

Large-Scale Investments in *Chitemene* Farmland: Exploring the Marginal Lands Narrative in Zambia's Northern Province¹

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Introduction

Recent years have witnessed a spike in public and private sector interest in land-based investments for food, feed, fuel and fiber, driven by volatility in commodity prices, economic growth of emerging economies, policy drivers of biofuel demand and investor strategies in the wake of the global economic crisis (German et al. 2011c; EU 2009; World Bank 2011). This has led to a surge of foreign investment in developing countries, where land can be obtained at lower economic and opportunity cost (Anseeuw et al 2012; Schoneveld 2011; World Bank 2011). Developing countries have generally embraced foreign direct investment in agriculture as a pathway to macro-economic development through employment generation, increased exports and economic and technological spillovers to rural areas, and Zambia is no exception (German et al. 2011a; Honig 2012; Schoneveld 2011).

Forests and mixed-use woodlands are often targeted by government for agricultural expansion as a means to leverage benefits from land-based investments while avoiding the displacement of cropland. However, the identification of such areas is more often driven by perceptions than evidence, with these perceptions grounded in optimistic views about land availability and discriminatory views of customary land uses. "Available," "degraded," "marginal" and "unutilized" have become epithets in common usage among proponents of large-scale land acquisitions, discursively rendering landscapes as commodities ready for the taking. Zambia is one country where such narratives have helped to justify farmland acquisitions, where the Miombo woodlands in northern Zambia have been actively targeted for large-scale investments due to their relatively lower population densities and presumption that negative food security effects can therefore be avoided (German et al. 2011a). Here, government agencies have gone chiefdom by chiefdom to encourage chiefs to provide 10,000 ha each "for development" (German et al. 2011a). Yet to date, no systematic studies on the cost and benefit of such investments for customary land users have been conducted to ground these policy actions.

This paper aims to fill that gap through a case study in Mpika District, Northern Province, in a prime investment destination located along the TAZARRA corridor. We analyze the income households derive from shifting agricultural plots (*chitemene*), permanent cropland and other land uses in 3 villages located on the border of a leasehold concession acquired by a foreign company interested in *jatropha* cultivation. We then take a scenario approach to explore the likely economic impacts of targeting different types of land uses and land cover for customary land users under different employment scenarios.

¹ Revised version forthcoming in a special issue of *QA – Rivista dell'Associazione Rossi-Doria*.

Background

Large-Scale Agricultural Investment in Zambia

Zambia is one of the countries most actively pursuing large-scale private investments, with significant investment flows into the mining, manufacturing, energy, tourism, transport and agricultural sectors in recent years². These investments have been facilitated through an active government role in promoting investment by establishing the Zambia Development Agency (a ‘one-stop shop’ to facilitate investment in the country), providing generous fiscal incentives, creating a secure investment climate, and facilitating the necessary licenses and exemptions (German and Schoneveld 2012; RoZ 2006b; ZDA 2009). Agriculture is designated as a priority sector, and has accounted for between 1 and 29 percent of investment pledges, and from 10 to 62 percent of employment pledges, in the 2000-2009 period. In addition to the general investment promotion efforts listed above, several government actions have explicitly targeted the agricultural sector. These include the establishment of a land bank to facilitate investor access to agricultural land and launching of the Farm Block Development (FBD) program.

The land bank is a registry of concessions held by the Zambia Development Agency and Ministry of Lands for allocation to prospective investors through leasehold titles of up to 99 years (renewable). The land bank derives its policy support from Zambia’s five-year development plans, which consider improvements in the land delivery system to increase the amount of land available to investors to be ‘one of the major structural reform agenda items’ of the Private Sector Development Reform Programme or PSDRP (RoZ 2006a). The PSDRP, established under the Plan, established a lands working group with representatives from the Zambia Development Agency and the Ministry of Lands, which is involved in negotiating with chiefs for the relinquishment of customary lands for inclusion in a land bank (German et al. 2011a; Ministry of Lands 2009). This group has been particularly active in the Northern Province, where it has gone chiefdom by chiefdom requesting each chief to relinquish 10,000 ha “for development” (German et al. 2011a). This results in the permanent transfer of land from the customary domain to the state, thus enabling non-Zambians to acquire land under leasehold title under the 1995 Land Act.

The FBD program was conceived as part of Zambia’s efforts to promote commercial farming, and cemented through the adoption of the National Agricultural Policy, 2004-2015. The policy enshrines a commitment to open new farm blocks in each of the nine provinces and provisioning each with the necessary feeder roads, bridges, storage sheds, electrification, dams and canals (MACO 2004). For this purpose, the government acquired, through voluntary transactions, 892 000 ha across its 9 provinces, with each farm block covering 45,000 to 147,750 ha (Schoneveld 2011). Each block has an anchor estate of about 10,000 ha, a number of commercial estates of between 2000 and 4000 ha, and several hundred satellite farms of 20 to 1000 ha each. Being located in accessible, prime cropland, many of the areas were found to be actively used by communities (Ministry of Lands 2009). A June 2011 report referenced

² Data provided by the Zambia Development Agency for the 2000-2009 period.

by the Oakland Institute (2012) suggests that 9,000 people had been displaced. On the other hand, progress has been slow – with only one farm block having secured investors³.

