Land Privatization and Pastoralist Well-being in Kenya

Carolyn K. Lesorogol

ABSTRACT

East African pastoralists have well-developed systems of communal land management that have been challenged by recent demands from some pastoralists for land privatization. This article analyses the impact on household well-being of privatizing land among a community of Samburu pastoralists in northern Kenya. Using longitudinal data from household surveys conducted in 2000 and 2005, trends in wealth, income, stratification and livelihood strategies are analysed comparing the privatized community and a community where land remains communally managed. Results indicate few significant differences in wealth and income between the privatized and communal areas, although cultivation has become an important additional strategy in the privatized community. Significant levels of wealth stratification are present in both communities but are mitigated to some extent by mobility across wealth quintiles over time. Wealthy and poor groups exhibit different livelihood strategies with wealthier groups relying more on livestock trade and home consumption while poorer groups depend on wage labour and trade for their income. Policy implications of this analysis include the need for development strategies specific to different wealth groups, greater investment in education and infrastructure, and more attention to employment creation in pastoral areas.

INTRODUCTION

Extensive pastoralism, as practised by East African pastoralists such as the Samburu of Northern Kenya, is premised on access to relatively large tracts of rangeland. Most pastoral land has been communally managed by groups of pastoralists who have, over time, developed rules and norms for regulating access to and use of the resources. In recent years, however, a number of pastoral groups have begun to privatize land, raising questions about the implications of this shift for pastoral livelihoods and the future of commonly held rangelands themselves (Ensminger and Rutten, 1991; Kimani and Pickard 1998; Mwangi, 2007a, 2007b; Rutten, 1992).

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The ‘new thinking’ about pastoralism, which emerged during the 1990s, suggests that maintaining pastoralists’ mobility is critical to enabling them to remain successful herders (Behnke et al., 1993; McCabe, 2004; Scoones, 1994). Accordingly, privatization of pastoral lands and the associated trend toward sedentarization of pastoralists appears to be a threat to the continued viability of pastoral production and livelihoods (Fratkin and Roth, 2005; Rutten, 1992). However, there are few empirical data demonstrating the effect of a shift from communal to private rangeland on household well-being or on economic survival strategies, and depending on the particular context, scholars have reached different conclusions regarding the likely impact of de jure or de facto privatization. For example, McCabe (2003) finds that pastoralism and cultivation in the Ngorongoro region of northern Tanzania may be combined without threatening pastoralists’ livelihoods or undermining wildlife conservation objectives. On the other hand, computer simulation models of livestock production on sub-divided group ranches in southern Kenya find that enclosures of private land will ultimately reduce the viability of livestock production there (Boone et al., 2005). More information is needed to determine the effects of privatization on livestock production and livelihood strategies of pastoral households.

This article presents evidence on the impact of privatizing pastoral lands at the household level over a five-year period from 2000 to 2005 among Samburu pastoralists of northern Kenya. Results of the first phase of research conducted in 2000–01 revealed that privatization of pastoral land is not necessarily the disaster feared by some scholars studying pastoral societies, nor is it the absolute boon predicted by mainstream economic theory (Lesorogol, 2005, 2008). In Siambu, a Samburu community that privatized land in the late 1980s, private ownership has facilitated crop production, which serves as an additional form of economic diversification, enabling many households to preserve their livestock assets in order to better survive drought. Comparing Siambu to Mbaringon, another Samburu community in which land ownership remains communal, Siambu had higher levels of per capita wealth and income in the year 2000 (Lesorogol, 2005). Siambu people had not, however, abandoned livestock production for farming post-privatization, nor had they mortgaged their land for credit in order to make productivity-enhancing investments. Instead, they engaged in small-scale cultivation using available technologies and relatively few inputs while continuing to graze livestock on their own and their neighbours’ private parcels. To date, only five or six individuals in Siambu have fenced their parcels thus effectively prohibiting grazing on their land.

1. This research is supported by the National Science Foundation senior grant, 2005–2008 (BCS 0456015), Carolyn K. Lesorogol, Principal Investigator.
2. Only a few Siambu respondents reported using their land as collateral for credit, and they used their loans primarily for consumption (food, school fees) and not for investments in agriculture. This is consistent with findings that land is seldom used as collateral for loans following privatization in Africa (Bruce and Migot-Adholla, 1994).
The current phase of research, which is ongoing, examines change over the last five years in Siambu and Mbaringon. Longitudinal data enable a more dynamic analysis of the impact of privatization of land on household economic status and livelihood strategies. Two main questions guide the work reported here. The first is whether gains from privatization apparent in the year 2000 have been maintained over the last five years. This is a particularly relevant question since the first survey took place just following the serious drought of 2000, and since then the region has experienced ecological recovery which could have significant effects on both communities. The second question is whether the distinctive survival strategies used by wealthy and poorer pastoralists have changed over this five-year period.

To address the first question, data on wealth and income are analysed and compared for the two communities. The main finding is that there is evidence of recovery from the 2000 drought in both communities and that while stratification remains significant it is mitigated by mobility across wealth quintiles. Answering the second question involves comparisons of livelihood strategies across wealth quintiles. Here, the primary finding is that income sources remain diverse but only modest gains in real income have occurred since the drought.

The rest of the article is organized as follows. The next section presents ethnographic background of the study areas in Samburu district including a brief description of the process of land privatization that occurred in the late 1980s in Siambu. This is followed by a discussion of pastoralist livelihoods and patterns of diversification, the methods used in the study, and the analyses of findings regarding changes in wealth and income. The final section suggests policy implications arising from the study.

