

# **Livelihood Choices and Returns among Agro-Pastoralists in southern Kenya**

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## **Introduction**

The economic options available to pastoralists are relatively few, and the returns to the various options across households little studied. This brief summarizes an article that addresses livelihood choices and income diversification strategies among agro-pastoralists and pastoralists in the Kitengela area of Maasailand, and the factors influencing the returns to the diverse livelihood strategies being pursued. How variability in income and wealth levels across households can be explained by household-level versus geographic factors is explored.

Kitengela is quite unique in that it is very close to a major metropolitan area, Nairobi (and therefore has some very valuable land), is a dispersal area that supports a large and long distance wildlife migration to and from Nairobi National Park (NNP), has seen significant population growth and in-migration of non-Maasai peoples in recent years, and is taking part in a wildlife conservation payment scheme (called the land leasing program) that may or may not be sustainable in the long run.

Despite this uniqueness, the adjustments in livelihood strategies and outcomes in terms of incomes and asset levels that we are witnessing in this area have important lessons for other pastoral and agro-pastoral communities facing similar challenges in the future (e.g. land privatization, diversification of incomes, wildlife-livestock-people conflicts). The information generated in this study can contribute to more evidence-based decision making occurring across pastoral areas and inform policy decisions regarding conservation of wildlife and poverty reduction strategies.

## **Methods**

In 2004, a formal household survey was carried out on a random sample of 177 households in Kitengela. It builds upon previous household socio-economic studies conducted in the area in 1999, 2000 and 2003. Detailed information was sought regarding household demographic characteristics, revenues, production costs, income sources and income levels under various land-use options as well as off-land activities. In addition to this information, spatial variables were generated for each household, including distance to the nearest tarmac road, town, park, permanent water source and primary school. Various other secondary sources of data on crop and livestock prices and other spatial information were also used.

A multiple linear regression model was used to look at the determinants of annual total net income (i.e. adding up net income from livestock, crops and off-land activities) – i.e. which of the different household characteristics or geographically determined factors help explain the wide range of incomes that we see across Kitengela. Separate similar regression analyses were also carried out to examine the most important factors influencing the components making up net income (livestock-related and income from other sources), land prices and herd value.

### **Livelihood strategies and outcomes in terms of income and wealth**

The range of household characteristics, size of land and livestock holdings, choice of land-use and other activities is wide across Kitengela. Key informants feel that, on average, family sizes have been shrinking, more children are going to school and for longer, and land and herd sizes are smaller than before. Data from our survey and two earlier ones support these perceived trends, although they only cover a 5-year period.

Average per capita herd size in 2004 was 7.1 TLU (total livestock units), slightly higher than the 5 to 6 per capita TLUs considered to be the threshold below which the household can no longer survive purely on livestock. One-half of the cattle are owned by the 20% of households with the highest incomes, earning more than US\$4,842/year/household, or US\$13/day/household.

The lowest income households, on the other hand, own only 11% of the cattle and earn less than US\$1,917/year/household, or US\$5/day/household). Despite the fact that cattle ownership is not equally distributed, livestock-related earnings (including the value of the meat and milk they consume) still account for over 50% of incomes across all income categories.

Poorer households actually have more income sources than the wealthier ones, although non-livestock earnings are considerably lower and from less reliable sources. Higher income-earning households have a larger proportion of their incomes coming from wages and business, for example, while those in the lower ones depend more on petty trading and other informal sector activities to help them diversify their incomes.

### **Factors influencing income levels**

Looking at the factors influencing overall income levels, the results suggest that almost half of the variation in net incomes (45%) across these Kitengela households can be explained by household level factors alone, including livestock assets (TLUs), education level of the household head, and extent of diversification (i.e. number of off-land activities being pursued).

When livestock-related income was considered on its own, the analysis showed that herd size alone is able to explain over half (52%) of the variation in livestock income. Households with larger herds still earn significantly more than households with smaller herds of livestock. The results suggest that a 10% increase in TLU per household (e.g. of 4 TLUs from the average TLU per household of 42) would increase livestock returns by 7.5 percent. Of the spatial variables, distance to the nearest permanent water source was the only one showing up as important, with the implication that households located closer to water points tend to earn more from livestock than those living farther from permanent water sources.