These projects have together given Zambia a prominent position among countries facilitating large-scale land acquisitions. A recent report places Zambia among 7 African countries with more than 1 million ha allocated to investors, and ranks it third overall in terms of land area – with approximately 1.8 million ha allocated (Schoneveld 2011). The FBD scheme was found to be the largest among the 353 projects larger than 2000 ha identified across 32 countries in sub-Saharan Africa.

Political-Economics of Land Use in Northern Province

Mpika District lies in the newly formed Muchinga Province; with 41,000 km², it is the largest district in Zambia. According to the 2010 national census, Mpika had a population 211,425 and a population growth rate of 3.8% per annum. Land tenure is predominantly customary, and land use is dominated by subsistence agriculture through both shifting and permanent cultivation. Production is inherently low due to remoteness from markets, seasonal labor constraints, and poor input supply and output markets (World Bank 2004; Saasa 1996). Farmers engaged in permanent agriculture cultivate 2 hectares or less using rudimentary equipment such as hand hoes and produce staple foods, mainly maize for home consumption. Shifting cultivators cultivate from 0.2 to 0.5 ha of finger millet, cassava and groundnut on a 3- to 4-year rotation. Yields in both systems are generally low, and some households practice both forms of cropping.

It is important to note that the current patterns of investment in permanent cropland and shifting cultivation have been strongly influenced by proactive efforts by government to intensify farming and become nationally self-sufficient in maize. In 2002, the government initiated a program to provide, initially as a temporary measure, subsidized hybrid maize seed and fertilizer packs to smallholder farmers. This prompted farmers to invest more energy in permanent cropland and in maize over the more customary shifting agricultural system (*chitemene*) and crops grown there. Fertilizer subsidies were not new to the government, as the post-independence government in the 1960s subsidized maize to feed urban residents and mine workers and to integrate farmers in outlying areas into the national economy. The government provided subsidized agricultural inputs, guaranteed a national price for maize, provided transport subsidies for maize, and offered subsidized credit for agriculture (Chiwele et al. 1999). Despite much debate and external critiques, these subsidies have continued to this day.

The Fertilizer Input Support Program (FISP) of 2002 sought to improve the access of smallholder farmers to inputs and enhance the participation and competitiveness of the private sector to supply these farmers in the future. Yet, the delivery of the program was fraught with difficulties. The Zambia National Farmers Union observed that the subsidized packs did not necessarily reach the deserving farmers, and in some cases were corruptly awarded. In other cases the packs were delivered late, affecting productivity (ZNFU 2008). An early evaluation of the program suggested that poor farmers benefited little (World Bank 2004). Temporal variations in the effectiveness of these schemes has prompted farmers to vary their level of investment in maize (only practiced in permanent cropland) and other crops (many of which are

³ Interviews with representatives of the Ministry of Agriculture and Cooperatives and Zambia Development Agency, May 2012.

traditionally practiced through shifting cultivation). In Mpika District, where shifting cultivation is historically an important agricultural practice, the failure to deliver on the promises of the FISP encouraged those farmers who had adopted permanent cropping strategies to reconsider given the unaffordability of both seed and fertilizer in the open market. Some resorted to practicing both shifting cultivation and permanent cropping, while others went wholesale into shifting cultivation. Generally, poor farmers replaced maize with low value food crops, notably cassava and other root crops which they grew under shifting cultivation. While there are strong and continuing political pressures to continue to provide subsidies to maize producers, poor farmers stayed with crops such as sorghum, cassava and finger millet – often practiced through shifting agricultural practices, as a safety net.

Methodology

Field Site

The site selected for research is located in Mpika District, located at the time of research in the Northern Province of Zambia (and in Muchinga Province since November 2011). The Northern Province was chosen for research due to its strategic location as a destination for large-scale agroindustrial investments. Government efforts to promote large-scale investments in land have been particularly active in the Province, due both to its strategic location along the TAZARA railway and demographic and land use conditions deemed by the government to be suitable to land use and ownership conversion (German et al. 2011). The latter include relatively low population densities and the presumed prevalence of ‘degraded’ and ‘available’ land.

Within Northern Province, Mpika District was chosen due to the presence of several large-scale investments for which operations had started by the time of fieldwork. One of the two largest investments, located on 6 estates clustered around Mpika District (Figure 1), was selected for research due to its location in a mosaic of permanent cropland, chitemene cropland and natural vegetation at various ages and stages of regeneration. This enabled the assumptions about land availability to be tested in practice. The six surveyed estates together cover 300,171 ha of land, although the Environmental Project Brief (EPB) speaks of 10 estates on 510,183 ha of land.

