



Livelihood diversification opportunities for pastoralists in Turkana, Kenya

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1 Introduction

1.1 Definition of livelihood diversification

Pastoral diversification is defined as the pursuit of any non-pastoral income-earning activity in both urban and rural environments. This includes various forms of wholesale and retail trade (e.g. selling livestock, milk, hides and skins, honey, and artisan goods etc.), rental property ownership and sales, waged employment (local and non-local, including working as a hired herder, farm worker, and migrant labourer), farming (subsistence and commercial), and the gathering and selling of wild products (e.g. gum arabic, firewood, or medicinal plants) (Little 2001). The sale of livestock and milk products at the herd gate are not included in this definition, nor are herd diversification strategies that instigate a mix of animal species to cope with drought etc. (Little et al. 2001).

1.2 Why diversify livelihoods?

Turkana is the largest, yet least developed, district in the country. This lack of development can be partly explained by Turkana's harsh climatic conditions. Turkana, which is situated in the arid and semi-arid lands (ASALs), experiences low rainfall and high temperatures that hinder any significant agricultural development. Livelihoods in Turkana are primarily based on extensive livestock production and most cash earnings come from sales of livestock or livestock products (Barrett and Luseno 2004). Indeed, approximately 70% of the human population inhabiting the area are nomadic or semi-nomadic pastoralists. However, the impact of drought, increasing insecurity, and famine has led to a growing emergence of sedentary Turkana and experimentation with alternative livelihoods. Pastoralists in Turkana, and East Africa in general, increasingly pursue non-pastoral income strategies to meet consumption needs and to buttress against shocks caused by climatic fluctuation, animal disease, market failure, and insecurity (Little 2001). Unfortunately, the poor transportation and communication infrastructure in Turkana restricts trade and income generation opportunities.

1.3 How have pastoralists in Turkana diversified?

Over recent years, pastoralist communities have had to employ other supportive activities to supplement pastoralism, which has proved to be ineffective in meeting all their economic and social needs. Key areas of activity include sedentary agriculture, particularly along the Turkwel River, where settled farmers and agro-pastoralists grow maize, sorghum, sukuma, oranges, mangoes, bananas and vegetables (UNDP 2006). Farming has often been acclaimed as a viable risk management strategy (Campbell 1984; Smith 1998), while others view

it as an unsustainable (even destructive) option that even accentuates risk (Hogg 1987, 1988). Fishing in Lake Turkana is another, long standing, form of diversification. Fishermen along Lake Turkana migrate to follow the patterns of fish movement. The pastoralists also supplement their livelihoods by selling the fish. Many pastoralists have also taken up weaving of mats and baskets particularly near the lake where weaving material is readily available from the Doum Palm. Other natural resource-based livelihood diversification activities have included the collection and sale of aloe (UNDP 2006), gum arabic (Little et al. 2001), honey (UNDP 2006), wild fruits (ITDG 2005b), firewood (Little et al. 2001), and the production and sale of charcoal (Little et al. 2001) and alcohol (Little et al. 2001; ITDG 2005a). In addition, there is now more emphasis on the processing and sale of skins and hides (Little et al. 2001; Ajele 2005; UNDP 2006). Attempts have also been made to diversify into chicken production (Little et al. 2001), gold mining (ITDG 2005a) and petty itinerant, or kiosk-based trade (Little et al. 2001). With the exception of fishing for subsistence purposes and the use of ethno-medicines (ITDG 2005a) in place of modern veterinary medicines that need to be paid for, the rationale of the majority of livelihood diversification ventures have been the search of cash. While there is considerable debate over the importance of the market in pastoral diversification, with some condemning and others applauding it (see Hogg 1986; Fratkin 1991; Little 1992; Holtzman 1996; Bailey et al. 1999), most pastoralists have attempted to tap into, or even create, markets for their products. There is little evidence that pastoralists have diversified into service provision (Little et al. 2001).

1.4 Socio-economic and spatial characteristics of livelihood diversification pathways

1.4.1 Gender

Gender is one of the key determinants of the options chosen for diversification (Little 2001). According to Field (2005), single women with children are most likely to try new income generating activities, even though resources are limited and individuals possess low levels of human capital. In general, women tend to move into petty trade, namely, milk, *uji* (porridge), mandazi (buns), wild fruit, processing and selling fish and/or animal skins, charcoal, firewood, alcohol, weaving (mats and baskets) and offer their services to fetch water and undertake household chores (see also Nduma et al. 2001). Conversely, men frequently engage in livestock trading, fishing, carpentry, construction work, long distance hawking, provision of security services, take advantage of comparatively more remunerative waged employment than women (which often involves labour migration) and sell poles, rent buildings, and own shops (including butcheries) (Little et al. 2001). According to Little (2001), waged employment is often prioritized as the most appropriate form of diversification to ensure food security.

1.4.2 Proximity to urban centres

Proximity to urban centres also affects the number and range of options open to those interested in livelihood diversification. According to research undertaken by Little (2005), pastoralists residing less than 40 km from towns typically have more alternative income generating options than those living further away. Pastoralists residing within a 39-kilometre radius of towns indicated up to eleven different income activities compared to just seven activities for those living more than 40 km away (i.e. more than a day's walk) (Little 2001). Proximity to an urban centre is beneficial to residents because they can easily access societal amenities like hospitals, water, electricity and schools that provide free lunch. Most charitable organizations are located in the urban centres and residents can benefit from their assistance, especially food. Casual and permanent jobs are readily available in urban centres. In addition, there is ready market to sell food stuffs and other things like charcoal and woven items. In addition to the opportunities offered by urban centres, Lake Turkana offers fishing and tourism opportunities and both the Turkwel and Kerio River offers the potential of irrigated agriculture and agro-pastoralism.

1.4.3 Accumulation vs. survival strategies

On the whole, pastoralists are not innovative or willing to try new ideas, particularly if self-esteem and self-reliance has been eroded as a result of a loss of livestock, time spent in relief camps, or as recipients of charitable support (Field 2005). With the exception of relatively wealthy pastoralists in Turkana, livelihood diversification is generally perceived as an *ex ante* strategy adopted to reduce risk exposure (McPeak and Barrett 2001). There are many reasons why pastoralists diversify with considerable local variation in both the activities chosen and the rationale behind their choice (Little 2001). Pastoralists' diversification profiles illustrate clear dualistic tendencies, i.e. the richest diversify in order to promote economic growth and accumulate additional wealth, whereas the poorest diversify in order to survive (Little 2001). According to Little et al. (2001), mid-level income pastoralists tend not be so heavily involved in income diversification, something noted by Barth (1964) over 40 years ago.

Accumulation

Despite the lack of viable diversification options available to pastoralists in Turkana, Hogg (1988) postulated that a few, relatively wealthy, pastoralists had survived countless drought-related crises relatively unscathed as a result of livelihood diversification, specifically when pastoralists had diversified their incomes in the pursuit of relatively lucrative trading activities (Little 2001; McPeak and Barrett 2001), and skilled (higher income) waged labour (Little et al. 2001). The diversification profile of wealthier women also differs from that of relatively

poorer ones. Wealthier women are more likely to rely on income generated from livestock, milk and ghee sales, compared to the petty trade of milk, vegetables, handicrafts, alcohol and local waged employment engaged in by the poorest women (Little 1992; Coppock 1994; Fratkin and Smith 1995).

Survival

In contrast, for the majority of pastoralists, livelihoods diversification in Turkana and other neighbouring districts (such as Marsabit and Moyale) are scarce and generally unremunerative, specifically when individuals lack human capital (education) and access to significant financial capital (Little et al. 2001). According to Little et al. (2001), many livelihood diversification options, including accommodation, retail and processing businesses in town require significant amounts of cash for initial start-up. As a result, the poor are generally relegated to marginal activities characterized by firewood sales or charcoal production (Little 2001), the sale of their own unskilled labour, and forays into petty trading (Little et al. 2001). According to Little (2001), charcoal production and firewood/charcoal sales are examples of livelihood diversification activities undertaken only by the poor (Little et al. 2001). Furthermore, these activities are extremely laborious, generate little income (Little 2001), and are illegal. Diversification into non-farm activities is most commonly observed among poorer pastoralists driven by herd losses into unskilled waged labour and petty trade, as well as by young adults who have not yet accumulated herds (McPeak and Barrett 2001).

2 Livelihood diversification in Turkana

The principal purpose of this report is to characterize the extent of livelihood diversification in Turkana and, through the application of a case study approach, illustrate some of the existing activities and identify their associated strengths and weaknesses. An attempt is also made to highlight both constraints and opportunities associated with the future expansion of these activities. This section is comprised of two parts. The first part, based on a literature review and two extremely knowledgeable key informants (Ann Kirya and Margret Nabuin—both belong to the Turkana District Chamber of Commerce), briefly outlines the range of diversification opportunities currently being exploited in Turkana. The second part, using insights gained through Focus Group Discussions (FGDs), highlights some of the most promising and widespread commercial diversification activities in Turkana.