**ETHNOGRAPHIC BACKGROUND: SAMBURU PASTORALISM AND LAND PRIVATIZATION**

The Samburu are pastoralists, numbering about 200,000, who live in north-central Kenya, primarily in Samburu District. A semi-arid region, Samburu District receives between about 150–750 mm of rainfall annually, concentrated in two rainy seasons in April and October, with highland areas receiving additional rainfall in July and August. Rainfall is spatially and temporally erratic, and the district experiences droughts about every five years. Geographically, the district is divided into a highland plateau in the southwest (the Lorroki plateau where both Siambu and Mbaringon are located) and lowlands that are punctuated by the Matthews and Ndoto mountain ranges. Samburu are semi-nomadic and herd cattle, sheep, goats and, in drier areas, camels. Historically, they were highly mobile, migrating several times a year in accordance with rainfall and pasture availability (Spencer, 1965). These days they are increasingly sedentary, especially in the highlands, but livestock continue to move seasonally to access pasture and water, sometimes...
spending months of the year in temporary cattle camps far away from the home settlement.

The district has a high rate of poverty, with about 50 per cent of the population estimated to fall below the government’s poverty line in 2000 (Government of Kenya, 2005a). Samburu, like other northern districts inhabited primarily by pastoralists, is considered a remote area, far from the main cities and centres of economic activity in the country. There are no paved roads and basic infrastructure such as schools, health facilities, electricity and clean water are generally underdeveloped. School enrolments are about 50 per cent, and drop out rates are also about 50 per cent (Government of Kenya, 2005b). The district does have wildlife resources and the Samburu Game Reserve generates considerable revenue from tourism for the local government, which is used for running costs and supporting a limited number of infrastructure projects. Over the last decade, cattle raiding by neighbouring pastoral groups has reduced livestock holdings of affected households and also limited use of pastures that are considered high risk.

The Samburu system of communal land management has functioned to provide a basic livelihood for most households, even in the face of rapid population growth and significant interference from colonial and post-independence governments. Grazing lands are managed in a decentralized fashion, with local councils of elders deciding which areas should be reserved for dry season grazing, regulating use of water points, and negotiating with outsiders who wish to migrate into their area temporarily. In general, Samburu people are able to move their herds anywhere within Samburu territory, but access to grazing and water outside one’s home area normally requires negotiation with the local elders of the area one wishes to move into. From the 1930s to the 1950s, the British colonial regime instituted measures to regulate access to grazing areas, especially in the Samburu highlands. They also limited livestock numbers in the highlands, leading many people to move surplus animals to the lowlands, probably causing environmental damage there. These regulations were disliked by the Samburu and were abandoned at the end of the colonial period.

Following independence, land adjudication proceeded in Kenya with the goal of establishing individual freehold title to land in most parts of the country (Okoth-Ogendo, 2000). The semi-arid lands inhabited by pastoralists were deemed unsuitable for individual ownership due to their lower productive potential. Instead, the Kenyan government decided to establish a system of ‘group ranches’ wherein title to land was transferred to groups of households (Galaty, 1994; Rutten, 1992). Most Samburu were not

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3. Samburu territory is primarily restricted to Samburu District, though in the pre-colonial period they migrated further, especially into what is now Marsabit District. Since the 1990s, many Samburu have also migrated into neighbouring Laikipia District to the south, which was the northern edge of white settlement during colonial times. Land ownership has become less clear in Laikipia enabling Samburu and other groups to enter the area and use the land.
interested in the radical change to their livestock production system implied
in the group ranch concept, and many opposed land ownership of any kind,
as it was a foreign concept to them (Lanyasunya, 1990). Many Samburu
joined group ranches only in order to preserve their claim to the land, not
from any motivation to alter their techniques of livestock production or land
management (Lanyasunya, 1990; Lesorogol, 2003). 4

While most Samburu were opposed to land adjudication, a small group of
men desired private land of their own. Most of them had experiences outside
Samburu district, such as formal education, military service or employment,
which exposed them to agricultural societies in other parts of the country
where land ownership was highly valued. As a result, they associated land
ownership with membership of modern Kenyan society in which owning
land was one marker of success, along with formal education, Western style
clothes and housing, and white-collar employment. They also believed that
land, even in semi-arid Samburu district, was a valuable commodity and
an investment opportunity. Some of them also saw privatization as a way
to resist the advantages enjoyed by wealthier pastoralists under communal
ownership. Their education and familiarity with the government bureaucracy
gave these individuals an advantage over ordinary pastoralists during the
land adjudication process, because they understood the procedures better,
including the fact that they were able to make individual land claims during
the registration of group ranches (Lesorogol, 2003, 2008).

In Siambu, located on the north-western edge of the Lorroki plateau, thirty-
seven individuals sought land during the adjudication process which began
there in 1978. They laid claim to the most productive area of flat, fertile
land in the location, which was suitable not only for grazing, but also for
farming. Also during the adjudication process, a commercial wheat farmer
approached the community asking to lease land for cultivation. The advent
of land leases increased the value of the land even more, contributing to the
desire of those who sought private holdings. An intense conflict between
those wanting private land and those upholding the status quo developed,
continuing from 1978 until 1986. At that time, in response to the local con-
flict, the government decided to nullify the original adjudication, which had
included large individual parcels for the thirty-seven individuals and, in-
stead, equally sub-divide the land among all the resident households. In ad-
dition, the government designated an adjacent section of much less desirable
land as a group ranch of which all individual land owners became members
(Lesorogol, 2003). In 1992, 240 households in Siambu received title to pri-
vate parcels of land, each roughly 23 acres in size. These are the private
holdings analysed here.