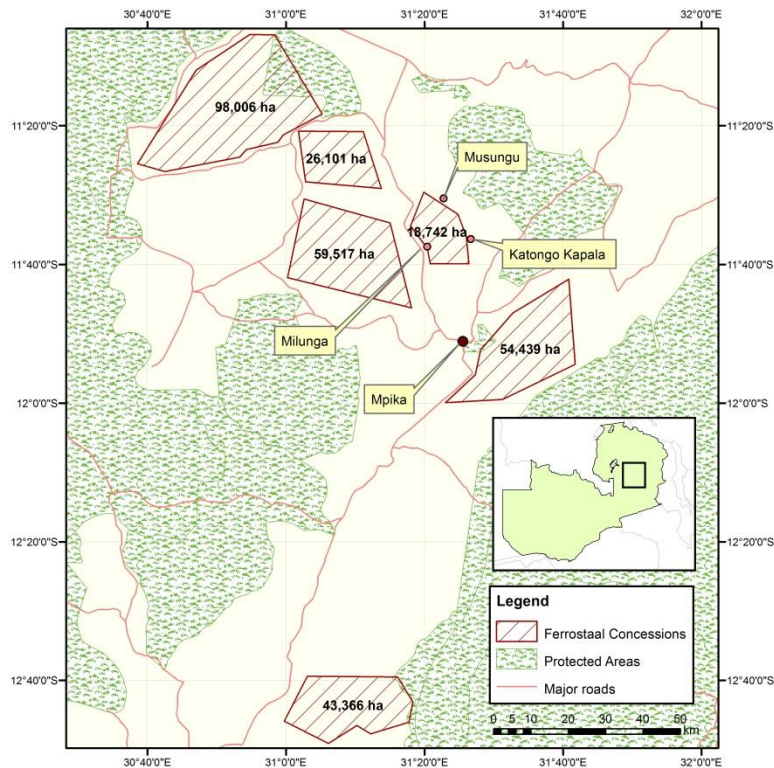


Figure 1. Location of communities selected for research in relation to the 6 concessions

The land was acquired from 5 different chiefdoms for the cultivation of *jatropha*. While the EPB acknowledges loss of farmland, it argues that ‘food security will increase due to labour income, which will more than compensate for loss of land area’ and that ‘the business-like approach of this project will also help to replace the dubious policy of food-self-sufficiency’.

Official narratives about land availability in Northern Province appear to be linked to customary land use practices involving the use of fire, including both charcoal burning for consumption and sale and a form of shifting cultivation customarily practiced by Bemba farmers called *chitemene* (Chibemba for “to cut”). The system consists of an infield–outfield system in which branches lopped from the larger “outfield” are concentrated within the “infield” and burnt to liberate nutrients for cultivation (Stromgaard 1986). Published estimates suggest that outfields are in the order of seven times larger than the resulting infields, which measure from 0.2 to 1 ha (Kakeya et al. 2006; Stromgaard 1984), although anecdotal evidence from our fieldwork suggests this ratio may be higher. Fields are abandoned after 3 or 4 years of cultivation due to declining returns to labor, leaving woodlands to regenerate (Sprague and Oyama 1999). The practice of lopping branches but not felling trees is a unique feature of this shifting agricultural system, enabling biomass to regenerate and trees to reach reproductive age faster (Stromgaard 1986). Full regeneration is anticipated to occur within 25 to 50 years (Chidumayo 1987; Stromgaard 1988, cited by Sprague and Oyama 1999).

Household livelihood strategies in the field site are mixed within any given household, and highly variable among households. All families practice agriculture, although with investments in chitemene fields, permanent cropland and livestock rearing (cattle, chickens, small ruminants, pigs) highly variable. Families also engage in significant forestry activities, including charcoal burning and collection of non-timber forest products (edible caterpillars, mushrooms and fruits, wood for poles and planks, thatching grass). Select households also specialize in fishing for consumption and sale and select off-farm activities (e.g. brick manufacture).

Methodology

Research was carried out in June, 2010 and May, 2012 in one of the five concessions allocated to the company. This concession was selected for analysis as it was the only concession where work had initiated and early impacts could be evaluated. Of the five villages affected by the concession, the three villages on the border of the concession were chosen for analysis: Milunga (the location of the company's earliest operations), Musungu and Katongo Kapala (Figure 1). While selecting villages falling fully inside the concession area would have had some advantages, villages on the border were selected to maximize the variability of land use and livelihood conditions. As the emphasis of this paper is on livelihood impacts under different alternative future plantation development scenarios rather than actual impacts, the benefits were seen to outweigh the drawbacks associated with this choice. Time and resource constraints made it impossible to include all five villages in the analysis.