2.1 Extent of livelihood diversification in Turkana

2.1.1 Aloe production

According to Kirya and Nabuin, Aloe Vera is a native plant found in the hills on the Turkana/Ugandan border and has been valued for many years for its ethno-medicinal qualities. In places such as Oropoi and Latea, it is used locally to treat malaria, flesh wounds, and eye infections and to moisturize dry skin. Recently, however, the production and processing of Aloe Vera has been seen as a potential candidate activity for livelihood diversification. It was reported that, in March 2006, a white foreigner visited Lobei (located between Lorugum and Lorengipi) and explained to the locals how to process Aloe Vera and promised that he would return and buy it from them. ITDG Practical Action has also attempted to promote the production, processing and marketing of commercial Aloe Vera. ITDG is attempting to support producers (harvesters and boilers) in West Pokot bordering Turkana and is keen to establish a 'Market Opportunity Group' (Griffith 2005). According to Griffith (2005), key challenges related to Aloe Vera production include a desperate absence of market information and the poor organization of production and processing. Corruption is endemic throughout the Aloe Vera value chain, adding costs and creating distortions of power and interests e.g. boilers pay bribes to local chiefs, which enables them to negotiate lower prices (chiefs negotiate prices on behalf of harvesters). Prejudice against Somali traders causes a high degree of mistrust and a lack of cooperation. Ultimately, if sustainable production could be promoted, there is substantial scope for the profitable expansion of Aloe Vera in Turkana (Field 2005).

2.1.2 Ecotourism

According to Blench (2000), many extensive pastoralist areas in Eastern Africa are increasingly being seen as potential biodiversity reserves. According to Kirya and Nabuin, sites in Turkana that possess latent ecotourism potential include: Eleye-Springs, Lobolo and Choro Island (where numerous crocodiles abode), Kapedo Springs and the Turkana south (KWS) Game Reserve in Kainuk. Indeed, an ecotourism circuit has been put forward for Turkana that features Turkwel Dam Gorge, Nasalot National Park, Southern Turkana Game Reserve and the Lake Turkana area (including the islands and Koobi, famous for its archaeological importance).

2.1.3 Gum arabic production

Gum arabic comes from *Acacia senegal*, which is widely distributed in Turkana (Field 2005). According to Kirya and Nabuin, gum arabic is primarily produced/harvested in Loima and Lorengipi. Gum arabic is traditionally used for home consumption but is also sold commercially to Somali traders. Traditionally, it is placed on hot charcoal to create a pleasant essence that percolates throughout the house. It is also used as chewing-gum or even eaten as food. For many years, gum arabic has been harvested in the interior of Turkana and sold to the Somalis, who also like to spray it on their fires. However, gum arabic production in Turkana faces stiff competition from Sudan, where 80% of the world's gum arabic originates (ITDG 2006).

2.1.4 Charcoal production

Charcoal is primarily produced along the Turkwel and Kerio Rivers and is sold along the main highway between Kainuk and Lokichoggio. Unfortunately, whilst charcoal production offers small returns to those that produce it, due to the destructive nature of current practices, the production and sale of charcoal is illegal in Turkana (Field 2005). Efforts are currently being made to promote sustainable charcoal production across the ASALs.

2.1.5 Fresh milk, dried milk and dried meat sales

Fresh milk is sold throughout the district during, and straight after, the rainy seasons as milk is often in surplus and can be exchanged for food commodities with a higher calorific value. Fresh milk is generally not traded during the dry seasons or prolonged droughts. Whilst once a popular practice, and a tried and tested way to store milk during times of milk surplus, few Turkana still produce dried milk. Indeed, there used to be factories in Kakuma and Lokomarinyang dedicated to the production of dried milk. However, recently, the market for 'Edado', or sour milk, has expanded. When milk surpluses exist, pastoralists elect to sell their

milk for cash in order to purchase consumer goods and to pay school fees. Whilst dried meat is still produced for home consumption in the interior during times of surplus livestock, there is no notable market for dried meat either in Turkana or Kenya as a whole.

2.1.6 Forage trees

Traditionally, pastoralists have relied on a range of forage trees for livestock feed. However, in the contemporary period, the use or sale of material from forage trees is strictly prohibited by the Department of Forestry. As with charcoal production, the collection and use/sale of livestock fodder from forage trees has been driven underground.

2.1.7 Collection and sale of wild fruits

The collection and home use or sale of wild fruits is widespread throughout the district. The most common fruits sold include Doum Palm (date-like), Ngakalalio, Edong and Edapal, and Ebei.

2.1.8 Gold mining

Gold mining has been prevalent in Turkana for many years. Whilst most gold mining operations in the contemporary period are labour intensive one man operations, gold mining in the recent past has been the domain of large businesses backed by significant political support. Currently, gold mining occurs primarily in Nakoriyek (on the road to Kanakurdio), Kimagur (on the main road before Lokichar), Lokiriama, Namorupus and Nadunga (west of Nakoriyek).

2.1.9 Poultry and egg production

Local/traditional free-range poultry is widespread in Turkana. However, due to their poor diet and extreme conditions in the district, poultry productivity is low as is the quality of both eggs and meat. Many external agencies have attempted to promote poultry production in Turkana. In 1993, NIP provided poultry for egg production to the RCEA Maridadi Women's Group, Lokichar. Initially, the egg business was good, the Group even sold eggs in Lodwar. However, over time, the group was unable to continue buying expensive chicken food and did not possess the knowledge to provide appropriate care for their poultry and the venture eventually failed (Source Maridadi FGD). At one time, both broilers and layers used to be produced in Lodwar by groups such as the Naotorong Women's Group and AIC. However, due to poultry diseases (which are costly to prevent/cure), and the relatively high costs and supply problems associated with poultry feed, commercial poultry is no longer produced in Turkana.

2.1.10 Trading of small stock by women's groups

In Turkana, trade in livestock, whether small or large stock, has traditionally been the domain of men. However, according to Kirya and Nabuin, small stock is currently being traded on a small-scale by women's groups across Turkana. Key groups and their locations include: The Toyarbon and Kauma Women's Groups in Turkwel, the Ekwar Women's Group in Moruese (east of Turkwel River), the Umoja Women's Group in Lodwar, and other undisclosed women's groups in Lokoriamia, Namorupus, Lorugum, Turkwel, Kalemnyang, Nawotin, Loturere, and possibly one in Katilu. In addition, other groups have also traded small stock on a transient basis, namely during destocking interventions. For example, the Natole and Napetet Women's Group bought small stock during VSF-B's 2005 destocking program.

2.1.11 Casual and waged labour

According to Little et al. (2001), demand for casual labour in Turkana is in the form of agricultural or building jobs. However, in the case of agriculture, most casual jobs are available in the wet season with some herding opportunities in the dry season. Unfortunately, the lack of work opportunities in Turkana has led to many youngsters, often having completed their schooling, loitering around the principal urban centres, many of which turn to crime. Within Turkana District, there is a distinct lack of opportunities for waged or salaried labour. If they have good contacts and can rely on financial support from their families, educated sons (and occasionally daughters) of relatively wealthy pastoralists will secure waged or salaried jobs in Nairobi and other major urban centres in Kenya (Little et al. 2001).

2.2 Honey production

According to Mwangi (2005), honey production is a commercially viable enterprise, especially along the riverine ecosystems (Turkwel and Kerio Rivers) and higher altitude locations close to the Ugandan border. The principal areas of honey production include Turkwel (Toyarabon Women's Group, Turkwel Division), Kalemnyang (Turkwel Division), Lokapel (Katilu Division), Kanaodon (Katilu Division), Kainuk, Loyapat (Kainuk Division), Lokwar, Ekwar, Kaptir, Nakwamuru, Kapelibok and Oropio.

2.2.1 History of honey production in Lochori and Kaptir

According to our Focus Group Discussion (FGD) conducted with beekeepers from Kaptir 200 long-term inhabitants, out of a total population of 1000, kept bees and processed honey. In Ekwar, all of the 400 inhabitants were suggested to keep bees and produce honey. In Kaptir and surrounding villages, honey producers can own up to 30 or 40 beehives, the minimum is 10–15. According to our FGD conducted with beekeepers from Lochori, only a minority

of people in the local area historically produced honey. However, in the contemporary period, almost everyone produces honey, and the population has increased significantly. On average, individuals possess 10–15 hives, however, individuals can possess up to 20, or even 40, hives. In the wider community, more than 100 people, out of a population of 1500, have beehives and process honey. Beekeeping in Lochori is usually the domain of men, but women also help their husbands process the honey after harvest. However, the research team was informed that in the Lochori area, a few women had just begun honey production on their own. Traditionally, in Kaptir, only men and youths were involved in beekeeping. Recently, however, the Kaptir Women's Group has begun producing honey and has one modern beehive. Interestingly, beekeepers from Kaptir suggested that while their grandparents focused exclusively on honey production for home consumption, the current generation also kept livestock. The principal motivation for producing honey in the contemporary period was for its medicinal qualities and because honey can be exchanged for either money or a goat. However, many people in the community still chose not to produce honey. Some were suggested to be lazy or lack the skills required to manufacture a beehive and encourage bees to colonize their hives once constructed and sited. Bee producers in Kaptir also suggested that diversifying into honey production does not always result in improved livelihoods but that successful beekeepers were able to sustain their families. When asked about support, the Lochori beekeepers informed us that the community occasionally benefited from the support of NGOs, but were not forthcoming about what kind of support they had received. Conversely, beekeepers from Kaptir praised the support that they had received from the Catholic Mission but condemned SNV, an international NGO, for promising everybody 5–10 beehives and failing to deliver.

