PART I

Assessment of Indigenous Range Management Knowledge of the Booran Pastoralists of Southern Ethiopia

Gufu Oba (Dr. Philos.)
Consultant
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CONTENTS

Executive summary
Forward

Chapter 1
The emerging issues in the Lowlands of Ethiopia
1.1 The Southern rangelands
1.2 Is the Booran Lowland an equilibrium or disequilibrium system?

Methods of the study
2.1 The literature search
2.2 Group interviews
2.3 Road transects
2.4 Assessments of invading tree species

Indigenous range management system of the Booran
3.1 Landscape classification
3.2 Range suitability
3.3 Soil licks
3.4 Salt mining
3.5 Annual grazing cycle

Indigenous resource tenure rights
4.1 Property rights of wells
4.2 The adadi and Tulla well Konfi rights
4.3 Maintenance and excavation of the Tulla wells
4.4 Conflicts over the Konfi

Current range condition and trends
5.1 Results of the survey
5.2 The ecology of bush encroachment
5.3 State-and-transition model

Past Range development
6.1 Water development
6.2 Ranch development
6.3 Development based on community model
6.3.1 Development of domestic water
6.3.2 Fodder banks
6.3.3 Food security

Farming in the rangelands
7.1 History of farming in Booran
7.2 Range enclosures
7.3 Current trends

Consequences of no policies in Rangelands
8.1 External conflicts over resources
8.2 Implications of the land Proclamations for the pastoral lands
8.3 Alienation of communal resources : who are the losers?
8.4 A private ranch? The mystery of profitsteering from public land
8.5 The proposed Group ranch
5.0 Property rights of the salt craters: private or communal? 70
5.1 Should it be so? 71

9 Indigenous drought coping strategies
9.1 Drought and famine in the Booran oral history 73
9.2 Drought grazing reserves 75
9.3 Social security networks 76
9.4 Household food security networks 78
9.5 Food aid and its implications 79
  9.5.1 Food for Work 79
  9.5.2 Bulking grains 80
  9.5.3 Growing own crops 81
9.6 Restocking destitutes 81
9.7 Livestock marketing 81

10 Future prospects for the indigenous range management of the Booran 88
10.1 Strengths of indigenous range management knowledge 88
10.2 Why the indigenous system of resource management is failing 88
10.3 Options for future development 89
10.4 The Booran perception of the future 90
10.5 Community based proposals for improving food security 91

11 Conclusions and recommendations 93
12 References 96

Annex
1 The Lowlands of Booran showing the existing and the land annexed 97

Tables
1. Distinguishing characteristics of equilibrium and non-equilibrium systems 3
2. A schematic scheme for assessing woody cover, soils, soil erosion, bare soil, the herbaceous
   cover for rating range conditions and trends 9
3. Suitability of landscapes 12
4. The Tulla wells in Dubluq 24
5. The Tulla wells in Iggo 26
6. The Tulla wells in Webb 27
7. The Tulla wells in Dh’aas 30
8. The Adadi wells in Gorille 31
9. The Tulla wells in Erdar 32
10. The Adadi wells in Borbor, Madacho, Magado and Dillo 33
11. The Tulla wells in Goof and Lae 35
12. Landscape suited for management of different livestock species 40
13. Factors threatening range condition 40
14. Range condition and trends 41
15. Population structure of two invading species 42
16. Oral history of major droughts and famine in Booran 74
EXECUTIVE SUMMARY

1. Ethiopia’s rangelands represent a valuable economic resource to the pastoralists and to the nation. The arid conditions and unreliable rainfall has left them peripheral to the national economy. Where development was applied it was based on inappropriate economic and socio-economic models. Development ignored the indigenous knowledge systems for managing the natural resources. Developments policies were founded on equilibrium theory that argues inappropriateness of the indigenous systems of land use. Development rather than strengthening worked against indigenous range management. Land alienation and transformation of grazing systems left them vulnerable to the vagaries of climate. In the southern rangelands of Booran, conflicts over grazing lands, compression of the population into a fraction of the former territory, ecological degradation caused by progressive establishment of bush encroachment, internal pressures on the grazing lands by crop lands, fodder banks and land alienation by ranches are putting the resources under severe pressure. The pressure is manifested in declining livestock productivity and increasing reliance on food aid. Solution to range management should be based on assessment of the current condition and trends, improved understanding of the ecology, improved knowledge of the indigenous range management knowledge and security of tenure rights.

2. Assessments of the Lowlands in the Booran zone were conducted in the Liban, the Durre, the Arero and the Yaballo Woredas during field studies in February and March in 1998. Group and individual interviews were conducted to assess present land management system, evaluate traditional range management of the Booran, the perceptions and concerns, indigenous resource tenure rights, experiences from past development and impact on the environment and traditional drought coping strategies. In conducting ecological assessments, indigenous and scientific methods were used. The indigenous techniques of range assessments are robust and can be relied on for making rational judgements.

3. Indigenous knowledge of range management is comprehensive. Resources are classified at landscape and patch levels. At landscape levels, soils and vegetation are important basis for rangeland classification. Land classification is also based on suitability for management. Cattle, camels and small stock have different preferences and therefore, the different landscapes used. Suitability is based on their feed requirements and soils for kraaling. Range suitability is inferred from livestock performance rather than being measured directly. Suitability of landscapes are described by grazing capacity which is an ability of the land to support high stocking densities without causing degradation. Landscape grazing capacity is low, moderate or high. It is distinguished from carrying capacity. It is the property of landscape based on the potential. Indigenous range management is based on division of herds into home based (waara) and mobile (foora) herd management systems. Annual grazing cycle by the two management systems involve movements between the wet season, the dry season and the drought year grazing lands. Pastoral land use is focused on spatial-temporal use of resources. The grazing patterns of the Booran in the Liban, the Durre and the Golbo production systems are differentiated arising from unique ecological conditions and distributions of critical grazing and water resources. The Golbo production systems of Magado, Dinbo, Gorai and Saake have limited dry season and drought year grazing reserves as compared to the Liban and the Durre production systems where the resources are well defined. The population of the Golbo production system suffers more drought stress than those in the Durre production systems.

4. Notion of resource tenure among the Booran is well established. Land ownership is entrusted in the whole tribe but the property rights are held by the groups native to the region called Choggera. The key resources are the wells. Water is not only considered as a resource but a tool for regulating range management. Through complex watering rights, access to the wells are controlled. This has a restrictive effect on total livestock watered at any well. Thus, the Booran are much concerned about the damage unplanned water development might do to the environment. Their priority is development of water for human consumption. The exception is in the Golbo production system where carefully developed water programs may ease the sufferings from recurrent drought. Property rights of wells are in the Konfi (the person or the ancestor who initiated the digging) that is genealogically inherited through the paternal line. Wells are the property of the sub-clans of the Konfi family and maintenance and excavations are the responsibilities of the clan. Ponds have property rights but are managed by the users. Violations of the Konfi rights are not allowed, but different families may contest ownership rights. Conflicts are resolved by the sub-clans by reconstructing the genealogy of the ancestry Konfi. This often requires oral records of names that go back to more than two centuries. Hence, the Booran use a reliable system of keeping track of ownership rights of wells and other resources.
5. The Lowlands are gradually degrading. Causes of rangeland degradation are several. Internal response to loss of land by cropping, range enclosures and loss of key resources to ranches are some of the causes. Range degradation was exacerbated by water development. Indigenous patterns of the wet-and-the dry season grazing were altered and sedentarization of the population accelerated. Internally, the rangelands are deteriorating due to bush encroachment and changes in composition of the herbaceous vegetation. 82.8% of the landscapes were threatened with bush encroachment, of which 24.1% are in bush climax states. Soil erosion is not a threat in the rangelands but a growing threat on the cropping areas and around semi-permanent ponds. The most severely eroded and threatened areas are in the Erdar maid of the Dibre Woreda. This was blamed on a recent bore-hole developed in the perimeter of the traditional Tulla wells. In the former grasslands, unpalatable fab composition constitute > 40%. In Diid Hara threatened on the cropping areas and around semi-permanent ponds. The most severely eroded and threatened areas are

6. During the previous two-three decades, range development in the Booran Lowlands focused on improvement of infrastructure, veterinary services, livestock marketing and water development. Development of ranches were designed to demonstrate the advantages of altering the indigenous system of range management. Development philosophy was based on technical solutions but miserably failed. As opposed to this, small scale community based development model was successful. Generally, development should be concerned with security of resource tenure rights from within and without.

7. The lowlands of Ethiopia are bound to be affected by resource tenure regimes. In the lowlands of Booran changes in resource tenure regimes were related to four processes. (1) Historical alienation of the humid zones for farmland by the settler communities, (2) external pressures caused by ethnic conflicts leading to loss of grazing lands, (3) Internal adjustments to declining resources by reallocating parts of communal land to cropping and establishment of fodder banks and (4) privatisation of the communal grazing lands as ranches. Internally, reallocation of communal lands to farming and fodder banks used the traditional rules and regulations of resource access. The processes have been gradual and adaptive. Farming is an internal response to declining livestock productivity, while fodder banks promoted food security for livestock in settled and degraded areas. Allocation of fodder banks followed the Proclamations of the PAN Booran Assembly of Gungi Gayo. It provides an opportunity to integrate different land use systems in areas where resources are under intensive pressure, but not a substitute to the wet and the dry season grazing patterns.

8. Changes in resource tenure rights that are externally influenced are sudden and disruptive as opposed to the indigenous evolution of resource tenure rights. Currently, Ethiopia has not developed policies for land use in the Lowlands. This has not stopped the policy makers and the administrators from implementing policies which are developed for the highlands, where farming is the principal land use. Nevertheless, two important Federal Government's land Proclamations have implications for the pastoral lands of the country. The Federal Negarit Gazeta, 1/ year No.1 Addis Ababa 21st August 1995 under Article 40, the 5th item and the Federal Negarit Gazeta No. 54 of Proclamations No. 89/1997, under Part 2 Section 6 confirm the security of the pastoralists lands from eviction or displacement for "any reason”. The current trends of privatisation of the communal grazing land in the lowlands of Booran is therefore a contradiction to these very important policy guidelines. Privatisation of the rangelands and transformation into ranches is based on what the policy makers and administrators refer to a better use of "unused land”. The idea of un-utilised land is antithesis of pastoral land use strategies. According to the pastoral notion of space, there is no land which is unused. Land is used adaptively in response to erratic rainfall distribution and variations of pasture. The grazing systems involve rotational use between the wet season and the dry season rangelands. This open policy is likely to lead to misappropriation of public land, that will interfere with the adaptive coping strategies of the pastoralists. The Booran are dissatisfied with these changes as the planning and consultations were inadequate. The evidence has relevance to the pastoral Lowlands of Ethiopia. The Proclamations are acknowledging the rights of all peoples and Nationalities. This realisation need to be followed up by ensuring implementation of the policy guidelines that secures resource tenure rights of the pastoral peoples. Failure would make them more vulnerable to the vulgansc of climate and economic dispossession.

9. Pastoralists have comprehensive indigenous knowledge of drought. Their coping strategies include establishing drought grazing reserves, social security networks both at the community and household levels. The indigenous coping strategies are being weakened by changes in resource tenure regimes. Past drought relief interventions did not establish sustainable systems of food security. Famine relief was widely used to save lives and regulate prices of grains on the market. The interventions that included restocking, bulking grains and promoting self-grown grains have had important impact but have not produced lasting solutions. Increased livestock marketing was expected to provide the pastoralists with improved purchasing power. Although there is a general contention that the pastoralists
are not selling enough livestock, the evidence shows that livestock marketing is unreliable and prices are low. The current markets are incapable of absorbing the animals supplied by the pastoralists.

10. In conclusion, therefore, there is clear indication that the lowlands of Ethiopia are degrading. Loss of key grazing resources and unsound water development policy have been responsible for breakdown of the indigenous patterns of land use. Consequently, the indigenous coping strategies have suffered a decline.

During the future, development should
- promote indigenous natural resource management.
- Establish clear land use policy in the rangelands.
- Conduct adjudication of land to favour community based land use as opposed to private ranches.
- Reduce land use conflicts between different ethnic groups by promoting amicable sharing of resources.
- Develop land use policy for the lowlands on solid scientific and indigenous knowledge systems.
- Link bush encroachment control to development of fodder banks at the community level.
- Promote cistern water development for human and calf use.
- Avoid construction of bore-holes in the zones of the deep Tulla wells.
- Develop farming systems according to the potential of the land.
- Popularise the idea of banking using women and men groups.
- Promote formation of Community-based drought management Committees.
FORWORD

This report on assessment of indigenous range management knowledge of the Booran of southern Ethiopia was commissioned by the GTZ-Boran Lowland Pastoral Development Project in Collaboration with the Oromiya Bureau of Agriculture. The report is based on field studies (12 February to 10 March 1998) in the Liiban, the Diirre, the Yaballo and the Arero Woredas.

The report is in two parts. Part I assesses the indigenous range management knowledge, resource tenure rights, current range condition and trends, past development in the Lowlands, farming in the rangelands, current resource tenure policies and indigenous drought coping strategies. In Part II community-based extension plans are proposed. It is recommended that the Part I and the Part II of the reports be used together for better understanding of the issues.

Several individuals participated in planning field work. Dr. Florian Menzel and Barbara Menzel contacted me to conduct the study. Ahmed Jamal, Khaled and Ato Mitiku were companions in the field. Sora Adhi, Genet Jarso and the Project Secretary supported the work in various ways. Borbor Bulle and Nura Diida, my Booran assistants taught me a great deal. Both were without doubt most knowledgeable in landscape ecology and the oral history of the Booran. Halakhe Bante of CARE-Ethiopia shared his knowledge of salt mining and livestock marketing data. Boku Tache was my guide around Addis Ababa and shared his knowledge on range enclosures and development of water. Huqa Garse was helpful with his ideas on extension organisation. I thank the Woreda and the Zonal Administrations for their co-operation. I benefited from discussions with the Zonal Chairman and the Zonal Head Bureau of Agriculture, Representatives of DPPCD, Zonal Head the Ministry of Water in Nagele and the Head of Bureau of Agriculture and the Extension Team Leader of the Mega Woreda. In Addis Abba I had useful discussions with Ato Baricha of the Oromiya Regional State Bureau of Agriculture and Dr. Taffe and his Team. I should thank the Teams of CARE-Ethiopia and SORDU for the information on past development experiences. Finally, I thank the Booran elders and Traditional leaders who freely shared their knowledge.

It is hoped that the information included in Parts I and II of the report will help extension workers, policy makers, administrators and development agencies to understand indigenous range management and development in Boran. It is hoped that this report will help to improve the commitments to support the community-based range management and development in the Lowlands of Booran.

Gufu Oba (Dr. Philos.)
Oslo, Norway
May 1998.

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Boxes

1. Mining of salt  
2. Excavation of *Lakoole Duubana* by the clan of *Nonitu -Hamoye*  
3. The new well of Barchi Ogoba Reqiso  
4. Conflict over *Galanticha* of Morowa Abba (1680-1688)  
5. Private water  
6. The community owned cistern  
7. Management of self-grown grains by households  
8. Comparison of *Kaalo* and non-*Kaalo* landscapes  
9. Conflict over use *Kaalo* land in Diid Hara  
10. A letter to the Woreda administration  
11. Interview with Ato Tesfy Gollo

Figures

1. Schematic landscape assessment form  
2. Schematic representation of different landscape types  
3. Seasonal grazing cycle  
4. The wet, the dry and the drought year grazing reserve  
5. Grazing model of the Liiban production system  
6. Grazing model of the Diirre production system  
7. Grazing model of the Golbo production system  
8. Estimated bush covers in the six Booran Woredas  
9. Schematic model of bush encroachment in the rangelands  
10. Life cycle of *Acacia* sp.  
11. State-and-transition model of bush encroachment  
12. State-and-transition model showing vegetation response to wildfire  
13. Changing traditional grazing patterns following pond developments  
14. Percentage of land under cropping from 1993-1996  
15. An integrated *Kaalo*-grazing and farm management  
16. An integrated indigenous natural resource management in Diid Hara  
17. Approximate location of the private ranch in Dubluq  
18. Approximate location of the land proposed for the group ranch  
19. Clan social security administration  
20. Cattle on offer in different markets in 1997  
1.1. The Southern Rangelands

The southern rangelands (Annex 1) account for 7.6-12.3% of total land area of Ethiopia. The region until few decades ago was considered as the finest grazing lands in East Africa. The human population is dominated by the Booran who are mainly pastoralists. The Booran model of range management is robust and optimal. The rangelands are marked by high rainfall variability. Rainfall is bimodal with the long (gaana) rains expected between March - May and the short rains (hagaya) between October and November. The short hagaya rains are unreliable. Variable rainfall results in greater variability in forage productivity. Seasonal distribution of rainfall more than annual rainfall total influences range productivity. Years of high rainfall produce surplus forage, while below average years produce deficits. The Booran use forage surpluses by maintaining high stocking rates. Livestock losses are expected during years of below average when forage productivity declines.


The indigenous system of land use is appropriate to cope with rainfall variability. Response is through opportunistic movements within and across geographically distributed grazing units called Dedha. The residents of each dedha depend on common water sources called mada. The indigenous range management includes semi-sedentary camps where the elderly, children, women and milch herds are maintained. The surplus herds composed of males, non-milking females, pregnant animals and the young, join the mobile foora-herd management. The grazing lands surrounding the semi-sedentary encampments are used by the milch (waara) herds, while the foora-herd management system uses the remote grazing lands. Overgrazing is reduced by using the grazing lands in rotation during the wet and the dry seasons. Grazing of the wet season rangelands depend on temporary water sources in natural pools and human-made ponds. The herds go onto the dry season pastures of the well complexes when the temporary water sources are exhausted, but before grazing resources are overused.

1.2. Is the Booran Lowland an Equilibrium or Disequilibrium systems?

Development and policy directions need to consider theoretical arguments that in the past has influenced range development in the countries of sub-Saharan Africa including Ethiopia. Range management debate and policies during the previous two decades were dominated by equilibrium and non-equilibrium theories. The mainstream or science of range management is developed

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15 Tamene Yigezu 1990
16 Agrotec-C.R.G. 1974
17 Cossins and Upton 1988
18 Weather Stations located in humid zones are unlikely to be representative of the drier regions which make up most of the lowlands.
19 Cossins and Upton 1988a
20 Donaldson 1986, Oba 1997a
21 The use of the two terms have been confused. The term mada is used for a natural resource administrative unit whereas, the natural resource administrative unit is the Dedha. In this report where the term mada is used it applies to water source and Dedha the geographically distributed grazing unit.
22 Oba 1994a
23 Coppock 1994
from equilibrium theory, while the non-equilibrium thinking is closely related to indigenous range management knowledge systems. Comparisons of the two theories and their implications for development are summarised in Table 1.24

The equilibrium theory proposes that high livestock mortality during drought is influenced by density-dependent factors. It is presumed that increased forage production during above average rainfall years results in increased livestock densities, while decline in forage production results in livestock loss and reduced density. It is postulated that implicit relationships exist between range productivity and livestock density. The theory reasons that changes in the rangelands are predictable. It propounds that management can be used to manipulate livestock density in response to changes in forage production. The failure results in overstocking followed by degradation. It is presumed that overstocking reduces forage production, resulting in disappearance of palatable grass species and an increase in unpalatable fobs and bush encroachment.

