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LAND USE CHANGE IN THE BALE MOUNTAINS ECO-REGION OF ETHIOPIA: DRIVERS, IMPACTS AND FUTURE SCENARIOS

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ABSTRACT

Livestock has been an integral part of the Bale Mountains Eco-Region landscape for many centuries. This paper describes the results of a research study undertaken in the region comparing land use change and livestock movements over a period of eight years from 2008 to 2016. The study provides some insights into the trends of intensification that have taken place, the challenges of this, and indications of who is benefiting from these processes and who is not. In 2008 the majority of the area was predominantly livestock in terms of production systems, with the traditional *godantu* movement system still functioning well despite challenges. However by 2016 though livestock numbers have not decreased in all areas, poverty levels have grown and access to resources for livestock production have become increasingly difficult for many. Key causes of this is the allocation of land to investors by local governments, trends in privatisation of resources, and a strengthening of the boundaries of the Bale Mountains National Park. The paper concludes by making recommendations for reconciling some of the conflicts arising, particularly over land use, and how land management in the area can be improved.

Key words: Livestock, Ethiopia, highland-lowland, mobility, intensification, conservation,

1. INTRODUCTION

1.1 History of livestock land use in the Bale EcoRegion

Livestock has been an integral part of the Bale Mountains landscape for centuries and until recently the system was extensive allowing free mobility of a small human and livestock population (Hillman 1986; Solomon et al ND; Watson 2007). In the 1800s a rinderpest outbreak killed off tens of thousands. During the imperial era grazing lands were effectively declared as belonging to the state (*ye mengist merit*). The pastoral rangelands were seen as no-man's lands alienated for other purposes.

In an attempt to generate taxable resources systematic land measurement (*qalad*) began in the 1950s, privatizing what had been commonly-held resources and marginalizing those with less means to influence the land registration process (Mindaye 2005). This was a major contributing factor to the first Bale Uprising of 1963 to 1970. The uprising also significantly reduced the livestock population in the region as animals were stolen by combatants and even bombed from the air (Ayele 1975). During this time landlords tended to control access to grazing, the '*Aba lafa*' particularly where the area was also suitable for agriculture. The system at the time put 'good' agricultural land under a private landlord and charged the users for any access.

The coming of the Dergue following the 1974 Revolution marked the state's grip over productive resources facilitating sendentarization (Helland 2006). The landlord system described above was abolished and land was opened up for all. However, the establishment of large state farms in the Goba area left little room for livestock keepers who were increasingly pushed to higher altitudes including to the area which would become the Bale Mountains National Park (BMNP) (see below). This disturbed the traditional livestock movements – locally called *godantu* (see Box 1.1).

Box 1.1 The traditional *godantu* livestock system

A system of seasonal movements known as *godantu* was the predominant method of livestock management. Livestock were split into a *fora* herd of dry cows, bulls as well as camels (where kept) and a *warra* herd of milking cows, as continues to be the practice in the Borana rangelands (Ayele 1976). This often relied upon reciprocal kinship relations known as *godanna* (B & M Consultants 2004). The *fora* herd was trekked to distant pastures and water points by the household head and the boys of the household, while the *warra* herd remained behind and was tended by the women of the household (Ayele 1976).

These livestock movements appear to have been dictated by the lack of water and grazing in low lying areas (*gammojji*) and also the presence of livestock diseases that proliferate in the dry seasons (Ayele 1976). Therefore while the lower altitudes provided grazing during the wet season, during the dry season livestock were trekked to the higher altitudes (*badda* and *badda dare*) and in particular to high altitude forests. Forests provided a rich source of fodder, browse and also shade (Girma 2005). The shift to growing of crops in some of the mid-altitude areas has shifted the movements of livestock somewhat, with livestock being pushed out and up from these areas to such as the Sanetti Plateau during wetter months. As confirmed by the BMNP (2006): "Under the *godantu* system, peak livestock numbefs occur in the Afroalpine in the wetter months, from April to August, when livestock are moved from lower pastures where agricultural crops are being grown. In the Harenna Forest, influxes of pastoralists from the surrounding lowland areas are reported for 3-4 months (December-March) in the dry season."

As livestock rearing has become more challenging, local populations increasingly turned to agriculture as an alternative livelihoods system. This placed further pressure on pastoral resources, increasingly limiting movement. This is the despite the fact that in general the climate is not conducive for crop growing: it can take nine months for barley to grow and ripen. As a result of increasing pressure on resources, disputes over communally held grazing lands (*lafa dheeda*) have become common occurrences (Mamo 2005). Disputes tend to be settled through either formal or informal means: formally through the woreda administration and informally by the council of elders (*jaarsa biyyaa)* or ritual experts known as *wayyuu* (ibid). In either case, farmers are given greater opportunity than livestock owners to demonstrate ownership to their land with the latter finding it difficult to prove use, let alone 'ownership'. Alongside the expansion of smallholder agriculture, mechanized large-scale agriculture has increased, though limited to places of 3000 masl or below (Guilio 2003; Hillman 1986). This has further compelled livestock producers to shift their migration routes into the higher altitude regions (WAAS 2005).

From the late-1970s attempts were made to settle the local population and limit movement of people and livestock across the area. Most recently (circa 2000), this included the resettlement of several hundred families from Haraghe, mainly in Delo Mena *woreda.* Mainly agriculturalists, they sped up the conversion of grazing land to crop agriculture. Conflicts between the settlers and local livestock herders occur sporadically.

Yet despite the increased in crop farming, livestock numbers have grown substantially. A review of livestock numbers across the Bale zone (see Appendix 1) show a reduction between 2000 and 2007, but a doubling between 2007 and 2015 from 2,611,618 (number of cattle, shoats, equines

and camels) to 5,506,179 in 2015. Though there may be some issues in data collection and reporting here, it is clear that there has been a substantial increase.

1.2 Bale Mountains National Park

The Bale Mountains National Park (BMNP) was established in 1970 encompassing an area of 2400 km sq. Those communities already living in the area were not involved in this decision despite recognition of their mainly negative impact on the land. Leslie Brown a naturalist (who played a role in the establishment of the Park) visited the area in the early 1960s noting that:

> *The Galla[1]1 are a largely pastoral people, unlike the Amhara, who are cultivators. No pastoralist is quite as destructive as a cultivator, so this noble plain retained much of its pristine beauty* (Brown 1965: 100).

Describing the area around Adaba and Dadola:

> *This whole country, on a fine day, would have been like the proverbial Garden of Eden* (ibid:120)*.....They were an almost perfect example of a community of primitive people whom it seems better not to disturb or try to change, because they have enough for their own needs and a little more and are not, in the satisfaction of these needs, doing any real harm to their habitat. Here no one had yet learned the destructive use of the plough on steep slopes. They had enough land to enable them to pursue the more leisured and gentlemanly pastoral way of life without starving and the forests were open enough and provided with rich enough herbage to let them live without having to hack down the cover….Although it was not my responsibility, I could not help cogitating on ways and means of preventing the destruction of the forest cover which will, with increase in population, be inevitable some day unless this favourable situation is stabilized while the chance exists* (ibid: 121).

He continued:

> *We saw very few human beings upon these mountains. Horsemen were sometimes seen crossing trails, but there were no herds of stock. We gathered that herds only came up here when the country was nearly dry; it was never quite dry. There was only one month in the year when the heath would burn, and then not every year. Heath fires were generally started by people along trails and, given the right conditions, they would go on and on till stopped by some obstacle, such as another track, a river valley, or a continuous sill of rock* (ibid:134).

During the Dergue state authority over the Park was at its strongest resulting in the forced removal of settlements and the effective colonisation of the mountain landscape. As feelings towards the Park were not favourable, *"the local people destroyed all the outposts during government changeover in 1991…*[a]*fter demolishing the outpost, Tamsa'a area was converted*

[1] *Galla* is a term used for the Oromo people in the past, now considered derogatory.

into farmland by the local people" (B & M Consultants 2004: 28). Many people returned to the Park following the fall of the Dergue in 1991 and the disintegration of controls, although the eviction of some communities was attempted again in 1999 (Flintan 2000; Malcolm & Evangelista 2005). Over the next decade and a half management of the Park has lacked consistency though there have been several further attempts to evict villages, though not necessarily well-enforced resulting in a return of many villagers once the controls have weakened. In addition a number of different development projects have been undertaken, mainly in the surrounding areas in anticipation of being able to 'pull' community members out of the Park to access better services and livelihood opportunities.

In 2007 although the Park had still not been formally gazetted attempts were being made to delineate the boundary. This reflected the launch of the most recent management plan for the Park, produced with the support of Frankfurt Zoological Society (FZS).[2] This Plan supported the sustainable use of Park resources as long as it did not affect the primary management objectives of conservation. It was anticipated that this could be achieved by a 'zoning' of the Park into different use zones. Though the conservation of Exceptional Resource Values of the Park was given precedence over any other kind of use (BMNP 2006).

Livestock enter the Park for grazing, browse (in wooded areas) and to access the mineral springs or *hora* (see Box 1.2). In addition there is a major transport route (now a tarmaced road) through the Park running over the Sanetti Plateau from Goba through Rira village to Delo Mena. The increasing settlements and increasing numbers of livestock in the Park are of concern to the Park, government and conservation organisations for a number of reasons including:

i) Disturbance of the hydrological cycle and water sources in the highlands, upon which hundreds of thousands of people rely upon including in the lower parts of the watershed.
ii) Erosive impacts of livestock hooves, grazing and browse on vegetation cover.
iii) Negative impact on tourists who do not wish to see livestock in the Park disturbing 'natural' views.

[2] Though there have been a number of management plans produced in the Park including the first in 1974 by the then Park Warden Chris Hillman, updated in 1986, a second in the early 2000s developed by the World Widlife Fund though never finalized and the current General Management Plan 2007-2017 (compiled and edited byt the Frankfurt Zoological Society).

iv) Disturbance of, competition for grazing with, and spread of disease to the Mountain Nyala and Ethiopian Wolf (distemper and rabies).

Said to be of particular vulnerability is the ericaceous belt of the mountain area (Yoseph Assefa et al undated).

Box 1.2 Mineral springs *hora* and mineral lick *haya*

Mineral springs are found mainly in the northern part of the BMNP (used mainly during the drier months) and around Dinsho Town (used all year round). Hillman (1986) identifies nine *hora* but sees them largely as an excuse used by herders to graze within the BMNP noting also that, "[i]*t is a small step for temporary-use housing and caves to become permanent use."* Figure 1.1 shows the same author's interpretation of livestock routes to *hora*. However in general the importance of the mineral springs for livestock (particularly cattle) nutrition/health is generally recognised through provision of sodium, potassium, calcium, manganese, and zinc (Kemp McCarthy 1990; BMNP 2006). A study in 1990 found that the *hora* within the BMNP were not regulated while those outside the boundary were administered by the local PA, with elders controlling access to the springs and keeping them relatively clean. Up to 2005 the Park had not restricted access to the *hora*.

Kemp McCarthy (1990) pieced together information on routes to the mineral springs:

The traditional access routes to the horas are along river valleys. No herdsmen were recorded travelling from the south and south-east of the Park to the high level horas at Wasama and Worgona, although well worn paths exist from this area, crossing the Sanetti Plateau (Hillman 1986). Paths to Horas Worgona, Salitti and Cave Hora follow the Danka River from the south-east. The Web and Sodota River valleys provide the main route to Hora Wasama from the north, whilst the Keyrensa River links the Haricho region of the Park with the area around Wasama. The Garemba and Rira Rivers provide a passage-way to Wasama from the south. The Sodata River links Hora Kotera with the south-east and the Web River provides a passage from the north. Horas Soba and Tayanta are both located just south of the main road, providing the most obvious routeway to these springs from the north-east and south-west" (ibid: 48). (See Figure 1.2)

Where mineral springs are not available (i.e. in lower altitude areas) there tend to be mineral licks instead. Not only are the animals taken to feed directly from the soil, but also the soil is mixed with water and given to the animals. Livestock keepers believe that the minerals improve the health of the livestock, reflected in stronger animals that for example produce more milk.