2.2.2 Contemporary honey production

Local beehives are manufactured from logs cut from special types of trees. The most popular trees used to make beehives are the 'Echoke', locally known as a sycamore, and the 'Edurukoit', suggested to be a type of acacia. After cutting, the log is split into two equal parts and hollowed out (almost like two canoes) and holes are cut into the edges of each half to enable the two halves to be rejoined. In Kaptir, it was explained that the manufacture of a beehive requires significant skill and that there were skilled individuals in the community that had the tools and skills to make beehives at the price of 1 goat per hive. After rejoining, the new hive is smoked and then hung in a suitable tree. Bees are attracted to the hive by smearing sugar or honey inside the hive. Hopefully, after a few days or so, bees will colonize the hive.

2.2.3 Prerequisites for entering honey production as a livelihood

According to beekeepers from Lochori, the manufacture of beehives only requires simple tools. An axe and panga (a machete-like tool) is required to chop and shape the hive. Beekeepers were keen to stress that, if you have these basic tools, anyone can enter beekeeping, particularly as communal lands have open access. The Group did stress the siting of beehive close to a body of water was essential for successful honey production.

Three weeks to 3 months after colonization, the beekeepers smoke the hive to sooth the bees and extract the honey. While the beekeepers from both Lochori and Kaptir do not possess special clothes to protect themselves from the bees while harvesting the honey, beekeepers from Kaptir usually hire someone from the local Catholic Mission, at a rate of Kenya shilling (KES)¹ 300/bee hive, to harvest the honey for them. Honey yields range from 10–15 litres for the traditional wooden hives.

Once extracted the honey is placed in a small can with holes in the bottom and placed in a tree with just a little shade. As the honey warms, it melts and runs through the holes in the tin into another honey-tight can beneath. Beekeepers from Lochori suggested that the time required for an individual to harvest and process 10 litres of honey was approximately one day. In Kaptir, some beekeepers use a slightly more sophisticated approach. After harvesting, the honey combs are separated and the honey is sieved. Special durable sieves are used, which are purchased for between KES 105–200; the price differs due to the size of the sieve. Conversely, sieves can be hired for KES 50 per honey harvest. Beekeepers in Kaptir suggested that an individual can process up to 20 litres of honey per day.

The Lochori beekeepers also noted that some individuals had modern beehives. The group informed us that, in 2000, ARID Lands had donated 50 modern beehives, free of charge, at a rate of 3 per family. The Kaptir FGD added that modern beehives could be purchased for KES 100 from the local Catholic Mission in Nakwamuru. They informed the research team that the modern hives were made of wood with an iron sheet inside, and that for some unknown reason were placed at a lower level in the tree than the traditional ones. Modern beehives were also suggested to yield up to 20 litres of honey and are simpler to install.

2.2.4 Honey marketing

Once processed, honey is generally sold rather than consumed within the community. According to beekeepers from Lochori, approximately 50% of their honey is sold to buyers from Kitale and Lodwar. Of the rest, some honey is used internally and some is traded for goats. In Lochori, honey is usually harvested thrice per year. The honey is sold unsieved

1. In March 2008, USD 1 = Kenya shilling (KES) 68.90.

(just the traditional filtering through tins under the hot sun). Over 50% of sales are over the farm gate, a much smaller proportion is transported to Lodwar and Lokichar for sale. Beekeepers from Lochori revealed that different buyers visit the community to purchase honey but they have no idea what happens to the honey once it is purchased. They don't know whether or not their honey is further refined or even where it is sold. The price of a 5 litre can is between KES 700–800. In Kaptir, we were informed that most of the honey produced was sold to other members of the village community and to visitors for a price of KES 135 for a 300 ml bottle. Kaptir honey producers were also visited by people from the Kerio River area, who exchanged goats for honey at a rate of 1 large he-goat for 12 litres of honey. While beekeepers in Kaptir do not sell their honey alongside the main road, they occasionally travel to Lokichar and Lodwar where honey can fetch as much as KES 2,500 per 5 litres compared to KES 1500 per 5 litres in Kaptir. However, beekeepers complained that the market for honey in Lokichar and Lodwar was slow and that they would often sit for many hours before any honey was sold. We were also informed that the high cost of bus fares acted as a disincentive to sell honey in the major towns. For example, the fare from Kaptir to Lokichar was KES 200 and a further KES 200 to reach Lodwar. We were also informed that, until 2005, they would also sell honey to the Catholic Mission of Nakwamoru, who marketed it for them in their shops in Kitale and Nakuru. The group also expressed that, as this outlet traditionally made up over 50% of their honey sales, they were worried about where to sell a significant part of their honey harvest. However, no-one from Kaptir had attempted to visit Kitale, Nakuru or Nairobi in an attempt to re-establish market outlets for their honey. Honey producers from Lochori also revealed that they are often unable to sell all their honey. Any unsold honey is exchanged for goats at a rate of 1 medium goat = 5 litres and 1 big he-goat = 10 litres. The group also admitted that even though the lack of market outlets was a problem, very few individuals had searched for new or better market outlets as markets are a considerable distance away from the community. On one occasion, someone from the community travelled to Naquamuru, where a small 0.5 litre bottle of honey only managed to fetch KES 100. Unfortunately, however, the area was too insecure to institutionalize market linkages.

2.2.5 Honey production: Constraints and opportunities

With regard to constraints, Lochori beekeepers mentioned that some animals, particularly squirrels, eat their honey and that some selfish community members burn the bush and frighten off bees from their hives. They also stressed that no-one in the community owns protective clothing, and many don't have axes or pangas. In Kaptir, the principal constraint to expanding honey production was a lack of individuals with the skills to make traditional beehives and a lack of free modern beehives. Several individuals stressed that there was little money to buy modern beehives, even though they insisted that honey production was

profitable. During this part of the FGD, the local chief in Kaptir insisted that VSF-Belgium find a market for their honey, purchase honey from them, provide them with modern beehives, and assist them with the storage of their honey. On the whole, however, beekeepers in both Lochori and Kaptir believed that honey production was profitable and that there was still plenty of scope to expand the number of beehives on communal lands. Beekeepers from Kaptir added that honey production was stable and enabled communities to survive droughts that had catastrophic impacts on livestock production. This sentiment is echoed by numerous commentators, including Field (2005) and ICIPE (personal communication), who are currently involved in an intervention aimed at promoting profitable honey production in Pokot and Turkana as part of their CABESI Project.

2.3 Fishing

2.3.1 Fishing around Lake Turkana

According to members of the Multipurpose Group FGD, Namukuse and Longetch are currently the principal places where fish are caught in Lake Turkana. From north to south, other key bases for fishing include Lowarenyak, Nachukui, Kataboi, Namadak, Kalokol, Eleye Spring, and Kerio. While there are said to be plenty of fish around Central Island and off Todonyang, fishing is not undertaken in these areas due to National Park restrictions and insecurity, respectively. Historically, Lake Turkana provided a livelihood for many fishermen and their families. Before its collapse in 1989, the Kalokol Cooperative, funded and managed by the NORAD (supported by the Norwegian Government) had 3000 members. Until its collapse, every fish caught by the Turkana was processed and marketed through the Kalokol Cooperative. The Group estimated that until 1989 there were probably upward of 6000 fishermen operating from bases in Turkana. Today, fish is caught and processed to order. Even if you wanted to buy a fresh fish in Kalokol it would almost be impossible to do so. Anecdotally, the research team can corroborate this as we found that a local restaurant in Kalokol had run out of fish at lunch time even though the team could clearly see fish being dried and processed in peoples' back yards. Due to the tough and dangerous nature of fishing, most boat crews are comprised of men, both young and middle-aged. The most common danger faced by fishermen is high winds that can create huge waves on the lake. It was suggested that sometimes only 4 out of 7 men survive a storm, although almost all know how to swim. While fishing is primarily a male dominated occupation, women actively fished the Ferguson Gulf, close to Kalokol, until it dried up due to siltation and shrinking water levels in Lake Turkana. It was also claimed that fish numbers have declined due to the shrinking water level in the lake brought about by frequent and severe droughts and damming of the River Omo that flows from Ethiopia.