The other community, Mbaringon, is located about 40 km southeast of
Siambu, still on the Lorroki plateau, but was adjudicated as a group ranch

4. Joining group ranches in order to defend land from other claimants was also important in
the Maasai areas of southern Kenya as discussed in Mwangi (2007b).
in 1978. Land ownership and management remain communal in Mbaringon. During land adjudication, five individuals sought private land. Their claims were granted before most community members realized what was happening or could mount a challenge and this land never became a part of the group ranch land. The two communities are generally comparable in terms of social organization, culture, and their main livelihood of livestock herding. Mbaringon is somewhat drier than Siambu and there is less cultivation there. Each community has a small town within 10 km of most households and they are each located 20 km from Maralal, the district capital. The comparability of the two communities is addressed at greater length elsewhere (Lesorogol, 2005, 2008).

PASTORALIST LIVELIHOODS AND DIVERSIFICATION

Pastoralists are livestock-herding people whose livelihood primarily derives from livestock and its products. This definition is complicated by the fact that historically many livestock herding groups have also been involved to some extent in cultivation (agro-pastoralists), fishing, or hunting and gathering. Scholars have emphasized the importance of pastoralism as an identity and the social and cultural significance of livestock in forming and maintaining such identities regardless of the degree of dependence on livestock per se (Spear and Waller, 1993). For the Samburu, livestock have been the central means of livelihood, as well as being critical to identity, for at least the last 150 years; there is little evidence of their engagement in cultivation or other non-livestock activities on any scale before the 1960s (Holtzman, 1996: 212–13). Even relatively ‘pure’ pastoralist systems, however, include elements of diversification as hedges against the high risk nature of the fragile environments in which they exist (Dahl and Hjort, 1976). Samburu herders, for example, normally keep cows, sheep and goats, which utilize different types of fodder resources and have varying disease susceptibilities. They often split their herds and move them to different areas mitigating risk from localized droughts and disease outbreaks. They develop social relationships through livestock (stock friends) and exchange animals with them as a further insurance strategy.

Over the last decade or so, however, there has been growing recognition that pastoralists are diversifying their sources of livelihood beyond livestock herding activities. While livestock rearing is still very important in most areas, it is supplemented by other activities including livestock and non-livestock trade, wage labour, and various degrees and types of cultivation. Little et al. (2007: 4) find in a study of northern Kenyan pastoralists that about a quarter of income came from non-livestock activities, 5 per cent from gifts, and about 20 per cent from food aid. The percentage contribution of different activities varied across wealth levels, a finding that is echoed here for the Samburu. Using computer simulation modelling of different livelihood options among
Maasai pastoralists in southern Kenya, Thornton et al. (2007) find that more diversification in activities improves livelihoods, while increasing land fragmentation (through group ranch subdivision) poses a threat, especially to livestock-based options. In Senegal, Adriansen (2006) describes a number of ‘ideal types’ of diversification patterns from reliance on cultivation, to trade in sheep, to subsistence pastoralism, to wage labour. She notes that households engage in one or more of these strategies depending on their particular circumstances and preferences. Ethiopian agro-pastoralists also demonstrate varying degrees of involvement in cultivation (including sharecropping), wage labour, and livestock herding and trade (Little et al., 2006).

These new patterns of diversification have been characterized as responses to both ‘push’ factors like rising population pressure and falling livestock holdings that force people into alternative activities, and ‘pull’ factors such as the availability of new opportunities for trade and employment, often located in growing settlements and towns (Fratkin and Roth, 2005; Little et al., 2001). The effects of diversification on household well-being vary depending on the wealth of the household, the types of activities undertaken, and the risks facing households (Fratkin and Roth, 2005; Little et al., 2006; Little et al., 2007; Thornton et al., 2007). Cases discussed in Fratkin and Roth’s volume illustrate how wealthier households benefit from engagement in livestock trade while poorer households also engaged in trade benefit far less since they are relegated to less remunerative activities and suffer more from malnutrition and disease as a result of sedentarization and the associated separation from livestock herds and food sources. In the Samburu case discussed here, the shift from communal to private land tenure is a factor contributing to diversification of livelihood activities as it creates new land uses such as leasing and selling land, which may provide income and food, but may also threaten welfare, for example, if an entire parcel is sold. Evidence presented below demonstrates that patterns of diversification differ depending on wealth and suggest that diversification beyond livestock is an effective hedge against drought risk.

METHODS AND RESULTS

Data for this study were collected as part of a larger research project investigating institutional change among the Samburu, particularly the shift in property rights from communal to private. As part of that study, a structured household survey was administered in 2000–01 and again in 2005 to a random, panel sample of 200 households; 100 in Siambu and 100 in Mbaringon. Households were defined as a man and his wife or wives (for polygynous households) and their dependants. Dependants included children currently living in the households, other family or non-family members who were determined to have a long-term relationship as dependant with the household head. Of the 200 initial households, 159 participated in the second survey as
well, and results reported here are based on those households.\textsuperscript{5} Information was collected on a wide range of variables; results analysed here focus on wealth and income data. Table 1 shows the composition of survey households. In order to compare households of different sizes and compositions, each household member was converted to Active Adult Male Equivalents (AAME) following ILCA (1981). Per capita measures of wealth and income are calculated by dividing household levels by the AAME for the household. Using AAME and per capita measures helps to control for the effects of household variability over time and among households.\textsuperscript{6}

The survey was conducted with heads of households and/or their spouses and was designed to elicit accurate numbers of livestock, the main indicator of wealth, and good estimates of income. For example, rather than asking people to give the total number of livestock, they were asked to enumerate livestock according to age, sex, utility, and location. This detailed accounting corresponds with the way people normally think about their stock, according to utilities such as breeding vs. non-breeding, milking vs. dry, at home vs. at cattle camp, and marketable vs. for home use. For income, respondents were asked about their involvement in a wide range of possible activities and assisted to calculate their total earnings from each activity. While it is difficult to obtain accurate information on these variables, these techniques and the familiarity of the study team with the communities improve the credibility of findings.