Table 1. Distinguishing characteristics of equilibrium and non-equilibrium ecosystems

<table>
<thead>
<tr>
<th>Equilibrium</th>
<th>Non-equilibrium (Indigenous)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Climatic stability</td>
<td>Climatic variability</td>
</tr>
<tr>
<td>• Predictable primary productivity</td>
<td>Variable primary productivity</td>
</tr>
<tr>
<td>• Livestock population controlled by density-dependent factors</td>
<td>Livestock population controlled by density-independent factors</td>
</tr>
<tr>
<td>• Changes in stocking density create predictable changes in plant composition</td>
<td>Livestock trek to cope with unpredictable forage production</td>
</tr>
<tr>
<td>• Potential carrying capacity can be predicted. Stocking density regulated according to carrying capacity</td>
<td>Prediction of carrying capacity not useful. Uncertainties dominate future events</td>
</tr>
<tr>
<td>• Management oriented towards a single species of livestock</td>
<td>Management of multi-species herds; sheep, goats, cattle, camels and equines</td>
</tr>
<tr>
<td>• Conventional range management applicable</td>
<td>Pastoral land use more suited</td>
</tr>
<tr>
<td>• Grazing can be controlled according to grazing systems planned</td>
<td>Grazing strategies applicable. Mobility is an adaptive strategy</td>
</tr>
<tr>
<td>• Strict regulations of stocking rates</td>
<td>Opportunistic stocking of the range</td>
</tr>
<tr>
<td>• Resources secure from land reforms</td>
<td>Resources have indigenous rights</td>
</tr>
<tr>
<td>• Land has collateral value</td>
<td>Resources are communal and cannot be used for debt security</td>
</tr>
<tr>
<td>• Economic goals are commercial</td>
<td>Mostly subsistence economy</td>
</tr>
<tr>
<td>• Management influenced by market forces</td>
<td>May be averse to market forces</td>
</tr>
<tr>
<td>• Benefits are in financial capital</td>
<td>Benefits are in reproductive capital.</td>
</tr>
</tbody>
</table>

The alternative non-equilibrium theory maintains that arid and semi-arid rangelands are influenced by stochastic events. Rainfall is highly unreliable both in space and time, making predictions to match livestock numbers with range productivity impossible. Drought, livestock disease and tribal raids are episodic, hardly predictable with any certainty. According to the non-equilibrium thinking, therefore, livestock numbers seldom overshoot available forage since no carry over in vegetation productivity exists.25

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24 Oba and Stenseth 1996
25 Old growth of perennial grasslands have low nutritional quality and would not increase animal productivity
In semi-arid and rangelands, controlled by stochastic weather events, reduced range production creates stress in animal numbers before drought stress intensifies. Owing to low forage production during below average years, livestock productivity declines, milk yields get reduced and animals lose body condition. Increased drought stress is followed by a substantial increase in animal mortality. Herders take coping strategies opportunistically to reduce livestock losses.

It is presumed that perennial grasslands with more predictable productivity represent equilibrium systems as opposed to annual grasslands, with unpredictable productivity representing non-equilibrium systems. The trouble is that most of the so-called equilibrium rangelands experience high rainfall variability. More important, land alienation or changes in indigenous management regimes could introduce additional instability. The population become compressed, creating an artificial density-dependence condition. The herders not only experience loss of critical resources, but their coping strategies break down.

In the case of southern rangelands, the debate ignored socio-political factors that contributed to the ongoing crises over resource use. Coppock suggests that the Booran system became density-dependent following loss of land and increased human and livestock population densities. Our assertion is that reduction of the Booran rangelands has not changed the unpredictability of weather and its influence on primary productivity. Rather, the problem has been confounded by loss of external grazing reserves, weakening coping strategies and increasing pressure on vegetation.

The mainstream proponents argued that during high density phases, animal numbers may overshoot available forage followed by a crash. In such a system, recovery may take decades. Although it has been assumed that the Booran system operates under equilibrium condition controlled by density-dependence factors, human and livestock population data are unreliable for making the predictions. For example, the population of Booran and other pastoralists in 1974 was estimated at 500,000 (the Booran and the Somalis combined). In comparison, the 1995 census estimates the population at 316,367. Livingston populations estimates from randomised aerial surveys and annual veterinary campaigns between 1969 and 1985 showed no substantial increases. The livestock population is characterised by fluctuations. Coppock predicts high-density phase population densities of greater than 19.4 head/km². At this stocking density, competition for forage is expected to rise. Given highly variable rainfall distribution, calculations of long-term carrying capacity and correlating range degradation to population density without considering internal pressure and loss of the land to the external conflicts are unlikely to benefit range development plans.

Whereas loss of external resources and reduced range productivity due to bush encroachment have reduced natural resource base, the rapid expansion of livestock populations following drought recovery is only presumed. Cossins and Upton report that cattle population follows irregular cycles of decline following drought and gradual recovery after drought stress. The time taken for recovery varies with the population of surviving breeding females. Recovery is affected by post-

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27 This is to suggest that changes in density are not directly related to reproductive potential of livestock.
28 There is no compelling evidence that the Booran herds are increasing at a faster rate than decades ago.
29 Coppock 1994
30 Coppock 1994
31 Data supplied by SORDU during the 1997 trip
32 Personal communication with SORDU staff
33 Coppock 1994
34 Cossins and Upton 1988b
drought calving rates. Dah and Hjort showed that growth of cattle through biological reproduction varied between 3-4% per annum, with recovery taking between 10-15 years.

Cattle and human populations throughout history have been perturbed by episodic events followed by changes in structure and composition of the vegetation. Episodic vegetation changes caused fluctuations between the woodlands and the grasslands. The oral source suggests that the human and the livestock populations crashed at least every century. Following each crash, the woodlands established during the recovery period were reduced by wildfires, transforming them into the grasslands.

The earliest population crash reported was during the gada of Hindale Doyo (1624-1632). Another crash occurred during the gada of Ungule Halakhe Saade (1792-1800). In the latter, the human and the livestock population crashes were caused by epidemics following the heavy rainfall called guuna sooga. Population perturbations again occurred during the gada of Jaldesa Guyo Dabassa (1838-1846). Following recovery, livestock and human populations were claimed to have “filled every mada” during the gada of Guyo Boru Ingule (1872-1880). This was followed by another population crash during the gada of Liiban Jaldesa Guyo (1880-1888). The crash was caused by the rinderpest epidemic (“chiina tiite guracha” - the termination during the period of black flies). The population of the Booran was claimed to have been reduced to only a few settlements. Most mada were left vacant during the period. The recovery was followed by bush encroachment, which was reduced by burning during the gada of Adi Doyo (1888-1896). A famine during the gada of Bulle Dabassa (1920-1928) resulted in another population crash.

The current decline in the conditions of the rangelands began following political perturbations caused by the Anglo-Italian war of 1931-1936, exacerbated by the persistent Booran - Somali conflicts over grazing lands. The population was forced out of the Eastern grazing lands and compressed into the central region of the Diirre Woreda. After the gada of Jaldesa Liiban (1952-1960), increased banditry and external pressure altered traditional patterns of land use leading to undesirable changes in vegetation.

The situation in Booran therefore demands distinction between “causes” and “effects” of range degradation. The “causes” (socio-political and ecological) undermined pastoral production. The “effects” are manifested by range degradation or increased dependency on food aid. During future events, development should not ignore the multi-dimensional causes of range degradation in the lowlands of Booran.

The report is aimed at:

- assessing the present range land management systems
- Assessing current range condition and trends
- Assessing impacts of range development on the Booran pastoral economy and the environment during the previous two decades.
- Assessing experiences of different development agencies in Booran.
- Assessing influences of changes in resource tenure, e.g. farming, traditional kaalo, ranches and water on the communal rangelands.

Dahl and Hjort 1976;66
Dahl and Hjort 1976:66
The Booran population was reduced to less than 1000 mamed families (pers. Comm. Borbor Bulle).
The Full Terms of Reference is attached as Annex 1 in the Part II of the Report.
• Assessing the Booran community-based drought coping strategies and its decreasing efficiency during the previous three decades.
• Proposing how future-community based drought alleviating mechanisms can be supported and strengthened.
• Assessing the strengths and weaknesses of the traditional Booran range management system in a rapidly changing socio-economic environment.
• Evaluating why the traditional range management knowledge of the Booran and techniques of resource management have not been successful in recent decades.
• Assessing the Booran pastoralists' perception and ideas for possible future range management.
• Proposing future strategies and approaches for the management of Booran rangeland resources in view of the elaboration of a pastoral-oriented development and extension concept (see Part II of the Report).
CHAPTER 2

Methods of the study

Four methods were used to gather data.

2.1. The literature search

A growing body of literature on the Booran and other pastoralists were consulted in Oslo, Addis Ababa and in the field.

2.2. Group interviews

Open interviews were conducted with individuals and groups of elders, extension workers and development project personnel in the Liiban, the Diirre, the Yaballo and the Arero Woredas. Discussions with groups or individuals, were each preceded by confidence building. This involved introducing the purpose of the visit and pleasantries about “news” from other areas. The confidence building techniques were essential for creating trust. During the discussions, interruptions by the late coming participants or visitors were allowed. About 120-150 people participated in the discussions.

Discussions conducted at pastoral encampments (olla), wells, in towns, or while attending public meetings were chaired by the hosts. All discussions followed the Booran model of debate. Traditionally, all mature men and women are entitled to contribute. Interruptions, were avoided unless important issues were clarified or followed up with additional questions. Responses were used to ask further questions to elicit more discussions. Each viewpoint was followed up by additional questions and responses to exhaust each topic before proceeding. Digressing subject matter were permitted, followed by the interviewer re-introducing the previous topic. A typical discussion is in “circular fashion” that can be slow but engaging. Individual opinions and common knowledge were distinguished. In the debate no attempt was made to present the views of everyone since it would be interpreted by others offensively.

2.3. Road transects

Range condition and trends at landscape and patch levels were assessed at 20 km intervals using road transects. The choice of long intervals was due to the vast area covered. Using the car’s odometer, the Team stopped at the appropriate distance intervals. Each sampling point was random since the Team had no prior knowledge. Range assessments were helped by Booran traditional range scouts who are also oral historians. They knew landscapes by their local names and history of land use.

At each sampling point, assessments were conducted about 200 m on either side of the motor tracks. If there were discernible differences in vegetation cover, level of use and erosion indicators (i.e., rills, gullies, bare), the assessments were conducted on both sides of the road. The landscapes

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37 The lowlands cover 90,000 Km²
38 Distance intervals in the Liiban Woreda were set at 10 km.
were assessed by traditional range scouts and the consultant. The range scouts used the following criteria of land assessments (Table 2): (i) name of the landscape, (ii) soil type, (iii) types of vegetation, (iv) changes in vegetation structure (i.e. grassland or woodland) based on historical knowledge, (v) whether the landscape is used for wet season or the dry season grazing, (vi) the species of livestock suited and, (vii) the grazing capacity of the landscape, defined as the ability of the land to support stocking densities without causing degradation. Landscape grazing capacity is low, moderate or high. Perennial grasses served as indicators of high grazing capacity compared to annual grasses and fobs that inferred low grazing capacity. Such landscapes have low resistance to grazing pressure. By combining the attributes, the range scouts (ahurtu) determined suitability of each landscape for a specific species of livestock. This is expressed by the idea of chiisa - which is to lie down. Chiisa is a sum of suitability based on history of land use that is desirable or undesirable.

**Figure 1. Schematic landscape assessment form for evaluating range condition and trends by Traditional range scouts.**

<table>
<thead>
<tr>
<th>Name of the landscape</th>
<th>____________________________</th>
</tr>
</thead>
<tbody>
<tr>
<td>Landscape category</td>
<td>____________________________</td>
</tr>
<tr>
<td>Altitude</td>
<td>____________________________</td>
</tr>
<tr>
<td>Soil types</td>
<td>sandy - clay - sandy-clay-loam mixture - sandy with pebbles - lime soil</td>
</tr>
<tr>
<td>Soil colour</td>
<td>red - black - white - mixed colours</td>
</tr>
<tr>
<td>Indigenous vegetation</td>
<td>perennial grassland - annual grassland - woodland - wooded - grassland</td>
</tr>
<tr>
<td>Grazing capacity</td>
<td>high - low</td>
</tr>
<tr>
<td>Change from potential</td>
<td>Yes - No</td>
</tr>
<tr>
<td>Previous use</td>
<td>Wet season - Dry season - Drought year</td>
</tr>
<tr>
<td>Current use</td>
<td>Wet season - Dry season - Full year</td>
</tr>
<tr>
<td>Management</td>
<td>Foora - herd - waara-herd</td>
</tr>
<tr>
<td>Current management</td>
<td>Foora-herd - waara-herd</td>
</tr>
<tr>
<td>Condition and trends</td>
<td>downwards - upwards - stable</td>
</tr>
</tbody>
</table>

Assessors walked through the landscapes, examining individual patches within circular areas of 50 m in width. The patches selected were judged to be representative of the landscape. The assessments were first conducted by the traditional range scouts and their information systematically recorded as shown by Figure 1. Ecological assessments were conducted using a subjective scheme (Table 2). The woody cover, bare soil, soil erosion indices and grass cover were classified ranging from very poor, poor, fair-good and excellent. Increase in woody cover and bare soil inferred negative conditions, while increase in grass cover represented a desirable change. The condition class for woody cover and percent bare soil are in reverse order to those of the grass cover and the soil erosion indices.

20 The assessments were made from the grazers point of view.
Table 2. A schematic scheme for assessing woody cover, soils, soil erosion and herbaceous cover for rating range condition and trends

<table>
<thead>
<tr>
<th>Indicators</th>
<th>&lt;10%</th>
<th>10-30%</th>
<th>30-60%</th>
<th>&gt;60%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Woody cover</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Range Condition class</td>
<td>Good</td>
<td>Fair</td>
<td>Poor</td>
<td>Very poor</td>
</tr>
<tr>
<td>Bare soil</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Range condition class</td>
<td>Good</td>
<td>Fair-Poor</td>
<td>Poor</td>
<td>Very poor</td>
</tr>
<tr>
<td>Grass cover</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Range condition class</td>
<td>Very poor</td>
<td>Poor-Fair</td>
<td>Fair-Good</td>
<td>Excellent</td>
</tr>
<tr>
<td>Soil erosion index</td>
<td>slight</td>
<td>moderate</td>
<td>Severe</td>
<td>Very severe</td>
</tr>
</tbody>
</table>

Range trends were assessed using evidence of soil erosion indices (e.g., rills, gullies and crusts) and invader plant species (i.e., fobs and unpalatable woody species). Presence of unpalatable trees and fobs and greater erosion indices showed declining range condition. Range trends were upwards when bush encroachment or unpalatable fobs were absent or where erosion was less evident. The trends were downwards if there was an increase in unpalatable tree and fob species and/or evidence of an increase in soil erosion. Native perennial grass cover were used to determine trends in range condition. Effects of different management systems were compared using the kaalo and the non-kaalo sites, where this was available. Landscapes that showed no evidence of change based on historical knowledge were inferred as stable. Traditional range scouts evaluated whether the ratio of woody cover to grass cover changed or was unchanged over time. Most of the landscapes that showed no change were in bush climax stages. The final range condition and trend ratings were based on indigenous and the scientific assessments. Throughout the Liban, the Durré, the Yaballo and the Arero Woredas covering more than 60 000 km², a total of 58 landscapes types were assessed.

2.4. Assessments of invading tree species

Acacia drepanolobium and Commiphora africana are among the species responsible for bush encroachment. Random samples of the species were measured in 10 sites in the Durré, the Liban and the Arero Woredas. At each site, 25 m x 25 m plots randomly placed were used to determine tree density. The species were grouped into 0-2 cm, 2-4 cm, 4-6 cm, 6-8 cm and > 8 cm girth basal diameter (gbd) size classes. Representative samples in the different gbd size classes were randomly selected for tree core analysis.

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**Notes:**
- This is based on assessment of the traditional range scouts
- List of the species are given in Coppock 1994
- Data from tree core analysis will be processed later
CHAPTER 3

Indigenous Range Management System of the Booran

The lowlands of Booran are geographically and ecologically classified. Geographically, they are divided into the Liiban system, the Golbo system and the Diirre system. The Liiban system is divided into the Diid Liiban system, the Chaari production system and the Badha system. The Diirre system is divided into several eco-climatic zones. These include the Tulla well complex zone called the “valley of the white soil”, the Malbe, the Golbo production system, the Gomoole and the Badha. The Golbo production system extend into Northern Kenya. The Malbe zone is often called “Malbe Godha saadhenf” - the Malbe of the three indentations in the Gorro Escarpment. These include Marmaro, Bidhiru, Galchat, Gomso and D’oqqole. The area west of Dubluq-Yaballo highway with characteristic undulating topography compose the Malbe system. The heterogeneous landscapes (Chaari) of Gamadu falls into the Golbo production system, while the area between Yaballo, Dubluq, Maatin and East of Arero is called Gomoole. The landscapes of Gomoole are characterised by heterogeneous highland vegetation formed on basement complex and pre-Cambrian rock systems. The region north of Wachille and east of Loe is called Wayama (land of red soil). The Badha humid zones occur in Tuka Hiddi Lola, Gamadu, Gomoole, Arero and Liiban.

The Chaari production system bordering the Dawa River has heterogeneous landscapes and the associated vegetation. Within the zone are pockets of the Badha humid zone. The humid zones are unsuited for cattle breeding during the wet season because of biting flies and ticks. The Chaari production system lacks ticks and are suited for grazing during the dry season. People and livestock obtain water from wells in the dry river beds or from the Dawa River. Suitability of the Chaari system for livestock grazing is attributed to soil-salt licks. In the Liiban Woreda, the Chaari production system is called kod’olfe, while the residents call themselves Sarkamitu, after the Grewia tenax (sarkama).