2.3.2 Prerequisites for entering into fishing as a livelihood

According to the Multipurpose Group, individuals, keen to enter fishing as a livelihood, need to purchase or hire a boat. If an individual wishes to own their own boat, there are two options. Modern plastic boats are for sale at around KES 700 thousand; or you can build yourself a wooden boat for around KES 75 thousand. Conversely, it is also possible to hire both plastic and wooden boats; a plastic boat with an outboard motor costs KES 3500/hour, while a wooden boat costs between KES 2000–3000/for several days. When questioned further, fishermen from the Multipurpose Group suggested that, if you're lucky and go where there's fish, you can earn enough to pay for the boat and more. A good fishing trip is deemed as one that returns with 1000 Tilapia and 800–900 Kara. However, the Group was less forthcoming about the consequences of individuals being unlucky. Whilst it is not possible to buy shares in a boat, communally owned boats have been donated. For example, Oxfam GB donated 16 boats for fishermen in Kalokol and 20 boats for Lowarenyak. In 2005, World Vision donated 10 boats for Kalokol and 10 boats for Eleye Springs. In January 2006, CDF donated 12 boats to fishermen in Kalokol (10 wooden + 2 plastic with outboard motors). Finally, in May 2006, Arid Lands donated 15 boats to Kalokol fishermen and 6 boats for fishermen based in Kerio. Surprisingly, fishermen at the Kalokol FGD suggested that only 35 of the 53 donated boats were still in good condition explaining that 'wooden ones will not last beyond 3 years'. Interestingly, when probed further, fishermen revealed that they also build and sail smaller one-man fishing boats, which bring the total number of lake worthy vessels to over 100. However, it must be noted that it is unlikely that these one-man boats will be robust enough to access fishing grounds deep into Lake Turkana.

In addition to a boat, any individual wishing to take up fishing would need to purchase at least one fishing-net, costing KES 2,500, which one would expect to last more than 3 years. Fishing nets are generally purchased from Kisumu and the stone weights are added by Group members—all repairs were undertaken by women members. Other ancillary costs include registration fees for your boat of KES 200 and a licence (costing KES 100) from the Ministry of Fisheries.

When the boat is finally ready to set sail, the owner must find a crew. Each fishing boat has a total of 7 fishermen. The boat owner himself usually will not join the fishing expedition unless he is short of crew. Any profits generated by the fishing expedition go to the owner of the boat and, depending on how much they catch, the owner gives each fishermen a share of the fish. The main fish species caught are Tilapia and Kara fish. Due to the considerable distances involved, fishing boats generally leave their base once every month and spend approximately two weeks on the lake. During the fishing trip, fish are preserved by gutting and drying.

The background of the fishermen interviewed was varied. Some entered fishing in response to losing all their livestock during severe droughts over the past 20 years. Other families are still pastoralists and use the income from fishing as a supplement to their principal livestock keeping livelihood. Of the 20 or more members of the FGD, 3 young men raised their hands to indicate that they had diversified into fishing as a livelihood as a result of the severe 2005 drought. These young men left their parents with the remaining livestock occasionally supplying them with food. They informed the research team that the first step when entering fishing as an alternative livelihood is to find employment. Once they have earned a little money, they are then able to buy their own fishing net and start fishing from the lake shore. The next step is to rent somebody's boat and then, if things go well, buy your own boat. After probing they stated that they knew of many examples of people who had actually done this.

2.3.3 Fish marketing

Of the two fishing groups interviewed as part of our research, it transpired that most of the fish catch in Kalokol is generally to satisfy orders of dried fish destined for Lokichoggio, Kakuma, Laikipia, Busia, Kisumu, and Nairobi, most orders coming from Kisumu and Busia. Often the groups would sell 6 bales of dried fish at a time at 200 kg per bale. Group members are also allowed to purchase fish from their own children or others outside the Group. It was stated that much higher volumes of fish are exported out of the district compared to the volumes consumed locally. In addition to dried fish orders, fresh fish is marketed locally in Lodwar and other principal urban centres.

When questioned about the price of their fish, respondents suggested that the price depended on the type of fish caught. Table 1 illustrates prices for a range of fish caught on Lake Turkana.

Table 1. Fish prices per kg for the main species caught in Lake Turkana, May 2006

	Groups*	Individual
	Price/kg	Price/kg
Tilapia	80	30–40
Nile perch	80	30–40
Kara (Chubule)	40	25
Loruk	40	25
Mud Fish	40	25
Cat Fish	40	25

*Those were the NORAD cooperative's prices. All fish are now sold by either smaller cooperative groups or individual fishermen.

Table 1 clearly illustrates the substantial differences in prices obtained by fishermen both during the period that NORAD and the fish processing plant operated and the spot prices

obtained by fishermen negotiating on a one to one basis. The price was also suggested to vary in relation to the amount of fish bones.

2.3.4 Fishing: Constraints and opportunities

Drought was one of the principal constraints to fishing in Lake Turkana noted by our FGDs. Fishermen suggested that the lack of rainfall had caused the lake to shrink and greatly reduced fish catches close to the lake shore; this constraint includes the silting up Ferguson Gulf, once the main source of fish. This sentiment is supported by ITDG (2005a), which also stated that available stocks of fish had declined. A lack of good markets for fish was seen as another principal constraint to fishing in Lake Turkana. Fishermen complained about the low and variable prices offered to them by buyer cartels. The fishermen constantly harked back to the days when the NORAD backed cooperative had significant power to negotiate higher/fairer prices for its members fish and could access markets as distant as Zaire (now known as the Democratic Republic of Congo). Indeed, in the contemporary period, many external buyers purchase their fish from individuals as they can negotiate a much lower price for the fish compared to prices negotiated with the fishing Groups. ITDG (2005a) were also keen to express concern that the number of out of district fish buyers had declined over recent years. Aside from a foray into Moroto, Uganda, assisted by VSF-Belgium, no other alternative markets had been explored by either of the fishing groups. Insecurity was mentioned as a significant disincentive to trade fish in Moroto. A lack of capital was also cited as a major constraint. The fishing groups stressed that they did not have enough working capital to buy large volumes of fish in order to bolster their negotiating position with fish buyers. They also considered the lack of a lorry (either owned or hired) as a constraint to marketing their fish and achieving higher returns and a lack of modern fishing boats and fishing equipment. This last point was corroborated by ITDG (2005a), stating that the fishing gear used by fishermen in Turkana is generally old and dilapidated. They suggested that the majority of boats on the lake were either poorly maintained or inadequate for the task in hand. In addition, ITDG (2005a) stressed that Turkana fishermen also lacked the technical capacity to maintain their boats to a sea-worthy standard.

With regard to potential opportunities, whilst there was little fishing communities could do to address declining water levels in the lake, fishing groups insisted that there was much room to improve fish marketing. They believed that there was still a good market for fish in the Democratic Republic of Congo and a substantial market in Nairobi but insisted that they would need to establish their own retail outlets in order to capture a fair percentage of the added value of their fish catches. They also indicated that Sudan was another potential market outlet but suggested that the people there are harsh and unfriendly and that with no appreciable government it was likely that fishermen would lose their money. The fishing

groups also stressed the need for bigger plastic boats in order to access areas of the lake known to contain high numbers of saleable fish, particularly areas across at the Eastern side of the lake.

2.4 Irrigated agriculture

According to Kirya and Nabuin, the principal locations of irrigated agriculture (usually as part of agro-pastoralism) in Turkana are along the Turkwel and Kerio rivers. These include centres such as Katilu (irrigation scheme), Lokori, Turkwel (irrigation scheme), Kalemunyang, Nakwamoru, Kaptir, Juluk, and Lokui along the Turkwel River and Lotubai and Morulem irrigation schemes along the Kerio River. In addition, irrigated agriculture was also practiced along major seasonal rivers such as the Tarach River. The principal crops grown under irrigation include maize, sorghum, green grams, cowpeas, bananas, mangoes, oranges and guavas. The most important crops grown under irrigation are maize and sorghum, which comprise 80% of irrigated crops in the district. In the past, cotton and okra were grown but there is currently no market for these commodities.

2.4.1 Katilu Irrigation Scheme

The Katilu Irrigation Scheme was established in 1964 as an FAO development intervention. In 1973, the FAO created furrow irrigation over 540 acres of land adjoining the Turkwel River. At this time, each pastoralist or existing farmer in the area was allotted 1 acre some of which has subsequently been subdivided. In addition to their own plot of land, each farmer was supplied with the appropriate hand tools with which to farm the land. In 1976 the FAO catalysed the creation of a farmer cooperative initially focused on searching for market outlets for their members' produce. The FAO remained committed to the scheme until 1983 at which time NORAD took over. Between 1983 and 1989, NORAD changed the system from furrow irrigation into basin irrigation; they also constructed several houses, sponsored primary school education, built a hospital, and promoted forestry in the area. In 1997, the cooperative collapsed due to the unscrupulous and debilitating involvement of local politicians. During our FGD with members of the Scheme, one individual stated that 'since the collapse of the cooperative there has not been anything good'. When asked why they had not re-established the cooperative, members informed us that they had attempted to re-establish the cooperative on two occasions but had been thwarted by non-payment of cooperative subscriptions and pressure from powerful political figures in the local community. Today, there are 680 members of the Katilu Irrigation Scheme. In addition, there are many other farmers on land surrounding the Scheme (in total some 6000 farmers) many of whom have created their own canals from the river. Within the Scheme boundaries, 100 acres are planted with maize, the rest is planted with sorghum. However, later, when probed,

members of the FGD also mentioned that they grew several species of Napier grass, 50% of which was used to feed their own animals, and the remaining 50% was sold, primarily during the dry seasons to migrant pastoralists at a rate of KES 100 per bundle.