\textsuperscript{5} In 2005, 89 out of 100 households in Mbaringon participated in the survey, while 70 out of 100 in Siambu participated. In order to account for attrition, the households not participating in 2005 were removed from the 2000 survey results for the purposes of numerical comparisons such as for TLU and income. The reasons for attrition were primarily due to the absence of the household from the area during the survey period. There were also a few cases of households declining to participate in the survey. The total number of households in Mbaringon is estimated at 350 and for Siambu about 275. Thus, the samples represent about 25 per cent of total households in each community.

\textsuperscript{6} On average, household AAME increased by .04 between 2000 and 2005; 90 per cent of households remained within 5 AAME of their 2000 level. Even so, some changes in household well-being may be due to developmental changes in the household not captured in the analyses presented here.

\begin{table}
\centering
\begin{tabular}{lcccccccccc}
\hline
Location & No. & Head of & Wives & Adult & Ave Household & Total &
\text{Households} & Households & Children & Dependants & AAME & Number &
m & f & m & f & m & f &
\hline
Siambu & 70 & 63 & 7 & 74 & 157 & 157 & 38 & 16 & 7.8 & 512 &
Mbaringon & 89 & 81 & 8 & 121 & 275 & 253 & 63 & 33 & 6.3 & 834 &
\hline
\end{tabular}
\caption{Household Composition}
\end{table}

\textit{Note:} Active Adult Male Equivalents (AAME) convert as follows: adult male = 1, children 0–5 = .52, 6–10 = .85, 11–15 = .96, adult female = .86.

\textit{Source:} author’s data.
Table 2. Per Capita TLU for Siambu and Mbaringon, 2000 and 2005

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<tr>
<td>n = 70</td>
<td>n = 89</td>
<td>n = 70</td>
<td>n = 89</td>
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<tr>
<td>Mean</td>
<td>3.28</td>
<td>2.71</td>
<td>3.69</td>
<td>4.28</td>
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<tr>
<td>Median</td>
<td>2.47</td>
<td>1.85</td>
<td>2.39</td>
<td>2.74</td>
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<td>t = .84</td>
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<td>0.02</td>
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<tr>
<td>Std. Deviation</td>
<td>3.28</td>
<td>2.71</td>
<td>4.35</td>
<td>4.40</td>
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</table>

Note: Tropical Livestock Units (TLU) were calculated using current exchange rates for livestock: cow = 1 TLU, sheep/goats = .8 TLU, camel = 2.5 TLU. Total household TLU was calculated for each household and then divided by the Active Adult Male Equivalent (AAME) for each household. Two-tailed t-tests were performed, t-scores reported but not significant at the .05 level.

Source: household survey conducted by author.

Wealth: Recovery from 2000 Drought and Continued Stratification

Livestock herding has been the mainstay of the household economies for residents of both Siambu and Mbaringon for at least the last 100 years. In the late 1960s and early 1970s a few individuals in Siambu began to experiment with farming, although their efforts were not encouraged by the rest of the community, who saw farming as an inappropriate activity for Samburu and the enclosure of fields as a hindrance to livestock movement. Historically, then, livestock constitute the primary form of wealth in these communities. Estimates put the number of livestock required to meet subsistence needs of households at between five and nine per person (Fratkin, 1999; Rutten, 1992). As will be shown below, very few households own this many livestock and therefore most households rely on other sources of income and livelihood in addition to livestock. The survey findings regarding livestock wealth indicate that there was growth in livestock holdings over the period from 2000 to 2005 in the whole sample. Siambu experienced a slight gain in per capita wealth while Mbaringon experienced a more substantial gain. Stratification is also evident in both communities but is mitigated by mobility across quintiles over the five years.

The initial survey was conducted in 2000–01 during the final phase of a serious drought that led to large losses of livestock for many households in both communities. At that time, the mean per capita wealth for Siambu households was 3.92 tropical livestock units (TLU; see Table 2 for definition of TLU) compared to 2.57 for Mbaringon, a difference that was significant at the .05 level (Lesorogol, 2005: 1965). In order to compare the 2000 and 2005 samples, the 2000 sample was adjusted for attrition by removing households that did not participate in 2005. Table 2 shows the adjusted figures for the 2000 sample as well as those from 2005. Adjusting for attrition, the differences in mean per capita wealth between the two communities in 2000 are no longer significant at the .05 level, although Siambu still has higher levels of mean...
and median wealth. As shown in Table 2, both communities experienced increases in per capita livestock holdings over the five years, an indication of recovery from the drought. Compared to the adjusted 2000 sample, the mean TLU per capita for Siambu in 2005 rose slightly to 3.69 while it rose to 4.28 in Mbaringon, but this difference between the two communities is not significant at the .05 level. However, combining both communities, there was a significant increase in mean per capita wealth over the five years.7

The histograms in Figures 1a and 1b show the clustering of per capita TLU around the mean and median levels, between zero and five TLU, as well as the presence of a few outliers on the upper end of the distribution in both communities. Thus, in spite of some recovery from the 2000 drought, it is evident that most households are still rather poor in livestock, especially if livestock are the primary means of subsistence.

To get a better sense of the distribution of wealth, households were ranked by per capita TLU and placed into five quintiles with quintile one being the richest and quintile five being the poorest. The number of households, mean and median per capita TLU, and the range for TLU are shown for each quintile in Table 3. These data reflect both the average (mean and median) numbers of TLU owned by each quintile, and also the changes in per capita TLU experienced by each quintile between 2000 and 2005. Examining median TLU, the top two quintiles experienced increases on average, while the poorest two quintiles experienced modest decreases. The largest gains were made by Siambu’s richest quintile, from 5.5 to 9.0 per capita TLU, almost a doubling of per capita holdings. These data indicate that, in general, drought recovery was greatest among the wealthiest households in each community.