Research consisted of four basic components: key informant interviews; focus group discussions with company employees; and household interviews. The aim of key informant interviews and focus group discussions with employees was to gain a basic understanding of the chitemene system as practiced locally, the company's operations to date and the early stages of livelihood displacement. Information gathered in these early discussions was then utilized to develop the household survey instrument, which was carried out with 15 households in each of the three villages, for a total of 45 interviews. Data were entered into SPSS and analyzed using descriptive statistics. While all sources of cash income were evaluated, only those non-timber forest products that could be given a market price were included in the calculation of consumptive value – resulting in an underestimate of this component's contribution to livelihoods. Products included in value estimates included charcoal, mushroom, caterpillar and select fruits (fungo, masuku). Items which were not allocated consumptive values included firewood, wood for construction and grasses used for thatching roofs.

For the scenario analysis, two scenarios were considered, with two variants within each:

Scenario 1 – The first scenario follows the officially declared company strategy, in which only chitemene cropland is displaced. The variants explored in this scenario are: (1a) no employment, and (1b) one household member employed.

Scenario 2 – All agricultural land and vegetation within the concession area is subject to displacement. The variants explored in this scenario are the same as those explored in the first scenario, namely: (2a) no employment, and (2b) one household member employed.

Household Livelihood Strategies and Intensification Dynamics in the Research Site

In 2010 a majority of households (55.6 percent) claimed to be cultivating exclusively on permanent cropland, with the remaining 44.4 percent practicing both chitemene and permanent agriculture. None of the interviewed households was practicing exclusively chitemene. This may have a number of causes, including the effectiveness of government efforts to intensify the chitemene system, the decreasing viability of the chitemene system as mature forests become increasingly scarce and remote, or reluctance to admit to a greater dependence on chitemene due to the negative propaganda it has received historically from government and the media⁴.

Estimated average landholdings for each category of household are summarized in Table 1.

Table 1. Average landholdings

Category of Farmer	Average Landholding (ha)	
	Permanent Cropland	Chitemene
Farmers of permanent cropland	1.3	n/a
Farmers of chitemene and permanent cropland	1.5	1.3

It is interesting to note that chitemene farmers have larger areas of permanent cropland on average than do those specializing in permanent cropland. The tables which follow explore relative household dependence on diverse livelihood activities, and help to interpret the extent to which chitemene farming is associated with wealth differentials. Tables 2 and 3 summarize the estimated annual cash income and net value (from products sold and consumed) from different livelihood activities, respectively, when averaged across all respondents.

Table 2. Estimated annual cash income from diverse livelihood activities, all respondents

Activity	Annual Income (Zambian Kwacha)				% of Total
	HH Average	St. Dev.	Max	Min	
Permanent cropland	1,349,600	1,891,694	8,806,000	0	31.1
Chitemene crops	224,322	424,559	1,531,500	0	5.2
Non-timber forest products	1,319,789	2,163,950	8,797,500	0	30.4
Livestock	137,867	330,829	1,950,000	0	3.2
Other	1,314,186	2,008,141	8,200,000	0	30.2
Total	4,345,764				

⁴ This effect is very real. One respondent jumped on the defensive when asked whether he practices chitemene, declaring the negative environmental impacts associated with it and that he abandoned the practice long ago. Later he admitted to cultivating finger millet and when asked whether it was in permanent cropland or chitemene, he admitted to cultivating chitemene. A local extension officer also stated that, "chitemene is a primitive system, so we haven't been supporting that."

Table 3. Estimated net annual value (from sales plus consumption) from diverse livelihood activities (all villages, all respondents)

Activity	Annual Income (Zambian Kwacha)				% of Total
	HH Average	St. Dev.	Max	Min	
Permanent cropland	2,501,455	2,663,685	12,606,000	0	35.0
Chitemene crops	703,017	1,163,141	4,344,000	220,000	9.8
Non-timber forest products	2,213,940	2,906,126	12,517,500	0	31.0
Livestock	419,933	368,179	1,190,000	0	5.9
Other	1,314,186	2,008,141	8,200,000	0	18.4
Total	7,152,531				

It is clear from these tables that while chitemene cropland makes a meaningful contribution to household livelihoods when considering both income and consumption values, it makes a significantly smaller contribution to household income on average than permanent cropland. However, it is also important to consider that the chitemene system provides a reserve of fallow land that also supports other income generating activities, including the harvesting of non-timber forest products (whose viability depends to a large extent on the natural vegetation in locations where chitemene is practiced) and livestock grazing (which is partially dependent on these areas). When its importance is estimated as a combination of these activities, it rivals the contribution of permanent cropland to the household economy at between 36 to 39 of cash income and 41 to 47 percent of the net value, depending on one's assumptions. Thus, the aggregate contribution to the household economy is likely to exceed that of permanent cropland.

A thorough analysis of household livelihood portfolios should not stop at average values; the importance of any given livelihood activity must also be looked at from a distributional angle. Tables 4 and 5 evaluate the relative economic importance of different livelihood activities for two categories of farmers: those practicing and not practicing chitemene farming.