The main factors driving returns to activities other than livestock, including crops and off-land activities turned out to be the number of years of education of the household head, herd size (TLU), and the number of off-land activities. The fact that larger herds also mean higher off-land income suggests that in some cases, livestock and milk sales

help households pursue other opportunities (although off-land income is also used to purchase livestock).

### **Land Issues**

Land price per acre was regressed on spatial variables that included average NDVI, population density, distance to NNP, distance to permanent water, distance to town, and distance to school. The results show all of these variables as significant determinants of land price, able to explain 70% of the variation in land prices observed.

An examination of land versus herd values for each household highlights the huge trade-off in herd-related versus land-related wealth. Households with larger herds and more livestock wealth tend to be living on less valuable land (farther from Nairobi), versus landowners living on extremely valuable land, that are more likely to be located nearer NNP and good roads, but with smaller herds and generally lower livestock assets.

The implications of being able to predict land prices quite accurately, based on spatial, rather than household-level information, are large in this area where these households have had no access to such information. This can empower community-based organizations such as KILA (Kitengela Landowners Association) to pursue more transparent negotiations with district and national officials and others, such as the administrators of the lease program. For example, lease payments in the future may need to be adjusted to account for the varying value of land assets across the Kitengela landscape in order to be sustainable. This model will also allow predictions of land prices into the future, e.g. given different population growth or infrastructural development scenarios.

### **Wealth versus incomes**

Both household and spatial factors were unable to explain much of the variation across households in livestock asset wealth. Household labor was positive and significant, along with years of education of the household head. So larger and more educated households appear to have an advantage when it comes to accumulating livestock assets. With respect to spatial determinants of livestock wealth, households living closer to livestock market towns tend to be wealthier, as are those that are living further away from NNP.

### **Conclusions**

While Kitengela is a fairly unique area, lessons learned here will be valuable for the many other agropastoral communities facing similar issues across the region. Relatively few household characteristics can explain almost half of the variation in income levels across Kitengela (livestock asset levels, education level, landholdings, and diversification of income sources), and location largely determines land prices (70% of the variation in land prices can be explained by four spatial variables – distance to the nearest livestock market town, permanent water source, Nairobi National Park and pasture potential, or NDVI). While the weather cannot be influenced by policy, investments in infrastructure and services can influence the other factors, so these findings and their policy implications are important. For example, the Kitengela community is currently working

closely with the Ministry of Lands and local government (OIKejuado Council) to develop the first coherent, evidence-based local land policy for this area; the type of information generated in this study can contribute to these efforts.

Despite the rapid economic and social changes the Maasai in Kitengela have been experiencing in recent years, policymakers need to recognize that earnings from livestock are still critical in terms of overall household earnings. Households with larger herds not only have more overall net income, but also more livestock and off-land income, suggesting that livestock/herd size may be driving diversification strategies in some cases (this is a complex relationship, working both ways, since income from off-land is also used to purchase animals). These higher income households also tend to be the ones educating their children past primary school, so they have improved employment opportunities. This is in fact counter-intuitive to conventional wisdom about pastoral families, i.e. a picture of large, uneducated households with huge herds but not much income, and points to the difference that education is already starting to make in this particular area. It suggests that investments in education beyond primary school have potentially high payoffs in this and other pastoral areas (and doesn't automatically signal the end of pastoralism).

Sales from milk provide roughly a third of household income in a good rainfall year, and is completely in the control of women. This simple fact has a huge policy implication. Interventions and policies that assist women in improving their earnings from milk have potentially large poverty impacts at the household level. For example, marketing of milk is currently very disorganized, so training and technical assistance in milk handling, marketing and management skills, for example, through women's groups could be very beneficial.

Diversification through cropping still appears a quite tenuous option, with many households not getting a harvest even in a year considered to be a 'good rainfall year'. While relatively few households are yet receiving wildlife conservation-related income, for those that are, it is a more lucrative option than cropping, from which very few are earning positive returns.

This kind of information has, and will continue to be, shared with community members and local and national policymakers, as it can contribute to a better understanding of the huge trade-offs that these households are facing, and the information they require as they struggle to adjust their livelihood strategies to cope with widespread and rapid socioeconomic changes. After all, it is the communities themselves that must influence new, and hopefully more evidence-based, land, livestock and other policies that will improve their levels of well-being sustainably over the long run.

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