To further examine wealth stratification within each community, the total TLU of each quintile was calculated and divided by the total TLU for the sample to determine the percentage of total TLU owned by each quintile. Figure 2 reveals a considerable degree of wealth stratification in both Siambu and Mbaringon with the richest quintile in each case owning more than 50 per cent of the total wealth in livestock in 2005. In contrast, the poorest quintile in each community owns less than 5 per cent of the wealth. In Siambu, the gains of the first quintile are reflected here in a sharp increase in their share of TLU, while this share remained almost unchanged in Mbaringon.

The finding of stratification challenges notions of pastoral egalitarianism at least in terms of livestock wealth (Salzmann, 1999). Over the five years considered here, inequalities in livestock ownership have persisted and in Siambu have increased. The fact that stratification is present in both the privatized and communal community indicates that privatization of land in and of itself does not account for concentration of livestock wealth. Siambu

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7. A paired t-test on mean per capita TLU for the whole sample comparing 2000 and 2005 was conducted resulting in a t-score of 3.82 with a significance level of < .001.
Figure 1a. Distribution of Per Capita Tropical Livestock Units in Siambu, 2005

Siambu

Mean = 3.69
Median = 2.39
Std. Dev. = 4.35
N = 70

Figure 1b. Distribution of Per Capita TLU in Mbarangon, 2005

Mbarangon

Mean = 4.28
Std. Dev. = 4.40
N = 89

Source: author’s data
### Table 3. Wealth Distribution Shown in Quintiles for 2000 and 2005

<table>
<thead>
<tr>
<th></th>
<th>Richest Quintile (Q1)</th>
<th>Second Quintile (Q2)</th>
<th>Third Quintile (Q3)</th>
<th>Fourth Quintile (Q4)</th>
<th>Poorest Quintile (Q5)</th>
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<tbody>
<tr>
<td></td>
<td>Siambu</td>
<td>Mbaringon</td>
<td>Siambu</td>
<td>Mbaringon</td>
<td>Siambu</td>
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<tr>
<td><strong>No. Households</strong></td>
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<td></td>
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</tr>
<tr>
<td>2000</td>
<td>13</td>
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<td>17</td>
<td>14</td>
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<tr>
<td>2005</td>
<td>13</td>
<td>17</td>
<td>14</td>
<td>18</td>
<td>16</td>
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<tr>
<td><strong>Mean Per Capita TLU</strong></td>
<td></td>
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<tr>
<td>2000</td>
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<td>10.2</td>
<td>6.3</td>
<td>4.9</td>
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<td>2005</td>
<td>11.1</td>
<td>11.7</td>
<td>4.2</td>
<td>5.1</td>
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<tr>
<td><strong>Median Per Capita TLU</strong></td>
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<tr>
<td>2000</td>
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<td>2.8</td>
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<tr>
<td>2005</td>
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<td>10.1</td>
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<td><strong>TLU Range</strong></td>
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<td>17.2</td>
<td>22.0</td>
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<tr>
<td>2005</td>
<td>16.1</td>
<td>13.2</td>
<td>3.3</td>
<td>2.9</td>
<td>1.5</td>
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</table>

*Source: author's data*
Figure 2. Share of TLU Owned by Quintile, 2000 and 2005

Share of TLU owned by Quintile

<table>
<thead>
<tr>
<th>Wealth Quintile</th>
<th>2000</th>
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<tr>
<td>Q1M</td>
<td>50</td>
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<tr>
<td>Q1S</td>
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<td>30</td>
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<tr>
<td>Q2M</td>
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<td>Q2S</td>
<td>20</td>
<td>10</td>
</tr>
<tr>
<td>Q3M</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Q3S</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Q4M</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Q4S</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Q5M</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Q5S</td>
<td>10</td>
<td>10</td>
</tr>
</tbody>
</table>

Note: the chart shows the per cent of total TLU owned by each quintile in each community in 2000 and 2005. M denotes Mbaringon, S denotes Siambu, Q1 denotes the richest quintile, Q2 the second richest and so on.

Source: author’s data

households also own land and there is potential for land sales leading to concentration of land ownership. However, this possibility is not supported by data on land sales from Siambu which show that only about 2 per cent of land in Siambu has been sold since privatization (Lesorogol, 2005). The rather high degree of stratification found in these communities suggests that different policies and interventions will be needed to address the needs of different wealth groups, a point I will return to below.

While stratification clearly exists in both communities, it is mitigated to some extent by mobility across quintiles. Over time households may move up or down the continuum of wealth as their fortunes improve or decline. Mobility would be expected in pastoralist communities that are regularly affected by drought, disease and insecurity resulting in often dramatic changes in their livestock holdings. Comparing the quintile position of the survey households in 2000 and 2005 reveals considerable mobility (Table 4). In Mbaringon, 53 per cent of households remained in the same quintile while 47 per cent experienced mobility. About the same proportion were upwardly mobile (25 per cent) and downwardly mobile (23 per cent).

---

8. All legal land sales must pass through the District Land Control Board. Land sales from 1991–2001 were confirmed by reviewing the minutes of the Land Control Board for those years. In 2005, when I went to review the minutes to update the data on land sales, I discovered that the Land Control Board had been disbanded sometime in 2002 and had not functioned since then. Thus, any land transactions that have occurred since 2002 are not legally binding.
Amongst households experiencing mobility, 38 per cent remained within one quintile of their 2000 position and there were very few extreme shifts in quintile (plus or minus three quintiles). Siambu experienced an even higher level of mobility with only 36 per cent remaining in the same quintile while 64 per cent were mobile. Of those, 36 per cent moved up and 29 per cent moved down, with 43 per cent moving within one quintile up or down. As in Mbaringon, there were few extreme shifts of three or more quintiles.