Table 4. Estimated annual cash income from diverse livelihood activities among chitemene farmers

Activity	Annual Cash Income (Zambian Kwacha)		Total Income, Sold + Consumed (Zambian Kwacha)	
	HH Average	% of Total	HH Average	% of Total
Permanent cropland	770,453	17.1	1,850,482	24.9
Chitemene crops	504,725	11.2	1,581,788	21.3
Non-timber forest products	1,623,200	36.1	2,156,570	29.1
Livestock	124,850	2.8	358,000	4.8
Other	1,473,684	32.8	1,473,684	19.9
Total	4,496,912	100	7,420,524	100

Table 5. Estimated annual cash income from diverse livelihood activities among households claiming to have abandoned chitemene farming

Activity	Annual Cash Income (Zambian Kwacha)		Total Income, Sold + Consumed (Zambian Kwacha)	
	<i>HH Average</i>	<i>% of Total</i>	<i>HH Average</i>	<i>% of Total</i>
Permanent cropland	1,743,420	41.9	2,944,116	42.8
Chitemene crops	0	0	0	0
Non-timber forest products	1,077,060	25.9	2,259,837	32.8
Livestock	148,280	3.7	490,714	7.1
Other	1,187,917	28.6	1,187,917	17.3
Total	4,156,677	100	6,882,584	100

The differences between Table 4 and 5 clearly suggest the crucial importance of the chitemene system for chitemene farmers. This is due in part to the contribution of the crop component to household livelihoods, but more importantly to the wider array of economic values provided by the chitemene system. The degree of reliance on crop income as a proportion of net income is far more significant for non-chitemene farmers than for chitemene farmers; however, both groups rely heavily on chitemene landscapes for their income and consumptive needs. It is also important to recognize the complementarities between the two systems, which were identified as low input requirements of chitemene (enabling limited capital for inputs to be allocated to permanent cropland), complementarities in the labor calendar, and to a lesser extent complementary crop combinations.

In the absence of time series data, it is far more difficult to evaluate intensification dynamics in this system. With traditional reliance on chitemene as a livelihood strategy, and a ratio of 1:2.4 of chitemene to permanent cropland in production in 2010 (for all respondents), it is clear that chitemene has witnessed a marked decline over time. However, 75 percent of chitemene farmers claimed to have cleared mature forest when establishing their most recent chitemene plots, suggesting the ongoing feasibility of this livelihood system. Factors at play in conditioning a household's relative reliance on chitemene or permanent cropland, in addition to official rhetoric and fertilizer subsidies for maize, include: a household's reliance on finger millet and ability / willingness to purchase chemical fertilizer (and suffer the loss of self-reliance that goes with it). Finger millet, said to grow much better in chitemene fields, has important cultural and economic functions – being eaten as a staple and processed into local beer for use in ceremonies, and to pay for agricultural laborers by women-headed households. The shift to permanent cropland also raises the question of how fields will be fertilized, raising a challenge particularly for maize farmers – 90% of whom were found to rely on chemical fertilizer for their maize crop.

Company Operations and Local Response

2010 Fieldwork

At the time of research in June 2010, company operations had just begun in Milunga village. Approximately 18 employees from the affected community and 5 others were hired on a 6-month

contractual basis and had begun the process of opening a 1.5-ha plot for the nursery site. No company property or structures were yet visible on the site. Employees at the time were generally enthusiastic about their employment conditions and opportunity to earn regular wages; however, several individuals indicated their fields had already been affected. Contrary to the company’s promise to restrict their operations to chitemene fields, one employee claimed his permanent cropland had been affected.

As a means to gauge local responses to the investment, we explored anticipated benefits and concerns, with results summarized in Table 6 and Table 7, respectively.

Table 6. Expectation of future benefits among respondents

Expectation of Future Benefits	% Respondents
Improved household well-being	90.0
Improved health facilities / healthcare	83.3
Improved roads	83.3
Employment of one or more household members	80.0
Improved schools / education	76.7

In addition to the expectations listed in Table 6 (which were posed to interviewees on the basis of prior inquiries), respondents volunteered additional impacts. These included connection to the electric grid, improvements in transport and marketing outlets, construction of weirs (6.7 % of respondents for each) and general upliftment in the status of the area (47% of respondents).

While members of affected communities also volunteered a host of concerns (Table 7), these concerns were shared less widely than the anticipated benefits – illustrating the lure of such developments to communities historically deprived of employment and public infrastructure and services.

Table 7. Concerns voiced by respondents

Nature of Concern	% Respondents Voicing Concern
Being moved from the area	26.7
Company may grab land / loss of farmland	23.3
Families being separated	6.7
Company departing before development impacts are observed	6.7
Failure of company to keep promises on employment	3.3
Crop disease introduced by jatropha	3.3
Reduction in available household labor	3.3
Local people not employed due to poor qualifications	3.3
None	33.3

2012 Fieldwork

By 2012, the company’s operations were limited to the 1.5-ha nursery plot, a 2-hectare trial plot, a borehole and several rudimentary structures made from local materials (e.g. storehouse, meeting room) in Milunga and additional trial plots in adjacent chiefdoms. According to respondents, company

representatives left in February 2011 and never returned, leaving 2 months of salary unpaid. Of the eight employees interviewed from Milunga, all nevertheless indicated that net impacts were positive.