3.1. Landscape classification

The basic grazing units are patch mosaics of landscapes characterised by different soil types, topography and the vegetation (Figure 2). Landscapes are classified using a combination of physical and vegetation attributes. Individual landscapes are named after the dominant vegetation combined with the name of historic event. For example, Fullesa Hirmata is the Acacia drepanolobium of livestock booty. The landscape is found East of Yaballo. Chaari Kuubda is the heterogeneous vegetation where the Kuubda ceremony was done. The landscape classified as Chaari has pebbles mixed with soils (Fig. 2). The topography is raged and the vegetation broken into patchy thickets and grasses. Whereas the landscape recurs throughout the Diirre and the Liiban.

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43 The Golbo production system is mostly in bush climax.
44 Coppock 1994
45 In the traditional war fare, when the attacking groups carried off the livestock booty and approached the safety of their homes, they used established quarters called hirmata to divide livestock among themselves.
46 Kuubda is a ceremony performed after a successful lion hunt.
Woredas, the name is that of a point about 40 km south of Yaballo. A landscape called Damballa Badhana is named after a pond (damballa) and the dominant woody species (Balanites sp.). The name Walchamuna Iggo is the name of the landscape named after a local shrub and the epithet Iggo, the locality. Individual landscapes are suited for different uses (see Table 4 and Chapter 5).

3.2. Range suitability

Assessments of grazing suitability provide means for reading landscapes and predicting suitability for different livestock species. For cattle grazing, presence of perennial grasses and warm soils are suitability indicators. For camels and small-stock, suitability is based on soil types and browse availability. Landscapes suited for all livestock species have the right combinations of vegetation and soils. Rangelands suited for camels are bushy. *Acacia brevispica* and *A. frutcosa* are the suitability indicators. The small stock prefers highly heterogeneous landscapes. Preference indicators are palatable foabs and *Commiphora* sp. Pure grasslands are not suited for small-stock. Bushlands are suited for browse but unsuitable for herding.48

Herders conduct periodic assessments to evaluate range condition and trends. Suitability assessments for grazing and settlements are done differently. The scouts assess the soils. Warm soils are preferred for livestock kraaling. Soil with cold properties are avoided. Suitability for settlements are inferred from body conditions of livestock. For grazing, the scouts assess the vegetation, condition of plant growth, current grazing pressure and accessibility to water for human and livestock consumption. Grazing lands without water supplies cannot be exploited.

The scouts evaluated the condition and stages of grass growth. The old growth, un renewed by fire is called *fuura*. It is a mixture of the previous growth and the new growth that provides roughage for the drought-weakened cattle. The other grass growth is an old burn (1-2 seasons of post-fire growth) called *gursumes*. It has higher nutritive value than *fuura* and is preferred as a feed during drought.

Oba 1994a

* Herders are bound to lose the small stock to predation in the bushy country.
### Table 3. Suitability of landscapes

<table>
<thead>
<tr>
<th>Landscape</th>
<th>Soils</th>
<th>Major vegetation</th>
<th>Suitability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chaari</td>
<td>Basement complex, soil mixed between clay and sand</td>
<td>Highly heterogeneous, Commiphora sp., Acalypha, rental grass, shrub layer</td>
<td>Cattle, camels High grazing capacity suited for the wet and the dry season grazing.</td>
</tr>
<tr>
<td>Koobe</td>
<td>Sandy clay, well drained upland topography. Soil erosion by wind and water.</td>
<td>Wooded grassland with heterogeneous woody species, Grewia bicolor and Balanites sp., dominating. Herbaceous vegetation dominated by fobs and annual grasses.</td>
<td>Settlements by semi-sedentary olla, grazing by waara-herds. Suited for the wet season grazing. It has poor resources during the dry season. Grazing capacity is moderate. Farms are common. The ever green vegetation indicates favourable soil moisture.</td>
</tr>
<tr>
<td>Koobe chiracha</td>
<td>Mixed, sandy clay with pebbles, well drained upland topography. Soil not easily degraded.</td>
<td>Open grassland with few Acacia sp.</td>
<td>All stock. Preferred by cattle during the wet and the dry season. Has high grazing capacity.</td>
</tr>
<tr>
<td>Malhe</td>
<td>The soil of the drainage basin, muddy during the rainy season and dusty during the dry season. Erosion by wind.</td>
<td>Predominantly Acacia reficiens, A. poli, grass and fob layer distributed in patches between bushes. Grasses mostly annuals.</td>
<td>Cattle grazing during the wet season, camel browsing during the dry season. Some of the annual grasses and fobs have salty properties preferred by livestock. The landscape has low to moderate grazing capacity.</td>
</tr>
<tr>
<td>Badha</td>
<td>Humid zone. Has highland vegetation. Soils are red volcanic, with high fertility, easily eroded by water and wind. Species biodiversity is rich. Land clearing and intensive farming has removed much of the natural forest. Fire remains the main threat.</td>
<td></td>
<td>Key resource for cattle. Use preferred during the dry year and drought. Has high grazing capacity. Currently, these landscapes carry high human density that may exceed 40 persons km$^{-2}$.</td>
</tr>
</tbody>
</table>

Herders during the wet season prefer rangelands that are less fouled by other herds. The dry season strategy obliges herders to seek grazing where perennial grass tufts are available. Grazing is preferred before grass flowering. To capture suitable grazing conditions, herders move livestock from landscape to another. Movements are induced by livestock behaviour and distribution of rainfall.$^{49}$ Cattle released from kraals move in the direction preferred. Herders use this as a cue to

$^{49}$ Oba 1994a
direct grazing to appropriate landscapes. The distance from home base depending on availability of forage increases during the dry season and decreases during the wet season.

Use of camels by the Booran began during the *gada* of Abayyi Orro (1552-1560), but were not allowed for breeding until later. Traditionally camels were forbidden from the ritual sites in the Diid Liiban system. The oral source suggests that only a few Booran households managed camels before the *gada* of Liiban Jaldesa (1880-1888). The Booran in comparison to the Somali and the Gabra clans lacked the camel management skills. They deposited camels in care of friends among the Gabra. Presently, increasing numbers of the Booran are managing camels, yet they still have misconceptions about them. Camels are blamed for introducing ticks, fouling vegetation and mediating bush encroachment. Management of small stock is not compatible with cattle because they require mobile management system, while cattle coped with a semi-sedentary lifestyle. During previous two decades, increased ownership of camels and small stock indicate declining reliance on cattle.

Management of the “three with sweet milk” requires different strategies. Cattle herding families predominate landscapes suited for cattle, while those with small stock and camels give preference to landscapes suited for their purpose. The grazing zones preferred by small stock herding families are in the Golbo production systems of Diilo, Arbaale, Gorai and Magado. The vegetation of the red Wayama soils of the Eastern rangelands are suited for camels, while the basin of the Tulla well complexes is suited for cattle. Settlement patterns of camel herding families differ from their counterparts herding the cattle and the small stock. Camels prefer soil baths as opposed to cattle and small stock herds. Small stock prefers hard soils of the Chaari and Koobe chiirachia landscapes but avoids muddy soils during the wet season. Bottom lands are unsuited for settlements. They are the key resources for grazing during the dry season (see Table 3).

Herders consider other suitability factors that are inferred from livestock performance called *chiisa* and *fiinna*. *Chiisa* is a locality specific condition of livestock performance. Condition of grazing alone is not sufficient to decide presence or absence of *chiisa*. Other factors such as soils are overwhelmingly important. This knowledge is universal to pastoralists. The Booran perceive that livestock show signs of comfort by sleeping in the landscape if *chiisa* is present. The clues are livestock behaviour, milk yield, rumen fill and the body condition. If *chiisa* is wanting livestock body conditions and productivity deteriorates.

Herders settle in landscapes preferred by a particular species and abandon them if conditions are unsuitable. The notion of *chiisa* is evaluated using historical knowledge. Pastoralists accumulate knowledge of range suitability from migrations. They mentally map landscapes with and without *chiisa*. Compared to *fiinna* (see below), *chiisa* is a permanent condition of individual patches within the landscape. The condition may be suitable for cattle but may not be so for small stock or camels and vice versa.

The notion of *fiinna* is a manifestation of range condition and environmental trends. It is a product of climate, ecology and socio-political events that influence lives of the people and the livestock. *Fiinna* is a broad notion that describes changing atmosphere that modifies survival strategies. *Fiinna* as in *chiisa* is positive or negative. The Booran describe events that influence their lives as *fiinna*. The notion is not static but changes from season to season or from one grazing zone to another.

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50 Dahl 1979
51 Oba 1994b
52 Oba 1985
another or from one political system to another. Consequently, grazing patterns are influenced by
the status of finna during a particular season or grazing. Herders move to the rangelands with a
positive finna and abandon those with a negative finna. Presence of ticks, biting flies and
poisonous plants contribute to a negative finna. When finna is negative livestock loose condition
that herders cannot explain. Presence or absence finna is not directly related to forage condition.
Rangelands overgrazed may have a positive finna as opposed to those with greater herb layer
productivity with a negative finna. The indicators of a positive finna are increased mating
frequency, improved body weight and increased milk yields.53

3.3. Soil licks

Optimum livestock performance is possible only if the forage contains the necessary mineral
elements. Essential minerals required for normal functioning and productivity such as Sodium
(Na), Phosphorus (P) and Copper (Cu) are in insufficient amounts in natural forages. Essential
mineral supplements might be used to infer to the notion of finna. Livestock that lacks essential
mineral supplements fail to respond to a good husbandry because their finna is deteriorating. In the
lowlands, a primary constituent of improved range management technique is mineral supplements.
Mineral supplements are obtained from soil licks, salt and magadi-soda. Salt and magadi-soda are
available in the Diirre Woreda. In the Liiban Woreda, soil licks are common. These are of two
varieties: haya and booji. Herders are familiar with symptoms of mineral deficiency. The Livestock
chew bones, become restless and their body conditions deteriorate. The wet season is the critical
period for supplying mineral supplements, while during drought mineral supplements are less in
demand. Treatment with mineral supplement is followed by accelerated improvements in livestock
production.

In the Chaari production system of the Liiban Woreda, the booji (the lime soil-licks) are collected
by camel caravans in the zone of the Dawa River. The haya soil licks are mined in the Dudi Liiban
system. The Booji-soil licks are preferred by camels and small stock than cattle. The haya soil licks
are consumed in quantities by cattle during the wet season. Preferably, the cattle are fed
mineralised mud that has properties of a laxative. The response to the treatment is rapid weight
gains and increased milk yields.

3.4. Salt mining in the salt and Magadi-soda craters

The main source of mineral supplements in the Diirre Woreda is Soda-crater lake and the Magadi-
soda craters of Diilo, Gorai and Magado. The communities in the Atero, the Yaballo, the Diirre
and the Talteli Woredas depend on the salt sources for mineral supplements. The town of Soda
grew out of the salt extraction and trade. The residents provide experienced labour for mining salt.
The salt miners called hobolayo - consist of people who lost livestock and became destitutes. The
irregular salt caravans are called Soigdo. The hobolayo breed donkeys for salt transport and for
hiring to the Soigdo salt caravans. Salt mining is an established technique (Box 1).

53 Oba 1994b
54 Kabaija and Little 1987
Box 1. Mining of salt

The Soioko caravans operate during the wet season. The resident Hobolayo provide hired labour. Salt harvesting season varies with the variety. Salt crystals (likoke) and the impure varieties (buurante) are mined. The latter is consumed by livestock. While likoke is collected for human use. The likoke variety is obtained from bottom of the salt brine in the lake. The impure salt pastes are collected and packed in baskets (sabonde) made out of tree branches and fibres. The packed salt is sold to the Soioko caravans who are in much hurry or lack the necessary experience to collect salt. Hobolayo collect salt crystal varieties, packing them in 50 kg bags ready for marketing. Salt may be harvested through crystallisation process. Branches of the shrub called duurte (Salsola sp.) are placed in the salt brine to induce salt crystallisation.

The second method is to mine the crystals from bottom of the brine. The saline water having a high specific gravity forces all objects to float. The salt miners have devised an ingenious method of mining by pushing a member below the surface to scoop salt in units of measurement called haafare-which is equivalent to 20 kg of salt. Another variety of salt called kuul (with high organic matter) serves as a laxative for livestock. The kuul crater has traditional wells where cattle drink salty water.

The Magadi-soda is mainly consumed by livestock and for curing the chewed tobacco. The Diilo variety is preferable for livestock use. The Booran feed livestock on salt followed by Diilo as a complete treatment for supplementary elements. The Magadi-soda comprise two varieties; the low quality brown variety called haache and the high quality white variety called baleela. The haache variety is harvested throughout the year. The baleela is harvested during a specific season of the year. Mining of baleela is controlled by the users until crystals sufficiently form and harden. The baleela variety is highly priced with a greater market demand than the haache variety.

3.5. Annual grazing cycle

Land use is influenced by landscape types, water and grazing resources. Strategies of grazing are flexible. Grazing management is based on cumulative knowledge of the range resources, assessments and distribution of rainfall. The Booran year is divided into two rainy seasons and two dry seasons (Fig. 3). About 60-70% of annual rainfall is expected during the gaana and 30-40% during the hagaya. The interim cool season between the gaana and the hagaya is hadolesa. The hagaya is followed by long dry season (boona hagaya). The short-hagaya rains often fail. The long gaana rains may be insufficient or poorly distributed.

Figure 3. Seasonal grazing cycle
The grazing lands are arbitrarily partitioned into the wet and the dry seasons. Greater portions of the landscapes fall into the wet season grazing lands. The wet season rangelands are used, while rain water is obtainable. Generally, use of the wet seasons grazing lands last for short duration, leaving grazing in a favourable condition.

Figure 4. The Wet, the dry and the drought year grazing reserves

The dry season rangelands that surround the well complexes tend to be over stocked when human and livestock populations converge on them during the dry season. However, they benefit from resting during the growth season. As a result, most of these rangelands have remained in a fairly good condition, aside several centuries of use. The drought year grazing reserves are created by the communities. During drought, pastoralists gain access to the waterless rangelands. Grazing of the drought reserves is by altering watering regimes of cattle, from the normal two to three days.56

Grazing models of the Liiban, the Diirre and the Golbo production are different. In the Liiban Wareda, the grazing cycle is towards the Diid Liiban system during the wet season, while during the dry season grazing is onto the Chaari production system (Fig. 5). Movements between the wet season and the dry season involves the whole family. This is because the Liiban Booran are nomadic compared to their counterparts in the Diirre and the Arero Woredas. The Diid Liiban system is a key resource. Its rich perennial grasslands and the hava soil-licks are crucial for successful livestock management. The Dawa River in the Chaari production system serves as a key resource during droughts. However, it is avoided during the wet season because of the tsetse and mosquitoes.

In the Diirre and the Golbo production systems, grazing is divided into the foora-herd and the waara-herd management systems (Figs 6-7). The two management systems are assigned different grazing lands. In the Diirre production system, the core grazing land are composed of the rangelands of the Tulla well complexes. Settlements are prohibited within 10-15 km of the well radius. Outside this area is found the home production or the waara-herd management system. The well zone rangelands (100-150 km²) are used by the waara-herd management system during the dry season. During the wet season, grazing is in the opposite direction. The pattern of grazing is coordinated by the Ardhna - the lowest resource administrative unit (see Chapter 6 Part II). Within

56 Agrolec-C.R.G 1974
56 Oba and Lusigi 1987
56 Oba 1994a
Ardha are series of olla or pastoral encampments. The grazing area beyond the waara-herd management is preserved for the foora-herd management. Exploitation of the latter rangelands are limited by scarcity of water.

Figure 5: Grazing model of the Liiban production system

In the Diirre and the Golbo production systems, the foora-herd management uses opportunistic mobility in response to erratic rainfall distributions. The waara-herd management system as opposed is fairly sedentary. The foora-herd management system is accessible to a greater portion of the rangelands when nutritional quality of plants is high. The livestock quickly recovers from the stress of the preceding dry season and builds body fat reserves for the following dry season. They gain weight rapidly, mating frequency increases and milk yields improves.

Figure 6. Grazing model of the Diirre production system
The foora - and-the waara-herd management systems are integrated. Herders move livestock between the two management systems depending on family milk needs, labour allocations and conditions of the waara vis-à-vis the foora grazing lands. Young and dry cattle are sent to the foora-herd management system, while milking cows, calves and old cattle are returned to the waara-herd management. Large numbers of cattle are sent to the foora-herd management system during drought when forage becomes scarce in the home rangelands. The foora-herd management system as opposed to the waara-herd management system is not restricted to particular Dedha. They criss-cross the Dedha borders depending on availability of the rains and forage distribution.

Figure 7. Grazing model of the Golbo production system

In the Golbo production systems of Saake, Arbaale, Diilo, Gorai and Magado, the dry season grazing lands are limited (Fig. 7). Drought is stressful resulting in greater livestock deaths than in the Diirre and the Liiban Chaari production systems. The grazing resources are mostly annual grasses. Besides, the wet season and the drought rangelands are identical resources. The dry season rangelands of the foora-herd management systems are used during the wet season by the waara-herd management system. Hence, the rangelands tend to be overgrazed when the foora-herd management returns. The Golbo production system is constrained by bush encroachment. Thus, although the rangelands are extensive, they are producing forage far below the potential. This may explain the greater livestock losses experienced in the Golbo production system during droughts compared with the Diirre and the Liiban production systems.

Messele 1997
Mengistu 1998
Indigenous Resource Tenure rights

Land ownership rights among the Booran infer user rights. Land resources are traditionally classified into ritual, grazing, salt licks and water sources. The nine Tulla well complexes (Tulla sallan) i.e., the core grazing lands of the Diirre together with the Liiban and the Golbo production systems and the salt craters (booge) are vital for human and livestock survival.

Within the territory, land tenure rights are vested with all Booran but more specifically, with the historical clans of Heero Abba Biyya who are called Choqorsa. The word figuratively translated means “roots”. The Choqorsa were the resident of the region earlier than five centuries ago. They have ownership rights to wells, ritual land, ponds and the grazing land. According to the oral source, ownership right to water sources and grazing lands by Choqorsa is inviolable. The Sodom Booro clans of Booran who assimilated Heero Abba Biyya in the 15th Century made no exertion to change property rights of land and water sources. Instead, the clans of Choqorsa were assimilated with their resources. Oral source suggests that most biological genealogy of Sodom Booro had died out. They were succeeded by Heero Abba Biyya who had taken on their identities.

For example, the Choqorsa of the area of Gomoole is the clan of the Hawatu. In Arero, the Choqorsa is the Digalu. The Choqorsa of the Eastern grazing lands of Goof, Lae, Batalu and Moyale is Jille Ganojii (Waar Jida). The Choqorsa of Wallena and Chaari Helu is Dambe Nomo. The Choqorsa of the Magado is the Qarchabdu. The nine Tulla well complexes are owned by all the Booran clans. The salt crater lakes are the property rights of the three gada (gada sadeeni). Even so, the wells in the Magado, the Diilo and the Gorai craters belong to the Choqorsa families.