Figure 1.1 Livestock routes to mineral springs and licks, water and grazing in Bale Mountains National Park in the 1980s (Hillman 1986)

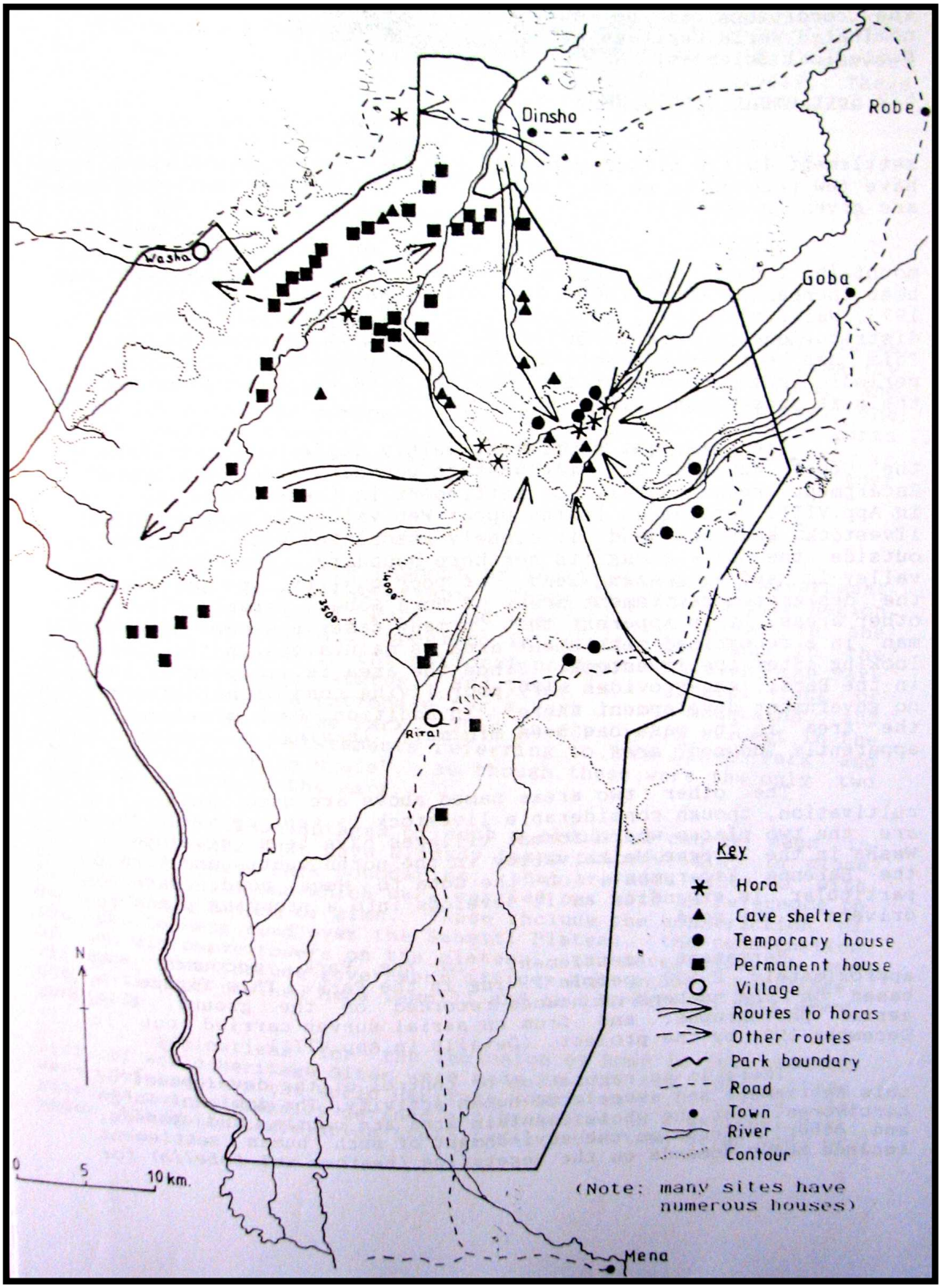
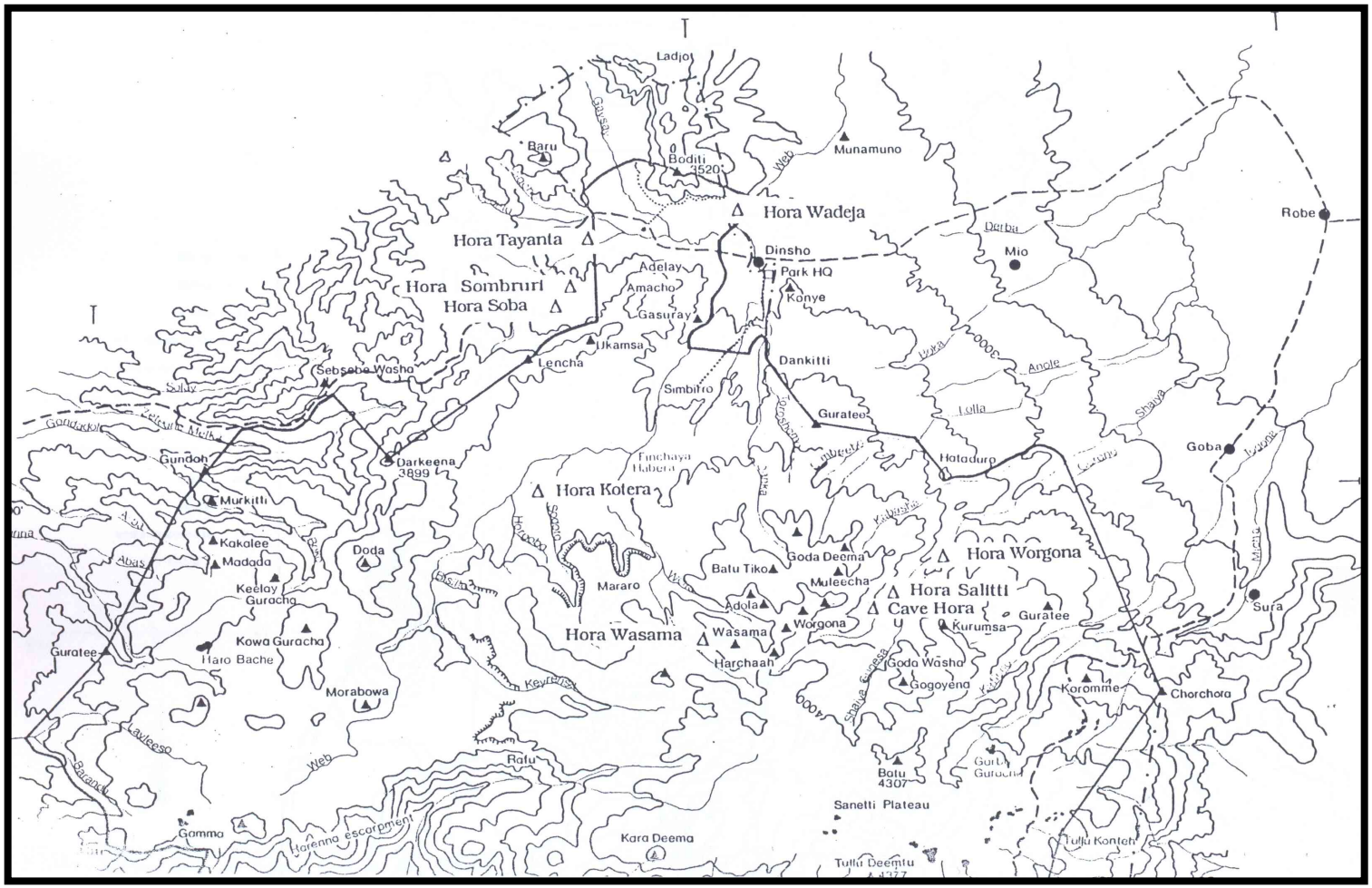

Dinsho
Robe
Washa
Goba
Rira!
Mena
Key
Hora
Cave shelter
Temporary house
Permanent house
Village
Routes to horas
Other routes
Park boundary
Road
Town
River
Contour
(Note: many sites have numerous houses)
N
0
5
10 km.

Figure 1.2 Northern extent of Bale Mountains National Park showing location of *Hora* (Kemp-McCarthy 1990:3)



1.3 Livestock and BMNP

Unquestionably the number of people and livestock living in and/or using the BMNP has increased significantly since Brown's visit in the early 1960s. Human populations within the BMNP were estimated at 2,500 in 1984 rising to 7,000 in 1992 and 20,000 in 2004 (although it is unclear how these figures were reached) (B & M Consultants 2004).

An ongoing study by the Ethiopian Wolf Conservation Project (EWCP) measured densities of cattle in the Web Valley[3] as between 25 per km sq and 65 per km sq in the peak usage time (mid-wet season) in 1999. At this time livestock usage of Western and Eastern Sanetti areas was low, though had been absent until 1995.

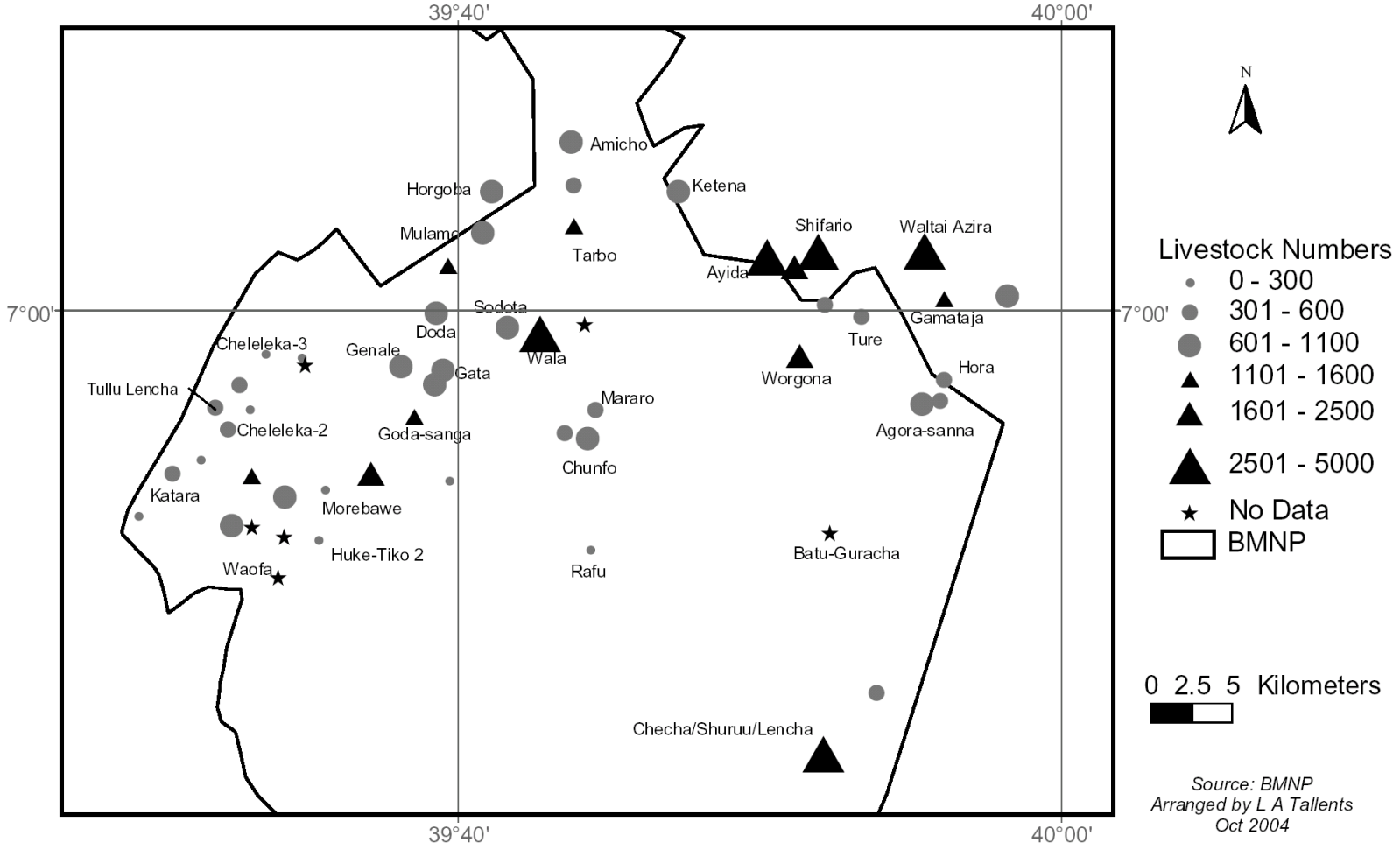
Despite attempts to control livestock numbers through such as impoundment and fining, this has had little effect. For example in the year 2000, around the Park headquarters in Dinsho it was common to arrest livestock owners with livestock who were trespassing in the Park. The cattle and owner were impounded in the local jail/camp and kept there until a fine of ETB10 per cow was paid (Flintan personal observation 2000). In 2007 there was little effective control at all. At that time the BMNP concurred with the view that local livestock owners have been effectively forced into the Park due to land use policies outside of its own borders (BMNP 2006).

A study carried out over a 3-year period showed that community members lost a total of 704 livestock to wild carnivores (mainly hyenas but also leopards, jackals and servals), causing a loss of potential revenue of 12 USD per year per household. Dogs are kept to protect the livestock. During 250 nights of observation in ten settlements, households were alerted to the presence of hyenas on 80 occasions by the barking of their dogs.