Only one of the 15 farmers interviewed in Milunga village claimed his chitemene fields were affected by the early operations of the company, which claimed 0.75 ha of his fields. Two respondents claimed their permanent fields were affected, with 0.5 and 2.0 ha affected, respectively. At this time, respondents from all villages had a very limited understanding of the total area of the plantation and the extent to which it would affect their cropland if the full area were developed. Thirteen, 44 and 18 percent of households estimated portions of their chitemene fields, permanent cropland and fallow land were located within the concession area, respectively. Yet as illustrated by our experiences in Milunga, where initial assumptions by farmers assuming their land did not fall within the concession area were found to be false upon further probing, these estimates point only to the lack of any real understanding of what had been negotiated. Curiously, 6 out of the 7 respondents who were not employed (one whose cropland was already affected, and all of whom anticipate negative impacts on their cropland) indicated the impacts had been positive – suggesting the high expectations that accompany such developments in the minds of affected land users.

The next section explores the livelihood impacts of large-scale agricultural investments in the mosaic landscapes of Mpika District under different land occupation and employment scenarios. The aim of this study is less to generate more accurate estimates of future impacts for affected communities than to gain an understanding of wider policy implications of targeting mixed use landscapes in Zambia's Northern and Muchinga Provinces.

Livelihood Strategies and Impacts under Diverse Future Scenarios

Impacts under Diverse Land Occupation and Employment Scenarios

Assuming the livelihood strategies of interviewed households are representative of the area as a whole, this section explores the consequences of diverse land occupation scenarios of current or future investors – assuming all of a household's livelihood activities are found within concession boundaries. The actual situation of boundary communities will be considered in the subsequent section.

(i) Scenario 1 (Companies Restrict their Operations to Chitemene)

In this scenario, investors would actively avoid displacement of permanent cropland and instead aim for chitemene land that is either actively cropped or laying fallow. It is assumed that 100% of non-timber forest products and 50% of the livestock component are affected (the latter corresponding to the feed that is sourced in communal grazing areas rather than permanent cropland or homesteads). Table 8 highlights the magnitude of the estimated losses and contrasts this with the potential gains from employment while contributing to more regular income flows – a factor that tends to be valued in the shift from customary livelihoods to waged labor (German et al. 2011b).

Table 8. Household losses and potential employment gains under Scenario 1

Category of Household	Net Loss (cash income)		Net Losses (cash + consumptive value)		Annual Income from Employment
	Zambian kwacha	% of total	Zambian kwacha	% of total	Zambian Kwacha
Chitemene farmers	2,190,350	48.7	3,917,358	52.8	3,840,000
Non-chitemene farmers	1,151,200	27.7	2,505,194	36.4	
All households	1,613,045	37.1	3,126,924	43.7	

Based on this assessment, employment on company terms (320,000 kwacha/month) could potentially offset most of the losses for most households. This ignores the costs associated with resources that were not given an economic value in this study, such as firewood, thatching grass and timber for household use.

(ii) Scenario 2 (All Vegetation and Land Uses within the Concession Area are Subject to Displacement)

In this scenario, investors would have the freedom to occupy all land within the concession area, potentially displacing all natural vegetation and farmland. While not all areas would likely be considered suitable, the tendency for large-scale investments to practice exclusionary tenure regimes suggests that access to resources within the concession area would be severely curtailed or eliminated entirely. The assumptions employed in this scenario are that all livelihood values would be displaced with the exception of the “other” category (which is generally limited to off-farm income, but may include resources found within the concession area). Table 9 summarizes estimates on losses and potential gains from employment for households with different livelihood strategies under this scenario.

Table 9. Household losses under Scenario 2

Category of Household	Net Loss (cash income)		Net Losses (cash + consumptive value)		Annual Income from Employment
	Zambian kwacha	% of total	Zambian kwacha	% of total	Zambian kwacha
Chitemene farmers	3,023,228	67.3	5,946,840	80.1	3,840,000
Non-chitemene farmers	2,968,760	71.4	5,694,667	82.7	
All households	3,031,578	69.8	5,838,345	81.6	

This analysis suggests that while income from employment could potentially offset all losses of cash income, it is insufficient to offset consumptive values associated with local land uses.

(iii) Employment scenarios

Table 10 summarizes respondent statements of anticipated coping strategies in the event the jatropha plantation were to occupy most or all of the available land for chitemene. While significant numbers of

respondents indicated they would expand (if feasible) or intensify their permanent cropland, the most prevalent strategy is to depend on the company for employment.