4.1 Property rights of wells

Water is a crucial resource in the lowlands of Booran. Surface water is limited to the Dawa River and myriad of seasonal streams. Seasonal rivers are temporary sources of water. The principal sources of water are wells and ponds. The well clusters are central to the functioning of the Booran

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60 Oba 1996a. The word Choqorsa is also the name of a grass that the Booran use in ceremonies during the gada cycle.

61 The History of the Booran has not been written. From oral source, the Booran have been in the present region earlier than 1500. The Choqorsa clans of Heero Abba Biyya are the native population.

62 It is estimated that only 46 families dating back to the genealogies of Sodom Booro are living today. According to Borbor Bulle, the oral Historian, the rest of the Booran are made up of the Heero Abba Biyya clans or those assimilated in the process of history. According to this same source, of the five pogqessa to which the jubba class belongs, only 2 belong to the Sodom Booro, while 3 belong to the Heero Abba Biyya or the assimilated clans. The sitting abba gada Boru Mad'a is from an assimilated ancestry with an origin among the Arsi Oromo.

63 Oba 1996a

64 This is the same as the adopted children fixing their genealogies with foster families, while the genealogy of their biological families disappears.

65 There are 17 Booran clans (see Legesse 1973; Schlee 1989).

66 Gada is fully described by Asmarom Legesse (1973) and PTW Baxter (1978).
pastoral economy. There are about 75 well complexes that are the loci of Booran rangeland management. Presence of deep Tulla wells helped establish stable patterns of resource use. As a result, the Booran have developed an elaborate water management culture compared to other pastoralists communities of East Africa. For them, water is not only a resource, but a tool for range management. The yields of the well clusters determine livestock and human populations that may be supported by the surrounding rangelands. By regulating livestock population, they maintained sustainable stocking rates in the dry season rangelands. Control of the livestock population is linked to the sub-clan watering rights.

The grazing lands surrounding well complexes are protected (laafa seera eela) during the wet season and used during the dry season. The decision is made by the Dedha council (jaarsa dedha). The mada that yields more water tends to be overgrazed because they attract greater livestock populations (e.g., Webb, Erda and Dh’aas) compared with the low water yielding mada (e.g., Iggo, Gorille and Dubluq) that experienced less overgrazing.

Ponds are spaced at about 18 km intervals. Ponds are the property of individuals who excavated them called abba konfi. The community provides labour to gain access to the pond water. Unlike wells that are privileges of clans, ponds are resources of the Dedha. In pond management as opposed to well management, the Dedha decides the caretaker (abba heerega). The property right of ponds is inviolable. Pond water is primarily for human consumption except for larger ponds that are used by human and livestock populations.

4.2 The adadi and Tulla well Konfi rights

Wells are of two types; Adadi and Tulla. The shallow adadi wells are excavated in sandy river beds called labu-waale. The nine Tulla well complexes (Tulla salaan) are located in the Diirre Woreda. In the Liban Woreda, wells are mainly of the adadi type. The semi-Tulla wells are those found at Had’essa. The Tulla well complexes in the Diirre system are at Dubluq, Melbana, Erda, Gayo, Dh’aas, Borbor, Iggo, Goof and Lae. They are situation in the limestone geological system that stretches from Dubluq to Lae. The traditional water technology of cutting through limestone rocks is ancient.

Wells have ownership rights, yet not in exclusive sense. Property rights of wells infer categories of user rights. Wells are the property of clan of the konfi-the person who initiated the digging ceremony (see Boxes 2-4). Ownership of konfi is called father of the well (abba eela). The Konfi insinuate paternal inheritance. Each heir has obligations to his clan and to all the Booran. The person who holds the property right of the konfi is not the manager (abba heerega). The manager is

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67 Abune 1991
68 Coppock 1994
69 This is the maximum distance travelled by grazing livestock in a day.
70 The property rights of wells and pods are in their konfi rights. The rights are established by person or his ancestors who initiated the digging. The digging stick called Konfi symbolizes ownership right (see Box 3).
71 Heiland 1980
72 Messele 1997
73 The Booran oral traditional suggests that the Tulla wells were excavated by a race with superior technology, called Suftu—who sniffed out water. The water management was perfected by the Warda Oromo from whom the Booran acquired the water technology. The Booran clans who formed part of this earlier population called Choaorsa are the owners of most wells.
74 Oba 1996b
appointed by the clan. The well manager (\textit{abba heerega}) establishes watering rights for well users by fixing water rota. Proper use of wells is guarded by the \textit{Hayu} councillors. Their responsibility is to protect access rights of users and proper maintenance of the wells. The \textit{Tulla} are maintained by the resources of the clan compared with the \textit{adadi} wells that are maintained by the users. Watering requires co-operation of the well users. Water is drawn by a human chain (\textit{gogeesa}) that may vary from 15-20.\footnote{Legesse 1973, Heliand 1980} It is the organisation of labour that contributes to social cohesion and effective utilisation of the \textit{Tulla} wells.\footnote{Abunie 1991}

Each well has three watering days during the dry season, when cattle are watered at two day intervals (\textit{liiman liima}), while during drought at three day intervals (\textit{sadheeni}). The position one takes in the rota depends on the type of relationships shared with the \textit{Konfi}. The first day is preserved for the \textit{Konfi} and his clan. On this first day:

\begin{quote}
"The most senior member of the clan has the right to water his livestock first (this is called \textit{qaara}). The \textit{abba-heerega}... takes the second position (called \textit{laaga}), and the third place is taken by the in-laws and the fourth goes to the person not belonging to the clan... but who had slaughtered a bull for the work force who excavated... the well. This is called \textit{bisaani maala}—the water of the dew lap. The next priorities are called \textit{sadeeja casa}-the eight orders of the well. This covers the next eight places in the watering order. Here there is no seniority, but individuals are given a position... on a first come, first served basis."
\end{quote}

The second day is for those who excavated the well. The third day called \textit{guya qaar qoore} is introduced when the rota is crowded. Once the rota is established, individuals are expected to keep their positions. Livestock species have different watering priorities. Water for human consumption (\textit{bisaani d'aane}) has the priority. Calves, donkeys, mules and horses have access to water taken when the well is free (\textit{bisaani hindrifti}). The next order is for the \textit{waara}—and the \textit{foora}-herd management in that order. Camels have the least priority, because they are thirst tolerant.\footnote{Oba 1996b} The camel owning pastoralists depend on the Dawo River. Those who have access to the Booran wells established entitlements by contributing bulls to feed labour for well excavation. The entitlement is for life and is claimed as a right by the descendants of the participants.\footnote{Camels are watered every 7-14 days.}

The property right of the \textit{Konfi} is guarded and therefore cannot be changed except in total death of the paternal family. Change of citizenship would not alter ownership rights of the wells. The \textit{Konfi} will be protected by a guardian who is closely related to the \textit{Konfi} ancestor or by a caretaker who is entrusted with the responsibility by the clan or sub-clan. Clans form alliances to gain access to the wells of others. Distribution of clan alliances are determined by access rights to wells. If clan A has more wells in \textit{mada C} than \textit{mada B}, members of the sub-clan alliances concentrate in the latter where they have better access to water. The clans that lack wells depend on mutual networking with other clans. Improper watering schedule during drought results in loss of livestock herds than those with a priority. The alternative is to migrate to the Dawo River, move to the \textit{mada} where their clan alliance own wells, re-excavate the old or dig new wells.

\footnote{These relationships were established with the Gabra and the Ajuran Somalis. See Oba 1996b for full description of the arrangements.}
Box 2. Excavation of Lakoole Duubana by the clan of Nonitu Hamoye (the Webb mada)

The wells of the Lakoole Duubana (the twins of Duubana) fell into disuse following the heavy rains during the gada of Diid Bitata Mamo (1864-1872) and remained disused for about 135 years. The Acacia tortillas that had grown in the old rump is 18 m in height and has 84 cm with base diameter and all above-ground. The clan of the Konfi, Nonitu Hamoye had insufficient resources and for a long time depended on the wells of the sub-clan alliance. They lost large numbers of cattle during periodic droughts because of unfavourable watering hole. The sub-clan assembly met and decided to pool resources to excavate the wells. They asked the sub-clan members living in Kenya to make the necessary contributions. The meeting was organised in Borbor in 1997 during the months of June and July. They contributed cash as opposed to bulls and hired labour at EB 5 per day. In addition, the labour was provided with grains. The sub-clan contributed milk herd to supply the labour and housed them. A total of 22 persons were hired per day for six months for the excavation work. The total expenses for well rehabilitation amounted to EB 30,000. This is equivalent to 60 bulls if the traditional donations were used.

Box 3. The new well of Barchi Ogoba Reqiso (the Dubluq mada)

Barchi Ogoba Reqiso (Karayu) is a livestock trader from Dubluq. He selected a well site in the Dubluq cluster that was not part of an old Tulla. The ceremony of initiating the digging was elaborate. On the material day (in 1996) Barchi and his sunsuma (who is from the Qarchabdu clan) put on ceremonial regalia and built the gate similar to that of the ceremonial house (galma). In company of their spouses and children, both Barchi and his sunsuma poured the ceremonial tobacco at the gates. This was followed by the ceremony of slaughtering the bull of the Konfi. The ceremonial coffee was fired and Barchi who is the Konfi took a seep of the fried coffee berries, passing it on to his sunsuma. The second order symbolises, the second position of the well. The meat of the bull was served to the visitors. Both Barchi and his sunsuma retired to the well site on their own and removed their shorts, left only with loose garments wrapped around their bodies. They poured the ceremonial tobacco, salt and incense at the spot that will be the new well opening. They exchanged sticks of Cordia sinensis (mad’ee’ra) that symbolised the digging stick—the Konfi. The sticks had leaves at one end and sharpened at the other. Barchi made movements with his hand to simulate digging twice, and on the third, hit the ground with the stick. His sunsuma followed suit. They said the following prayer as they performed the digging act.

Buurq be a spring
Galaan tai be like a river
Eela aramat qoosan we excavate a well here
Waag nubissei God make it yield to us
Laafa nubasi Earth give it to us

They were then joined by others in the excavation. Barchi Ogoba hired labour at EB 5 per person per day food excluded. The total cost of the well was EB 45,000. After completion of the well and the yields being satisfactory, he slaughtered an old cow as the concluding ceremony. Barchi’s well has five gogeesa (i.e., number of people in a watering chain). In digging the well he used the ancient technology attributed to the “suftu” several centuries earlier. After the well was completed in six months, he invited the Qulla of Karayu and the clan to come and “drink from their well”. The sub-clan offered him EB 10,000 as gratuity.

4.4. Maintenance and excavation of the Tulla wells

The clan alliance is responsible for digging, maintaining and excavating wells. The havu is responsible for calling the clan assembly (koora deebanu). The attendance is by the jaalaba who are assistants to the havu and the abba que (the senior Jalaaba). The assembly assesses the clan-wide resources including labour allocations. Number of bulls and milk herds necessary to feed the labour force are determined and responsibilities apportioned accordingly. The excavation begins —

80 6 EB = 1 USD
81 The Booran clans share reverence and mutual respect with the opposite clans in the Sabbo and Goona moities (see Legesse 1973). The relationship is called sunsuma—which literally stands for the three cooking stones. The members also refer to each other as in-laws or sodha.
with slaughter of a bull of the *abba Konfi* or his next of kin. The sequence in which bulls for slaughter are provided establishes the privileges of watering rights in the water rota. A greater number of Tulla wells fell into disuse 2-3 centuries ago. Excavating old Tulla is an expensive undertaking for which most sub-clans lack resources. However, in recent years the Booran have begun to excavate old wells and new wells are dug by clans and individuals. In the Dubluq well cluster, 15 new wells have been excavated compared to 10 old wells that were rehabilitated. In the Webb, 10 old Tulla wells were re-excavated during the last two years alone. There are a number of reasons for the increased re-excavations and digging of the new Tulla. First, following displacement of the Booran from the Eastern grazing lands, the clan wells in the Diirre Woreda have become insufficient to meet the increasing water demands. Families with large herds are particularly constrained. Second, many clan wells have remained unused because clan-wide resources were lacking. It might be that individual clans have acquired more resources through increased herd growth. This would encourage them to excavate the old wells. Third, the Booran are establishing different and more convenient strategies for funding excavation of wells. Labour for excavating wells is hired from the public as opposed to the provision of clan labour (Boxes 2-3).

Most Tulla wells fell into disuse during three historic periods of heavy rainfall. The wells that fell into disuse during the heavy rains called *gaana sooqa* during the *gada* of Ungule Halakhe Sadhe (1772-1800) were restored during the *gada* of Doyo Jillo (1848-1856). This was followed by a heavy *hageya* rainfall called “the thunder year - *gaaf d'ueesa gada Diida* (Duida Bitata Mamo 1864-1872). The well restoration was interrupted by the rinderpest epidemic during the *gada* of Liiban Jaldesa (1880-1888). The old Tulla wells currently being excavated are those that fell into disuse approximately 130 years ago.

4.5. Conflicts over the Konfi

The oral source suggests that ownership rights of *Konfi* of the Tulla well complexes were made public by Gobba Alla Nuura (1688-1696). The original *Konfi* of Heero *abba Biyya* remained the rightful *Konfi* as mentioned before. In most cases after the genealogy of the Sodom Booro died out, the *Konfi* property rights were left with the assimilated clans. The latter changed their genealogy by adoption.

There are two dimensions to well ownership rights. (1) The *Konfi* proper, who in the case of the old wells were the original population (*Choqorsa*) or their assimilators and in case of the new wells, the person who initiated the digging. (2) The sub-clan of the *Konfi* who are protectors of the property right of the wells. Identities of ownership rights are reconstructed from paternal genealogies of the *Konfi* ancestors. In certain cases, the rightful family of *Konfi* having died out, the wells are inherited by kin of the *Konfi* (*aana ecla*). If a common name of the genealogy of the *Konfi* ancestry is shared by more than one family, which are not biologically related, long standing conflicts may ensue. The claimants’ use ancestors’ names to support their petition. To settle the conflict, the Booran sometimes recollect names of the genealogy to the 14th generation. However, the genealogy of the ancestor may remain unknown because its members are not living. This is especially true for wells that remained disused for 200-300 years. What is not in dispute is the sub-clans that owns the property rights of the *Konfi*. If the genealogy of the *Konfi* cannot be traced, the sub-clan places the well under a caretaker, until the rightful genealogy is reconstructed and the surviving members identified. The Booran perceive that conflicts over *Konfi* leads to social and
economical misfortunes. Sudden deaths, impoverishment and die-out of families are linked to false claims of the Konfi property rights (see Tables 5-12).

Most conflicts occurred between members of the same sub-clan as opposed to members of different clans who seldom conflicted over the Konfi ownership rights. Occasionally, conflicts occurred because the Konfi property right was transferred to a woman by the abba gada. The clan of the Konfi is entitled to contest the transfer, but the issue may be complicated by the multidimensional nature of social relationships. These conflicts may remain unresolved for several generations (Box 4).

Box 4: Conflict over Galanticha of Morowa Abbay (1680-1688)

The story is told that when Morowa Abbay was settled in Borbor, the well collapsed over his nine sons, while watering cattle. He was said to be very sorrowful. It was his woman lover who helped him to live through the loss. In appreciation of her love and her consonance he asked her to name anything that she wished as a present. She asked for El Hiddo (the well). The old Morowa did not expect this, but had already made a promise. He is said to have uttered "a curse be that slipped out of the mouth of men" and in anger [to his poor judgement] spat on the ground. The woman by a strange coincidence collapsed and died. The Konfi right was inherited by her sons, the well becoming the property of their sub-clan. The clan of Morowa Abbay have been petitioning without resolve the Konfi of Galanticha since the gada of Mad'a Boru Mad'a (1824-1832).

The conflict may occur because the family of the caretaker claims the Konfi. Less common are the conflicts between the Booran sub-clans and the Gabra or the Garre clans. Periodically the conflict is over watering rights.

Table 4. The Tulla wells in Dubluq

<table>
<thead>
<tr>
<th>Name of the Well</th>
<th>Sub-clan of the Konfi</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>El Waaq/Ali Elkarro</td>
<td>Qarchabdu. The Konfi family is Hindo Diido Khakho Bukko Yaya. Hindo Diido was an Adula during the gada of Liiban Wata Nafuur (1768-1776). The genealogy of the Konfi is that of the family that adopted the original Konfi (Warda).</td>
<td>This well is ritually important for the Booran and the Moslems. The water of El Waaq is believed to have curative properties. The original Konfi, who is a Warda called Ali Elkarro is said to have refused to leave and was adopted together with the well. He informed the Booran that as long as El Waaq was functional the Dubluq wells will yield water and that the livestock that drank at El Waaq will not be raided.</td>
</tr>
<tr>
<td>Dibsaaru</td>
<td>Galanticha. The Konfi belongs to the family of Jillo Boru Sanqala. There has been conflict over Konfi for about 300 years. The evidence presented is the name of the ancestor.</td>
<td>The Konfi was illegally taken by the family of Guyo Boru Gailma whose genealogy Doyo Mad'eera was an abba gada. The well was returned to the rightful Konfi in 1997 after the genealogy of Guyo Boru Doyo Mad'eera got impoverished and lost most of its members. Their misfortunes were associated with illegal possession of the Konfi. Being concerned that their genealogy might perish they returned the Konfi to the claimants. There were numerous misfortunes which befell the family of Galgallo Adhi. At one settlement alone, they lost more than 42 members. The well was returned to the Konfi after several hundred years of conflict.</td>
</tr>
<tr>
<td>El Komtu Goljo</td>
<td>Konitu. The Konfi has been in the hands of the family of Galgallo Adhi Godana Qampiso for several hundred years. The claimants who had the property rights of the Konfi were the family of Adhi Galgallo Ch'utche.</td>
<td></td>
</tr>
</tbody>
</table>