2.4.2 Prerequisites for entering irrigated agriculture as a livelihood

According to the Katilu FGD, only rudimentary inputs are required for irrigated agriculture or irrigated agro-pastoralism. As no artificial inputs such as synthetic fertilizers and pesticides are used, farming equipment comprises a basic harrow, panga, axe, spade and rake. Even though there is still no organized cooperative, prospective farmers must first formally join the Irrigation Scheme. On joining the Scheme, farmers are allotted their own piece of land and given instruction on how to work it. Women can also gain access to land through marriage as long as they demonstrate the ability to work the land. According to the FGD, there is plenty of water and room to expand the Scheme's membership. For the privilege of joining the Scheme, each member must pay a share of the annual fees, which are payable to the local council that owns the land. An annual permit for water extraction for the Scheme area as a whole is KES 7700, and the annual cost of land rental is KES 1100, each individual farmer is expected to contribute a concomitant annual subscription. According to the Scheme members, each member contributes KES 10, to the Irrigation Scheme's committee towards the water bill. If a member does not contribute to communal work (e.g. de-silting the canals) then he/she must pay a fine (e.g. 1 bag of maize). Additional monies, used to pay the annual council charges, are raised from member fines levied when they have breached the group's by-laws.

2.4.3 Marketing produce from irrigated agriculture

According to our FGD, compared to the organized markets that existed during the time of the cooperative, very little of the produce grown by Scheme members is marketed outside the confines of the Scheme boundaries. Some market transactions, usually based on barter, occur on a small scale sale between individual farmers. Occasionally, maize and sorghum are bartered for goats at an exchange rate of 50 kg for medium sized goat.

2.4.4 Irrigated agriculture: Constraints and opportunities

Compared to the alternative livelihoods of both honey production and fishing, the FGD on irrigated agriculture generated by far the most constraints. These constraints can be broadly grouped into structural constraints and both input and output-related constraints.

Structural constraints consist of problems, namely soil compaction and premature senescence of crop plants, which have arisen due to the long-term use of basin irrigation.

Input constraints include a short supply of fertilizers and pesticides and the financial capacity to procure them when they are available. In turn, a lack of fertilizer usage has, apparently, resulted in nutrient mining and declining soil fertility. Likewise, the lack of suitable pest and disease management, including extremely short fallows (3 months), have allowed certain plant pests, namely stem borer and army ants, to flourish.

In addition to fertilizers and pesticides, a lack of labour was identified as a constraint to successfully diversifying into irrigated agriculture. This shortage of labour was further compounded by the fact that more young men were now regularly attending school and, as a result, were not available for hard labour in the fields. FGD members indicated that many families had abandoned their plots because of the lack of strong family members to till the land. Scheme members stressed that cultivating the land was both arduous and tedious.

A lack of agricultural machinery was the constraint perceived to be the most debilitating, specifically the lack of tractors and cultivation/pan-breaking implements. From the FGD, it was obvious that the use of large horsepower tractors and cultivation equipment for the clearing, grading and cultivation of land had made a huge and lasting impression on farmers in the Scheme. When asked about the use of oxen for ploughing, Scheme members responded by insisting that they had tried using oxen but the ground had been so hard that they feared for the well-being of their animals. When probed about the possible use of small, two-wheeled, tractors, it was obvious that no-one knew of the existence of such things. Scheme members enthusiastically came to the conclusion that large capacity tractors were the answer to their problems. They had even calculated that 1 tractor would be adequate for each 25 acre block, containing 50 farmers. All they required was that an organization supplies them with tractors.

Lastly, output-related constraints referred to declining yields, suggested to be brought about by both structural and input-related constraints. Scheme members suggested that in the days of furrow irrigation under the FAO, farmers achieved 38 bags/acre. Under basin irrigation, farmers achieved only 1 or 2 bags/acre.

On a positive note, Scheme members stated equally as many opportunities as constraints.

They acknowledged assistance from the Ministry of Agriculture for the refurbishment of part of the canal system even though this had been on a cost sharing basis. Furthermore, irrigated agriculture was recognized as being a much more stable livelihood than pastoralism, which is much more subject to drought and livestock raiding. Scheme members stated that they believed that the livelihoods of their own families, and the burgeoning population of new comers to the area, could be assured by three key development interventions: 1) Crop yields could be increased by the use of new varieties, mechanization and better tools, and the

protection of arable crops from roaming livestock; 2) Improved marketing of their produce, and; 3) Expanding the area covered by the Scheme. Originally, the FAO had promised Scheme members an extension to the existing scheme of 600 acres.

2.5 Basket-making and handicrafts

According to ITDG (2005a), commercial basket-making (and associated activities) supports a network of producers, traders and transporters in Turkana and is especially important in the livelihoods of households located along dry-river valleys and close to Lake Turkana. According to Kirya and Nabuin, the most important sites for these types of activities include Lodwar, Kalokol and Eleye Springs (for basket-making), and Kataboi, Kerio and Turkwel (for mat-making). In Turkana, women are the main producers of baskets, other woven goods and handicrafts, while men dominate the production of carved wooden products (Maridadi FGD, Natole and Napetet FGD) and actively trade both woven and wooden products (Natole and Napetet FGD). According to Kirya and Nabuin, the principal products produced include: mats, baskets and brooms, and an assortment of wooden goods. According to the FGD conducted with the Full Gospel Women's Group based in Lokichar, Turkana seats/stools, dolls, spoons, milk jugs, and cow skin jugs comprise the bulk of wood-based products for sale. In addition, modern earrings, bracelets and necklaces are produced. According to Kirya and Nabuin, Lodwar is the only centre that produces and sells modern bead work. Traditional beads made from local materials are still produced, for both sale and own use, by women (wives) throughout Turkana.

2.5.1 Basket-making and handicrafts in Lokichar and Kalokol

In order to showcase basket-making and allied activities in Lokichar and Kalokol, four basket-making and handicraft groups were interviewed during three FGDs; two in Lokichar and one in Kalokol. In Lokichar, 9 members of the Full Gospel Women's Group and 15 members of the RCEA Maridadi Women's Group took part in the FGDs. In Kalokol, 10 members of the Natole Women's Group and 10 members of the Napetet Women's Group took part in the FGDs. The research team was informed that the RCEA Maridadi Women's Group was established in 1979 and had an initial membership of 100 people; it also has a shop, established in 1984 and purchased from the sale of their wares, through which it retails members' products. All product prices are agreed by the Group. By 2006, the Group had expanded to 150 members with an extensive network of independent outworkers and independent suppliers. The Group has a bank account and benefits from grants from NGOs etc. In February 2003, the UNDP provided money to the Group to establish a shop retailing handicrafts in the main street. Unfortunately, after selling all the contents, the shop now lays empty. The new shop was opened because the old shop was off the main street and almost

invisible to passing trade. However, most customers who return to Maridadi know exactly where the old shop is and make a bee-line to it. Conversely, the Full Gospel Women's Group, which is organized as a cooperative, has a much smaller membership, only 40 in total. According to the Full Gospel FGD, the Group was established in 1989 by a local catholic missionary, at which time a shop was constructed, with financial assistance from SIDA, from which to sell their wares. They informed the research team that basket making groups exist because individuals need to work together to make a living; there is a small but positive impact on their livelihoods. They went on to say that the cooperative has a bank account and that any profits made are used to pay for a council licence to sell goods, school fees, and to support the needy in their cooperative. The women expressed that this particular women's group was more social than anything else.

In Kalokol, the Natole Women's Group was established in 1987 and had an initial membership of 36 individuals. Conversely, the Napetet Women's Group was established in 1991 and had a membership of 20 individuals. The Group received KES 90 thousand from World Vision to construct the Napetet Commercial Buildings comprising offices and rental houses. Currently, three houses are occupied and four houses are empty. Each house costs KES 500 per month to rent. Some members joined the Groups for assistance in exploring alternative livelihood options; they share experience and knowledge. They also realize the importance and potential of small-scale business venture. Both Groups function as a marketing outlet for their members. Traditionally confined to the bush, upon realizing higher profits from basket-making, charcoal-makers are now attempting to enter the basket-making market.

2.5.2 Prerequisites for entering basket-making and handicrafts as a livelihood

According to the Maridadi FGD, the principal prerequisites for basket-making is the ability to buy reeds, dye and specific tools, including a knife, pricking stick (to push leaves through the basket), little hoe, and panga. According to the Full Gospel FGD, palm leaves are purchased from Lodwar and Kalapata; indeed, people from Kalapata bring them to Lokichar to sell. If this supply fails to meet demand, palm leaves are purchased from Lodwar. Cooperative members explained how they extracted dyes from local trees and occasionally bought dyes from a local shop. The principal dye (brown) is extracted from a local tree. In addition, newcomers need to be taught how to weave; and some new comers have more inherent weaving skills than others (Natole and Napetet FGD). Raw materials are purchased individually and not bought in bulk (Full Gospel FGD). According to members of the Maridadi Group, while basket making is a simple activity, and easier to enter than selling flour, it is often too difficult for the most resource poor of individuals to acquire even these basic inputs. For

example, a small hoe costs KES 500, a knife KES 300, reeds for a medium-sized laundry basket (50 bundles of reeds at KES 20/bundle). Furthermore, it can take 3 (Natole and Napetet FGD), 4 weeks (Full Gospel FGD, Maridadi FGD), part-time, to make a medium-sized laundry basket and can take many more weeks before the basket is sold and a return is made on the investment. Other items, such as little bread baskets retail for KES 150 and take approximately 1 week to produce, and a floor mat takes 2 weeks to produce. Conversely, small place mats only take a day to produce (Full Gospel FGD, Natole and Napetet FGD), and many brooms can be produced in the same day.