A study published in 2012 used satellite imagery to study land use change across the Bale region, comparing data from 1973, 1987, 2000 and 2008. Within a representative subset of the study area (7,957.5 km^{-2}), agricultural fields have increased from 1.71% to 9.34% of the total study area since 1973. Natural habitats such as upper montane forest, afroalpine grasslands, afromontane dwarf shrubs and herbaceous formations, and water bodies also increased. Conversely,

[3] The Web Valley is said to be the most heavily used area in the Park – five times higher than anywhere else Marino et al. 2006).

Figure 1.3 Number of livestock in afro-alpine are of BMNP as per study carried out in 2006 (BMNP 2006)



afromontane grasslands have decreased in size by more than half (going from 19.3% to 8.77%). Closed *Erica* forest also shrank from 15.0% to 12.37%, and isolated *Erica* shrubs have decreased from 6.86% to 5.55%, and afroalpine dwarf shrubs and herbaceous formations reduced from 5.2% to 1.56%. Despite fluctuations the afromontane rainforest (Harenna forest), located south of the Bale Mountains, has remained relatively stable.

1.4 Introduction to this research study

This research study was undertaken by ILRI (Internaitonal Livestock Research Institute) for IWMI (International Livestock Research Institute), who is leading the research of the EU-funded Support to the Horn of Africa Resilience (SHARE) project until November 2017. SHARE works across the Bale EcoRegion with the aim of conserving biodiversity and ecosystem functions and services in the region, and to improving the wellbeing of communities that depend on these functions and services. A consortium of organisations is working to this end including FARM Africa, SOS Sahel Ethiopia, Frankfurt Zoological Society (FZS), Population Health Environment Ethiopia Consortium (PHEEC) and IWMI.

The research component of SHARE set out a number of inter-related research studies that aim to build better knowledge and understanding of sustainable eco-regional management practices – this research study is a contribution to this. Not only will this study present a clear picture of current livestock land use and dynamics, but it also provides the opportunity for a comparative analysis of the situation today compared to 2007, when a similar study was undertaken. The study in 2007 was completed for the BERSMP (Bale EcoRegion Sustainable Management Programme) jointly implemented by the Ethiopian government (namely the Bale Forest Enterprise) and NGOs – FARM Africa and SOS Sahel Ethiopia. It is documented in the report: *Livestock and Livestock Systems in the Bale Mountains EcoRegion* (2008) by F. Flintan, W. Chibsa, D. Wako and A. Ridgewell.

This research study, undertaken in 2015-2016 was carried out in the same PAs and woreda as study undertaken in 2007. Four woreda are included – Delo Mena, Goba, Nensebo and Harena Buluk and nine PA/kebele. The woreda were selected in 2007 by the BERSMP, as good representation of the different livehood systems and socio-ecological systems across which BERSMP was working. The sample kebele were selected for the study by the government partners and the BERSMP in order to have a selection of:

- PAs near the forest
- PAs far from the forest

• PAs in the middle (only in Goba woreda).

For this research study in 2015-2016 the same woreda and kebele were selected in order to provide the opportunity for the comparative analysis across the almost decade (2007-2016).

A range of participatory tools were used to initiate discussion and improve understandings. These included:

- Wealth ranking;
- Trend analysis;
- Seasonal calendar;
- Mapping of rangeland resources and grazing routes;
- Proportional piling of preferred fodder; types of livestock; grazing areas etc; and
- Observation.

1.4 This paper

This paper summarises the comparative analytical study of livestock land use, livelihoods and change over a nine-year period from 2007 to 2016. It focuses on the changes that have taken place in one case study woreda – Delo Mena – a woreda that has both lowland and highland kebele, and a large number of livestock that have increased dramatically in recent years. The report concludes with an overall analysis of the current situation and trends seen, and their implications for further land use, development interventions, potential conflicts, and likely future challenges and opportunities for the still predominantly livestock-based livelihoods of local communities in the region. The full report of the study including information from the four woredas is available from the authors.

2.0 PARTICULARS OF THE STUDY AREA

2.1 Climate of the Bale Mountains

Southern Ethiopia is within the East African climatic domain, influenced during the larger part of the year by south-easterlies originating over the Indian Ocean. Further the inter-tropical convergence zone, plus altitudinal and topographic influences also affect the distribution of the precipitation in the Bale Mountains. Annual rainfall ranges between 600-1500 (2000) mm depending on relief (Yoseph Assefa et al, undated) (discussed in more detail in Miehe and Miehe 2004).

The diurnal variability in temperature is higher than its seasonal variation. A minimum temperature of -15°c has been recorded on the Plateau (3850m) while a night-time minimum temperature of -3°c was found in the sparsely vegetated areas of the ericaceous belt (ibid).

2.2 Altitudinal and seasonal variability

Those interviewed divided the year up into two or four seasons (see Table 2.1). In the lowlands the year was divided up into two main seasons, though with some communities describing additional seasons inbetween the main ones:

- *Bona* – the dry season (roughly October to March)
- *Gana* – the rainy season (roughly April – October)

In the more highland PAs of Solana and Gerambamo, the year was divided up differently into:

- *Birra* (September – November)
- *Bona* (December – February)
- *Afrasa* (March – May)
- *Gana* (June – August).

What is clear is that all PAs experience little or no rainfall fall between December and February, when highest temperatures are experienced and often strong winds.

Table2.1 Weather patterns in study PAs

PA	*Hagayya*	*Bona*		*Gana*	*Adolessa*
Lowland areas					
Erba	Sep-Nov	Dec-Feb		Mar-May	Jun-Aug
Melka Arba	Nov-Dec	Jan-Apr		May-Jly	Aug-Oct
Sodu Welmal	Sep-Nov	Dec-Feb		Mar-May	Jun-Aug
Berak	Sep-Nov	Dec-Feb		Mar-May	Jun-Aug
Highland areas					
PA	*Birra*	*Bona*	*Fumata*	*Afrasa*	*Gana*
Fasil Angesso		Nov-Jan	Mar-June		Jly-Oct
Hilassa		Oct-Feb			Mar-Sept
Ashuta		Months not stated			Months not stated
Solana	Sep-Nov	Dec-Feb		Mar-May	June-Aug
Gerambamo	Sep-Nov	Dec-Feb		Mar-May	June-Aug

In 2007 respondents of the study suggested that rainfall and water resources have reduced over time due to climate change and temperatures increased. Further, several respondents commented that they are now experiencing drought on a regular basis particularly in the lowland areas.

3.0 CASE STUDY OF DELO MENA WOREDA

Delo Mena was originally part of Menu Angetu woreda together with Harena Buluk, until the two were split. As part of this split the 180,000 hectares of forest found in Menu Angetu were divided with 90,000 given to each woreda. This forested area is a highly important dry season grazing area providing respite for livestock from the dry lowland areas in the dry season.

Livestock numbers in Delo Mena have grown significantly since 2007 and before that from 2000. AS the data from 2000 relates to Mena Angetu, the 2007 figures for Delo Mena and Harena Buluk have been aggregated to offer a comparison. In 2000 the livestock population was reported to be: cattle 145,850; shoats 33,939; equines 5,906; and camels 11,953, which equates to 121,281 TLU or 197,648 (see Appendix 1). By 2007 this had risen to: cattle 161,993; shoats 49,770; equines 14,275; and camels 23,690, which is equal to 151,341 TLU or 249,728 heads. This represented a 25 per cent increase in the overall livestock holding of the area between 2000 and 2007.

To compare these figures with 2015, again the figures for Harena Buluk and Delo Mena can be aggregated. This means that in what was Mena Angetu woreda (i.e. now split into Harena Buluk and Delo Mena) total livestock figures in 2015 were 723,269 heads of livestock made up of: 479,601 cattle, 160,731 shoats, 37,515 equines, 45,422 camels. This is a nearly 3-fold increase from 2007, and a 3.65-fold increase from 2000 with increases across all livestock types including cattle.

In Delo Mena alone, total numbers of livestock heads in 2007 was 154,409: this was made up of 102,324 cattle, 26,097 shoats, 6412 equines and 19,576 camels. In 2015 this had increased to total number of 490,892 heads, made up of 322,626 cattle, 105,814 shoats, 17,780 equines and 44,672 camels. This is a more than 3-fold increase (i.e. in eight years) with increases across all livestock types, including a more than 4-fold increase in shoats (mainly goats). This is very surprising considering the increased pressures on grazing, and the conversion of much land to crop farming.

3.1 Erba PA/kebele

Erba *kebele* is found close to the forest. The people in the PA depend largely on wild coffee harvest and due to little available grazing resources, livestock are taken elsewhere to graze and browse. Trends already established in 2007 of land increasingy being cultivated during the wet season, has continued meaning a reliance on grazing elsewhere during this time (particularly in Berak and Haya Odo PAs), however grazing here is being increasingly restricted.

Socio-economics and livelihoods

Table 3.1 Erba PA wealth ranking in 2007
Total no. of households: 547

Rich – *duressa*	**Medium - *jidugalessa***	**Poor - *hiyessaa***	**Destitute - *dhaba***
100+quintals coffee per year	30-50 quintals coffee per year	1-3 quintals coffee per year	1 quintal coffee per year
30+ cattle	15-20 cattle	-	-
2+ mules	1 mule	-	-
2+ donkeys	1 donkey	-	-
50-100 goats	10-20 goats	1-4 goats	2 goats
10-20 chickens	10-15 chickens	5-10 chickens	1-5 chickens
10-20 beehives	5-10 beehives	1-5 beehives	-
55+ quintals crops	10-25 quintals crops	6 quintals crops	2 quintals crops
11	67	211	-
4%	23%	73%	0

Table 3.2 Erba wealth ranking 2016 by women's group[4]

Criteria	**Duressa (rich)**	**Jidu Galessa (medium)**	**Harka Qaleessa (poor)**	**Hiyyeessa (very poor)**
Cattle	20-50	5-20	1-2	-
Coffee (quintals)	50-100[5]	25+	1-3	-
Crop (quintals)	150+	40+	1-5	-
Donkey	1-2	1	-	-
Mule	1	-	-	-
Goat	5-20	2-5	1	
Type of house	Corrugated aluminum roof	Hut	Hut	Hut
% of children attending school	100%	100%	100%	100%

[4] The wealth ranking here is a combination of the wealth rankings carried out by the separate women's group and men's group.
[5] Women said this could go up to 300 quintals. Also women mentioned 'fruit' but it is not sure what was meant by this and we guess that it means 'crop'.

Honey production (kg)	50+	20+	-	-
	10%	45%	35%	10%

Source: Male and female FGDs

The wealth ranking carried out in 2017 suggests that the local community has a well-diversified resource base, with livestock still featuring prominently. Compring this wealth ranking with that facilitated in 2007 shows a slight reduction in the number of livestock owned, and surprisingly it would appear to the be number of goats that have reduced most. This contradicts the information provided at woreda level, which shows a 3-fold increase in livestock in Delo Mena as a whole.

The amount of coffee collected appears to have reduced somewhat, though the women in their exercise suggested that some 'rich' households could collect over 300 quintals per year; and in addition honey production appears to have declined. On the other hand there has been a significant increase in crop production, with the 'rich' category said to produce 150+ quintals of grain per year, and the 'medium' category producing 10-25 quintals, compared to 55+ and 10-25 quintals respectively in 2007.

Overall it would seem that the community in Erba PA has overall become a little wealthier, and on the basis that the wealth rankings are indeed correct, the 'rich' category has increased from 4% to 10%, the 'medium' category from 23% to 45%, and the 'poor' reduced from 73% to 35%. Though it would appear that the 'desitute' group has grown from 0 to 10%, this is in fact not true as in 2007 it was mentioned that the number of destitute was not shown in the wealth ranking as the list of community members from the PA office did not include them as they did not pay tax. The community members did say at the time that there were destitute in the village, but did not show them on the wealth ranking. – therefore there were at least some destitute even though the 2007 ranking shows 0.

An interesting phenomenon shared among all wealth groups in 2007 is access to education where regardless of economic background of households, children of school age attend school (DMER_FGD_01).

Table 3.3 Trend Analysis 2016

Characteristics	**Ten years ago**	**Present**
Grazing land	●●●● ●●●	●●●● ●
Crop land	●●●●	●●●● ●●●●
Time taken to access grazing (wet season)	One day	Two days

Time taken to access grazing(dry season)	Less than 30 minutes	Over 2 hours
Water availability(dry season)	30 minutes	30 minutes
Water availability (wet seas on)	Available at the grazing land	Available at the grazing land
Time taken to access mineral licks (wet season)	Available at the grazing area	Available at the grazing area
Income from livestock product*	●●●● ●●●●	●●●● ●
Time take to access mineral springs	Available at the dry season grazing areas	Available at the dry season grazing areas
Grass availability	●●●● ●●	●●●●
Browse availability	●●●●● ●●●●	●●●● ●●
Right to access grazing land	●●●●● ●●●●●	●●●●
Types of animal owned	Same	Same
Quantity of livestock owned	●●●● ●●●	●●●
Income from livestock*	●●●● ●●●●	●●●● ●
Time taken to access fodder	Less than 30 minutes	Over 4 hours

The trend analysis also illustrates the gradual move from a livestock and forest product livelihood-based system (coffee, honey) to a more diversified one including crops. This diversification seems to be working well for the community. However community members complain that though growing crops is of benefit, it is increasing at a rate that is difficult to control and they would like to see measures taken to ensure that crop farming does not further compromise the livestock production system.