62 The reason for the Moslems using Ali Elkarro as a ritual site has not been explained by my informants. The name Ali would not suggest a Moslem origin of the Konfi. The same name is used by the Booran. That the original Konfi is a Warda may suggest other reasons.
<table>
<thead>
<tr>
<th>Location</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hooma</td>
<td><em>Hawatu.</em> The Konfi belongs to the family of Galma Soora Chulchula. Another family began to conflict the Konfi but they abandoned their contest fearing that misfortunes might befall them.</td>
</tr>
<tr>
<td>Liiban Haliya</td>
<td><em>Hawatu-Wantii.</em> The Konfi of the well has not been identified. The caretakers are the family of Molu Dido Usala. There is no genealogy known as Liiban Haliya. The sub-clan is still looking for the family of Konfi with an ancestry of that name.</td>
</tr>
<tr>
<td>Halakhe Gaano</td>
<td>The Konfi is the family of Doyo Kula Deema. No conflict. The well is highly yielding and has never fallen into disuse.</td>
</tr>
<tr>
<td>Kararticha</td>
<td><em>Karayu-Karara.</em> The Konfi belongs to the Qalli of Karayu. No conflict.</td>
</tr>
<tr>
<td>Gaadulicha</td>
<td>Gardula. The Konfi belongs to the family of Quutuna Gorrao of Taitel Woreda. The care-taker is the family of Chuliacha D’eeera of the same sub-clan.</td>
</tr>
<tr>
<td>Halakhe Buura</td>
<td>Maatari-Doorane. The Konfi belongs to the family of Jaldesa Elele. The care-taker is the family of Galgallo Diima Reero. No conflict.</td>
</tr>
<tr>
<td>Dukalle</td>
<td>Garjeda. The Konfi belongs to the families of Diblaya Halakhe and Diblaya Diida (brothers) but conflicted by Gayo Are. The conflict over Konfi with Gayo Are was amicably settled by the sub-clan and the Konfi restored to the family of Diblayu.</td>
</tr>
<tr>
<td>Bargaaye</td>
<td>Digadul-Udumtu. The Konfi belongs to the family of Wale Wachu Roqaa (1712-1720). The clan of the Konfi is impoverished. There are only two members of that sub-clan known to be living. The well remained unused for several centuries. No conflict.</td>
</tr>
<tr>
<td>Daarmaato</td>
<td>Digadul-Walaadji. The clan of Heero abba Biyya owning the Konfi were adopted by the family of Liiban Wata Nafuri (1768-1776). The family of Liiban Wata Nafuri died out. The Konfi is with the family of Guyo Gollo Jillo Daanisa whose biological genealogy is Heero abba Biyya now serving as the retainers of the phallic emblem (kaalach) of Liiban Wata.</td>
</tr>
<tr>
<td>Baacha</td>
<td>The Konfi belongs to the family of Jattani Diida Gorore. The care-taker of the well is the family of Liiban Huqa.</td>
</tr>
<tr>
<td>Anna Waante</td>
<td>Maluyu. This is a new well. The Konfi belongs to Maalise Boru Anna Waante. The Konfi is alive. He excavated the well at a cost of EB 12,000.</td>
</tr>
<tr>
<td>Mandida</td>
<td>Waar Jida-Anna-Duuhana. The Konfi is inherited by Galgallo Kiilo. The property right belongs to Mandida Guyo Boore. He left Booran and became assimilated by the Burji. 83 This is the highest yielding well in Dubluq. Galgallo Kiilo inherited the Konfi. Contrary to the custom he used bribery to allocate watering rights. Consequently, his clan members left his well and excavated their own. The only living member of the Konfi is called Tutto Boru whose mother was a Burji and is married to one.</td>
</tr>
<tr>
<td>Guve</td>
<td>Karayu-Sibhu. Dadacha Kataala who is the care-taker died and the well fell into disuse. The sub-clan has not traced the Konfi family. No conflict.</td>
</tr>
</tbody>
</table>

83 This example shows that loss of Konfi will result if the property right holder or his genealogy changed tribal allegiance.
<table>
<thead>
<tr>
<th>Name of the Well</th>
<th>Sub-clan of the Konfi</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anno Iggo</td>
<td>The Konfi was traced to the family of Jaarso Golicha Qaanchoro.</td>
<td>The well has little water. No conflict.</td>
</tr>
<tr>
<td>Hawaatich’a</td>
<td>Hawatu. The Konfi property right belongs to the family of Dooyo Diida Lakhe D’eera.</td>
<td>No conflict.</td>
</tr>
<tr>
<td>Aabri</td>
<td>Konitu. The care taker of the well is the family of Godaana Guyo Diida.</td>
<td>The Konfi has not been traced.</td>
</tr>
<tr>
<td>Ruubo</td>
<td>Maliyu. The Konfi belongs to the family of Galgallo Waldo Saake.</td>
<td>No conflict.</td>
</tr>
<tr>
<td>El Galaana</td>
<td>Mulaata. The Konfi property right is owned by the family of Anna Faavo Dhaka.</td>
<td>This is the highest yielding well in Iggo. No conflict.</td>
</tr>
<tr>
<td>Name of the Well</td>
<td>Sub-clan of the Konfi</td>
<td>Comments</td>
</tr>
<tr>
<td>------------------</td>
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<td>----------</td>
</tr>
<tr>
<td>Daratato</td>
<td>Malibu; Konfi belongs to the family of Liban Gaal Gallo. Malibu.</td>
<td>No conflict.</td>
</tr>
<tr>
<td>D'ach'liche</td>
<td>Maachis; recently excavated by the family of Liban Gaal Gallo Shaande.</td>
<td>The clan contributed resources to rehabilitate the well after it had fallen into disuse for several centuries.</td>
</tr>
<tr>
<td>Haar Boora</td>
<td>Karuyu-Raasa; The Konfi is genealogically known. It belongs to the genealogy of Boora Arero Hadeesa Haar Boora Maale Gaala.</td>
<td>Wells by the same name are found in Gayo and Dh'aas. No conflict.</td>
</tr>
<tr>
<td>El Halakhe Waaraba</td>
<td>Diigalu-Emaaji; The Konfi belongs to the family of Halakhe Waaraba.</td>
<td>The well was re-excavated a few years ago after it had fallen into disuse for about one and a half centuries.</td>
</tr>
<tr>
<td>Dooranicha (Eel Aarich)</td>
<td>Maatari-Doorane; There is conflict over Konfi. The family contesting the Konfi has an ancestor called Aan, which is the name of the well.</td>
<td>The well was re-excavated by the family of Liban Jilto Nuura. The Konfi is contested by the genealogy of Guyo Duuba Halakhe Halkano Libakhe Liiban Waato Gando Halakhe Aan. The family of Liiban Waato Gando was the one that adopted the &quot;Rendille&quot; blacksmith family of Ilmaan Bacheelo who were assimilated into Booran during the gada of Arerro Ghedo (1912-1920). The Konfi is being contested by the family of Guyo Duuba Halakhe. The dispute has not been settled by the subs-clan of the Konfi.</td>
</tr>
<tr>
<td>Waanticha</td>
<td>Waar Jida; The Konfi belongs to Waanticha Guyo.</td>
<td>There was conflict between the clan alliances of Waar Jida-who owns the Konfi and Malibu, their mutual alliance, over watering rights. The Waar Jida denied the traditional watering rights of the Malibu after the two sub-clans fell out over the appointment of the Hayu Garbo (senior councillors) during the gada of Mad'a Galma (1944-1952). The Booran remember the conflict by the following verse in a cattle song.</td>
</tr>
</tbody>
</table>

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64 They were most likely the Lkunono blacksmiths who live among the Rendille.
<table>
<thead>
<tr>
<th>Clan</th>
<th>Konfi</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soora</td>
<td>Waar Jida. The Konfi belongs to the family of Soora Dadacha Iluu Maleku (1720-1728)</td>
<td>Only two members of this family are known to be living.</td>
</tr>
<tr>
<td>Konnicha</td>
<td>Konnitu. The Konfi belongs to the family of Jaldesa Illo Borbor Diibu Jaala.</td>
<td>The well was re-excavated using a tractor. No conflict.</td>
</tr>
<tr>
<td>El Yasbi</td>
<td>Karraa-Libano. There are only two families of this sub-clan known to be living.</td>
<td>The Konfi property right is not known. The care-taker is Gufti Liiban Waaqo Waaia.</td>
</tr>
<tr>
<td>Nonnicha</td>
<td>Nonnitu-Baaritu. There is an ongoing conflict over Konfi between the families of Guyo Jattani Choopi (the claimant) and Jaldesa Huqa Galma Boru Guyo Liiban (the caretaker).</td>
<td>The conflict has been going on for several generations. Jaldesa Huqa perished when the well collapsed and buried him together with his calves. The well repeatedly collapsed each time it was excavated. The sub-clan has been involved in settling the dispute over Konfi.</td>
</tr>
<tr>
<td>Galanticha</td>
<td>The Konfi belonged to Morowa Abbey (1680-1688) but was transferred to the family of Golicha Didi Kate.</td>
<td>The cause of the conflict over Konfi is presented in Box 4.</td>
</tr>
<tr>
<td>Saadeti</td>
<td>Digaalu-Nuntu. The Konfi belongs to Gobba Alla (1688-1696).</td>
<td>No conflict.</td>
</tr>
<tr>
<td>Gindha</td>
<td>Maanta-Gardulla. The Konfi belongs to the family of Diid Soora T'aasi Gindha.</td>
<td>No conflict.</td>
</tr>
<tr>
<td>Baabo Qood'a</td>
<td>Mataan-Meest. The konfi belongs to the family of Kusse Banju Jana Duulo. This genealogy has no living members.</td>
<td>The care-taker family belongs to the genealogy of Wayu Uru Malek.</td>
</tr>
</tbody>
</table>

85 The Miigo are the Gabra of Ethiopia.
86 This was the only Waar Jida family that ever assumed the gada leadership.
<table>
<thead>
<tr>
<th><strong>Dambichia</strong></th>
<th><strong>Odiicha</strong></th>
<th><strong>Goolota</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dambitiu.</strong> The Konji property right. This genealogy has only few members living and are destitutes. Liiban Jaala after he became a destitute gave up the role responsibility (heerega) to Boru kura who passed it on to his son Dimala. Boru kura who became Abbe heerega. He passed it on to his son Arero Dimala Boru Kura. The Konfi is performed by the forth generation abbe heerega, Jaaba Arero Dimala. The clan after reconstructing the genealogy restored the Konfi to Boru Jille Jaldessa Boru Tise Knump’a Liiban. Abbo Abbay Baabo who is the living member of the genealogy of the Konfi property right holder.</td>
<td><strong>Odiju.</strong> This is the second well that is contested for a similar reason as El Morowa Abbay (Box 4). Liiban Jillo Hadawa (1832-1840) gave the well to the wife of Guyo Hiddo because he loved her, but asked her not to reveal it until he had tricked his sub-clan to agree to the transfer of the property right. After the rains he called the assembly of Dambe-Nonno sub-clan alliance and asked them to offer him a request that he refused to divulge until they promised to grant his wishes. After the assembly promised, he then said “I have given Dambucha Qalla (the well) to the wife of Guyo Hiddo”. Curiously, the well called Galanticha (Box 4) which Morowa Abbay gave to his woman lover and Odiicha belong to the same sub-clan. The sub-clan is asking the return of “Galanticha” and to abandon claims on Odiicha.</td>
<td><strong>Karayu-Hajeji.</strong> There has been conflict over Konfi by three different families who had an ancestor with a common name, but not a common ancestry. The conflict is between the families of Balale Abuba, Gedhi Abuba and Golicha Abuba. The three families belong to the same sub-clan but are biologically unrelated. They are the family of Doyo Galgallo Liiban Jaara Marsa Halakhe Anna Balale Abuba Helu (the ancestor). The second family is that of Liiban Kuuluta Garsc Jarso Wario Balale Abuba Helu. The third family also had a genealogy whose names are...?...Gedhi Abuba Helu.</td>
</tr>
</tbody>
</table>

The Webb Tulla is the principal water sources in Diirre. The mada has extensive grazing lands that traditionally supported more livestock and people than other mada in the Diirre Woreda. The residents of the Webb Dedha practised controlled grazing. They reserved grazing for drought years.
for the waara-herd management system. The area called Qaa Dambalota Bosaaro is reserved for the Foora-herd management system. The restricted grazing land cover 200 km². Grazing regulation is by the rules (seera) laid down by the Dedha council.

Table 7. The Tulla wells in Dh’aas

<table>
<thead>
<tr>
<th>Name of the Well</th>
<th>Sub-clan of the Konfi</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Qaalu</td>
<td>Karayu-Beere The Konfi belongs to the family of Jillo Abba Khintie.</td>
<td>No conflict.</td>
</tr>
<tr>
<td>Tulla, Baahale</td>
<td>Maliyu. The two wells belong to the Maliyu sub-clan.</td>
<td>No conflict.</td>
</tr>
<tr>
<td>El Yaabi</td>
<td>Digaatu-Daado. The well had fallen into disuse for several centuries. The sub-clan of the Konfi re-excavated the well some years ago.</td>
<td>The sub-clan of the Konfi re-excavated the well some years ago.</td>
</tr>
<tr>
<td>Gaadhulich</td>
<td>Garduula. There was conflict over Konfi.</td>
<td>The conflict has been resolved.</td>
</tr>
<tr>
<td>Nonnicha</td>
<td>Nonitu. The Konfi is owned by Afaatu Diida Abuu currently leaving in Moyale.</td>
<td>No conflict.</td>
</tr>
<tr>
<td>Haar Boora Maale Gaala</td>
<td>The sub-clan of Karayu-Raasa owns the Konfi property right.</td>
<td>No conflict.</td>
</tr>
<tr>
<td>Iitu</td>
<td>Karayu-Iitu. The Konfi belongs to the family of Doyo Waaqo Buuke Liiban Sasaqi.</td>
<td>No conflict.</td>
</tr>
<tr>
<td>Qawa Druqa and Qawa Gundha</td>
<td>Hawaiatu-Bokoluto &amp; Hawaiatu-Wayiitu. The Konfi belongs to the same family. The two sub-clans shared ownership rights because of their mutual dependence.</td>
<td>No conflict.</td>
</tr>
<tr>
<td>Gaalatto</td>
<td>Hawaiatu-Bokoluto &amp; Hawaiatu-Wayiitu. The two sub-clans hold joint ownership of the well.</td>
<td>No conflict.</td>
</tr>
<tr>
<td>Deera and Dirbu</td>
<td>Karayu-Doorani</td>
<td>No information on Konfi.</td>
</tr>
<tr>
<td>D’aachicha</td>
<td>D’aachitu. The Konfi belongs to the family of Elema Jillo Gooliye.</td>
<td>No conflict.</td>
</tr>
<tr>
<td>Koorman Gaale</td>
<td>Maliyu. The Konfi is owned by the family of Boru Guyo Tillo Haalo.</td>
<td>No conflict.</td>
</tr>
</tbody>
</table>

87 Trespassers are fined EB 50, compared to the fines of EB 700 per herd charged by SORDU for trespassing ranch fences. Fines imposed by the Booran have less deterrence than the social sanctions that are more effective.

88 Joint ownership of wells are uncommon. In this case, the two sub-clans of Hawaiatu-Bokoluto and Hawaiatu-Wayiitu had established mutual relationships to share the water and the property rights of the wells. The oral source attribute this to the small number of the members. Each sub-clan on its own has insufficient resources for well rehabilitation. The word gaaliato is “to be thankful.”
The Gorille wells have limited water. The residents of the mada established mutual watering arrangements with other mada. The abba heerega used corrupt methods to decide water rota. They used the PA administration to intimidate those who questioned their decisions. Their scheme was exposed by the Assembly of Gumi Gayo during the gada of Jillo Aga (1968-1975).

Table 8. The Adadi wells in Gorille

<table>
<thead>
<tr>
<th>Name of the Well</th>
<th>Sub-clan of the Konfi</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roobe and Roobe Diiqa</td>
<td>Karayu-Didimtu. The Konfi belongs to the family of Jattani Guyo Molu</td>
<td>They are the only wells with sufficient water in Gorille.</td>
</tr>
<tr>
<td>Jillo Daabuulo</td>
<td>Karayu-Siiba.</td>
<td>The sub-clan owns five other wells in Gorille. No conflict.</td>
</tr>
<tr>
<td>Nonnicha</td>
<td>Noninu. The Konfi belongs to the family of Daub Guyo Jattani Ch'ooop'i</td>
<td>No conflict.</td>
</tr>
<tr>
<td>Daraato</td>
<td>Hawatu. The Konfi family is not known</td>
<td>No conflict.</td>
</tr>
<tr>
<td>El Mulaata</td>
<td>Karayu-Mulaata. There are three wells belonging to the Konfi owned by Arabti Daalu</td>
<td>No conflict.</td>
</tr>
</tbody>
</table>
Table 9. The Tulla wells in Erdar

<table>
<thead>
<tr>
<th>Name of the Well</th>
<th>Sub-clan of the Konfi</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boko</td>
<td>Karayu</td>
<td>No information</td>
</tr>
<tr>
<td>Kokiso</td>
<td>Karayu</td>
<td>The conflict between the families of Godana Garse and Jarso Garse went on for several generations. Gokhan Garse had presented as his evidence the name of his ancestor Kokiso Yaya which is also the name of the well. He cited the cattle watering song as evidence.</td>
</tr>
<tr>
<td>Shaani</td>
<td>Karayu</td>
<td>&quot;Kokiso Yaya: Goobo sanga Diima. Totu qaara d’and’aaame&quot;</td>
</tr>
<tr>
<td>El Morowa</td>
<td>The Konfi belongs to the genealogy of Morowa Abbay (1680-1688).</td>
<td>No conflict.</td>
</tr>
<tr>
<td>Jaaba Keere</td>
<td>Waar Jida-Waragu. The Konfi belongs to the family of Balambal Faayo</td>
<td>No conflict.</td>
</tr>
</tbody>
</table>

The Madacho and Magado wells have salty water. They are preferred mostly by camels and the small stock.
Table 10. The adadi wells in Borbor, Madacho, Magado and Diilo

<table>
<thead>
<tr>
<th>Name of the Well</th>
<th>Sub-clan of the Konfi</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Borbor Wells</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Koose</td>
<td>Hoola. The Konfi belongs to the family of Shaka but the ownership is being contested</td>
<td>The conflict is over watering rights of the Hoola family. The Konfi retook the right of watering on the day they Hoola family had entitlement. The conflict has been resolved.</td>
</tr>
<tr>
<td>El Jaideesa</td>
<td>Karayu-Nonno. The Konfi belongs to the family of Qalbecha Guyo Boru</td>
<td>No conflict.</td>
</tr>
<tr>
<td>El Leeqa</td>
<td>Karayu-Kudho. The Konfi belongs to Golicha Leeqa.</td>
<td>No conflict.</td>
</tr>
<tr>
<td>Karatucha</td>
<td>Karayu-Karara. The Konfi belongs to the Qalaa of Karayu.</td>
<td>No conflict.</td>
</tr>
<tr>
<td>Qarchatucha</td>
<td>The Konfi was given to the Gabra family of Bulbul Daayo on saving the senior abba gada Hindo Diido from drowning in the flood waters of the Ganaale River.</td>
<td>The sub-clan of the Konfi disputed the transfer of the property rights to a Gabra family. Then Hindo Diido replied them: &quot;Gaaafa ganaale nadaabse itidaabke keesa na fudxe.&quot; This is implied that if not for the Gabra he had drowned. As the decision was made by the abba gada, the sub-clan was forced to give up the contest.</td>
</tr>
<tr>
<td>Dambichi</td>
<td>Dambusi-Jaaro. The Konfi belongs to the family of Wano Jaarso Boru Baabo.</td>
<td>The well is in the care of the sub-clan because the Konfi family is impoverished.</td>
</tr>
</tbody>
</table>