2.5.3 Basket and handicraft marketing

According to members of the Maridadi FGD, there were good markets in Nairobi for their products throughout the late 1970s and throughout the 1980s. Unfortunately, the missionary who initially made the market contacts left the area in 1989 and all marketing outlets, bar passing trade, dried up. The Group suggested that sometimes it can be three months between one customer and the next. On probing, the Group divulged that it now only sells its products through the shops in Lokichar. In November 2005, with the assistance of VSF-Belgium, the Group attempted to establish market outlets in Moroto, Uganda. However, the road quickly became dangerous and trade between Turkana and Uganda ground to a halt. After probing, Group members admitted that they had not attempted to explore markets in Kitale or other potential centres because they have no means of transportation. They stated that they used to take their wares to shows in Lodwar and Nakuru but now they have no money to do so. The money that they have is used to pay school fees etc. Only middle-men and tourists buy from the old shop in Lokichar; no-one places orders. However, Group members did express that, when the market is good, basket-making is a profitable enterprise. Prices charged for their goods varied considerably, as does the quality of what is on offer. Table 2 illustrates prices for a range of woven and handicraft goods on offer in the Maridadi shop.

In the case of the Full Gospel Cooperative, members informed the research team that Cooperative retains 20% of the sale value of member's products, and that all items are inspected for quality before they accepted for sale through the shop. A sales woman is the only paid employee of the Cooperative. All items are sold through the shop; there is no hawking. Cooperative members informed us that when traders from Nairobi arrive in Lokichar they buy in bulk and orders are made in advance. Unfortunately, their visits are infrequent. When probed about the fate of their goods, they were unsure whether or not the traders that purchased directly from them were middle-men or final retailers and were unaware of terminal market prices. They feared going to Nairobi as they had no marketing contacts there (Full Gospel FGD). Some items are also sold directly from the shop to

passers-by. All items in the shop are sold at a set price, whether they are individual or bulk purchases. FGD participants had no idea of how much profit they made on each item. Table 3 illustrates the prices for a range of woven and handicraft goods offered for sale in the Full Gospel Women's Group shop.

Table 2. *Prices for a range of woven and handicraft goods in the Maridadi Shop Lokichar, May 2006*

Item	Cost (KES) per unit
Little place mats	20
Large oval place mats	30
Bread baskets	50
Turkana dolls	200
Stone beads	300
Metal beads	400
Honey, milk and oil containers	Undisclosed
Goat bells	200
Knives	Undisclosed
Seats/stools	200
Bows and arrows	Undisclosed
Shopping baskets	200
Bags	Undisclosed
Lamp shades	200
Blood letting knives	Undisclosed
Walking sticks	500
Medium-sized laundry (best selling item)	400

Table 3. *Prices for a range of woven and handicraft goods in the Full Gospel Shop Lokichar, May 2006*

Item	Cost (KES) per unit
Little place mats	20
Large oval place mats	30
Bread baskets	50
Large bread baskets	150
Coloured bread baskets	150
Shell beads	400
Honey, milk and oil containers	500
Shopping baskets	600
Hats	100
Lamp shades	400

In the case of Natole and Napetet Women's Groups, historically, the Cooperative supplied handicrafts to Lodwar, Machakos and the Undugo Spinners Whip in Nairobi. They also took orders to Kitale in empty returning relief trucks. Much of this success was based on assistance

by the GoK, which exposed the Group to external markets. In the past, some orders were even sent by post. Unfortunately, orders have tended to decline over the years. Currently, individual buyers come from Meru and Kisumu etc. and they have a sales person who explores new potential markets. Prices in the shop are negotiated between the producer and the Group and are sold on sale or return. All prices are subject to barter/negotiation. When there are orders for certain goods, these products are purchased and stored in their shop/warehouse until they are sold. The Group also sold baskets when they went with VSF-B to Moroto. Members had no idea of how to process or add value to their products.

Table 4. *Prices for a range of woven and handicraft goods in the Natole and Napetet Women's Group Shop, Kalokol, May 2006*

Item	Cost (KES) per unit
Large oval place mats	100
Brooms	5
Large bread baskets	150
Coloured bread baskets	150
Shell beads	400
Honey, milk and oil containers	500
Shopping baskets	600
Mats	100
Medium-sized laundry baskets	500

2.5.4 Basket-making and handicrafts: Constraints and opportunities

FGDs with four basket-making groups identified a lack of market outlets as the single most important constraint to the profitability and potential expansion of basket-making and handicrafts in Lokichar and Kalokol. Indeed, participants in the Maridadi FGD went as far as stating that 'when the market for baskets is good, many people make baskets and when the market for baskets is poor, many people leave the industry'. Participants from the Full Gospel FGD indicated that, if the market was poor, some items could remain in the shop for up to one year. In addition, ITDG (2005b) stressed that the remoteness of producers in Turkana from their terminal markets exacerbated problems associated with market information and market outlets (ITDG 2005b). The tedious and time consuming nature of the basket-making and the production of handicrafts was stated as another key constraint to the expansion of this livelihood, especially amongst young women (Full Gospel FGD, Maridadi FGD). Participants in the Full Gospel FGD stated that 'the work is tedious and time consuming and requires a great deal of concentration. Only people who have a lot of time on their hands are involved in basket making. This usually means the old, particularly women. Idle women are the only ones engaged in basket making etc. The young do not want to spend their time making baskets (Full Gospel FGD). Full Gospel members suggested that, given the choice, individuals would also tend to choose a different livelihood due to the low

profitability of weaving. Even some of the most elderly women in the FGD indicated that they would cease making baskets if there was an alternative way to make a living. Indeed, participants indicated that many elderly people had ceased making baskets (Full Gospel FGD). This sentiment is corroborated by the recent study undertaken by ITDG in 2005, which stated that the sector 'is not operated as a profitable chain especially at the production level' (ITDG 2005b). In addition, ITDG (2005b) also expressed concern about the lack of product diversity, particularly with regard to brooms, baskets and mats. Group members in Kalokol also felt that lack of training in making baskets and other items also constrained the profitability and expansion of the cottage industry (Natole and Napetet, FGD). Participants from all 4 basket-making groups believed that there was scope for profitable expansion of the sector if new, and possibly more lucrative, markets could be developed.

ITDG (2005b) and Field (2005) also see potential in the sector. They determined that the sector was not input constrained and that with improved designs and a more diverse product range, better quality control and improved marketing, the sector could be developed. According to Field (2005), ropes, mats, baskets offer potential for profitable expansion.

2.6 Processing and selling hides and skins

According to Kirya and Nabuin, the processing and sale of hides and skins has been traditionally undertaken by groups scattered across many of the urban centres in Turkana. However, as the market for hides and skins has tended to dry up, this activity has ceased in: Lokori, Lokichar, Eleye Springs, and Morule and Kamuge in the Central Division but there are still several groups actively processing and trading hides and skins in Lodwar, Lorugum, Kerio Nakurio, Loturere, Kalokol and Lorengippi.

2.6.1 Hides and skins in Lodwar

A FGD with 3 leaders of the Umoja Women's Group, Lodwar, and 2 male hides and skins traders, was selected in order to generate insights into the processing and sale of hides and skins in Turkana. The Umoja Women's Group was initially established in 1978 as a self-help group, comprised of both men and women. In 1993, after the male members of the Group had squandered their profits on drink and taking additional wives, the Umoja Women's Group, with 30 members, was formed. The core activities of this Group are the processing of hides and skins and the butchering and sale of small stock. Members of the Group share ideas, receive profit from sales, and are entitled to loans from the Group of up to KES 10 thousand. Group members also stated that it is also easier to attract external assistance when working as a registered group with a bank account. Most of the activities of the group are focused on the processing and sale of goat skins and the slaughter and sale of goat carcasses.

Members' goat skins are cured by air drying (lowest quality), dry salted (medium quality) and wet salted (highest quality). Most air dry cured skins are supplied by pastoralists from the interior, as they have limited scope to sell fresh/untreated goat skins. Being part of the Group also allows members to buy goats cheaply. Members pay KES 1000 for a Grade 2 goat and make a profit of KES 200 per goat carcass; the skin, stomach and head are not included in the profit. No details were forthcoming regarding the profit on offal and heads.

2.6.2 Prerequisites for entering the processing of hides and skins as a livelihood

The research team were informed that relative wealth was the principal prerequisite for entering this activity. Group registration is a significant KES 5000 and there is a commission of KES 30, levied by the Group, for each goat slaughtered. Members of the Group suggested that because of this financial barrier, this activity is dominated by middle-income women with some capital to invest.