Table 3.4 Seasonal calendar

Seasons / Characteristics	Gana (March-May)	Bona (Dec-Feb)	Adoolesa (June-Aug)	Hagayya (Sep to Nov)
Rainfall	●●●● ●●		●	●●●
Temperature	●	●●●● ●●●●	●●●●	●●
Wind	●●●	●●●● ●●●	●●●● ●	●●●
Grazing availability	●●●● ●●●	●●●●● ●●●●●	●●●● ●●	●●●● ●●●
Water availability	●●●●	●●●●● ●●●●	●●●●● ●●●●	●●●●
Income from livestock sale	●●●●	●●●●	●●●●	

		●●	●●●●	
Income from livestock product	●●●● ●	●●●●● ●●●●	●●●● ●	●●●●● ●●
Quantity of livestock products	●●●● ●●●●		●●● ●●●	●●●● ●●●
Labour demand for livestock related activities	M ●●●● ●●●●	●●●●	●●●	●●●● ●●●●
	F ●●●● ●●	●●●● ●	●●●●	●●●● ●●
Labour demand for non-livestock related activities	M ●●●●● ●●●●●	●●●● ●●●●	●●●●● ●●●●	●●●●● ●●●●●
	F ●●●● ●●●●	●●●● ●●	●●●● ●●●	●●●● ●●●●
Incidence of disease	●●●●	●●●	●●●● ●●●●	●●●● ●●

Source: Male and female focus group discussions (DMER_FGM_01 and DMER_FGF_01)

In terms of labour men dominate livestock production. Women also contribute through such as calf management, animal health management, preparation of food for herders – however men would not give these activities the same degree of importance as those activities carried out by themselves. During *Bona* it is considered easy work to take the animals to the forest area, guarding the animals against wild animals and theft. The men considered *Ganna* (the wet season) to be the most labour intensive when they said that there is no rest due to cultivation activities. Women also work hard during G*anna*, responsible for weeding and feeding the male work parties, and often work into the night – however, again, male respondents gave little value to this contribution.

Grazing resources

To date, Erba *kebele* has always had excellent dry season grazing in forest/wooded areas – livestock are moved there to escape the sun/heat particularly in the lowland areas for 3-6 months. However during the wet season nearly all livestock are moved out of the PA to Berak and Nanega Deehra not only to avoid the crops then being grown in Erba, but also to give the grazing in Erba a rest.

Daroo is one of the best dry season sites in Erba and is surrounded by forest. Special grasses locally called *maaxa/gaguro* and *gamagne* are found there. Most other grazing areas are forested with grasses called *daafa(cita), gale, homba, hamoca, wayaboosa, xoorso* and *diki* growing under tress/bushes. There are also other grazing areas of poorer quality mainly found in wooded areas, and/or where access is restricted due to steep terrain of the area.

In 2007, community members mentioned a long list of grazing areas, the majority in forest/wooded areas (see below). It is understood that the majority of these are still available but their access may be more restricted due to land use pressures and reduced quality (excessive use). Grazing and browse tends to be better the deeper into the forest one goes. Herders tend to make a cluster of temporay huts as a base – this is encouraged by the PA administration in order to limit damage to the forest (fire, cutting, illegal hunting). Herders are expected to be responsible for the area where they settle with the livestock. Herders tend to move in a group (neighbours and/or relatives), and are often made up of youth (aged 8-14).

In 2007 particularly popular sites were *Arda jaldessa/Aalge; Qarssa Kurkuru; Daroo; Awajiro/Jirru; Qanqicho; Borte; Melka Qarsa; Abuubb/Habubi;* and *Adami* (though this last one was considered poor quality through close to home). In 2007 it was said that several browse species had disappered including *remoo, jojotta* and *luchee.* Some respodents mentioned using *kalo* (or grazing reserves). One site was mentioned as having a parasite called *ulaanul/ulaandula* – that is a site called *Qundhi*, and in 2016 other sites were mentioned as having this parasite (i.e. that in 2007 were not mentioned as having it), including Wandesa and Hoitu. This suggests that this is a growing problem and appears to be occurring in those sites where there is more farming taking place.

Though it is important for cattle to move to the cooler environment of the forest during the dry season, the goats would happily browse around the settlement. However because the two are normally grazed together, the goats are taken with the catle to the forest. This is usually done by the men (perhaps with one wife) while his (other) wife is left at the homestead looking after young, weak and lactating cows.

Table 5.5 provides a summary of dry season grazing areas used by the Erba community FGDs in 2016, and mapped in Figure 3.1**.**

In 2016 the majority of dry season grazing areas still used by Erba PA livestock keepers are found either within the BMNP or within the boundaries of the Oromia Forest and Wildlife Enterprise area. The latter has increased in authority over the last ten years (see Box 3.1). With this increasing authority and reach, together with threats from the BMNP authorities to prevent all access of livestock to the national park, the Erba community is extremely concerned that they will lose access to most of the dry season grazing areas, which will make their livelihood impossible to maintain. As a result they fear destitution.

Figure 3.1 Rotational grazing of livestock around Erba PA, Delo Mena (2007)

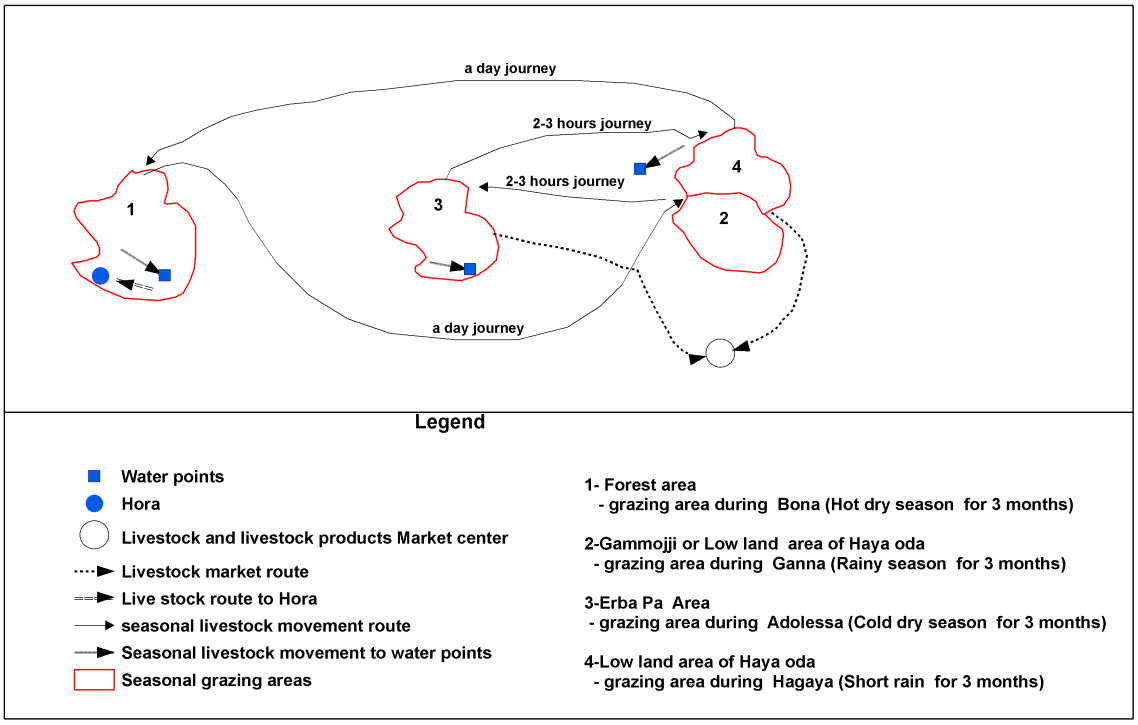


Table 3.5 Dry season grazing areas in Erba PA	
Dry season grazing areas	**Characteristics**
Daroo	6 hours travel from the PA center to the north bordering Goba *woreda.*
Qarsaa Kurkuru	Top quality grassland surrounded by forest and woodland. Preferred by all the PA herders. Grass type: *maaxa/gagaro* and *gamagne* Now the grazing area falls in the gazetted boundary of the Bale Mountain National Park.
Awajira	Woodland grazing areas. Ranges from 3-5 hours from the PA centre. Fodder type is similar across the whole woodland but of varying quantity, including: • *Daafa* • *Gaallee* • *Homba* • *Hamoocaa* • *Wayyabessa* • *Xoorsoo* • *Diki* Community members have heard that these woodlands also now fall within the gazetted boundary of the BMNP.
Gargara	
Korjoo	
Hanje	
Haaxa- Qallee	
Mata-gooba	
Hora higana	
Tarba raafuu	
Borte/Dala baru	
Wadessa	These woodlands are near to the PA centre with low quality grazing and browse, and potential for conflict with other land users including coffee growers. The woodland falls partially in both the Oromiya Forest Enterprise area and BMNP. The distance ranges between 1-3 hours from their PA centre. Wadessa is particular not so good since there is a parasite called *ulandhulaa* found there.
Adami	
Siisa	
Hoitu	This woodland falls in the Forest Enterprise area with poor grazing resources as it is very near to their settlement. Hoitu is also infested with *ulandhulaa.*

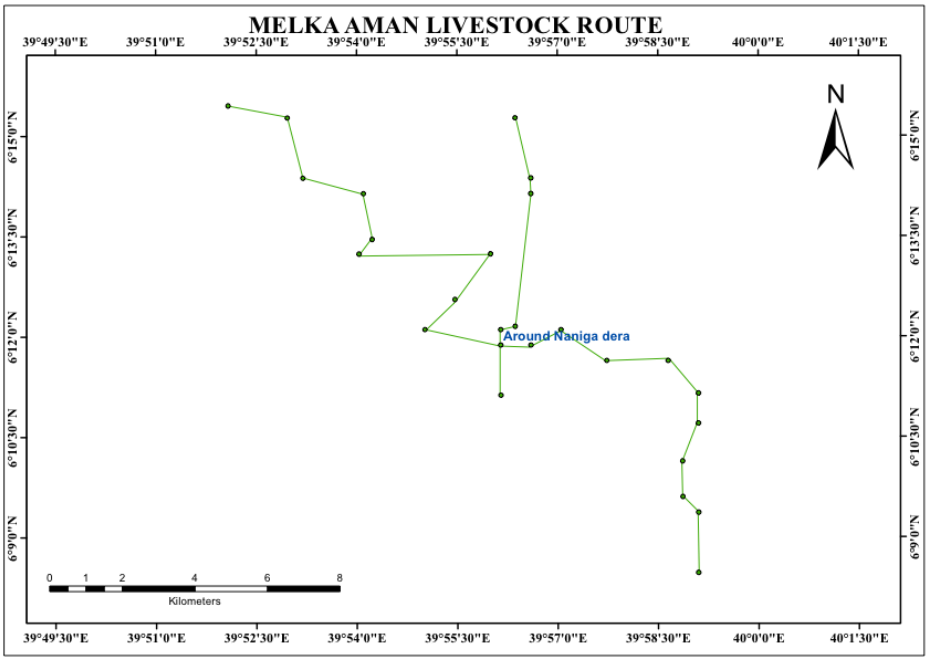
In the wet season the majority of livestock are moved out of Erba PA and taken to the lower lands in Berak. The livestock and their herders will stay here throughout the long rains. Some will stay

longer while others may move back for the *Adolessa* or cold dry season returning during *hagaya* (or the short rains) i.e. visiting the area twice for roughly three months each (see Figure 3.1) Livestock are moved out of Erba PA in the wet season for several reasons – one, because cultivation of crops takes place, two to avoid the damp and cold and resulting sicknesses/disease, to make the most of the good wet season grazing in Berk that is preferred by the cattle and results in high milk production.