* Families that contribute bulls to feed labour established watering rights called Hoola. The relationship of Hoola has entitlement. That can be demanded as a right by the descendants. The Hoola relationships are established with individuals from different clans with the Konfi owner.
### Madascho Wells

<table>
<thead>
<tr>
<th>Village</th>
<th>History</th>
<th>Ownership</th>
</tr>
</thead>
<tbody>
<tr>
<td>Odiicha</td>
<td>The Konfi family of Liiban Goorichaa has a Konfi ancestry. They were assimilated by the family of the Konfi.</td>
<td>The Konfi family died out and the assimilated family inherited the well. The family of Liiban Goorichaa is destined, being supported by the clan for providing services at the well.</td>
</tr>
<tr>
<td>Korme</td>
<td>The Konfi belongs to the family of Nuura Taulo Dillo Kadhara Jaldeesa Korme Kustu Korme.</td>
<td>No conflict.</td>
</tr>
<tr>
<td>Karara</td>
<td>Kanyu-faa: The Konfi belongs to the family of Godana Duuba Galma Elema.</td>
<td>The living member of the Konfi family is a destinat. The well is cared for by the clan.</td>
</tr>
<tr>
<td>Dambiich</td>
<td>Dambhiitu: The Konfi belongs to the family of Tulla Godana Lakhe.</td>
<td>No conflict.</td>
</tr>
<tr>
<td>Bachiicha</td>
<td>Baachitu: This clan has the least members among the Booran. The Konfi belongs to the family of Katelo Chilmo.</td>
<td>The wells are under the care of Jaldeesa Liiban Guuro. No conflict.</td>
</tr>
<tr>
<td>Dawa</td>
<td>Massari-Gadhalu: The Konfi family is unknown.</td>
<td>The care-taker is the family of Jillo Boru Dullo. The clan is still looking for the ancestral Konfi.</td>
</tr>
</tbody>
</table>

### Magaado Wells

<table>
<thead>
<tr>
<th>Sub-Village</th>
<th>History</th>
<th>Ownership</th>
</tr>
</thead>
<tbody>
<tr>
<td>Qarchabda-Chogorsa</td>
<td>Qarchbadaa-Chogorsa. The Konfi property rights of all the wells in the Magaado crater belongs to the family of Tadole Liiban Jirmo (Hayu). Gobba Harsama Hooote Anoole Abbayi Neffur Magaado.</td>
<td>The wells of Magaado crater are owned by the Chogorsa clan of Heero Abba Biyya. Other clans who excavate wells have user rights but cannot own the Konfi property rights.</td>
</tr>
<tr>
<td>Dillo wells</td>
<td>The wells in Dillo crater are owned by the sub-clans of Galantu and Suunqana.</td>
<td>These wells belong to the Chogorsa of the Heero Abba Biyya.</td>
</tr>
</tbody>
</table>

Since the Tulla wells of Lae are vulnerable to silting each year by the floods of lag Suure, it is obligatory for the community to mobilise resources to de-silt the wells annually. Thus, the Booran who resided in the Lae mada were exempted from clan contributions in the Diirre mada. Moreover, they were not required to make contributions to the support of the gada leaders and the Hayu.\(^{90}\)

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\(^{90}\) The decision was made by the Assembly of Gumi Sencho Lae.
### Table 11. The Tulla wells in Goof and Lae

<table>
<thead>
<tr>
<th>Name of the Well</th>
<th>Sub-clan of the Konfi</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goof Yaya</td>
<td>Dambiitta-Limu</td>
<td>No other information</td>
</tr>
<tr>
<td>Baaro</td>
<td>Dambiitta-Duubana. The Konfi belongs to the family of Jillo Kiiri Diudu Chilako.</td>
<td>This is a high yielding well.</td>
</tr>
<tr>
<td>Dambiicha</td>
<td>Dambiitta-Limu</td>
<td>The sub-clan that owns Konfi has no living members.</td>
</tr>
<tr>
<td>Quulque</td>
<td>Dambiitta-Duubana. The Konfi belongs to the family of Jillo Kiiri Diudu Chilako.</td>
<td>The well has fallen into disuse. The clan owns another well in Gayo.</td>
</tr>
<tr>
<td>Digaalticha</td>
<td>Digalu</td>
<td>Has fallen into disuse.</td>
</tr>
<tr>
<td>Safarticha</td>
<td>Karayu-Siibu. The Konfi is owned by the family of Anna Jattani Diida</td>
<td>The Konfi rights of the well was given to an Ogaden family who were assimilated by the family of the Konfi.</td>
</tr>
<tr>
<td>Loe wells</td>
<td>Dambiitta-Limu. The clan of the Konfi has few living members.</td>
<td>The sub-clan of Liimu failed to get the appointment of Hayu, and announced their disassociation with the Dambe-Noono clan alliance. They were then cursed by the assembly of Dambe-Noono. Liiban Jillo Hadawa (1833-1840) told them “Saaden Dambe Noono yaxay isaan kuute beena&quot;- you have been terminated by the eight Dambe-Noono alliance. Following this curse the whole sub-clan perished by diseases. The few families left were reabsorbed into the sub-clan of Dambiitu-Faaroo.</td>
</tr>
<tr>
<td>Dambiicha Dac</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Luurme</td>
<td>Karayu-Danqa. The Konfi belongs to the family of Kootucha Haache.</td>
<td>The sub-clan of Karayu Danqa is divided into Oromtiti and Gabbararti. The Danqa in Obbu-Kenya are Oromtiti, while those in Diirre and Dubluq are Gabbararti. The Konfi belongs to the Gabbararti.92</td>
</tr>
<tr>
<td>Dalao</td>
<td>Waar Jida. The Konfi belongs to the family of Halakhe Dalao.</td>
<td>A member of that family Jida Chaqqua Dalao is currently living in Moyale town.</td>
</tr>
</tbody>
</table>

91 All the wells in the Goof and the Lae mada have been occupied by the Garre. The Booran during the assembly of Gumi Gaayo in 1996 petitioned the Government about violations of their ownership rights (see Huqqa 1997).92 These are the sub-clans of Haero Abba Biyya and other later groups absorbed into the Karayu clan.
Karayu. The Konfi belongs to the family of Ballale Abuba.

No other information

Dambe Saako

Dambitu. The Konfi belongs to the family of Oasyo Melko Cegjo.

The care-taker is Gwy Gojape. He lives in the refugee camp in Liibe.

Dambe Saako

Liiban Gololcha

Dambitu. The Konfi belongs to the family of Golacha Birru Hum Jarso.
The well has been claimed by the Garre.

The well had fallen into disuse for several centuries. In 1990 the Garre re-excavated the old well, ignoring objections by the sub-clan alliance of Dambe-Nonno. They nominated it Wacha Dera. The Dambe-Noono clan brought the case before the Booran and the government during the Dergue administration. The Dambe-Nonno alliance used the genealogical history to Liiban Gololcha who dug the well to prove their claim. Finally, the administration decided that the well belonged to the Dambe-Noono clan alliance who were asked to repay the Garre 100 bulls for their expenses. But the Garre refused. They hardened their position following the fall of the Government of Mengistu Haile Miriam.

Abbayi Raya

Nonitu-Amoooye. The Konfi belongs to the ancestor of the current abba gada
(Boru M’ada 1992-2000)

No other information

El Halakhe Jillo or Ali

Nonitu-Amoooye. The Konfi belongs to the family of Huqa Liiban Yaya.

No other information

Abuba Sibu was an Orma (Wardai) who gave himself up to the Sodom Booro and was assimilated. His genealogy formed the sub-clan of Karayu - Sibu
CHAPTER 5

Range Condition and Trends in the Lowlands

The Lowlands of Booran are gradually being degraded.\(^94\) The causes are numerous. Earlier it was mentioned that the rangelands have shrunk to a fraction of their former sizes (Chapters 2 and 7). This is largely attributed to conflicts between the Booran and other ethnic groups. As an internal response to external pressure, the Booran are converting grazing lands into farms, communal and private pasture reserves. The problem is exacerbated by loss of the wet season grazing lands to water and ranch development (Chapters 6 and 7-8).

For example, Diid Hara before 1960, was a wildlife sanctuary. The area served as wet season grazing rangelands for livestock of the residents of the Yaballo, the Arero and the Dubluq Dedha. The area had two traditional ponds used for short duration during the wet season, after which the population returned to the home mada. This pattern of seasonal grazing left the rangelands less overgrazed and resilient.

Following pond developments in the 1970s, large populations of livestock and the main settlements were attracted to Diid Hara. Between 1974 and 1990 the number of settlements increased by more than 200%.\(^95\) Availability of permanent water in the former wet season rangelands altered the patterns of grazing to a full year. Initially, water development resulted in an increase in herd growth. However, as grazing pressure increased and patterns of traditional grazing deteriorated, high livestock mortality occurred. The negative effect of pond development is only being comprehended after environmental damage has been done. Range degradation is characterised by invasion of undesirable woody species and unpalatable fobs, loss of grass layer and increased soil erosion. For example, between 1974 and 1983 the population of Commiphora africana increased from 8.2% to 31%.\(^96\) In Surupa and Fichawa, soil erosion is severe, herbaceous vegetation is lost followed by increased bush encroachment.\(^97,98\)

The oral source suggests little evidence of bush encroachment before the gada of Maad’a Galma (1944-1952). Bush encroachment began after the gada of Jaldesa Liiban (1952-1960) and worsened following a ban on use of fire.\(^99\) In absence of fire, grasslands are invaded by bushes, reducing grass production and creating food deficits for livestock. Recent estimates put the area under bush encroachment at 40%.\(^100\) The rangelands of the Arero and the Moyale Woredas followed by the Liiban Woreda have the greatest proportions of woody cover (Figure 8).

\(^{94}\) Coppock 1994  
\(^{95}\) SORDU 1990  
\(^{96}\) SORDU 1990  
\(^{97}\) Abune 1991  
\(^{98}\) GRM 1990  
\(^{99}\) Tamene Yigezu 1990  
\(^{100}\) Coppock 1994
Comparison of photographs of the area North of Yaballo taken between 1967 and 1984 showed that woody cover had increased from 24.1-28.5%. The changes were localised as opposed to being uniform.\textsuperscript{102} It is suggested that bush encroachment occurred in phases over time.\textsuperscript{103} These cycles are mediated by episodic climatic events, grazing and irregular use of fire.\textsuperscript{104} Commiphora africana, Acacia brevispica, Acacia nilotica, A. seyal, A. drepanolobium, A. bussei and A. hondia are among the species responsible for bush encroachment. The potential for bush encroachment is demonstrated by high densities of young populations.

Changes in woody canopy cover is followed by reduction of the herbaceous layer (Figure 9). In Figure 9 a represents an open savannah, the grass cover exceeding woody cover, while b represents bush encroachment phase followed by decreasing grass cover. In rangelands where grazing pressure is high, unpalatable fobs and shrubs are predominant.

Fire is an ancient tool of range management used to control undesirable plant species. Rotational burning was traditionally practised. The settlement lands were avoided, while the "forward grazing areas" (maata tiikha) were periodically burned. Burning removes moribund grass, renews grass growth and reduces tree saplings. The post-fire grass growth is nutritionally superior to the unburned grass. Burning may result in wildfires. The oral source cites an incident following the rinderpest epidemic of 1888 when the fire that was started in the Diid Liiban system crossed the Dawa River, across the Diirre and burning the ritual settlement of the Qallu at Darito near Yaballo.\textsuperscript{105} Following the official banning of fire, the woodlands have thickened, while tree regeneration may be out-competing with the herbaceous layer.

Data supplied by SORDU
\textsuperscript{102} GRM 1990
\textsuperscript{103} GRM 1990
\textsuperscript{104} Coppock 1994
\textsuperscript{105} The fire travelled more than 160 km. The wildfire was caused by an accumulation of fuel load following a crash in the cattle population.
5.1. Results of the survey

The landscapes of the lowlands of Booran varied in altitude from 570 m a.s.l to 1320 m a.s.l. Approximately 9% of the landscapes were used for crop cultivation, while 91% were used for grazing. The majority of the landscapes are suited for cattle management (58.6%) compared to 10.3% for cattle and camels, 12.1% for cattle, small stock and camels and 10.3% for small stock only. Less than 25% of the rangelands are suited for the management of small stock. Only 3.5% of the landscapes had conditions that met the needs of the three livestock species. Generally, the heterogeneous landscape of the Chaari production system are suitable for all the species of livestock, although camels and small stock have more preference. The broken landscape and hard ground supports browse plants more than grass. The landscape of limestone soils (boujji) is suited for cattle and least suited for small stock. The bushlands of the red clay soil (Wayama) is suited for camels and cattle management. The camels prefer the Wayama bushlands that is dominated by Acacia brevispica, Commiphora species and Acacia senegal. The vegetation of the Wayama landscape has both the browse layer and the grass layer. The grass consists mostly of the species that are tolerant to tree shading. Less shade tolerant grass species occur in gaps between bushes.
Table 12. Landscapes suited for management of different livestock species

<table>
<thead>
<tr>
<th>Livestock species suited</th>
<th>Wet season</th>
<th>Dry season</th>
<th>All Year</th>
<th>Drought year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cattle</td>
<td>38.6%</td>
<td>52%</td>
<td>52%</td>
<td>20%</td>
</tr>
<tr>
<td>Camels</td>
<td>5%</td>
<td>10%</td>
<td>12%</td>
<td>6%</td>
</tr>
<tr>
<td>Cattle/camels</td>
<td>10%</td>
<td>17%</td>
<td>21%</td>
<td>9%</td>
</tr>
<tr>
<td>Buffaloes</td>
<td>7%</td>
<td>15%</td>
<td>20%</td>
<td>8%</td>
</tr>
<tr>
<td>Goats</td>
<td>8%</td>
<td>12%</td>
<td>15%</td>
<td>7%</td>
</tr>
<tr>
<td>Sheep</td>
<td>6%</td>
<td>10%</td>
<td>12%</td>
<td>6%</td>
</tr>
<tr>
<td>All</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>

The wet and the dry season grazing rangelands occur in equal proportions (Table 12). 17.2% of the landscapes constituted main settlement lands where land use is for the full year. Drought grazing reserves made up 10.4% of the landscapes. The landscapes previously used during the wet season or the dry season are used for the full year following development of surface ponds. This infers the full year grazed landscapes might be increasing (Table 12). By contrast, areas previously set aside as drought grazing reserves are probably diminishing, due to conversion into ranches (see Chapters 6-7).

In the Lowlands, 82.8% of the landscapes are threatened by a combination of bush encroachment, unpalatable fobs and shrubs (Table 13). Only 17.2% of the landscapes were free from either bush encroachment or invasion by unpalatable fobs. Bush encroachment is in climax stages in 24.1% of the landscapes. The rangelands in climax stages are found in the Golbo production systems of Arbaale, Saake, Qadim, Magado and Diilo Gorai. In the Diirre production systems, the Gerille, the Dh'aas, the Erdar Dedha have bush climax. In the Liiban Woreda, the Chaari production system is in bush climax. The Booran informants suggest that these bushlands were established more than 40 years ago. In these areas woody cover exceeded 60%, with the density of 2000 trees/ha in most places. The common species are Acacia reficiens, Acacia nilotica, A. horida and Commiphora sp. The grass layer has been reduced. Traditional range scouts confirmed that annuals, biennials and fobs have increased. The landscapes in Diid Hara, Madacho, Gobso, Melbana and D'oçqole are recently invaded.

Table 13. Factors threatening range condition (N= 58)

<table>
<thead>
<tr>
<th>Bush encroachment/unpalatable fobs</th>
<th>Unpalatable fobs/shrubs</th>
<th>Bush invasion</th>
<th>Bush climax</th>
<th>Not threatened</th>
</tr>
</thead>
<tbody>
<tr>
<td>% of landscapes</td>
<td>25.9</td>
<td>32.8</td>
<td>24.1</td>
<td>17.2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Soil erosion threat</th>
<th>Non</th>
<th>Light</th>
<th>Light-moderate</th>
<th>Moderate-severe</th>
</tr>
</thead>
<tbody>
<tr>
<td>% of landscapes</td>
<td>63.8</td>
<td>10.3</td>
<td>19.0</td>
<td>6.9</td>
</tr>
</tbody>
</table>

106 The rangelands of Damaballa Wachu were used as a drought grazing reserve by the Dedha of Dulach Godana before the ranch displaced 400 households or about 1,600 residents 17 years ago.

107 My informants were 45-50 years old.
In 25.9% of the landscapes, change in the herbaceous layer were caused by unpalatable fobs (Table 13). The rangelands seriously threatened are in the Erdar mada. This Dedha was traditionally a jewel of the grazing lands in the Diirre Woreda. It was here that the “grassland plains of Italiyo famous for horse breeding” is found. In these once prime rangelands, more than 40% of the herbaceous vegetation is now composed of unpalatable fobs. The Booran informants believe that these changes have occurred in less than 5 years. The Erdar wells, among the highest yielding watered more cattle than other Tulla wells except the Webb well complexes. The ecological deterioration did not result from historical use, rather it is associated with a bore hole developed less than five years ago. The bore hole engine is less than 200 m from the traditional wells. Unlike the traditional wells where livestock numbers were controlled by amounts of water and human labour, the high yielding bore hole attracted greater livestock population above what the rangelands would support. This has resulted in rapid decline and downward trend in range condition (see below).

Soil erosion is not yet a threat in the rangelands, while it is a growing threat in the croplands. Approximately 26% of the landscapes are either severely or moderately eroded (Table 13). 74.1% of the landscapes showed no evidence of erosion or light erosion. Soil erosion is a threat in Diid Hara. Arbaale and Saake and in the croplands around Yaballo, Arero, Mega and mada Romso.

### Table 14. Range Condition and Trends

<table>
<thead>
<tr>
<th>Condition classes</th>
<th>% of landscapes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poor</td>
<td>15.8</td>
</tr>
<tr>
<td>Fair-poor</td>
<td>24.6</td>
</tr>
<tr>
<td>Fair-good</td>
<td>26.3</td>
</tr>
<tr>
<td>Good</td>
<td>22.8</td>
</tr>
<tr>
<td>Excellent</td>
<td>10.5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Condition Trends</th>
<th>% of landscapes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upward</td>
<td>3.4</td>
</tr>
<tr>
<td>Downward</td>
<td>58.6</td>
</tr>
<tr>
<td>Stable climax</td>
<td>37.9</td>
</tr>
</tbody>
</table>

Range condition and trends in the lowlands are deteriorating (Table 14). Of the total landscapes, only 10.5% (this includes a ranch, kaalo and the area reserved for calves) were in excellent range condition. 40.4% were either in poor or fair to poor condition. Even in those rangelands which received good to excellent condition ratings, their trends were downwards (58.6%). Less than 4% of the rangelands showed an upward trends in range condition. Among the landscapes with excellent range condition is the Damballa Wachu ranch with grass cover of > 60%. However, because of the invasion of Commiphora sp. the trend may be downwards. 5.2% of the landscapes were under management of kaalo and the traditional calf-grazing reserves (laafa seera yaahiye). Rangelands around the major well complexes were in fair-good condition. The trends of the grazing lands around the Tulla well complexes in Dubluq, Webb, Erdar and Dh’aas are downwards compared to that of the Gayo in excellent and stable range condition.