More insight into mobility is provided by considering patterns of mobility by quintile. Table 5 shows the number and per cent of households within each quintile that experienced no change, or moved up or down the quintiles, for each community as well as the pooled sample. These data reveal that all quintiles experience some mobility. At the extreme (and probably an exceptional occurrence), every household in Siambu’s second quintile experienced mobility over the five years, almost equally up and down. The poorest and richest quintiles show the least mobility, especially in Mbaringon where 65 per cent of the wealthiest households and 70 per cent of the poorest remained in the same quintile. In Siambu, 62 per cent of the wealthiest households experienced downward mobility, but 65 per cent of the poorest remained in the lowest quintile. The sharp increase in per capita TLU in Siambu’s richest quintile might explain the high mobility, as those households experiencing high growth displaced some of the households that had been in the quintile previously, causing them to fall to quintile two. About two-thirds of households in the second, third and fourth quintiles moved across quintiles. Most moves are up or down by one or two quintiles. Those moving three quintiles in either direction are in quintiles two and four. Thus, the magnitude of mobility is less for the poorest and richest households. Comparing the patterns of mobility in Siambu and Mbaringon reveals that there is greater mobility in all quintiles in Siambu during this period, although the magnitude of mobility is quite similar. One possible interpretation of this phenomenon is that private land ownership has contributed to a more diverse set of livelihood choices and greater dynamism in the fortunes of households compared to Mbaringon.

An important implication of the data on mobility is that the poorest households have difficulty moving up the wealth distribution. This conclusion is consistent with research showing that pastoralist households require livestock holdings above a certain threshold level in order to experience sustained gains in well-being (Carter and Barrett, 2006; Little et al., 2007; Lybbert et al., 2004). It may be that poor households in these communities are

**Table 4. Change in Wealth Quintile from 2000 to 2005 (in %)**

<table>
<thead>
<tr>
<th>Location</th>
<th>No Change</th>
<th>Plus 1</th>
<th>Plus 2</th>
<th>Plus 3</th>
<th>Minus 1</th>
<th>Minus 2</th>
<th>Minus 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mbaringon</td>
<td>52.8</td>
<td>19.1</td>
<td>3.4</td>
<td>2.3</td>
<td>19.1</td>
<td>2.3</td>
<td>1.1</td>
</tr>
<tr>
<td>Siambu</td>
<td>35.7</td>
<td>22.9</td>
<td>12.9</td>
<td>0.0</td>
<td>20.1</td>
<td>7.1</td>
<td>1.4</td>
</tr>
</tbody>
</table>

*Source: author’s data*
<table>
<thead>
<tr>
<th>Quintile</th>
<th>Richest Quintile (Q1)</th>
<th>Second Quintile (Q2)</th>
<th>Third Quintile (Q3)</th>
<th>Fourth Quintile (Q4)</th>
<th>Poorest Quintile (Q5)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Siambu</td>
<td>Mbaringon</td>
<td>Pooled</td>
<td>Siambu</td>
<td>Mbaringon</td>
</tr>
<tr>
<td>No Change n (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 (38)</td>
<td>16 (53)</td>
<td>11 (65)</td>
<td>5 (38)</td>
<td>7 (41)</td>
<td>7 (23)</td>
</tr>
<tr>
<td>Plus 1 n (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>6 (46)</td>
<td>4 (24)</td>
<td>9 (30)</td>
<td>3 (21)</td>
<td>4 (24)</td>
<td>7 (23)</td>
</tr>
<tr>
<td>Plus 2 n (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 (14)</td>
<td>1 (6)</td>
<td>3 (10)</td>
<td>4 (31)</td>
<td>2 (11)</td>
<td>6 (19)</td>
</tr>
<tr>
<td>Plus 3 n (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>0 (0)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minus 1 n (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 (54)</td>
<td>5 (29)</td>
<td>12 (40)</td>
<td>3 (23)</td>
<td>6 (35)</td>
<td>9 (30)</td>
</tr>
<tr>
<td>Minus 2 n (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 (8)</td>
<td>1 (6)</td>
<td>2 (7)</td>
<td>3 (23)</td>
<td>0 (0)</td>
<td>3 (10)</td>
</tr>
<tr>
<td>Minus 3 n (%)</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 (0)</td>
<td>0 (0)</td>
<td>0 (0)</td>
<td>1 (8)</td>
<td>1 (6)</td>
<td>2 (7)</td>
</tr>
</tbody>
</table>

Source: author's data
below this threshold and therefore stuck in a poverty trap. On the other hand, households above a certain threshold, perhaps about two TLU, are able to move up the distribution, but also remain vulnerable to declines. Since this was a period of recovery from drought, it is to be expected that more households would experience upward than downward mobility. The fact that many households were downwardly mobile underscores that the pastoral economy is not only affected by climatic conditions but that other factors also account for shifts in livestock wealth.

**Income: Diverse Sources and Modest Gains**

There is growing evidence that pastoralists rely on income beyond the sale of their own livestock to support themselves (Fratkin and Roth, 2005; Little et al., 2001) and this was confirmed in the first phase of research in which most households reported several sources of income in addition to livestock (Lesorogol, 2005). Information was collected on a wide range of income sources for each household. The survey was designed to elicit detailed information on income sources over the last year. Rather than asking informants to report their total income as a lump sum, the survey inquired about twenty-five different sources of income that are common in these communities including a range of wage labour occupations and trading activities. Since many activities are engaged in sporadically, interviewers were trained to calculate earnings from these occasional activities. A separate survey documented livestock sales over the last year including information on the type of animal, age, sale price, where and to whom it was sold.