Table 3.6 Wet season grazing areas used by Erba PA

Wet season grazing areas used by Erba PA	
1. Wet season grazing areas found in Berak PA	**Characteristics**
Dima Sole	Vast grassland, which is encroached by thorny bushes and shrubs, and woodlands. Best for wet season grazing when surface water is available for the livestock.
Qeremsa	
Waqdabare	
Qanqana	
Hara Galbo	
Dhugicha	
Bururi	
Sadeta	
Hunduko	Already given to investors so no longer available for use
Koticha Jema	
Kilkile/Basaqu	
2. Wet season grazing found in Nanega Dheera PA (on way to Berak)	**Characteristics**
Hurufa	Vast grassland mixed with bushes and woodland
Gogowe	

Figure 3.2: Grazing around Nanega Dheera



In the wet season herds from Erba PA as well as from many other neighbouring *kebele*[6] move to and congregate in Berak *kebele*. Though Berak's residents have traditionally provided for this sharing of the *kebele*'s grazing resources, they are increasingly becoming less tolerant and many residents as recently established cooperatives have started to enclose the grazing with fences. These cooperatives are now trying to prevent non-cooperative members from using the grazing in which they have invested time and resources, and/or are charging for the right to grazing in the enclosure. Most recently the grazing areas of *Saardetta Caamsa* and *Gogowe* in Berak were enclosed, and their use by the Erba community (and other outsiders) prohibited. They also said that members of the Berak community had burned their temporary houses. This is a new and disturbing trend for the Erba community and one that they have complained about to the *woreda* administration, but with no response to date.

Though this protection of grazing resources may be well-intentioned by Berak residents (and FARM Africa/SOS Sahel who have supported the process) in order to better manage their own resources, Berak livestock owners still move to the forested higher-altitude areas with their livestock in the dry season and use the resources of other communities, following the traditional

[6] Including Wabero, Haya Oda, Burgitu, Dhirri, Waltaee Gudina, Gongowe, Mala Amana, Kale Golbe, Bobiya, Oda Dima and Deyu *kebeles.*

godantu system. As such though they are increasingly refusing to share their own resources they are still expecting to use those of others. Berak community members said that the hospitality of those communities in the forest is becoming increasingly hostile and that these communities were responsible for burning some of their own temporary during the *godantu* migrations up to higher areas this year.

A second pressure on the grazing lands in Berak (as mentioned by Erba community members) is due to local government (woreda level Land Administration and Investment Office[7]) allocating grazing lands (including high quality grazing areas) to investors for crop agriculture (examples given were Hunduko and Koticha Jema) – undertaken without consultation of local communities (primary or secondary users). In addition, local government does not control the investors – many of whom cultivate more land than they have been allocated/leased (often double). Land for crop growing is given to those that have influence with local government officials. The increase in land allocated to crop farming not only removes the grazing land from the livestock production system, but also often blocks access to water sources or other grazing areas. In order to protect these lands for grazing, Berak residents see little other choice than to enclose them. Despite complaints to *woreda* officials about these allocations, the *woreda* continues to prioritise crop agriculture over livestock production despite livestock being the backbone of the local communities. This is discussed further below.

The increased conversion of grazing areas to agriculture means that it now takes double the time to get to the wet season sites than it did ten years ago, according to respondents. And with increased pressures on the wet season grazing areas, communities are forced to move more quickly to the dry season ones once ponds in Berak have dried up – putting added stress on these. Previously communities would take a month to move from Berak to the forested dry season grazing stopping to graze and browse along the way, but now all this grazing between the two has been lost to agriculture.

Access to grazing areas has become a critical issue for the community – who were outspoken in their complaints and concerns. Though grazing is an issue in both dry and wet seasons, it is in the wet season where tensions over access to grazing are of greatest concern. Erba *kebele* provides dry season grazing for many communities in neighbouring *kebeles* including Berak. This is

[7] The woreda and zone assess and decide on potential lands for different investment and submit to higher authorities (region) to invite potential investors to apply. Community is not included in the decisions about use of land for investment.

mainly in the forested areas, which provide shade and a cooler environment during the dry months. Where these grazing areas fall under the expanding Oromiya Forest Enterprise areas, the Erba communities have been organised into forest user groups, which amongst other things is responsible for controlling access to dry season grazing areas. Bylaws provide the governance framework for management and use. When asked what was the difference between this system and the rangeland/livestock cooperatives of Berak (described in more detail below) community members responded that their bylaws do not effect the *godantu* system for anyone – they do not stop anyone grazing in these areas – and though in future they anticipate charging fees for grazing they have not started doing this yet. In addition, residents of Berak and other *kebele* freely use the forest for collection of non-timber forest products. Community members stressed that if Berak did indeed prevent them from using the wet season grazing found there, then they in turn would refuse Berak livestock keepers access to Erba grazing areas. They believed that this would lead to conflict between the two communities who in the past had shared resources peacefully (DMER_FGM_01).

Of additional concern (and flagged by communities as being most serious) is the loss of access to grazing areas in Erba *kebele* itself. This is due to the current demarcation of the recently gazetted boundaries of the BMNP (see Section 1.2). This is a very 'hot' issue with community members vigorously complaining about the recent decisions made by the Park and particularly about its boundary demarcation, which now encompasses many of their traditional grazing areas. This, they say has completely gone against what was agreed previously with Park staff. Community members said that when the recent round of discussions had started about the Park boundaries, they had been involved, and conclusions reached left them with the understanding that they would still be able to use the grazing areas that they have been using for decades. However now, they have heard that they will not be able to use any of these areas – and even that week they had heard that they would not able to use the forest at all. With the additional pressures on their grazing resources as described above, the Erba communities feel they are reaching a crisis point, that could very possibly lead to violent conflict and significant problems for their future well-being. They said that those working to protect the BMNP were working against them and trying to destroy their livelihoods completely.

Figure 5.3 Resource map of Erba PA produced by male FGD (DMER_FGM_01)

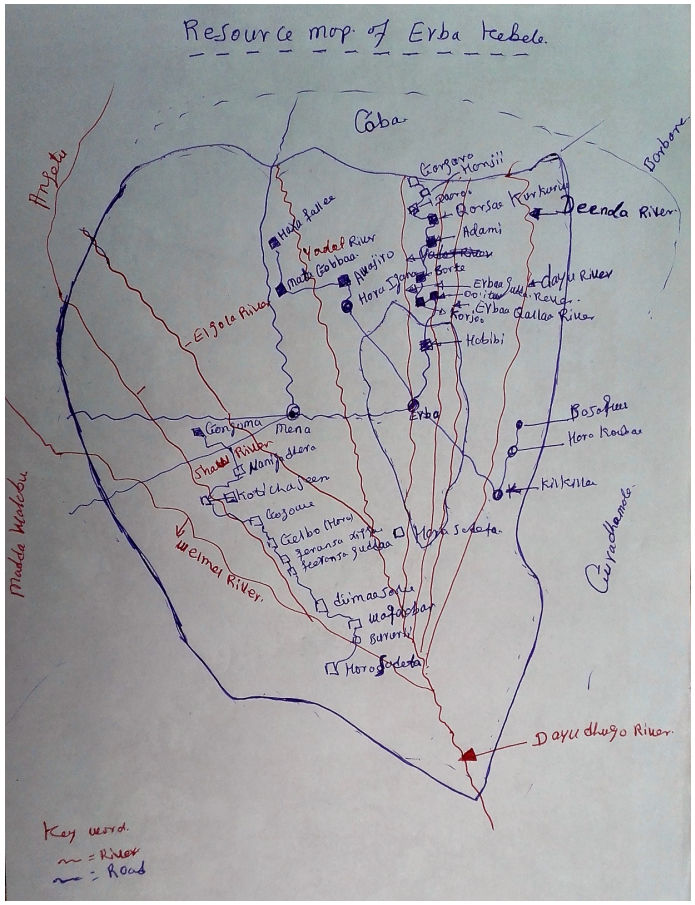
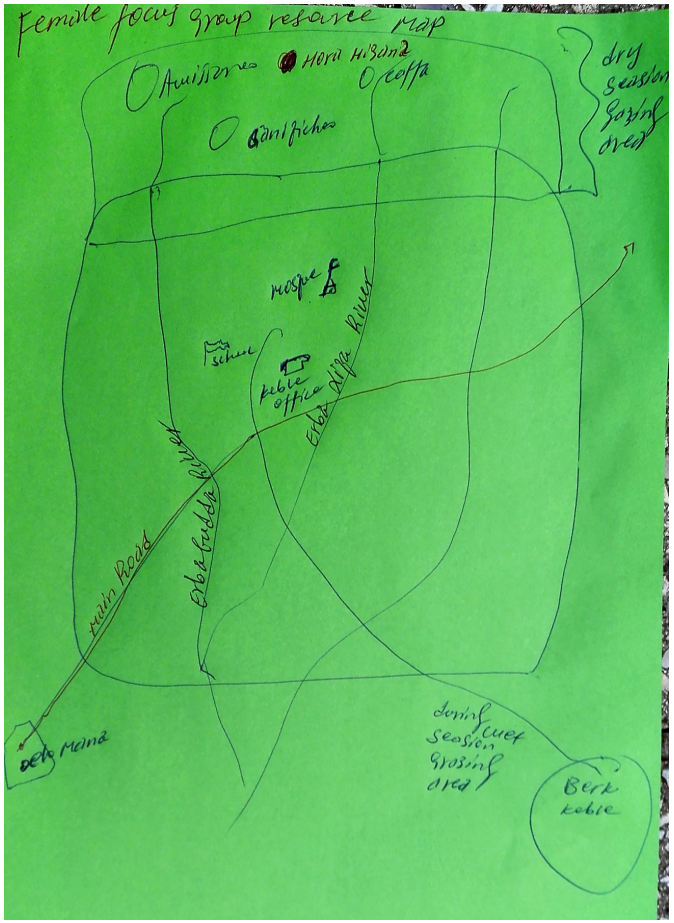


Figure 5.4 Resource map of Erba PA produced by female FGD (DMER_FGF_01)



The expansion of the Oromia Forest and Wildlife Enterprise areas is a further threat – but at least here the community is given the opportunity to co-manage the forest and to use resources, albeit under a greater degree for restriction and control. Many of the community are members of forest user cooperatives, which have been established by the Enterprise to manage forest resources including grazing.

Not only has the amount of grazing reduced, but also the quality. The community described how previously they had used fire to control bush encroachment but the use of fire had been banned by local government officials. Now grazing areas have been overtaken by bush and scrubby-woodland.

Supplementary feeding of livestock

Community members interviewed said that in order to supplement grazing and browse, crop residues are fed to livestock (DMER_KIM_01) i.e. after harvest. In addition women collect *haroressa, dhigri, ule gaaluu* and *bire luko* during the wet season to feed to weak and lactating animals remaining around the homestead whilst the other livestock move to wet season grazing areas (DMER_KIM_01). In 2007 it was mentioned that women collected 1-2 backloads of fodder per day when needed. Some fodder/browse species that were said to have disappeared in 2007 include *rermoo, jajatta* and *luchee* (Flintan et al 2008).

Livestock water resources

The community is well-endowed with water resources including rivers that flow throughout the year and permanent springs. These include Hoitu, Deyu, Mulka, Wadessa, Calcali, Dimbe, Hidi, Sisa and Usho rivers surrounding the grazing sites in the forest. However, increased agricultural encroachment of livestock routes and grazing areas is preventing livestock moving to the rivers and other watering points. In addition *dhulandula* are found in several of the rivers and which attack livestock when drinking. Wadessa River, close to Erba village has the most abundant prevalence of *dhulandula.*

In Berak during the rainy season water is abundant in surface ponds (called *hara*). In 2007 it was said that the government had developed many of these. However once the rains slow down, these quickly dry up and then livestock and their keepers are forced to move back to their own villages despite grazing still being available there. Livestock is then grazed around the homesteads during the months of May/June - August. In *Hagayaa* (November to December) livestock is again

moved to Berak as rains fill up the ponds, and from there, livestock are moved after about two months to the dry season grazing areas in the forest. As above, access to Berak is becoming increainsingly challenging.

Livestock mineral/salt springs *(hora)* and licks *(haya)*

Hora Higana is the main mineral spring used by livestock in Erba *kebele*. However, the cattle trough is broken here, which makes it difficult to access the spring. When there is good grass the livestock are taken to *Hora* weekly and graze around the site for some time: alternatively, livestock are taken there every two months including in the dry season. During *Adolessa* when livestock is mainly kept around the settlement, visits to *hora* are infrequent and rather, livestock are given additional feed to keep them healthy. There is one *hora* (Hora Qaba Caama*)* found on the way to Berak in Naniga Dheera PA.

In Berak PA there are no mineral springs, and instead when livestock are taken here in the wet season they use the mineral licks *haya* that are found there. There are also several licks found on the way there. The main mineral licks used by livestock from Erba PA are[8]:

- Haya Oda (found at Oda *kebele*)
- Haya Gafarsa (found at Gogowe grazing area in Naniga Dheera *kebele* on the way to Berak)
- Haya Dambala (found at Kale Golba *kebele* on the way to Berak)

And in Berak:

- Haya Dima Sole
- Haya Galbo
- Haya Hara Bargage
- Haya Dima Jirime
- Haya Sadeta
- Haya Hara Gobena
- Haya Balade

Climate and climate change

The PA receives its first rain from September through November and the next rains from March until May. Though rainfall is still relatively high, the intensity is said to have decreased over the

[8] *Haya* mentioned in 2007 include *Haya Qerensa, Haya Ado, Haya Sayida* and *Haya Gurati.*

last 10-20 years. The rains that were currently falling (during the first phase of research) was said to be 60% of what is normally expected. In 2007 community members also complained that there were more recurrent droughts.