The population structure of A. drepanolobium and Commiphora africana illustrates cycles of invasion (Table 15). The communities of A. drepanolobium called Fullesa Hirnata (named after the species and a historical event), Silala and Quare Kuuda are over-mature populations. They have lower regeneration potential, compared with the communities at Diibe Adama (Liiban) and Diban Diiba (Erdar) that had high regeneration potential. The younger population lacked the mature classes > 8 cm girth basal diameters (gbd). The population of Commiphora africana at Injum
Walansa and Diid Hara Arreele represented the mature communities. Lower proportions of the regeneration size class (0-2 cm gbd) might corroborate the evidence that the invasion stage was not recent.

### Table 15. Population structure of two invading species at nine sites in the Lowlands of Booran

<table>
<thead>
<tr>
<th>Species</th>
<th>Site Description</th>
<th>% (1/ha)</th>
<th>0-2</th>
<th>2-4</th>
<th>4-6</th>
<th>6-8</th>
<th>&gt;8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fullesa Hirmata (Yabalo)</td>
<td>1300 m a.s.l.</td>
<td>36.0</td>
<td>9.1</td>
<td>15.9</td>
<td>33.0</td>
<td>29.5</td>
<td>12.5</td>
</tr>
<tr>
<td>Silala (Melbana)</td>
<td>1030 m a.s.l.</td>
<td>36.0</td>
<td>5.0</td>
<td>21.3</td>
<td>57.5</td>
<td>12.5</td>
<td>3.7</td>
</tr>
<tr>
<td>Diban Diiba (Erdar)</td>
<td>1200 m a.s.l.</td>
<td>640</td>
<td>76.9</td>
<td>12.5</td>
<td>7.5</td>
<td>3.1</td>
<td>0.0</td>
</tr>
<tr>
<td>Diibe Adamal (Liiban)</td>
<td>1230 m a.s.l.</td>
<td>136</td>
<td>58.8</td>
<td>41.1</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Qaare Kuuda (Liiban)</td>
<td>1260 m a.s.l.</td>
<td>484</td>
<td>19.8</td>
<td>37.2</td>
<td>33.1</td>
<td>7.4</td>
<td>2.5</td>
</tr>
<tr>
<td>Commiphora africana</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Injinji Walansa 1 (Dubluq)</td>
<td>1230 m a.s.l.</td>
<td>392</td>
<td>20.7</td>
<td>24.4</td>
<td>31.7</td>
<td>15.9</td>
<td>7.3</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>200</td>
<td>14.9</td>
<td>29.8</td>
<td>36.2</td>
<td>14.9</td>
<td>4.3</td>
</tr>
<tr>
<td>Hara Hawatu (Diid Hara)</td>
<td>1300 m a.s.l.</td>
<td>644</td>
<td>11.8</td>
<td>34.2</td>
<td>37.9</td>
<td>11.8</td>
<td>4.3</td>
</tr>
</tbody>
</table>

5.2. The ecology of bush encroachment

Improvement of bush encroachment will require proper understanding of the mechanics of invasion. Bush encroachment is an impediment to rangeland management. The lowland vegetation that is a typical savannah dominated by varying proportions of woodlands and grasslands has shifted towards the woodlands. Savannah vegetation is evolved under climatic variation and periodic disturbance by grazing, fire and droughts. Disturbance results in unpredictable changes in woody-grass ratio. The changes favour woody plants when grassland productivity is reduced.

Ecologists have considered savannahs as equilibrium ecosystems. It is suggested that changes occurring in response to climatic variation and grazing were predictable. It is claimed that when these ecosystems are not disturbed, a balance exists between its different components. In absence of disturbance the vegetation is believed to progressively change in a predictable fashion until wood climax. Retrogression result in sub-climax represented by varying proportions of the woodland and the grassland. Earlier it has been mentioned that the Booran rangelands have been

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Note: Samples of tree cores will be used to analyse tree rings that might be related to past climatic events.
perturbed by famine, heavy rainfall and disease epidemic that caused episodic shifts in vegetation structure and composition.

The classical succession theory assumes that the vegetation exists as monoclimax. This presupposes uniform climatic conditions and ignores important effects of patchy landscapes. In heterogeneous savannah ecosystems, monoclimax is unrealistic. Moreover the model fails to acknowledge prevalence of repeated disturbances. The possible scenario for the savannah vegetation is existence of multiple states or polyclimax at the landscape scales.109

The alternative non-equilibrium model suggests that savannah vegetation is created by disturbance (e.g. fire, grazing, drought and rainfall). In response to disturbance events the vegetation oscillates between the grass layer dominance at one time and the woody dominance at another. Establishment of woodland on former grasslands follows overgrazing, underbrowsing, exclusion of fire or decline in the population of livestock. In the bush encroachment state, removal of livestock, or use of fire will not reverse the condition. A woody state will be persistent. The second theory suggests that transformation of the states from the grassland to the woodland and vice versa is unpredictable because changes are influenced by stochastic events.

The third model is state-and-transition.110 The model focuses on multi-stable states, separated by transitions described by disturbance or management. The change from grassland to woody state can arise if grass is overgrazed beyond its capacity to recover quickly or under-use followed by drought, which stimulates tree seedling developments.

The equilibrium theory suggests that coexistence of trees and grasses depends on "niche" separation between the root zones111 and differential responses of herbivory and fire that either favours the grassland or the woodland. The non-equilibrium theory would suggest that coexistence of vegetation states depends on dominance by one competitor, with disturbance controlling the direction of change.112 The model suggests that the structures of savannah environments are primarily determined by competition between a tree layer and a grass layer. The model assumes that grasses have access to soil water in the upper layers, trees having monopoly in the subsoil layer.113

Empirical data show that niche separation between grasses and trees is not well developed. Sporadic rainfall storms wet only the upper soil layers where both the roots of grasses and trees compete for water. Grasses because they have high density of roots in this layer, have advantage over tree seedlings but less advantage over mature trees. Soil water distribution is the function of soil structure.114 Most species of Acacia posses both deep roots and surface roots that gives them the advantage of being accessible to shallow and deep soil water.115 Thus, if grazing or fire exclusion alters the balance of tree and grassland layer, the competitive advantage of trees over grasses may be enhanced.116

109 Walker 1981
110 Westoby et al. 1989
111 Walter 1983
112 Walker et al. 1981
113 Walker 1973
114 Seghier 1995
115 Tamene Yigezu Tessema 1990
116 Coppock 1994
Layne Coppock explaining the causes of bush encroachment in the Lowlands of Booran, argued density-dependent factors or the equilibrium theory. He suggests two hypotheses. The first cycles of land use, followed by degradation and subsequently, bush encroachment and abandonment. This is followed by regeneration of grass and killing of trees with fire, then followed by the return of human habitation. The second hypothesis suggests that overgrazing and bush encroachment deplete soil nutrients, reduces grass production, which forces people to abandon the area, until nutrients are built up and the grass layer recovers. He suggests that such cycles take from 60 to 100 years. From oral tradition there is no suggestion that long-term land use is cyclic beyond short-term the wet-and-the dry season movements. The Booran shared grazing resources with other pastoral communities. Peaceful coexistence with the Gabra enabled their camels to exploit the browse, while Booran cattle exploited grasses. The traditional model of land use did not allow excessive overuse and abandonment. Furthermore, the suggestion that overgrazing depletes soil nutrients, while nutrients are replaced by bush encroachment is not supported by empirical data. However, both oral tradition and empirical evidence suggest that exclusion of fire is followed by bush encroachment. The more likely explanation of the mechanics of bush encroachment is the interactions between trees, grasses, fire, climate, grazing and episodic tree seed production. It is understood that the woody species responsible for bush encroachment characteristically have, high seed production, persistent seed banks, dispersal by livestock, capacity to sprout after fire, and are less suited for browsing.

The climax populations are found in greater proportions of the landscapes. The dominance by bush climax in the Chaari production system, the Golbo production system, and in the Diirre production system might be due to the combined effects of climatic variations grazing and history of fire perturbation. The Golbo production system until two decades ago had low densities of human and livestock populations. It is only after the insecurity period of the 1970s and following development of permanent ponds that the population increased. The Chaari production system of the Liiban Woreda was exploited intermittently during the dry season. Thus, the bush climax in these ecosystems would not suggest overstocking but might be understocking. This is corroborated by evidence from the Golbo production system in Northern Kenya where bush encroachment occurred three decades ago following grazing exclusion due to insecurity.

5.3 State-and-transition model

Tree regeneration occurs in episodic cycles. Woody plant regeneration may remain dormant for several decades before favourable conditions stimulate growth. The same may be true for the soil seedbank that remains dormant until rainfall of a critical threshold is registered. The burst of regeneration after episodic climatic events forms different cohorts of tree populations. For example, Acacia drepanolobium produces enormous quantities of seeds that regenerate after favourable rainfall into different population cohorts. Young seedlings may remain dormant until the grass layer is grazed. Droughts might favour tree seedlings more than the grass. After drought, tree saplings take advantage of improved soil moisture to grow. Moreover, fire and grazing may...
independently control the balance of the woody cover and the grass layer. They interact to cause changes in structure of the woodlands and the grasslands. These events occur episodically in different parts of the Lowlands. This differential patterns of tree regeneration through-out the lowlands has contributed towards different stages of bush encroachment. Bush encroachment control may therefore require understanding of the life cycles of invasive species. The effective state at which bush is controlled is at the early stage of seedling development.

**Figure 10. State-and-transition model of bush encroachment**

In the hypothetical example (Fig. 10), three states of vegetation leading from grassland to bush climax illustrate the state-and-transition model. The dashed lines show a probable but unlikely change from bush climax to grasslands without investing in range rehabilitation project. The reason being bush climax is a stable community that seldom burns (owing to low fuel loads) or respond to grazing.

[Diagram of state-and-transition model of bush encroachment]

\[1^{24}\] GRM 1990
Figure 11 is a life cycle of *Acacia* species.\(^\text{125}\)

**Figure 11. Life cycle of Acacia sp.**

Seed germination is favoured by episodic heavy rainfall or fire. Seedlings survival are influenced by moisture stress, herbivory and competition from bigger trees and the grass layer. State III is the most vulnerable stage of tree growth that could be controlled by repeated burning (Fig. 11). In Stages IV and V, the likelihood of bush control declines. The latter growth stages are resistant to fire.

**Figure 12. State-and-transition model showing response of Grassland, Abutulon sp. and Acacia seyal to wildfire.** Where T1,2,...,Transitions between the vegetation states

An experimental study from Northern Kenya\(^\text{126}\) is provided as an illustration (Fig. 12). In the fire-vegetation cycle, State I is represented by the grassland. In absence of fire and heavy grazing or

\(^{125}\) Tamene Yigezu 1990

\(^{126}\) Oba 1997
lack of grazing, the dwarf shrubs: Abutulon sp. and Acacia seyal invade the bottom land landscape. The invasion by A. seyal and Abutulon sp. is followed by reduced grass production. In State III, Abutulon sp. dies back providing fuel load. Following fire burn, the Abutulon sp. and A. seyal regeneration are eliminated. State IV is represented by A. seyal climax. The Abutulon sp. and the grass layers are replaced and bush encroachment is established. Lack of the fuel load make introduction of fire at State IV impossible. Management is beneficial if the focus is on States I-II. Burning eliminates Abutulon sp. and the regeneration of A. seyal. If the fire program is repeated in 2-3 year cycle, the range will return to the pre-bush community of open grassland (i.e. State I). In complete exclusion of fire, the Acacia woodland climax will be persistent.
Past Range Developments

Framework for developing the Booran rangelands was laid down by the study of AGROTEC/CRI/SEDES of 1972-74. The justification of the proposed range development project was that the traditional land use system was destructive to the natural vegetation. The policy of altering the traditional system of production was aimed at reducing overgrazing and encouraging integration of the pastoral economy into the consumer economy. It was wrongly believed that the intervention would raise the living standards of the pastoralists by increasing the supply of the red meat to the highlands and exports to earn the country foreign exchange. The modernising program was expected to increase productivity of the Booran herds by instituting proper stocking rates of the range. It was argued that development of infrastructure and water in strategic areas would reduce pressure on the rangelands. The traditional system of range management was argued to be incapable of achieving these goals. The overstocking of the dry season rangelands and understocking of the wet season rangelands were considered an unacceptable form of range management. The planners therefore envisaged that the pastoralists would "...(be) encouraged to restrict herd numbers" according to the carrying capacity of the range. "Upgrading" the indigenous production to "meet the requirements of the international market" and demonstrating financially sound range management and marketing systems.A To achieve this goal it was recognised that the natural balance that the Booran maintained would be altered. In the words of the authors of the report,
6.1 Water development

The assumptions for water developments were that the Lowlands of Booran lacked surface water in general. The water that is relied on is obtained from the deep Tulla well complexes. The wells and the rangelands that surrounds them are intensively used during the dry season. The aim of water development program was to reduce pressure on the dry season rangelands by creating watering points in the wet season rangelands. A further aim was to increase more use of the wet season rangelands. The advantage of the wet-dry season grazing pattern was therefore not appreciated. The practice of rotational grazing between the wet and the dry season rangelands was argued to be an impediment to proper grazing management. On the contrary the wet-and-the dry season grazing systems have preserved the rangelands.\(^\text{129}\)

The new development model reorganised the pastoral grazing units so that movements would be effectively controlled and sedentarization of the population encouraged. The changing patterns of resource use were thought to benefit the population through improved veterinary services and increased provision of technical assistance.

In the traditional grazing system, the fora-herd management system during the rainy season moves into the peripheral areas and utilises grazing, using surface pools and traditional ponds. After the water sources were exhausted, the grazing then returned to the dry season rangelands, that had been rested (Fig. 13). Water and grazing resources are reciprocally shared by each Dedha as a rule rather than the exception (see Chapter 4).

The new development model was based on the notion that movements between different mada and within individual Dedha worked against the principles of proper range management. It was assumed that if water was developed in the wet season grazing areas to last more than six months, then the need to move livestock within and between Dedha would be reduced. The new grazing model presumed that availability of water in the wet season grazing areas would ensure rational use of the land and avoid concentration of livestock in the dry season rangelands.

SORDU using heavy earth moving machinery constructed 126 ponds and rehabilitated some traditional wells. Pond capacities ranged from 6000 m\(^3\) to 10000 m\(^3\). The larger ponds provided water for the whole year. The water sources were linked by road networks. The development of free water, easy to exploit as opposed to the traditional water sources, attracted permanent settlements leading to abandonment of the wet and the dry season grazing patterns. The rangelands served by the perennial ponds were overstocked, leading to severe environmental degradation.\(^\text{130}\)

\(^{129}\) In most sub-Saharan Africa countries, rangelands surrounding bore-holes are overgrazed.

\(^{130}\) Messele 1997
Fig. 14. Changes in the traditional grazing patterns following pond developments.

Traditional Model

**Dedha I**
- Wet season rangelands
- Dry
- W

**Dedha II**
- Wet season rangelands
- Dry

Development Model

**Dedha I**
- Wet/Dry season
- Ponds
- Dry
- W

**Dedha II**
- Wet/Dry season
- Dry
6.2. Ranch development

Four ranches (Diiid Xuyyura), Sarite (17,000 ha), Damballa Wachu (12,000 ha) and Walensu (25,000 ha) were developed on the Western model of range management. They were aimed at

- removing unproductive immature cattle from the rangelands
- encouraging pastoralists to integrate livestock production into the market economy
- introducing improved management techniques
- providing sources of beef for export and the internal market

An additional objective was to increase offtake from the rangelands during drought. It was argued that marketing, saved animals from starvation and the cash earnings would reduce reliance on milk, by increasing grain intake.

The ranches failed to demonstrate economic returns. The improved marketing did not materialise. Thus, the strategy to reduce stocking rates on the range was not accomplished. The policy ignored the Booran rationale of livestock marketing, that of selecting unproductive old cattle, sterile females and bulls as opposed to immature cattle. The animals when sold fetched more money than immature cattle. The surplus cash is converted into livestock to replace the animals “lost” to the market.

The plan was to finally hand over the activities of the ranch to Service Co-operatives (SCs). The SCs were also expected to maintain veterinary services, provide consumer goods, maintain ponds and roads. Contrary to expectation the ranches and the SCs had not succeeded. Ranch financial losses were blamed on high operation costs and lack of finances to buy steers. The SORDU ranches between 1979-1988 operated at an annual deficits of EB 122,937 with an accumulated deficit of EB 842,174. Furthermore, ranches continued to experience drought and lost livestock just as did the pastoralists. During droughts, ranch livestock were sold at a loss. The ranches did not account for environmental variability. In the conclusions of the economists:

It is doubtful if (the) “...ranches in their “...present form would, even under the most opportunistic assumptions of the future ... be able to generate any profits...to give the Boran greater returns than they would have achieved under the traditional wet season grazing use of such rangelands.” Thus “The main question which arises is whether this form of operation is the most appropriate...and whether the present ranches can ever be profitable or justifiable if the full opportunity costs forgone by the Boran are included in the analysis (p.7)”

The pastoralists failed to meet the annual quotas of livestock needed by ranch management. During the 9 years of operations, only 5% of the total livestock originated from the pastoralists. The rest were purchased on the open market. The SORDU ranches demonstrated the bankruptcy of the Western model of range management in pastoral Africa.

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131 Nicholson 1983
132 SORDU 1991
133 GRM 1991
6.2 DEVELOPMENT ON COMMUNITY-BASED MODEL

The community based development programs were aimed at improving food security and introducing appropriate water technology. The Booran were introduced to large scale famine relief distribution during the drought of 1974 (Chapter 9). Through the Relief and Rehabilitation Commission (now renamed Disaster Preparedness, Prevention and Development Commission), the Red Cross, UNICEF, DPPCD, CARE-Ethiopia and the Norwegian Church Aid - Mekane Yesus-SES, relief was provided to the drought stressed population and victims of ethnic wars. After nearly two decades of famine relief distribution, self reliance has not been achieved, albeit useful lessons learnt from the work of the agencies.