In addition to these sources of income, an important component of household livelihood comes from products produced and consumed by the household. These include food crops and milk from household livestock. Information on food crop and milk production was collected and current market values were assigned in order to monetize these contributions to household well-being. In order to compare income data from 2000 to those of 2005, both sets of data were adjusted to 2003 shillings, using the Consumer Price Index values available from the Kenya Bureau of Statistics.

The figures for mean and median per capita income (in constant 2003 shillings) for each community in 2000 and 2005, as well as the standard deviation and difference of means statistic, are shown in Table 6. While Siambu had significantly higher mean per capita income in 2000, this difference is not significant in 2005 due to an increase in income in Mbaringon of about 20 per cent; from KSH 16,311 in 2000 to KSH 22,056 in 2005. Over the same period, Siambu experienced a slight reduction in mean per capita income of about KSH 1,000. The median numbers are closer and exhibit less change over the time period. For the whole sample, the mean change in income from 2000 to 2005 was KSH 2,759, which is not significantly different from the 2000 incomes for the whole sample ($t = -1.37$, sig $= .17$). As with wealth, there is mobility in income over the period. In Mbaringon, the mean change
Table 6. Per Capita Income in Siambu and Mbaringon, 2000 and 2005

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<tr>
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</thead>
<tbody>
<tr>
<td>Mean</td>
<td>16311.57</td>
<td>21658.77</td>
<td>22056.34</td>
<td>20622.12</td>
<td>−2.32∗</td>
<td>.377</td>
</tr>
<tr>
<td>Median</td>
<td>14524.30</td>
<td>16936.53</td>
<td>14704.00</td>
<td>16262.62</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Std. Deviation</td>
<td>10914.91</td>
<td>17918.03</td>
<td>29409.08</td>
<td>13666.04</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note:* Per capita income reported in constant (2003) Kenya shillings. Two-tailed t-tests were performed to measure difference of mean income between Siambu and Mbaringon in 2000 and 2005. An asterisk (∗) indicates difference of means was significant at the .05 level.

*Source:* Author’s data.

of income was KSH 5,744 with a standard deviation of KSH 28,239, while for Siambu it was a loss of KSH 1,036 with a standard deviation of KSH 20,740.

Sources of income differ across wealth quintiles, illustrating the various livelihood strategies pursued by households. In the first phase of this research, wealthier households earned income primarily from sales of their own livestock and home consumption of crops and milk (Figure 3, Q1M00 and Q1S00). By contrast, poorer households were more dependent on wage labour and trade (Figure 3, Q5M00 and Q5S00). Income from sales of crops and leasing out agricultural land (grouped here under agriculture) were also important sources of income, especially for poorer households in Siambu in 2000. These patterns of income suggest that wealthier households rely more on livestock production, both home consumption of milk and sales of their assets (livestock), while poorer households depend on employment and trade as well as agriculture in the privatized area (Lesorogol, 2005).

The 2005 survey results reveal some interesting shifts in income shares across quintiles. In the richest quintile in Mbaringon, the share of income from livestock sales fell while the value of home consumption rose, particularly from greater milk production since crops are negligible here. For this group, income from wage labour declined slightly while income from trade increased somewhat. For the top quintile in Siambu, income from livestock sales shows little change while home consumption declined by about 7 per cent. Wage labour income declined slightly while income from gifts (which includes remittances from working relatives) rose about 8 per cent. Richer households in Mbaringon appear to follow a strategy of rebuilding herds through reduced sales. Retaining livestock assets increases home consumption of milk and reduces the need for purchased food and livestock sales to finance those purchases. In Siambu, the drop in home consumption is probably due to poorer crop harvests in 2003 and 2004 that were reported by survey households.

A very different pattern occurs for the poorest quintiles. In both Mbaringon and Siambu, the share of livestock sales and home consumption of the poorest quintile rose, while wage labour (in Mbaringon) and trade (in both communities) contracted. In Siambu, the share of agriculture fell for the poorest
quintile, reflecting relatively poor harvests over the last several years resulting in fewer sales of crops. The share of income from gifts increased for both groups.

The pattern of shifts in income appears consistent with the 2000–2005 period of livestock recovery, but also demonstrates how the recovery process affects poorer and wealthier pastoralists differently. The wealthier pastoralists appear to be conserving their livestock assets (particularly in Mbaringon) in order to reconstitute herds lost in the 2000 drought, and filling the income gap with wage labour and/or trade activities. The recovery in livestock in Mbaringon is also reflected in the growth of the value of home consumed milk. By contrast, poorer pastoralists, who are also experiencing some growth of their herds, are selling more livestock and engaging a bit less in wage labour or trade. They are also experiencing an increase in the value of home consumption from milk and crops. This could be a sign that they are not allowing their herds to grow, but rather are selling any surplus livestock they have. If so, they may be rendered more vulnerable to the next drought than if they had resisted sales of livestock.  

Note: Q1M00 denotes richest quintile in Mbaringon in 2000, Q1M05 denotes richest quintile in Mbaringon in 2005, etc.
Source: author’s data.

9. Indeed, another drought struck Samburu District in 2006, the year after the 2005 survey. This drought was also accompanied by an upsurge of livestock raiding by neighbouring Pokot pastoralists which affected both Siambu and Mbaringon communities.
jobs in Samburu district and the risky nature of trade and casual employment, selling livestock may be a sensible strategy for these households even if it comes at a cost later on. Another way of looking at this is that wage labour and trade are, to some extent, drought coping strategies and that the high level of reliance on these by poorer households in 2000 reflects that, while the increasing share of livestock sales in 2005 reflects a more normal pattern of income.