At the same time temperature is said to be increasing, particularly during *bona* (the dry season). June to August tend to be the hottest months.

3.3 BERAK PA

Berak *kebele* is found at a distance from the forest towards the lowlands. Livestock owners practice *godantu* system taking their livestock up into the forested mountain areas in the dry season. Grazing is good in the PA and large numbers of livestock from other PAs visit during the wet season both from more highland areas (including Erba as described above) and the lowlands including herds of camel that are reported to have increased over the years. Some land is allocated to investors for large scale agriculture such as biofuels, and access to water and grazing is becoming more challenging. From around 2010 FARM Africa and SOS Sahel have been supporting the piloting of PRM in the PA.

Socio-economics and livelihoods

Table 3.7 Wealth ranking in 2007

Total number of households: 560

Rich 'duressa'	Medium 'wayyoo gobessa'	Poor 'deegaa'
40+ camel	10-30 camel	-
30+ cattle	20-25 cattle	3 cattle
50+ goats	25-45 goats	15 goat
1 mule	-	-
3-5 donkey	2-3 donkey	-
24	287	249
4%	51%	45%

In 2007 the wealth ranking showed that though there were a few households defined as 'rich' with as many as 40 camels, 30 cattle[9], 50 goats and other livestock, the majority of the community (96%) had much less than this with 51% being ranked as 'medium' wealth and 45% ranked as poor with only approximately 3 cattle and 15 goats. For a PA with rich grazing resources the number of poor, in particular, was surprising.

[9] It was noted in 2007 that though the wealth ranking states that the rich own 30+ cattle, herds of 100 cattle or more were disclosed by some of the individuals who were interviewed (Flintan et al 2007).

Table 3.8 Berak wealth ranking 2016

Rich *'olana'*	Medium *'gidu galessa'*	Poor '*harka qalleessa'*
40+ cattle	15-40 cattle	<10 cattle
60+ goats	20-60 goats	<10 goats
30+ camels	10-15 camels	<5 camels
30+ quintal maize	10+ quintal maize	<5 quintal maize
10+ quintal sesame	5-10 quintal sesame	<5 quintal sesame
30+ quintal sorghum	15-30 quintal sorghum	<5 quintal sorghum
10+ quintal wheat	5-10 quintal wheat	<2 quintal wheat
5%	30%	65%

The wealth ranking carried out in 2016 showed similar results in terms of livestock numbers per each wealth category to those provided in 2007, excluding the poor category which appeared to have not only increased in %age, but also in terms of wealth having less livestock. However, as noted above, the PSNP evaluation was taking place at the same time that would determine which households would qualify for the PSNP, so the 'poorness' of the poor wealth category could have been exaggerated. In terms of crops, it would seem that cropping has increased in importance as a livelihood component – it was not mentioned at all in 2007: though this does not mean to say that there were no crops being grown at that time, it would appear that they were not important in determing wealth status unlike today. As one can see the amount of grains produced is fairly substantial; and overall the combination of livestock and crop production across the wealth categories was one of (if not the) richest out of all the communities/PAs that took place in this study.

Table 3.9: Seasonal calendar

Seasons / Characteristics	Gana(wet season)	Bona(dry season)	Adoolesa (Autuman)	Hagayya(Spring)
Rainfall	●●●● ●●			●●●●
Temperature	●●	●●●● ●●	●●●●● ●●●●●	●●●
Wind	●●	●●●● ●●	●●●●	●●
Grazing availability	●●●● ●●	●●●● ●	●●●●	●●●● ●
Water availability	●●●● ●●	●●●●	●●●●	●●●● ●●
Income from livestock sale	●●●● ●	●●●	●●●● ●●●●	●●●●

Income from livestock product		●●●● ●●●●			●●●●
Labour demand for livestock related activities	M	●●●●	●●●●	●●●●	●●●●
	F	●●●● ●●	●●●● ●●	●●●● ●●	●●●● ●●
Labour demand for non-livestock related activities	M	●●●● ●●●	●●●● ●●●	●●●● ●●●	●●●● ●●●
	F	●●●	●●●	●●●	●●●
Incidence of disease		●●	●●●● ●●	●●●● ●	●●

Community members (DMBK_FGM_01) said that labour demand between men and women is equal in all seasons – both work hard. Women spend the majority of their time looking after livestock taking about sixty percent of their time. Men spend the majority of their time on non-livestock activities including crop farming. It is the men however that take the livestock to dry season grazing areas.

Table 3.10 Trend Analysis

Characteristics	**Ten years ago**	**Currently**
Quantity of grazing land – open grassland	●●●● ●●●●	●●●●
Quantity of crop land	●●●●	●●●● ●●
Time taken to access grazing in dry season	12 hours	12 hours
Time taken to access grazing in wet season (on the understanding that they have moved to the wet season grazing area and have a base established there).	2 hours	4 hours
Time needed for accessing water for livestock		Doubled
Browse availability	●●●●● ●●●●●	●●●●● ●●
Right to access grazing land	●●●●● ●●●	●●●●●
Types of animal owned	Same	Same
Quantity of livestock owned	●●●●● ●●●●●	●●●●
Number of conflicts with wild animals that kill livestock	●●●●● ●●●●●	●●●●●
Income from livestock	●●●●● ●●●●●	●●●●●
Food from livestock	●●●●● ●●●●●	●●●●

The trend analysis suggests that the quantity of grazing land has reduced by half, and the quantity of cropland increased. Browse availabitliy has also decreased. This has resulted in half the number of livestock owned compared to ten years ago, and a reduced income and food from livestock. Conflict with wild animals were said to have decreased – the reason for this is not clear but perhaps it is due to there being fewer wild animals because of the increased disturbance to their habitat because of crop farming etc.

Climate and climate change

The community stated that rainfall is less today than it was four years ago, and as a result is not filling the ponds during the wet season(s).

Livestock grazing resources

The *Gamoji* (lowland) grazing area is the key grazing for the community in Berak, which extends across an area of 150km sq. Livestock is kept here during the main rainy season – *ganna.* Grazing resources would allow livestock to stay there longer but surface water tends to run out after two months (there is no permanent water source here) and also livestock is moved to avoid contraction of a disease locally called *girixi bussi*, which is associated with tortoise bones (see below).

This is a vast grazing area, for which the community is developing management plans. The community are organised into grazing cooperatives (as mentioned above), similar to forest user cooperatives. The grazing area has been divided into three management zones, including some kept aside as a reserve. One cooperative has been established for each zone/block, except for Waqdabare where the zone has been divided into two blocks, thus with two cooperatives, because the area is large. The three major zones are:

i) Zone 1: Kobe (one block) – here a lot of land is being given by local government to investors for agriculture. The area is prone to conflict and currently there is fighting between community members and the investors.

ii) Zone 2: Sadeta (one block) – there is one investor here.

iii) Zone 3: Waqdabare (two blocks) – there are no investors found here. The area is wide, so it has been divided up into two blocks.

Through the grazing cooperatives the community is increasingly trying to place some controls on grazing, in order to better manage, develop and protect it and ensure that there is enough grazing available for their own use, as well as for the visitors who are many (coming from more than ten

neighbouring *kebele*). This has meant that they are starting to place restrictions on the grazing, particularly by outsiders, and this has caused some of the discontent voiced by community members from Erba *kebele* as described above. According to the cooperative's by-laws, 1 Birr is charged for one cattle, and 2 Birr is charged for one camel for the whole of the wet season. Outsiders are also charged for using the mineral lick – 1 Birr for 1 quintal of minerals. Cooperative members complain that they are willing to share their grazing and other resources, but the visitors do not follow the cooperative rules (e.g. grazing rotations), and therefore increasingly they are trying to stop them coming.

Increasingly the community has seen the health of the wet season grazing area deteriorate. In particular they have seen the invasion of *jirime* (a thorny bush), which has taken over large areas of previously quality grasslands. Previously the community used to destroy it by burning the grasslands three times a year. However, the government has banned the use of fire in this way. Now the bush is taking over, is unpalatable, prevents movement and also harbours wild animals. The grass is being destroyed.

Livestock is taken to the dry season grazing area during Adolessa and stay there for around two months. This is called *Badda*, and the herders from Berak tend to go no further than the Welmel River using the forested area around Welmel and below the road that goes from Delo Mena to Harena. Though inhabitants from Erba and neighbouring kebele come to Berak in the wet season, the respondents spoken to said that the inhabitants of Berak do not take their livestock as far as Erba or to the Harenna Forest (though this disagrees with what the Erba community members said!!). The highland areas have a good grass type called *citta* and *hudugudessa*, mixed with browsed plants. There are some problems with wildlife here including lion and hyena, but this not significant. The main challenge is the increasing cultivation taking place on the way to these areas, and to a lesser extent in these areas, which blocks livestock movement and destroys the grazing.

Following *Adolessa* the livestock is taken back over time to the lowland areas. During *Hagaya* they stay in grazing areas called *Kurfe, Barfata and Libe* for around one month.

Table 3.11 provides a summary of dry season grazing areas used by the Berak community

Table 5.11 Dry season grazing areas and other resources used by the Berak community	
Dry season grazing areas	**Characteristics**

Saala (Sole?)	In highland areas. These grazing areas have good pasture mixed with woodland. Water is sourced from the Welmel River close by. Good grass types include *citta* and *hudugudessa*, mixed with browsers. Cultivation is hampering normal movements.
Hadho	
Ciisa	
Galee	
Korbessa	
Ade Waataa	
Raphi	
Ardaa kuufa	
Okotiin	
Kurfe	Noted as *Adolessa* season grazing
Barfatu	
Libe	

In 2007 it was noted that though Berak does have reasonable dry season grazing, livestock keepers prefer to go to Welmal River area because there is better water availability, and also it reduced the chance of anthraz said to be caused by the dead bones of tortoises of which there are many in Berak. In 2016 respondents said they still use the area around the Welmal River for grazing. It takes 4-6 hours to get to the Welmal River from Berak.

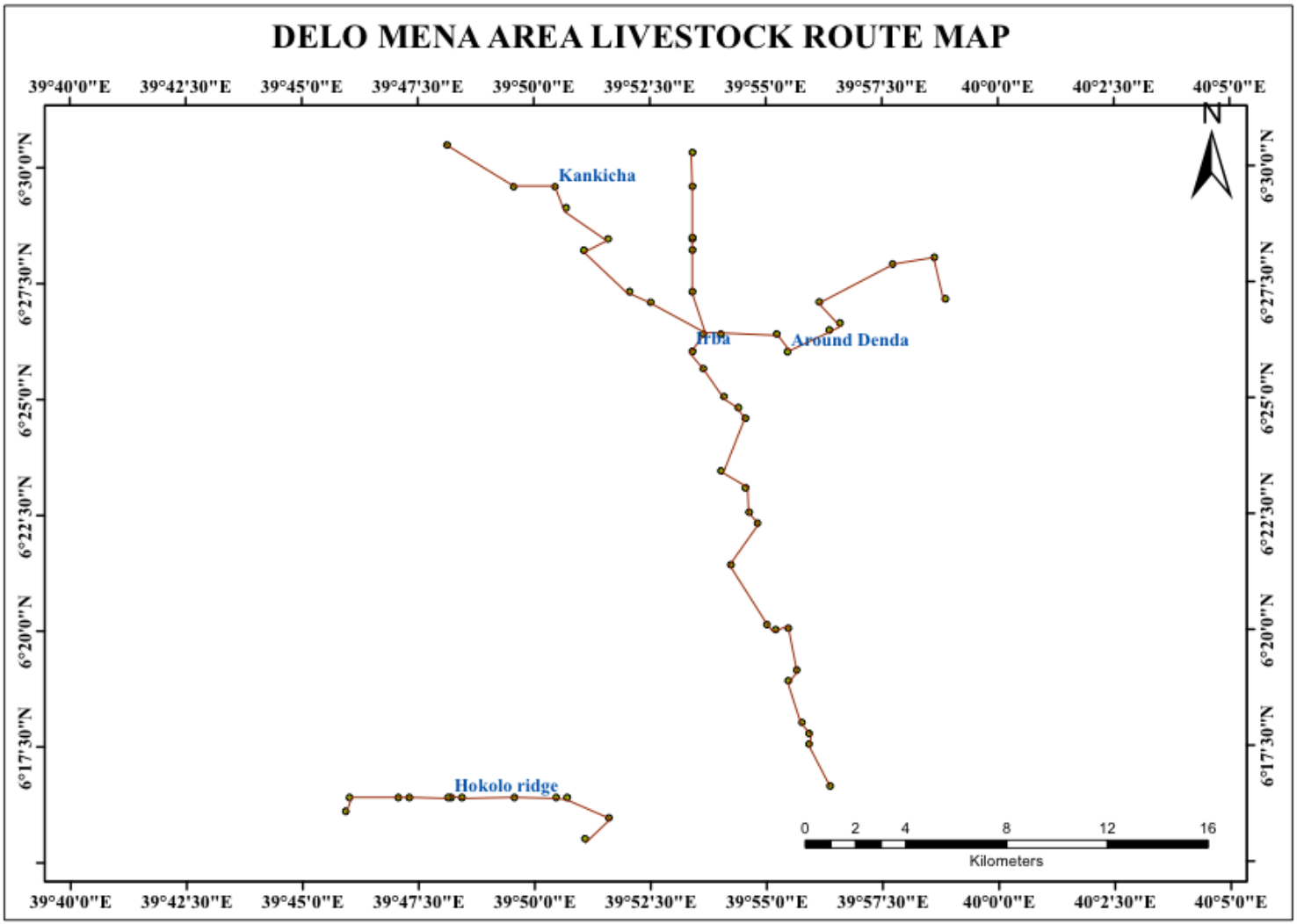
Table 3.12 provides a summary of wet season *ganna* grazing areas in Berak *kebele*

