. Sustainable Use

Defined: A volunteer organization with motivations towards maintaining economic profitability by using available environmental resources without drastically altering their form or function.

    Group Example: Makindu Woodcarvers (in Mbuinzau)

    Reason: Organized a tree nursery that supplies inputs to carvers for economic profit.

4. Non-Sustainable

Defined: A volunteer organization with motivations towards maintaining economic profitability by using available environmental resources by drastically altering their form or function.

    Group Example: Kenya Rural Enterprise Program

    Reason: Finances agricultural groups to obtain chemical inputs. Groups are then to participate in conventional farming for economic profit.

Within the scope of this study, three groups were identified as fitting the "non-use" category, ten groups fit the "sustainable livelihood" category, eight groups fit the category emphasizing "sustainable use", and five fit the "non-sustainable" category.

Implications for further research

Together with a fuller analysis of the ways in which people in Mbuinzau and Kibwezi assess the relative significance of different environmental issues, refinement of the 'sustainability spectrum' identified above could help development organizations target particular groups in rural areas with which to work for effective change. This might be especially true for local nongovernmental organizations, though it is important to emphasize that the activities of some indigenous NGOs should not be automatically assumed to be entirely inclusive. Paradoxically, there are some such groups, which, in trying to legitimize their claim to be "democratic" and "community-based", foreshorten their vision of what might constitute institutionally acceptable development projects. Such NGOs might undertake infrastructure and service provision (e.g., electricity, telephones, piped water, schools, postal and police services, etc.), but not income-generating activities (McNulty and Lawrence 1996; Lawrence and Titilola 1998). The unintended consequence of such inflexible dedication to a naive ideal of inclusiveness can be decision-refusing practices that wind up excluding the most marginalized populations in the community (Carroll 1992: 69-72; Howes 1997; Brown and Ashman 1996; Agrawal and Gibson 1999). One of the most important areas of further study has to do with thoughtful assessment of what really constitutes group commitment to projects, quality and availability of leadership, and so on. This also exposes the need for a longitudinal study of groups along the 'sustainability spectrum'; that is, if/how/why group(s) change in regards to their relative commitment to environmental or economic sustainability (Shipton and Goheen 1992).

Likewise, there is a need for a study of interconnections of groups via individual multiple memberships. Many people in Kibwezi especially belong not only to more than one group there but, given a history of relatively recent arrival in the area, maintain membership in a wide range of similar groups back in their ancestral places, some times far removed from where they now live and work. Migration patterns to and from work sites, geographic dispersed loyalties, and environmental change are all related in complex ways that need further study in the Kibwezi region as elsewhere (Curran 2002). Related to this, there is a need to study collaborations that may be formed between groups. It might be easily assumed that such partnerships automatically improve the ability of individual groups involved to look after their own concerns, but it is also possible that collaboration could lead to reduced autonomy and impair the ability of any given group to continue pursuing its own goals. This is an especially critical issue because it raises the related question of whether or not an oversight / umbrella group could use the kind of sustainability spectrum developed in this paper to distribute resources in a manner more consistent with that oversight group's mission. If smaller groups partnered with an oversight organization felt that their autonomy was compromised, the whole purpose of trying to work together at larger levels of social activity might be defeated. This concern links up with the need for longitudinal studies of organizational activities, since collaboration may

be likely during moments of mass emergency or concerning particular issues such as food sufficiency (Bwibo et al. 1994), but not once crises have passed or issues shift focus (say from supply to pricing of food).

Finally and needless to say, within the overall context of environmental issues facing Kibwezi residents, there remain several other areas for further study including water issues, public sanitation issues, soil issues, and issues relating to access to markets. It is also not immediately clear to what degree cooperation over ecological resource management is either feasible or effective without careful consideration of the specificities of place (Berkes and Farvar 1989).

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