It is also important to note that the share of income from agriculture in Siambu fell over this period, which is not expected during a period of better rainfall. In fact, for the poorest quintile, most of their agriculture income in 2005 came from leasing out land to commercial wheat farmers and not from producing food crops. Discussions with informants indicated that the timing and extent of rainfall have not been favourable during 2003 and 2004. Most households were expecting a good harvest in late 2005, but this was not recorded as the survey was conducted prior to the 2005 harvest. These findings indicate that while participation in agriculture has added to the diversity of Siambu survival strategies (including consumption of crops in the home consumption category), it remains an uncertain enterprise and crop failures, like droughts, are regular occurrences.

POLICY IMPLICATIONS: DIFFERENTIATED INTERVENTION AND GREATER INVESTMENT

Understanding the survival strategies of pastoralists is fundamental to designing policies that aim to reduce poverty (Little et al., 2006, 2007). The results of this study have a number of policy implications. First, the results reported here indicate that pastoral inequality is significant. The wealthiest quintile owns more than 50 per cent of the livestock while the poorest own less than 5 per cent. Since 2000, stratification has increased in Siambu and stayed about the same in Mbaringon. Stratification is mitigated by mobility across quintiles, but extreme shifts in wealth are unlikely. Development strategies that do not attend to this stratification may address only the problems faced by the wealthier pastoralists while overlooking the needs of the poorer households.

For example, many recent development programmes in northern Kenya emphasize the development of livestock marketing infrastructure and improvements in provision of animal health services. These are useful
interventions, but those who benefit most are those who depend most on livestock sales or who own significant numbers of livestock, and these tend to be the wealthier pastoralists. At the same time, there has been reluctance over the last few years to fund projects that would build the herds of poorer pastoralists by providing them with livestock. A number of fairly large scale restocking programmes were carried out in the 1980s and 1990s in Samburu District involving hundreds of households. Since the late 1990s, however, there have not been any large-scale efforts at restocking, and there has been some critique of the effectiveness of restocking as a relief or development strategy (Heffernan, 2004). The reluctance to support restocking may be due to the impression that there are too many livestock on the range and that adding more will contribute to environmental degradation. This line of argument is hotly contested, but what is clear from these findings is that livestock ownership is quite unequal. Even if overall numbers of livestock seem high, that does not mean that most members of these communities have adequate livestock even for basic subsistence. With per capita livestock numbers of three to four, the communities discussed here fall short of meeting their needs exclusively from livestock (Fratkin, 1999; Rutten, 1992). Programmes that aim to bring poor households above a threshold level of livestock holdings (which could be determined for particular communities and contexts) might enable those households to improve their well-being sustainably.

Poor households depend substantially on wage labour and petty trade for survival. Policies that support wage labour opportunities would thus be beneficial. Currently, due to a lack of jobs in the district, those seeking work often travel as far away as Nairobi, the capital city about 500 km away, and Mombasa, located on the coast more than 800 km from Samburu. Most of these jobs are relatively low skilled and low paying jobs such as night watchmen. Labour migration creates problems for women and children left behind while the husband is working far away. Remittances are often irregular and insufficient to support the family, particularly as costs of living in the cities are relatively high. The relatively small share of income made up of gifts and remittances (see Figure 3) underscores this problem. There is also heightened risk of HIV/AIDS transmission as men travel to areas of high incidence of the disease. Policies and interventions to create employment in the district are sorely needed, perhaps focusing on ways of adding value to livestock products such as milk, meat, hides and skins, and honey.

Land tenure policy is another area of practical application of this research. Much research and advocacy work has focused on securing pastoralists’

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11. There has been an active debate among scholars of pastoralism and range management regarding how many livestock can be supported on semi-arid lands such as those of Samburu District. The notion of ‘carrying capacity’, or a certain fixed number of livestock that can be supported on a fixed area of land, has been heavily criticized by ecologists studying arid lands, who argue that the erratic nature of rainfall results in a patchy environment that may support many more livestock than predicted by conventional ranching models that assume sedentary herds. See Behnke et al. (1993); McCabe (2004); Scoones (1994).
rights of access to rangelands and on preserving mobility, which are extremely important. However, in some pastoral areas (especially in higher rainfall areas or where other land uses are possible, such as tourism) internal pressures to privatize (de jure or de facto) are a reality and need to be addressed. Providing empirical data on the actual outcomes of privatization in Samburu can contribute to informed policy making. While the results of this research should not be taken as evidence that privatization is always desirable (and it may be quite inappropriate in many cases), they do indicate that communities adjust to changing land tenure rules and may even benefit from a change if it provides greater flexibility and more options for economic diversification (Lesorogol, 2005, 2008). One key aspect of privatization in Siambu is that land was divided equally among the resident households, which has not been the case in other places (such as Maasailand in southern Kenya) where some group ranches have been sub-divided.

Finally, while this analysis has emphasized the internal differentiation among Samburu pastoralists, this should be considered in a broader context. The vast majority of Samburu pastoralists are very poor by any standard — national or international. Their per capita incomes, including monetized home consumption, put them in the ‘surviving on less than $1 day’ group used to characterize the very poor worldwide. Their levels of wealth are modest and insufficient to support families without additional income from a variety of sources, and are subject to fluctuations in response to drought and disease outbreaks. The gains reported here from 2000 to 2005 are currently being wiped out by the 2006 drought and the current upsurge of livestock theft. The national government and international donors are responding, as usual, with relief food, but this often comes too late and in insufficient quantities to enable people to preserve their livestock. In spite of famine early warning systems that have been in place for more than a decade, and an understanding that droughts regularly occur in this region, droughts continue to be devastating because there is a lack of attention to long-term patterns of impoverishment and a lack of investment in the region to mitigate their effects. The research results here confirm these trends at the local level and suggest that considerable and sustained investments in building human and livestock assets are urgently needed in order to improve the situation and reduce vulnerability to future droughts.

REFERENCES


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