Table 3.12 Wet season grazing areas and other resources used by the Berak community	
Wet season grazing areas	**Characteristics**
Sire	Grasses found here include *daramo* (in abundance), *kodhessa, farado, jejeba, hasare, kuyera.* Browse found here includes *bisdhuga, hagarsu, hamarressa, kokoro* (when it rains), *fursa, huruffo, jirime*. *Jirime* is a thorny bush that has invaded the grazing land, but is browsed/eaten by goats and camels. A plant has been introduced by investor farms – a weed that was not seen in the area previously, and has caused livestock deaths.
Dima sole	
Dima jirime	
Qerensa	
Feeja	

Baladee	
Hara Goobana	
Waqdabare	
Leedi	
Mada Callo	
Diriyee	
Hargisa	

Responsible Land Governance: Towards an Evidence Based Approach

ANNUAL WORLD BANK CONFERENCE ON LAND AND POVERTY
WASHINGTON DC, MARCH 20-24, 2017


DELO MENA AREA LIVESTOCK ROUTE MAP
39°40'0"E
39°42'30"E
39°45'0"E
39°47'30"E
39°50'0"E
39°52'30"E
39°55'0"E
39°57'30"E
40°0'0"E
40°2'30"E
40°5'0"E
6°30'0"N
6°27'30"N
6°25'0"N
6°22'30"N
6°20'0"N
6°17'30"N
N
Kankicha
Hiba
Around Denda
Hokolo ridge
0 2 4 8 12 16
Kilometers

Livestock water resources

Water is available in the *kebele* as surface water in ponds during the wet season. It is understood that the government helped to build the ponds some years back. However, the community said that since 2012 there has been rainfall scarcity and this has meant that the ponds have not held water for as long as they used to, so restricting grazing in the area. Many of the ponds are also sites of mineral licks or *haya* – see below. Two key ponds are *Hara Abdi Hussein* and *Hara Mame* (though this one is now used only for human consumption due to water shortages).

In the dry season the community takes the livestock to the highland areas, and here they access the Welmel River (and others) in order to water their livestock. Though the River provides a reliable permanent source of water, it now takes them double the time to get to the River than it did ten years ago because increased cultivation in the area has blocked livestock routes. Other Rivers close to Berak area the Dumal and the Deyu.

Livestock mineral/salt springs and licks

When the livestock move to dry season grazing areas they visit the mineral/salt springs or *hora* there. In Berak PA during the wet season the livestock visit the mineral licks, mainly found in the same places as the surface water ponds. Community members said their livestock get fat and healthy (with milk increasing) when the use the mineral licks. These include:

Haya found in Berak:

- Haya Dima Sole
- Haya Diam Jirime
- Haya Hara Gobena
- Haya Hara Koro
- Haya Balade
- Haya Darara
- Haya Barfata

In addition, some *haya* have been destroyed or encroached by cultivation including *Haya Jage* (destroyed), *Haya Sadeta* (encroached), *Haya Libe* (encroached) and *Haya Sora* (encroached).

Fodder

In 2016 community members interviewed did not mention fooder collection, though observation suggests that fodder is collected particularly for those animals kept around the settlement during the dry season. In 2007 fodder species collected included *adda* (tree), *galee* (climber), and grass.

Conflicts with investors

In 2007 community members were already complaining that their land was being given to investors – at that time mainly for growing of biofuel (*jatropha*) and local people had protested the move resulting in their arrest and imprisonment. In Berak today, community members say the continuing loss of their land to investors is the biggest problem that they face. The community is angry that their grazing land, including their best grazing land, is being given to investors by the government (mainly woreda government with approval of zone/region). The investors today are mainly local, but with business partners from outside the area.

Community members complained that the investors cultivate two to three times more than that which they are allocated/leased, and often use it for other purposes that what their contract/lease agreement states. Chemicals and fertilisers used by the investors harm the land; and a plant introduced by the investors kills their livestock. Some community members even went as far as to suggest that the investors had purposefully introduced the plant to kill their livestock. Now, they say, all the best land in Berak PA has been demarcated for investors, and they (the local community) are not allowed to use it, even it is not under production. Yet when the community asks for land in order to cultivate crops, the government denies them saying that they do not have the right implements or tools to farm the land. When investors abandon land, it is of poorer land quality and more degraded than it was before.

Livestock keepers have expressed their dissatisfaction at the situation by allowing their livestock to enter the investors' farms. This may result in the livestock being imprisoned by the investors. This is an ongoing conflict between the two groups. Even the local *kebele* administrators are not in agreement with the plan of the higher levels of government to allocate land to investors. Currently there seems not solution to the problems. Community members said this situation is "*humanaan gudeedu"* meaning "raping them."

IV. SYNTHESIS AND FUTURE SCENARIOS

Community members said that today they are facing crises that they have never faced before. There are four critical factors influencing increased concerns of community members over their future access to grazing areas, and as a result, their livestock-based livelihoods and future food and human security. These are i) the enclosure of grazing areas in Berak *kebele* – the area used by Erba residents for wet season grazing; ii) the allocation of grazing areas by local government to investors; and iii) the demarcation of the boundaries of the BMNP; and iv) increasing restrictions put in place by the Oromiya Forest Enterprise. This is despite the fact that livestock numbers in the Delo Mena woreda as a whole has substantially increased (see above).

Of critical importance and the issue that communities are very angry about in Erba *kebele* is the demarcation of the boundaries of BMNP currently taking place. They said that before the last few years they had a good relationship with the Park and now this is completely breaking-down as they feel marginalised at best, and at worse that the Park and those working for the Park are trying to destroy their livelihoods. They know that poor land and resource use can negatively impact on the wildlife, vegetation and biodiversity – and there are some who do not abide by communities' rules related to grazing patterns for example (i.e. some do not move out of the forest in the wet season). However, many of the pressures on land and resources do not directly come from them, but rather from government for example the resettlement programme and the ongoing distribution of grazing land to investors and/or have been influenced by climate change.

There is population increase in local communities and this is contributing to a greater exploitation of resources including encroachment of the forests. However, community members said that they can offer solutions for this including the protection of critical grazing areas first and foremost (e.g. in Berak), providing alternative livelihoods for those who try to settle in the forest, and punish those who do not abide by local bylaws. Community members stressed that they have never damaged the forest – a forest that their ancestors have been using for many years – yet now their access to the forest is being taken away from them.

In order to resolve the escalating negative situation, the community suggested the following solutions. They said that Park staff should meet with them and discuss how the issues can be resolved – the Park should not make these decisions alone. Livestock should be allowed to graze in the places they have been grazing to this time, with agreed rules and regulations and punishments for those who break these. If the Park insists that livestock is not allowed at all

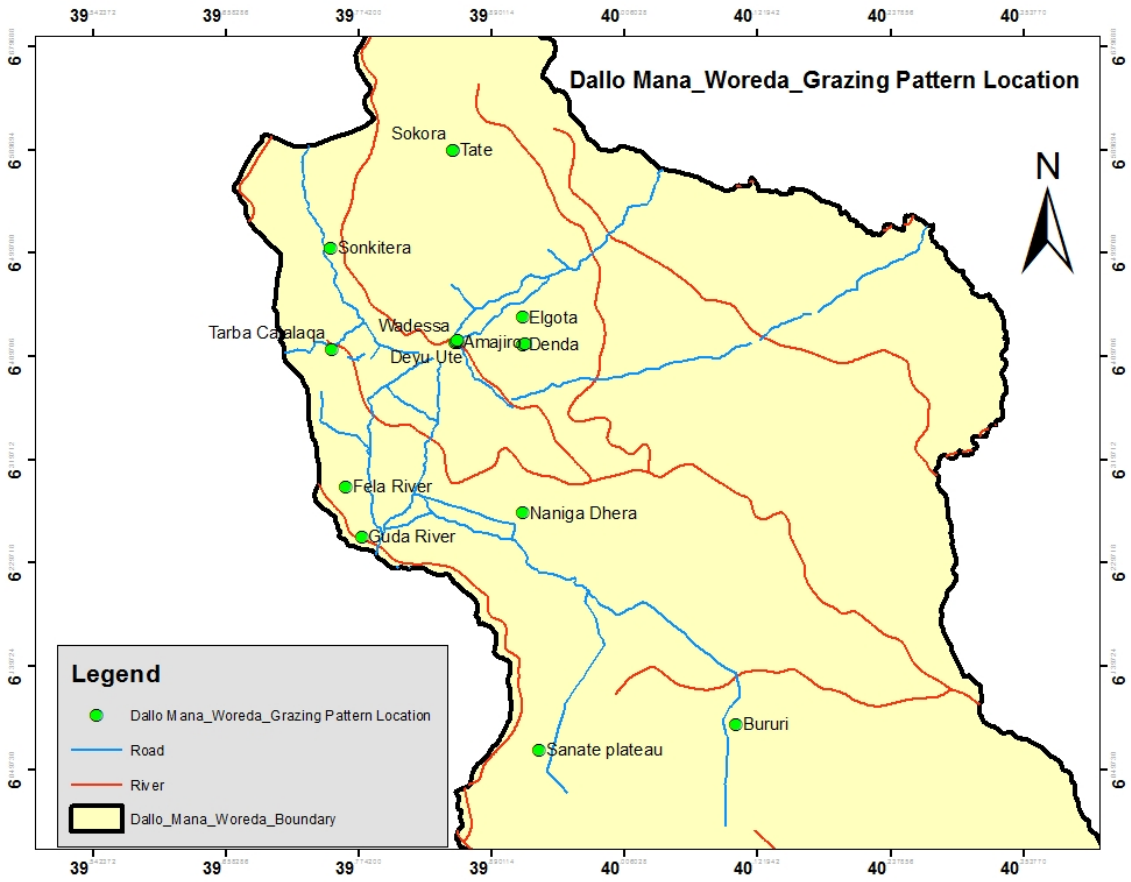
within the boundaries, then the boundary should be moved to the other side of Daroo (dry season grazing area). Forest adjacent communities should be given sole right to protect and guide the utilisation of forest resources to avoid loss of the biodiversity, including controlling those people who stay longer in the forest than has been agreed. In addition, the government should better control investors – giving the land used by the poor to rich investors can only damage local communities, and investors should only be allowed to use the amount of land that has been leased to them. Remaining grazing areas need to be protected for grazing and not allocated to agriculture. Livestock rearing does not mean destroying the forests and land, but crop farming does – so livestock is a better use of the land than crop farming in that it also protects the forest and wildlife. The community said "our livestock production should be supported not destroyed."

In Berak, the most critical issue is the increasing allocation of their grazing lands to outside investors by the government. This reflects a bias by government for crop agriculture and against livestock – a bias that is not only reflected in this land allocation but also through the lack of extension services provided for livestock and lack of response or support for dealing with livestock diseases. The communities described the giving of land to investors as killing the land and "raping" themselves as the land is not suitable for cultivation, their best grazing areas are being taken away, and their livelihoods are being destroyed. At the same time grazing lands are being infested by invasive species, that they are no longer allowed to or able to control. Livestock productivity is decreasing due to poorer quality of grazing areas and disease. Population is increasing and people are getting poorer – the trends in land use and resulting changes in livelihoods can only lead to a continued deterioration of the community.