The costs incurred in purchasing, processing and trading skins include: and average of KES 40 per air dried skin (usually sold in bundles of 200) or KES 60 per wet salted skins (usually transported in bundles of 50), a bag of salt (for wet or dry salting) costs KES 50, and, transport (KES 600 for one person and skins from Kerio to Lodwar).

Transport costs to Nakuru = KES 10 thousand for 2000 skins at KES 5/skin. Municipal charges are KES 5/skin. A dispatch permit is KES 100. Personal transport = KES 2000 return. Board and lodging = KES 600 x 3 nights and food = KES 1000 over 3 days.

2.6.3 Hides and skins marketing

According to senior members of the Umoja Women's Group, skins are bought in Lodwar, Lorugum, Namorupus, Kalokol, Kalemnyang, Nasiger and Kerio and sold in Nakuru. Skin volumes from each of these areas vary from 100–200 per week. All skins bought and processed by the Group are sold to Nakuru Tanners Ltd. Prices paid by the tannery vary according to quality, which, in turn, usually corresponds to the way the skin was cured/processed (see Table 5). Price also varies according to the amount of cuts and holes in the skins often corresponding to the way in which the skin was removed from the animal.

According to the Group members, Grade 2's are not usually sold. Table 6 is based on prices received on the delivery of 3622 skins, transported on a relief truck, to Nakuru Tanners between the 29th April and 2nd May 2006.

Table 5. *Average prices received for goat and sheep skins*

Species of animal	Grade	Price (KES)
Goat	1–4 wet/salted	90
	1–4 suspended	85
	Rejects undersized wet/salted	25
	Rejects undersized suspended	20
Sheep	1–4 wet/salted	85
	1–4 suspended	60
	Rejects undersized wet/salted	20
	Rejects undersized suspended	15

Table 6. *Delivery note for skins sold to Nakuru Tanners, Nakuru, April/May 2006*

Species of animal	Grade	Number delivered	Price (KES)
Goat skins	1	91	90
	2	4	25
	Rejects	42	25
Sheep skins	1	10	75
	3	2	20
	Rejects	10	20

In their last load to the tannery, there were 70 rejected skins; all were left at the factory. Skin traders complained of very strict grading criteria, especially on suspended dried skins.

2.6.4 Processing and selling hides and skins: Constraints and opportunities

According to members of the Umoja Group, a lack of capital is the major constraint to making a good livelihood from selling skins and hides, as it restricted the amount of skins that could be purchased and sold on to the tannery in Nakuru. Whilst they appreciated the facilities offered by Kadet, a micro-finance NGO off-shoot of World Vision, they insisted that their interest rate of 7% per annum was too high and called for CDF grants and loans.

The Group also acknowledged that a lack of both technical (how to cure skins) and business management skills severely impeded the profitability of trading in animal skins.

And while the Group acknowledged the importance of Nakuru Tanners Ltd., a lack of alternative, possibly more profitable, outlets constrained the profitability of their trading activities. Transportation was also flagged up as a significant proportion of member's costs; something that obliged them to utilize even greater economies of scale in order to make a profit. Transportation was deemed so important that, Group members requested donor assistance with transport to travel to Nakuru Tanners Ltd.

Interestingly, as part of the FGD with Natole and Napetet Women's Group, the Kalokol-based 'basket group', it transpired that they also had been involved in buying and selling skins as part of VSF-Belgium's and ITDG's destocking programs. All their skins were purchased by a buyer in Lodwar (by the name of Miriki), who took the skins to Nairobi. Unfortunately, when Miriki stopped buying, the whole chain collapsed. The Group simply sold the skins that they had and did not explore alternative outlets. Traditionally, the Group bought low volumes of skins from pastoralists' at KES 15 and sold them to Miriki at KES 30. The Group believes that there is a good opportunity for expanding their involvement in hides and skins but they have no real appreciation of how profitable this involvement would be. This, almost blind, optimism was also detected in the Umoja Women's Group FGD. The Group intends to expand their skin trading activity and even plan to build a new store for their skins. The Group is considering options for adding value. However, as they have limited access to capital for purchasing the chemicals used in more efficient and effective skin curing processes and recognize the existing knowledge and skills gaps, they are unsure as to how they should proceed.

2.7 Small-scale business enterprises

2.7.1 Small-scale business enterprises: The Napusikine Women's Group in Lodwar

In order to gain at least some understanding of the nature of small-scale business ventures in Turkana, a FGD was undertaken with Napusikine Women's Group (Lodwar). The Napusikine Women's Group, currently comprised of 20 women, was formed and registered in 1999. Most group members were pastoralists who had diversified their livelihoods after drought struck. Interestingly, no one has ever left the group. Group members expressed that for many pastoralists, retailing as a livelihood is viewed with suspicion, as something new and unknown. However, after witnessing the benefits of retail, Group members believed that pastoralists are becoming increasingly interested in retail as a means to improve their livelihoods. In their own experience, interest in retail as a livelihood expanded their Group to 40 people, after which it was decided to split the Group and establish a new one. When probed, members of the Group stated that most small-scale business operations are dominated by women. Members of the Group must follow rules and byelaws and sell their wares in allocated areas selected by the Group. Members of the Group also stated that, in 2002, two of their members received training on earning a living from World Vision and that they, the whole community, had been trained by ARID Lands in 2006 as part of their Participatory Integrated Community Development intervention. The ARID Lands training promoted farming by the Turkwell River. It endeavoured to test farming in a new area and to bring farming to pastoralists.

Cash for the purchase of sales stock is derived from a 'merry go around' system. Twice a month, members' fees are collected and given to one person for the purchase of sales stock. When endowed with the merry go around finance, individuals generally purchase: a 10 kg box of cooking oil, beans, sack of flour, vegetables, charcoal, dried fish, and a slaughtered goat. The merry go around money is also used to pay school fees and medical expenses. The Group also bulk buys maize and sells it to individual members of the Group at discounted prices. Indeed, some members of the Group are now able to buy and sell without relying on the merry go around finance.

2.7.2 Prerequisites for initiating small-scale business enterprises as a livelihood

Despite the merry go around fund, capital is required to get started in the Group. For example, the one-off Group registration fee for new members is KES 500, and each member must pay an annual fee of KES 100. Combined with the general lack of basic business skills, the initial start-up costs (including registration fee, annual fee and funds for the purchase of sales stock) can act as a barrier to entry for the most resource poor pastoralists wishing to diversify their livelihoods.

2.7.3 The retail chain

When asked about the profitability of their enterprises, members stated that they sold their wares to pastoralists when they come into Lodwar town. Group members explained that their standard business practice was to buy their wares from wholesalers, principally in Ortum (West Pokot). They informed the research team that, because wholesale prices in Lodwar are high, Group members travelled to Ortum Market every Wednesday by public transport. In Ortum, wholesale prices are relatively low and they are able to make a profit retailing their newly acquired stock in Lodwar. For example, FGD members suggested that, even after taking into account the cost of KES 400 for transport, traders often made a profit of KES 150 on every sack of maize bought in Ortum and sold in Lodwar, and that they generally bought 5 sacks every time they travelled to Ortum. Group members also suggested that there were very good profits to be made on tomatoes, onions, bananas, mangos, oranges and sugar cane. For example, the profit on a 50 kg bag of onions is KES 100, and tomatoes bought for KES 100 can double their money when retailed in Lodwar. Although no figures were forthcoming, low to medium profits were also suggested to be associated with the sale of maize and beans.

2.7.4 Small-scale business enterprises: Constraints and opportunities

A lack of investment capital, access to credit to purchase sales stock, and transportation were identified as some of the most important constraints to small-scale retailing in Lodwar. A lack of business and entrepreneurial skills were also identified as key constraints to the successful undertaking of retail activities. The Group stated that the lack of business skills and know how was a main contributing factor to business failure, particularly when they up-scaled activities. The Group called for assistance in acquiring new skills, new ideas, and new knowledge, particularly training in business and finance management and leadership skills. Interestingly, limited knowledge on where and how to add value was also identified as a constraint. For example, the Group was eager to be exposed to ways in which they could add value to skins, they also stressed the need for greater quality control when pastoralists remove skins from animals. Other Group-level factors constraining their business included poor group dynamics and frequent misunderstandings, and a singular focus of securing financial support for retailing activities rather than focusing on what the Group was able to do for itself. In addition, corruption and misappropriation of Group funds by unscrupulous men and politicians was also cited as a Group-level constraint.

With regard to opportunities, the Group expressed interest, and saw significant profit, in establishing a wholesale business. They suggested that there was a high demand for wholesale products/goods in Lodwar but that no true supplier existed. Members were also keen to buy and sell more goods to pastoralists, particularly on the plains close by Lodwar. They also suggested that Kakuma, Kitale and Ortum were good sources of cheap goods via the daily auctions. The group was interested in wholesaling food, hides and skins and beads. They also wanted to trade in animals, namely, to buy cheap and exploit high prices in other areas of Turkana. The Group also suggested the need for gauging demand for goods in other places in order to exploit market potential. In addition, the Group also saw potential, and was keen to invest, in land and the construction of domestic housing and commercial premises for the rental market.