Table 10. Anticipated household coping strategies under loss of chitemene farmland

Strategies	Responses (% of <i>chitemene</i> farmers)	
	Yes	No
Shift to other livelihood activities so as to depend less on farming	33.3	66.6
Try to grow more in your permanent cropland by using more fertilizer	66.6	33.3
Expand the area of permanent cropland	69.2	30.8
Travel longer distances to find new chitemene fields	16.7	83.3
Expect employment from the company	83.3	16.7
“Other” strategies volunteered by respondents: —Move away from area	16.7	n/a

It is important to note that employment of displaced land users cannot be assumed. A review of local impacts from biofuel plantations in select countries of Africa, Asia and Latin America suggests a preference for extra-local hiring for a variety of reasons (German et al. 2011b; Schoneveld et al. 2011). If early performance of the company studied here is any indication of future behavior, it is clear that a majority but not all employees (18 out of 23) were hired from affected communities. Furthermore, there is already evidence of elite capture of employment opportunities within the local village. With 72 households residing in Musungu and many respondents indicating they were never offered jobs (despite their eagerness to benefit), the fact that 13 percent of respondents admitted to having two household members employed suggests a lack of equitable distribution of benefits. It is unclear how these dynamics would play out over time as larger areas are brought into production. However, it is clear that in the absence of equitably negotiated and legally sanctioned agreements on benefits distribution, household expectations of future employment would not always be met.

Observations on employment conditions also merit mention. The investment observed in this study was paying rates significantly above those observed in other investments, whether equally recent or long-established. With lower rates, local residents would fare more poorly than what this analysis suggests. According to some reports, the Zambian minister of labor recently indicated that minimum wages for farm workers would be revised upwards in January, 2013 to K 710, 000 for those residing locally and not needing transport⁵.

The Particularities of Local Impacts

It is important to note that the treatment of landscapes as homogeneous can produce a very inaccurate evaluation of the likely effects of large-scale investment. The unique biological and physiographic features of each of the villages studied here were found to shape the nature of likely impacts in profound ways. Musungu and Katongo Kapala villages, for example, are bordered by the concession on

⁵ 'Zambia: Be Patient, Shamenda Tells Farm Workers,' All Africa, 7 September, 2012. Available at: <http://allafrica.com/stories/201209080026.html> (accessed Oct 31,2012).

one side and hills on the other, suggesting that concession boundaries were selected to coincide with flatter areas. In the case of Musungu, all farmland and nearly all other economic activity are concentrated within the concession area and pressure for resources inside the concession area is high as a consequence. This is due to the nature of land found within the hills (rocky, sandy and infertile), the presence of a river making access and transportation of produce difficult, greater soil moisture inside concession area, and the longer distance to areas suitable for chitemene on that side of the village. Planks were said to be found exclusively within the concession area, and firewood, caterpillars and charcoal were said to be mostly found there. In Katongo Kapala, permanent cropland and some non-timber forest products (e.g. caterpillar) were also said to be exclusively located within the concession area. However, access to the hills and areas beyond is greater as there is no river to cross and land within the concession no longer supports chitemene agriculture (thus pushing farmers to look beyond concession boundaries). Firewood and poles were said to be exclusively gathered from outside the concession area.

The Milunga situation was more mixed. While 100% of certain resources were said to be found within the concession area (e.g. fish, caterpillar), the story on agricultural land and other forest products was more mixed. While the village leader indicated that all the chitemene land lies within the concession area, household responses were more mixed, with some households claiming their land is unaffected. Similarly, some households claimed to source all other forest products (e.g. mushroom, firewood and charcoal) from within the concession area, while other households indicated they sourced 100 percent of these from other areas. The degree to which responses for different resources coalesced and the degree to which responses between households contrasted suggests limited awareness of concession boundaries accounts for the bulk of these differences.

Table 11 summarizes estimates of the economic impacts on households from each village based on the unique conditions summarized above. The assumptions made for Milunga (where patterns were not as clear) are that 100% of chitemene cropland, 50% of permanent cropland, 75% of grazing resources (given the location of chitemene and restrictions on movement posed by a highway), 100% of caterpillars and fish, and 50% of all other NTFPs are located within the concession area.

Table 11. Estimated economic impacts on boundary villages

Village	Annual Losses – Scenario 1 (Zambian kwacha)		Annual Losses – Scenario 2 (Zambian kwacha)		Net HH Impact (non-employed) (Zambian kwacha)	Net HH Impact (employed) (Zambian kwacha)
	Sales	Sales + Consumed	Sales	Sales + Consumed		
Milunga	806,467 (23.0%)	1,693,017 (30.6%)	1,247,326 (35.5%)	2,610,860 (47.2%)	Loss of 23-36% income; 31-47% livelihood	Gain of 74-86% income; 22-29% livelihood
Musungu	2,252,701 (47.8%)	4,237,051 (51.8%)	3,535,965 (75.0%)	7,001,236 (85.6%)	Loss of 48-75% income; 52-86% livelihood	Gain of 6-34% income; loss of 5- 39% livelihood

Katongo Kapala	236,873 (5.1%)	1,457,833 (20.9%)	2,343,769 (50.9%)	4,653,611 (66.6%)	<i>Loss of 5-51% income; 21-67% livelihood</i>	<i>Gain of 32-78% income; uncertain livelihood impacts (12% loss-34% gain)</i>
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The above table suggests that gains are only made in the case of employment for all villages, irrespective of the boundary status of these villages and their unique features. Yet here, the potential for net benefits should all households secure employment is conditional on the particularities of each village – with some villages experiencing gains when both sales and consumptive values are considered, and others experiencing gains in cash income but losses when consumptive values are factored in.