Previously the two PAs peacefully shared resources, but divides are being established as Berak PA restricts access of Erba PA residents to wet season grazing, and Erba PA restricta access to Berak PA residents to dry season grazing. Though Erba PA have not yet strated restricting this access they are threatening to do so if Berak further limits their use and access. Though some of the contributing land use changes taking place that are fueling the situation are led by community members themselves they have been aggravated by the interventions in the area including the BMNP, the Oromiya Forest Enterprise and others such as the PRM activites supported by FARM Africa/SOS Sahel. These interventions have worked within PA, ecological and/or intervention-focused boundaries that have failed to understand and/or take into account how local

communities work across the boundaries, and the cooperative arrangements that exist to do so. This confirm the need for such actors to take and support a wider landscape/watershed approach that would be better placed to understand and incorporate such arrangements, and limits the unanticipated negative impacts of working in a smaller area.

Figure 4.1 Map of grazing areas in the Delo Mena woreda as described by responents



V. OVERALL CONCLUSIONS OF THE STUDY

The lack of security to land and resources is an underlying cause of many of the problems that the community face. Government promotes individual land holding over communal, reflected in the strong drive in the area to allocate and certify individual plots of farming land to individuals/households. However communal lands including those remaining grazing areas that many livestock keepers depend upon remain unregistered/certified. Further, because livestock are moved to different areas for wet and dry season grazing the land is left 'vacant' for part of the year. Local government argues that this land could be put to better productive use, and with no certified owner, the government can easily allocate that land to other users such as investors or to landless youth. In some PAs e.g. Ashuta in Goba, the government is encouraging the community to pay for grazing; and in Solana and Gerambamo the leasing of grazing to other uses is a common occurrence. The renting of draught power (oxen) is common in the crop farming areas.

The introduction of PRM (participatory rangeland management) in Berak PA by FARM Africa and SOS Sahel, has to a degree legitimized local land use including grazing and contributed to securing the land for the community, following a management plan and regulating bylaws, with a resource user agreement established between the local PA government and the designated cooperative(s). However as described above, the increased formalisation and control of access to these grazing areas (traditionally used by many neighbouring communities in the wet season) is now leading to conflicts between the Berak PA and the visiting secondary users. This situation demands the introduction of a more watershed or landscape planning approach that considers land and resource use across the whole Bale region, the implications of one intervention in one place on others in the region, and how best negative impacts of such an intervention can be prevented and/or mitigated.

Forest encroachment from farming was an issue of significant importance for many communities and particularly those that use the forest areas for grazing. This had not only lead to problems in access resources as well as a degradation of those resources because higher numbers of livestock are using less available, but also conflicts between herders and the crop (including crop) farmers. Though the Oromia Forest and Wildlife Enterprise state that they support community-based/participatory forest management, the complaints of the community suggest otherwise and the OFWE would rather appear to be seeking to restrict/prevent the access of the community rather than working with them to manage the forest areas. This seems to be a lost opportunity for

a win-win situation where the OFWE would benefit from the community helping manage the forest, and the community benefiting from keeping access to it.

However, the most important issue for many of the communities, particularly those bordering BMNP (including Erba PA-Delo Mena, and Fasil Angesso-Goba), is the recent designation of the Park and plans to demarcate the boundaries and exclude herders and their livestock from grazing inside. This was the most heated issue discussed, with community members highly aggravated and increasingly resentful, and seemingly willing to take all measures to maintain access. They said that this situation should never have arisen as in the past they have protected the Park and such as the Ethiopian Wolf, and are still willing to do so. Yet they have been completely left out of decision-making processes about the Park, and now these recent moves to exclude them and their livestock reflect a complete lack of regard for them, their livelihoods and their willingness to participate in the management and protection of the Park. They believe that if the Park was to work with them then compromises and solutions could be found that will benefit all. A good solution would seem therefore that the Park authorities and supporting NGOs such as Frankfurt Zoological Society improve opportunities for the participation of willing communities in Park decision-making and management, and compromises/agreements are established allowing limited and regulated use of parts of the Park (e.g. priority grazing areas) and its resources.

An important future development for the region in the future would be land use planning at different levels. Currently the Oromia Water Works Supervision Development Enterprise are producing a land use plan for the Bale zone. The document was not finalized in time for review in this study, but it will likely have strong implications for future land use in the area, prioritizing different land uses in different areas. Additionally there are opportunities for lower levels of land use planning through the government structures e.g. at woreda level, as well as at community level – and already being carried out in Berak PA supported by the PRM process. If such land use planning processes are implemented in a participatory, inclusive way involving all land users, with possibilities for some consensus about future land use, then these processes could contribute to the resolution of many of the problems that were encountered in this study.

APPENDIX 1: LIVESTOCK POPULATION IN BALE ZONE BY WOREDA IN 2000, 2007 AND 2015

Comparison of livestock populations between 2015, 2007 and 2000 where figures were available

	Cattle			Shoats			Equines			Camels			Total numbers		
	2000	**2007**	**2015**	**2000**	**2007**	**2015**	**2000**	**2007**	**2015**	**2000**	**2007**	**2015**	**2000**	**2007**	
Bale zone	2,290,163	1,635,302	2,825,215	653,676	640,498	1,934,461	234,379	210,036	519,887	67,956	125,782	226,616	3,246,174	2,611,618	5,5
Selected woreda															
Goba	74,397	88,038	95,715	6624	39,129	74,054	17,711	26,806	20,957	0	0	0	98,732	153,973	1
Dola mena	145,850	102,324	322,626	33,939	26,097	105,814	5906	6412	17,780	11,953	19,576	44,672	197,648	154,409	4
Harenna Buluk		59,669	156,975		23,673	54,917		7,863	19,735		4114	750		95,319	2
West Arsi zone	N/A	N/A	284,001	N/A	N/A	1,423,745	N/A	N/A	481,733	N/A	N/A	9	N/A	N/A	2,1
Selected woreda															
Nensebo	100,617	N/A	156,353	17,252	N/A	70,777	6210	N/A	24,715	0	N/A	0	124,079	N/A	2

A. Livestock Population of Bale zone by woreda in Year 2015 (Zone, Livestock and Fishery Development Agency, Robe 2015)

Woreda	Cattle	Shoats		Equine			Camel	Poultry
		Sheep	Goat	Horse	Mule	Donkey		
Agarfa	229,206	46,070	29,634	11,810	4,983	16,984	0	40,150
Berebere	311,881	14,931	155,265	838	17,128	28,045	8,133	132,755
Dinsho	69,515	80,498	8,859	18,461	358	6,949	0	25,666
Gasara	128,266	17,560	17,301	6,112	1,298	11,037	0	32,349
Gindhir	204,278	17,121	61,742	2,501	3,571	28,813	4,650	75,981
Gololcha	161,830	11,101	49,679	1,632	3,295	21,592	2,990	39,210
Gobba	95,715	63,405	10,649	11,225	2,151	7,581	0	17,642
Goro	135,742	8,789	25,371	1,960	3,994	10,922	1,684	26,757
Sinana	287,825	55,978	15,769	9,200	2,820	14,000	0	60,000
Dalo Mena	322,626	14,912	90,902	13,994	1,275	2,511	44,672	50,665
Dawe Kachan	89,184	35,563	100,725	5,647	35	269	20,289	10,472
Dawe Sarar	51,393	53,381	114,145	11,212	10	50	38,588	9,420
Gura Dhamole	88,512	13,721	39,378	5,893	333	1,129	4,639	8,454

Harena Buluk	156,975	7,782	47,135	8,706	5,753	5,277	750	38,881
Laga Hidha	175,100	14,800	252,000	160,100	6	9,340	38,700	23,314
Madda Walabu	213,962	11,901	233,020	7,873	1,541	4,775	19,446	133,249
Rayitu	50,355	31,733	92,151	13,163	811	294	39,992	4,653
Sawena	52,850	29,500	61,990	9,750	295	585	19,540	18,044
Total	**2,825,215**	**528,746**	**1,405,715**	**300,077**	**49,657**	**170,153**	**244,073**	**747,662**

Source: Bale Zone Livestock and Fishery Development Agency Office

B. Livestock Populations of Bale zone by woreda in Year 2007 (Zonal Agricultural Office, Robe 2007)

				CATTLE					SHOATS			EQUINES			CAMELS	TOTAL
Woreda	**Oxen**	**Steer**	**Cow**	**Heifer**	**Bull**	**Calf**	**Sub Total**	**Sheep**	**Goats**	**Sub Total**	**Horse**	**Donkey**	**Mule**	**Sub Total**		
Agarfa	35013	400	41649	25169	23954	15640	141825	27780	27581	55361	5111	10750	1948	17809	0	214995
Berbere	10144	5100	17775	20333	5100	20222	78674	1008	86274	87282	174	7284	2790	10248	1831	178035
Delo Mena	6079	2932	50867	24448	6261	11737	102324	4596	21501	26097	1199	4512	701	6412	19576	154409
Dawe Kachen	5458	0	7219	9900	9057	10700	78674	3562	18186	21748	73	2937	563	3573	7154	111149
D/Sarer	NA	NA	NA	NA	NA	NA	6400	5708	17492	23200	0	2571	9	2580	5822	38002
Dinsho	9542	474	54806	8058	7130	12892	92902	43434	4169	47603	10995	2238	1050	14283	0	154788
Gassera	15753	1575	24629	11377	14315	12341	79990	15753	17328	33081	7877	8758	6302	22937	0	136008
Gindir	27618	1165	59723	31859	836	20479	141680	5648	19957	25605	583	13236	834	14653	407	182345
Gololcha	8477	6935	31904	23898	19044	23334	113592	2601	23409	26010	44	8606	629	9279	813	149694
Goba	15680	981	33746	10268	9693	17670	88038	31083	8046	39129	18193	6334	2279	26806	0	153973
Goro	25676	0	55440	25917	21254	23701	151988	7787	3733	11520	1555	8746	3429	13730	9829	187067
Gura Damole	2917	239	11795	5991	2433	4125	27500	755	7090	7845	279	1450	204	1933	2550	39828
Herena Buluk	3647	1086	21531	11231	9521	12653	59669	4710	18963	23673	2709	3952	1202	7863	4114	95319
Laga Hida	10312	13258	45668	26517	23572	27990	147317	5671	57128	62799	0	11607	6328	17935	23119	251170
Meda Walabu	9048	4530	30143	9585	14177	14264	81747	3672	59559	63231	10	2766	937	3713	16227	164918
Raitu	2165	0	9023	5065	2333	3864	22450	11508	22661	34169	181	4045	41	4267	9020	69906
Sewena	14502	0	15210	7476	7562	7032	51782	13948	4260	18208	2	4136	243	4381	25320	99691
Sinana	40701	2076	45264	32646	23665	24398	168750	19486	14451	33937	4134	20579	2921	27634	0	230321
Total	242732	40751	556392	289738	199907	263042	1635302	208710	431788	640498	53119	124507	32410	210036	125782	2611618

NOTE - The cattle sub total for Dawe Kachen is incorrect but has been maintained so as not to alter the rest of the data.

C. Livestock Population in Bale zone by woreda in 2000 (Oromia government 2000).

			SHOATS			EQUINES				
Woreda	**CATTLE**	**Sheep**	**Goats**	**Sub total**	**Horse**	**Donkey**	**Mule**	**Sub Total**	**CAMELS**	**TOTAL**
Adaba	176187	48349	20529	68878	14034	12001	530	26565	0	271630
Agarfa	130914	12225	10867	23092	3112	7732	1033	11877	0	165883
Beltu Laga Hida	103851	7795	2055	9850	0	2055	391	2446	16313	132460
Berbere	74500	3850	26400	30250	NA	NA	NA	4752	2210	111712
Dodelo	266619	42336	10273	52609	NA	NA	NA	38648	0	357876
Gasera Gololcha	307561	5934	56158	62092	4301	10100	2864	17265	393	387311
Ginir	186486	7374	37067	44441	NA	NA	NA	10692	0	241619
Goba	74397	1899	4725	6624	9263	832	7616	17711	0	98732
Goro	144606	3339	18203	21542	2061	4224	1329	7614	4048	177810
Gura Damole	63173	NA	NA	42000	NA	NA	NA	1580	3200	109953
Kokosa	192397	51672	23310	74982	43089	601	197	43887	0	311266
Meda Walabu	66069	50757	1711	52468	0	2249	616	2865	17509	138911
Mena Angetu	145850	3973	29966	33939	367	4394	1145	5906	11953	197648
Nensebo	100617	15620	1632	17252	NA	NA	NA	6210	0	124079
Raitu	5978	5978	7738	13716	NA	NA	NA	6636	9830	36160
Sewena	63440	5000	22000	27000	NA	NA	NA	2514	2500	95454
Sinana Dinsho	187518	56533	16408	72941	NA	NA	NA	27211	0	287670
Total	2290163	322634	289042	653676	76227	44188	15721	234379	67956	3246174

Note: In the year 2000 some woreda such as Harena Buluk and Delo Mena did not exist in their own right, but were part of other woreda. Therefore it has not been possible to calculate compare their livestock population figures.