Interestingly, based on their perceptions of profitability, other groups had also expressed interest in establishing retail ventures. In agreement with Napusikine Women's Group, these groups had also identified access to credit as a major constraint establishing such enterprises. Maridadi Women's Group in Lokichar exclaimed that 'with access to credit, they would have chosen almost any another activity' than basket-making and handicrafts. Indeed, they were keen to sell more sugar and maize from their shop but required credit to purchase sales stock (Maridadi FGD). The Group also wanted to open a hotel, butchery and initiate urban-based enterprises. They believed that these activities were profitable and were in demand every day (Maridadi FGD). Again, in Lokichar, the Full Gospel Group expressed a preference to

initiate another main activity. They suggested that, if capital was available, they would like to establish a hotel (Full Gospel FGD). While baskets/crafts still generate an income for the Full Gospel Group, most of their profit is derived from other sources, including the sale of vegetables and flour. The group was also excited by the increasing amount of trade in their hardware shop (Full Gospel FGD). Even Napetet Women's Group expressed a desire to explore the use of micro-finance but did not have an idea of the profitability of new ventures (Napetet FGD). In Lodwar, Women from the Umoja Women's Group also stated intentions to expand their activities. They suggested that, if they could secure enough capital, they wished to begin trading goats or even cattle. They also intended to begin renting houses and had plans to expand their butchery (Lodwar first and then other outlets later. They intend to purchase a refrigerator to store their meat).

3 Analysis and synthesis

3.1 Strengths

According to evidence collected through key informant interviews, FGDs, personal observation, and an extensive literature review, it can be seen that many of the alternative livelihoods profiled have a number of key strengths. Table 7 illustrates that most of the livelihood activities profiled are based on stable and plentiful natural resources, at least if they are managed in a sustainable manner. Table 7 also illustrates that many sectors are perceived as being profitable, and could be positioned to supply existing markets (both inside and outside Turkana). More importantly, at least in the early stages, most of the groups interviewed during the FGDs indicated that their particular activity was more stable than the traditional pastoralist livelihood, which many of them had recently abandoned (either permanently or temporarily). It must be noted that, whilst it was acknowledged by all the groups interviewed that individuals had entered and then abandoned the respective activities, only the views of those still involved in the alternative livelihood activity were captured.

Table 7. *Perceived strengths of profiled alternative livelihood activities*

Livelihood activity	Strength		
	Ample natural resources	Profitable with domestic and export potential	More stable than pastoralism
Aloe production	X	X	
Ecotourism	X	na	
Gum arabic	X	X	
Honey production	X	X	X
Irrigated agriculture	X	X	X
Fishing	X	X	X
Basket-making	X	X	
Hides and skins	X	X	
Small-scale business	na	X	X

3.2 Weaknesses

With regard to perceived weaknesses, concerns were often expressed about severe weaknesses along the whole length of the value/commodity-chain. Table 8 illustrates that, while production and processing aspects were often mentioned, poor marketing and low-levels of value-added were highlighted as the most significant areas of weakness. To a lesser extent, a fragile natural resource base was indicated as a potential weakness of their livelihood systems. The arduous and tedious nature of basket-making and irrigated agriculture was flagged up as a weakness.

Table 8. Weaknesses in alternative livelihood activities

Livelihood activity	Arduous and tedious	NRM	Weaknesses			Value-added
			Processing	Production	Marketing	
Aloe production		X	X	X	X	X
Irrigated agriculture	X	X		X	X	X
Basket-making	X			X	X	X
Fishing		X		X	X	X
Honey production			X		X	X
Hides and skins			X		X	X

3.3 Constraints

Table 9 illustrates perceived constraints to the profitable expansion of the alternative livelihoods profiled. A lack of capital and access to credit and a lack of know-how and business skills were identified as the principal constraints to expanding the show-cased activities. A lack of markets and a shortage in availability of key modern inputs were also identified as key constraints to expansion. Furthermore, it was also suggested that entry costs acted as a barrier to entry for the most vulnerable and resource poor pastoralists. Ironically, some of the other alternative livelihood options that offered few barriers to entry were banned by the Kenyan Government.

Table 9. Constraints to the profitable expansion of alternative livelihood activities

Livelihood activity	Constraints					
	Banned	Lack of know how and business skills	Lack of modern inputs	Lack of capital and access to credit	Marketing	Entry costs too high
Aloe production		X				
Charcoal	X					
Trading small stock				X		
Forage trees	X					
Poultry production		X		X		
Basket-making		X		X	X	
Small-scale business		X		X		X
Honey production		X	X	X	X	X
Irrigated agriculture		X	X	X	X	X
Fishing		X	X	X	X	X
Hides and skins		X	X	X	X	X

3.4 Opportunities

On a positive note, Table 10 illustrates that most groups involved in alternative livelihood activities believed that there was a high potential for profitable expansion, improvements in marketing were seen as the most promising ways forward.

Table 10. *Opportunities for the profitable expansion of alternative livelihood activities*

Livelihood activity	Opportunities	
	High potential to expand	Better marketing
Hides and skins	X	
Small-scale business	X	
Aloe production	X	
Charcoal	X	
Honey production	X	X
Irrigated agriculture	X	X
Fishing		X
Basket-making		X

3.5 Corroboration of existing characteristics of livelihood diversification

Research undertaken as part of this study tended to corroborate identified characteristics associated with alternative livelihoods in Turkana. Most groups engaged in alternative livelihood activities were either all women or dominated by women, some had begun as mixed groups and then cut loose their male members because of misappropriation of group funds and mismanagement of their own business. Likewise, our research found that fishing remained as an exclusively male undertaking. With respect to the spatial biases, all alternative livelihood activities profiled had either a distinct urban bias or were closely linked to either Lake Turkana or the Turkwel and Kerio Rivers. Likewise, from the research team’s brief encounter with alternative livelihoods in Turkana, it can be concluded that, not surprisingly, on the whole, survival was, and continues to be, the motivation for livelihood diversification in Turkana. However, the research team did note exceptions to this general rule. Current attempts by established groups to further diversify their activities by entering retailing and property rental etc. can be seen as being jointly motivated by accumulation as well as survival. In addition, current eagerness to enhance value-added on group products can also be seen as more accumulative in nature, particularly when groups expressing the desire to increase value-added have also stated that their particular diversified activity is more stable and profitable than pastoralism and thus have indicated less need to diversify for the purposes of survival.

4 Recommendations for intervention

This report recommends that development actors in Turkana should:

- Conduct a systematic and thorough assessment of the whole commodity system/value-chain associated with the selected livelihood option, particularly if a large-scale and costly intervention is proposed. This is particularly relevant in the case of aloe, gum arabic and charcoal production, irrigated agriculture, basket-making, fishing, honey and poultry production, and the hides and skins sector. The assessment should also include the natural resource base.
- Where resources are limited, the focus should primarily be on improving marketing and opportunities for adding value. This applies to all of the alternative livelihoods profiled. Special attention should be focused on developing linkages with national markets in Kenya as well as exploring export markets. The potential for fair trade opportunities should also be explored with a mind to accessing European markets. Where possible, intervention agencies should organize exposure visits and promotional events/craft fairs.
- Improve access to credit for organized groups interested in investing in alternative livelihood activities. Development actors should facilitate access to credit at competitive rates and, where an intervention is likely to involve significant amounts of credit, ensure that robust business plans are submitted with requests for assistance.
- Provide training in both business and technical skills and endeavour to develop high levels of innovative capacity/entrepreneurship.
- Investigate the viability of a wider range of alternative livelihoods, including, healthy and nutritious camel's milk and vanilla production.
- Investigate ways to reduce the arduous and tedious nature of some of the work. This is particularly important for the basket-making and irrigated agriculture sectors. Where cost effective and sustainable, development actors should endeavour to facilitate group access to modern inputs.
- Consider piloting grants to facilitate entry into alternative livelihood activities where relatively high entry costs act as a barrier to extremely resource poor pastoralists.

5 Researchable issues

- What are the most successful entry points and approaches for catalyzing livelihood diversification in pastoralist communities?
- What are the most successful approaches for establishing, stabilizing and institutionalizing equitable, economically and environmentally sustainable diversified livelihood systems?
- What are the key characteristics of input systems in socially acceptable, economically viable, environmentally sustainable and functionally stable for diversified livelihoods systems in Arid and Semi-Arid Lands (ASALs)?
- What are the key characteristics of marketing systems in socially acceptable, economically viable, environmentally sustainable and functionally stable diversified livelihood systems in ASALs?
- What opportunities exist for value-addition in socially acceptable, economically viable, environmentally sustainable, and functionally stable diversified livelihood systems in ASALs?
- What are the key micro-institutional arrangements that lead to development of socially, economically and environmentally sustainable diversified livelihoods in ASALs?
- What are the key policy and macro-institutional arrangements required to provide an enabling environment for the successful diversification of livelihoods for pastoralists in ASALs?

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