Discussion and Conclusions

This paper aims to shed light on recent debates surrounding the “marginal lands” narrative in the context of large-scale land acquisitions and agricultural investment. Drawing on data from 3 communities affected by one of Zambia’s largest foreign land concessions located in the mixed land use systems of Zambia’s Northern and Muchinga Provinces, this paper analyzes current patterns of land use and the income and consumptive values of diverse components of household livelihood portfolios. These data are used to estimate the likely future impacts of large-scale land acquisitions under different future land occupation and employment scenarios.

Results suggest that at this point in time, permanent cropping is contributing significantly more to household livelihood portfolios than shifting agricultural plots on average. When broken down by farmers practicing and not practicing chitemene, chitemene plots were found to be almost equal to permanent cropland in their contribution to household livelihood portfolios for chitemene farmers (at 21.3 and 24.9 percent of household livelihood portfolios, when both cash and consumptive values are considered). Thus, the crop component of the chitemene system still plays a fundamental role in sustaining a large number of households in the area. More importantly, the contribution of non-timber forest products to livelihoods was found to be considerable by almost any measure, and to exceed the value of permanent cropland for chitemene farmers (by a factor of more than 2:1 when considering the cash income contribution). If considering all the economic and consumptive values of natural vegetation – from which chitemene plots are established, non-timber forest products harvested and livestock in part supported, the contribution of so-called “degraded” land to the household economy exceeds that of permanent cropland for the population as a whole. This contribution is more significant for chitemene farmers at 2 to 3 times the contribution of permanent cropland, and less significant for households that no longer practice chitemene – for whom permanent cropland remained the larger contributor to livelihoods. However, with economic contributions from natural areas falling between 66 and 85 percent that of permanent cropland for even these households, it is clear that these areas cannot be discounted as “unutilized” or economically marginal – as they are so often depicted to be.

When exploring the consequences of large-scale land acquisition in these mosaic landscapes of northern Zambia, it is clear that the ultimate livelihood effects will depend a great deal on the patterns of corporate occupation of land, the extent to which displaced households are able to capture economic

opportunities that emerge, and the particularities of household livelihood strategies and local landscapes. Regarding patterns of land occupation, it is important to ask whether the company's purported commitment to focus exclusively on chitemene is even feasible, when viewing the wider trend towards more uniform and exclusionary patterns of land tenure and occupation and potential risks associated with landscape 'sharing' (stray livestock or fire, etc.). This analysis nevertheless considers both patterns of land occupation as feasible options. Irrespective of the scenario considered, it is clear that all households are negatively affected and can only offset these losses through comparable or greater benefits derived from the investment. The most obvious benefit that could potentially sustain households despite land loss and resulting land concentration is employment. Under the first scenario, where companies avoid targeting permanent cropland, employment on company terms (320,000 kwacha/month) could potentially offset most of the losses for most households. Under the second scenario, where all land uses are potentially affected, employment can potentially offset losses of cash income but was found to be insufficient to offset consumptive values associated with local land uses.

The study also clearly illustrates how the particularities of specific household livelihood strategies and local landscapes shape outcomes. Under Scenario 1, employment is less likely to offset losses for households more reliant on chitemene and non-timber forest products than on permanent cropland and off-farm income. It is important to note that this analysis does not capture the effects for households lying at the extreme of this continuum. The particularities of local landscapes, on the other hand, were found to affect the *level* of cash income gains realized through improvement and *whether* employment can offset the total livelihood values of customary land uses under conditions of guaranteed employment for all affected households. Yet such an employment scenario remains hypothetical; published studies looking at the proportion of land losing households gaining employment under corporate land acquisitions have tended to find evidence of significant numbers of affected households lacking employment to offset their losses (Obidzinski et al. 2011; Schoneveld et al. 2011).

This study highlights the crucial importance of moving beyond policy narratives and assumptions regarding "available," "degraded" and "unutilized" land to quantify the potential gains and losses under different land occupation, employment and wage scenarios. Such studies must include both income and consumptive values and cover all land uses to be useful in shedding light on potential risks. Yet illustrating the *potential* for positive gains is insufficient in guaranteeing these benefits accrue in practice. Governments, local land users and civil society must all play an active role in ensuring stated employment benefits materialize for *all affected land users interested in employment* by improving the quality of negotiations, improving the documentation (and documentation 'ownership') emanating from these negotiations and ensuring compliance with the minimum wage. Additional strategies would then be needed to safeguard the livelihoods of future generations and those households unwilling or unable (due to age, disability, cultural or other factors) to make the profound lifestyle transformations involved in abandoning customary practices in favor of waged employment.

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