CARE-Ethiopia began its activities in Booran in 1985. Initially the program was involved in emergency and rehabilitation projects designed to help most stressed populations. Following recovery the project adopted a small scale community-based development approaches with strong emphasis on extension (see Part II). Development projects were on:

- domestic water technology
- hay making
- providing loans
- grain storage
- Dryland farming

6.2.1. Development of domestic water

The project experimented with water cisterns, constructed by trained masons from the communities. Availability of appropriate and affordable technology within the community lead to its rapid adoption. The capacity of cisterns varied from 50,000-120,000 litres. Initially, CARE covered 75% of the total cost by supplying cement, while the people provided blasts, sand, artisans and labour. The cost of cisterns varied from EB 9,500-15,300. This is equivalent to the value of 8 bulls at the local market. The middle level households pooled resources to build cisterns as compared to the wealthy households that built their own. Boku Tache (unpublished data) reports that in Diid Hara 35.7% of the cisterns (N = 28) were privately owned compared to 64.3% that were communal. Provision of drinking water near settlements improved calf survival. During drought, individuals hired water-tankers to refill their cisterns.

Water cisterns introduced new dimensions to resource ownership rights among the Booran. Private ownership of water is a recent development. As described earlier, the Booran have an elaborate water sharing tradition. Moreover, water is not a commodity for selling. The practice of selling water originated in urban areas where households either hired labour to collect domestic water or bought water from the carriers. In the case of cisterns, Boku Tache suggests that individuals who sold water justified it by their investment. However, the Booran are concerned because the practice might be extended to the traditional water sources. Boku shows that the community tolerated the practice if the individuals needed the money to support their families (Box 5).

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134 Boku Tache unpublished
135 Coppock 1994
136 This is a practical solution to the scarcity of drinking water.
Box 5. Private water ownership - the case of “Galgallo Kootombola”

“Galgallo Kootombola” (not his real name), was a poor man who worked on the ILCA-CARE cistern demonstration project in Fadile. After the completion, ILCA-CARE handed him ownership to manage the water the way he saw fit. He certainly had a foresight on the project as he started selling water to livestock rich pastoralists. He charged ER 1 for 13 litre jerricans of water and ER 2 per head of small stock. Using his earnings he built a that roofed house and bought himself cattle. He accepted gifts to establish relationships with the community, in turn giving them water. This individual now owns several hundred heads of cattle and has used his extra earnings to build the second cistern.137

Where the community co-operated in the construction and shared the water, the traditional rules and regulations were applied for the cistern water management (Box 6).

Box 6. The communally owned cistern in Boorale, Madacho

The community of Boorale, has had serious water shortages for human consumption. Women and calves travelled more than 30 km to water every day. The long distance is partly to blame for high calf mortality during drought. The community pooled resources to construct a cistern. Poor families supplied labour, while the wealthy provided cash for the construction. The community appointed groups of elders from different olla to manage the water. The elders laid down rules on how the water would be shared. Priorities were given to the elderly, pregnant women and households with large families. The users paid fees for maintenance.138

6.2.1 Fodder banks

Drought kills livestock because of scarcity and the poor quality of forage. This is worsening as degradation is increasing. CARE-Ethiopia jointly with ILCA investigated adoption of hay making by women. Traditionally, women were responsible for collecting hay to feed calves. The dry hay collected at late stages of grass growth is low in nutrient quality. It has been shown that by harvesting hay at the right stages of grass growth, nutritive quality will be improved. Provision of forage bank is an improvement on calf management.139 The Booran have responded by establishing fodder banks near settlements (see Chapter 7). The pasture reserves or kaalo are owned by co-operating olla. Calves and drought weakened animals are grazed on the forage reserves during the dry season. The constraint is that forage banks are grazed after the nutritive quality has declined.

6.2.3 Food security

The other experience is with food aid (see Chapter 9). After more than two decades, the agencies are convinced that food aid needs to be linked to development. One such an approach was to advise the Booran to sell livestock while the price is favourable. The comparative price advantage gives them a better terms of trade to buy grains in bulk for emergencies. The second approach was to help destitute families to practice dry-land farming. The agro-pastoralists were given loans to purchase farm implements, improved seeds, oxen for ploughing and fertilisers. Loans were given in kind or in cash. These projects had important contributions to food security, but did not reduce the perpetual dependence on food handouts (see Chapter 9).

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137 Boku Tache unpublished Data
138 Boku Tache unpublished Data
139 Coppock 1992
Farming in the Rangelands: An Encroachment or Economic Diversification?

Changes in resource tenure rights in the lowlands should be understood from three perspectives. The historical alienation of humid zones by the Ethiopian soldier settlers and their influence on the Booran, the internal adjustments to diminishing resources and loss of grazing lands to farming systems. Internally, the community uses its judgements to alter allocations of communal resources. The internal adjustments are designed to ameliorate increasing grazing and food insecurity. The rules and regulations are those traditionally used. The internal responses to resource pressure provides gradual changes. The adjustments are favourable to members regardless of their wealth status. The resources reallocated would not lead to immediate breakdown of the indigenous resource administration. By contrast, the externally imposed resource allocation threatens indigenous arrangements, making every one vulnerable. The pace of change and the agents controlling it are responsible for the breakdown of the indigenous natural resources administration. The traditional rules and regulations of resource allocation are ignored. Political contingencies, influences and administrative decisions have an overriding effect. The community rather than being active participants in reallocating resources, become observers (see Chapter 8). The three processes of resource allocation produced cumulative stress on the community, threatening the integrity of the communal resources.

Privatisation of resource tenure rights is an alien idea. In their concept of territorial rights the land belongs to all Booran. The non-Booran have user rights. Right to own and right to use resources are distinguished. In case of user rights, resources are “temporarily” transferred for use. Such transfer would not allow the users to dispose the resource. Farming establishes user rights without changing ownership rights. Those who move to other places may pass the cultivated piece of land on to others but are not allowed to dispose it. Such definitions of tenure rights become redundant under laws of the country which uses different rules to define ownership of land. For the purpose of our discussion we shall concentrate on the Booran world view of property rights, without ignoring the supra-state laws that can annul them.

7.1. History of farming in Booran

Crop cultivation in the lowlands of Booran was reported during the gada of Morowa Abbay (1680-1688). After this period there was no report of cultivation until the Booran were conquered by Menelik II. Farming was begun by the settler soldiers (Neftanya) and the immigrant farmers. The Booran were divided up as Gabber among the settler soldier/farmers. The gabber constructed houses, provided labour for herding cattle, cleaned pens of mules, cleared land and carried out odd

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140 The Hayu Jidda Seele was executed by the Raba gada because he tilled land.
141 For example, the individuals of the sub-clan of Dambe-Nonno were divided among the soldiers/settler families of Angpasu and Birasu, while the Waar Jida were allocated to the families of Bagalla Ido. Gutuma Urgeesa and Gutuma Abba Basso. The soldiery of Menelik were paid in terms of gabber from whom they extracted labour, the produce and forced payments of miscellaneous taxes.
chores. The settlers farmed in the humid zones of Hiddi Lola, Tuka, Gombisa and Mega where favourable climate made cropping possible. After the gabber system was abolished waves of immigrant farmers from the Burji, the Konso and the “Sidama” took up cultivation in the humid zones. All the best farming areas were occupied during this period. The settler soldiers and immigrant farmers acquired extensive pieces of land (gasha) to the detriment of pastoral land use. Over time, the farming centres grew into towns and markets. Sedentarized farmers did not spare ritual lands as need for crop lands increased.

As more immigrants joined in they sought adoption by the Booran clans. The guise of being Booran gave them the right to gain access to the land. The farming communities deposited their livestock with their Booran hosts, who in return received grains. Some of the Booran provided labour for weeding and harvesting, and supplied baggage animals to carry harvests, while the majority bartered grains with magadi-soda and salt from the traditional grain sources in the Gedeo and the Guji.

The settler communities stored grains in underground silos for drought years. The Booran families established credit facilities by receiving grain loans during periods of food scarcity. Season of opening the underground silos were awaited with a great anticipation. A loan of each quintal of grain was paid with double the amount in interest. The credit scheme although unfavourable in terms of the high interest rates charged, provided the means for acquiring reliable supplies of grain. This system of grain loans was abolished when the Dergue took power. Thereafter, the farmers and the pastoralists depended on internal markets for grain supplies.

Farming by the Booran was initially adopted by the communities living in the humid zone (Badha). They picked the hoe and the plough technology from the soldier-settlers and immigrant farmers. The Badha communities traditionally had small livestock herds compared to others and needed grains to supplement their food. Furthermore, they were sedentary, a lifestyle that was conducive to farming.

The pastoralists despised them as being inferior and poor. During the famine of the gada of Jaldesa Liiban (1952-1960), the farming communities in the Badha humid zones were the principal sources of grains for the pastoralists. The drought and the civil insecurity that followed the gada of Goba Bulle (1960-1968) impoverished a large number of the Booran households who needed grains. But it was not until after the Dergue had taken power and following the droughts of the 1970s that the pastoralists began to cultivate. Destitutes who lost livestock to drought and ethnic conflicts during the Somali-Ethiopian war of the 1970s were settled and provided with implements to farm. Farming by the destitutes began in Iddi Alle, Bokdaa, Adhe Galchai and Dololo Makala. It was from this demonstration sites that most Booran adopted crop cultivation. The communities in Comole and Arero were the earliest to establish farming.

Farming was an economic diversification. The ecological crisis made it difficult for the Booran to rely on livestock for food alone. They attribute this to reduced rainfall, and declining livestock : human ratio. My Booran informants estimate that <10% of the Booran households rely directly

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14 The word Sidama is a broad term applied to the people from the Ethiopian highlands
14 AGROTEC. CRG 1974
14 The word Badhole applied to the residents of the humid zone has negative connotations, infering backwardness.
14 Average rainfall data from the highland towns show no such decline
14 Coppock 1994
on the products of their livestock. The remaining majority consumed grains and other non-pastoral foods to subsidise the little milk they got from the small herds. Excluding areas that are too dry for opportunistic crop growing (e.g., Madacho, Magado, Diilo, Arbaale and Gorai), farming has spread throughout the lowland Woredas of the Booran zone. Yet, because of unreliable rainfall, growing of crops in general has not been successful. Generally, successful harvests are in one out of three years. The rest of the time, the Booran relied on the market for grains. Figure 14 shows changes in farm sizes (in hectares) between 1993-1996 in the different Woredas. There are three important points that emerge. First, more land was cultivated in the Diirre and the Nagele Woredas than in others. Second, the areas under cropping fluctuated from year to year. In all the Woredas (the exception being the Arego Woreda), more land was cultivated in 1993, 1994 and 1995. This was after the drought of 1991/1992 in which the majority of the Booran lost livestock. Third, annual variations in cultivated land suggests, (1) that unreliable rainfall makes cropping opportunistic. (2) The slash-and-bum agriculture needed little investments. The exception was the Talteli Woreda where the land under cropping has been increasing gradually (Fig. 14).

Whereas growing of crops is a response to food insecurity, farming transferred parts of the grazing lands to private use. Transfer of grazing lands to cropping was the communities way of responding to food insecurity. Allocation of land for cultivation was authorised by the elders of the Ardha. The size of land cultivated and the locations of farmlands vis-à-vis grazing lands were restricted. The Booran are aware that farming, if not controlled, would conflict with livestock grazing. The checks and balances on sizes of crop lands assisted gradual adjustment of land use, under the resource tenure regimes.

Grains when available delayed sales of livestock, boosting the livestock population. Pastoralists do not make permanent investments in farming. Families who farm a patch in one area may move elsewhere where they acquire another temporary patch. The abandoned patch then reverts into the communal grazing land. Alternatively, when the original owner moves away, some one else would acquire it by informing the elders. Land according to the Booran cannot be sold. Farming is in resource use that is utilised when needed. In comparison to the Booran lowland situation, the more sedentarized Booran communities of Kenya have developed formal land holdings. It is to be expected that the same will occur among the Ethiopian Booran. Currently, it is estimated that between 2-3.4% of the lowlands are under cultivation. The proportion may seem small, but it is the prime landscapes which are being converted into farmlands. Farming has taken up bottom lands where moisture conditions are favourable. The bottom lands are traditionally used for calf-grazing reserve. Loss of the bottom lands to cropping makes livestock vulnerable during drought, when the landscape is in a greater demand.

Land under cultivation is bound to increase, adversely affecting the grazing lands. This is the concern of the Booran. Another concern is that farming and livestock husbandry are not integrated. Conflicting time allocation between farming and herding undermine both farming and livestock management. Furthermore, the Booran have not learnt the use of livestock manure on the farms. Huge piles of cattle manure that is accumulated is going to waste. Failure to use livestock manure coupled with losses of soil fertility implies that food security is unlikely to be accomplished by farming alone. The strategy of combining livestock husbandry and opportunistic farming is to improve food security.

\[147\text{ Obia 1997b}\]
\[148\text{ Coppock 1994}\]
\[149\text{ GRM 1990}\]
\[150\text{ Obia 1997b}\]
Agro-pastoralists share harvests with friends and relatives (Box 7). They establish food security in terms of seeds. During drought, families may not resist consuming seeds saved for planting. When the drought condition breaks and planting season begins, most farming families would be without seeds. They may either go to market to buy unsuitable seeds or abandon planting altogether. This is the period when pastoralists are most vulnerable to food insecurity.

The Booran seldom produce surpluses. Even during periods of favourable harvests self-grown grains would at most last 3-4 months, while for the remaining periods the families sell livestock to buy grains. Shortage of grains are often created by the sharing that goes on all the time. If one family member cultivates, the others regardless of their wealth status, have entitlements to the produce. Under this arrangement, surplus grains are less probable as the consumers outnumber the producers (see Box 7).
Box 7. Management of self-grown grains by households

Crops during farming are in the domain of men. After harvest the responsibility for managing grains is with women. At harvest time, seed for planting (chaartya) is separated from the rest, allocated for use in the following year. Management of seeds is the responsibility of both men and women. Both the family and the category for consumption and planting. Each person receives according to the established reciprocally.

Farmers save grains as seeds for planting. This is because unlike other category of grains, is considered a private resource which others are not expected to demand. If any request are given at the time of the harvest. By bulking grain savings as seeds for planting, farmers reduced due to the moral economy. Seed reserves are managed as the family’s security. The family will also refrain from consuming seeds unless they lack other alternatives. The obvious reason being that the seeds bought on the open market are not well preserved and are unsuitable for planting. Seeds are protected from pest infestation by keeping cobs over fires. The method is used by rural pastoralists, while the settled pastoralists use chemical preservatives against pests. When the grains in the barns are about exhausted, the family changes its consumption patterns. Number of meals are reduced especially during the planting season which is the period when rationing of food is practised.

The Booran do not practice grain loans as food security strategy. Grain loans are in minute quantities for immediate consumption borrowed from neighbours. Most farming families are those with insufficient herds, while those who rely on grain gifts are wealthy stock owners. The other problem is selling of grains at harvest time. The increased supplies reduces grain prices. The cheap grains are procured by traders who hoard them until grain supplies become scarce in the market.

7.2. Range enclosures

The most dramatic changes in resource tenure is that introduced by range enclosures. They are a semi-private grazing resource, allocated using traditional rules and regulations. The Booran categorised the grazing lands into different uses. These are the dry season grazing lands reserved around the wells, the wet season grazing lands of the waara-and the foora-herd management system and the grazing lands reserved for calves (seera yaabive). Each use area is governed by different rules and regulations. The co-operating pastoral encampments set aside the calf-grazing reserves. Any other categories of livestock are excluded. Fines are enforced for violation. The calf-grazing areas is a communal resource, whose management is the responsibility of the collaborating olla of each particular Ardha. Joint ownership of the forage bank allows them to decide when to use and to defer.

The preserved areas are not allowed to be grazed by mature cattle, except old cows and disabled animals. The calf-reserves are not fenced. The restriction is through consensus or what the Booran call “fencing by rules and regulations”.

The notion of calf-grazing reserves have been transformed into range enclosures. The enclosures are shared by 4-5 encampments. The range enclosures were a recent introduction from the Guji during the gada of Gobba Bulle (1960-1968), expanding during the gada of Jillo Aga (1968-1976) and Boru Guyo (1984-1992). Currently, 90% of the settlements in the Dirre Woreda, the Arero and the Yaballo Woredas have access to kaalo (fodder bank). Range enclosures are less developed in the Golbo production system where conditions are too dry, while in the Liiban Woreda, development of Kaalo has been limited by frequent movements of the community.

The rules and regulations are social barriers that serve as deterrence against violation of resource use.

Coppock 1994
Establishment of *kaalo* in the settled areas is an adaptive response to declining grazing resources. Similar rules of management as in the calf-reserves are used. Ages of calves (1-2 years) that use the fodder banks are specified with no limitations on numbers that individuals can graze.

The decision to develop *kaalo* was supported by the Proclamation of the Assembly of Gumi Gayo in 1988. The strategies for managing communal fodder banks were aimed at avoiding fragmentation of the communal property. The size of land under *kaalo* is controlled by the popular needs to limit loss of the communal grazing lands. Development of these semi-private property rights show that the traditional regulations of the key resources is flexible enough to accommodate the emerging situations.

Among the settled community, it provides an opportunity to develop a more intensive natural resource management system. Movements of livestock or calves between farms, *Kaalo* and communal rangelands may be used to mimic the wet-and- the dry season grazing patterns (Fig. 15-16).

*Figure 15. An integrated *kaalo*-grazing and farm management*

An integrated land use constituting the communal grazing land, *Kaalo* and farms have been developed in Diid Hara, where the community has been settled for the previous two decades (Fig. 16). The community allocates different landscapes to different economic activities. The bottom lands are cultivated, while the uplands are enclosed. The settlement arrangements enables the communities of different encampments to share forward grazing areas and set aside other lands for farming and intensive grazing management (see Box 8). Land use may be developed on rotational basis alternating between resources during different seasons of the year (see Figures 15-16).
Box 8. Comparisons of non-kaalo (kaalo I) and kaalo (II) landscapes (see Fig. 16)


The area has been grazed for 28 years following pond establishment by SORDU. The landscapes were divided into different management systems: the uplands used for fodder banks and the open areas for communal grazing, while the bottom lands were set aside for crops. The fodder banks were managed communally.

**Kaalo I**

The non-kaalo landscape was grazed full year. Range condition was fair to poor and the trends downwards. Woody cover was > 15% with a density of 500 young trees ha⁻¹. Invasion by unpalatable fobs and shrubs have increased. Bare soils accounted for > 45% of total ground cover. The principal threats are invasion by Commiphora africana, unpalatable fobs and increasing soil erosion.

**Kaalo II**

The fenced kaalo (300 ha) has been managed for two years. The area was part of an open range that reportedly was degraded. Following two years of management, the grass layer has recovered. The management system involved protecting the area during the wet season and allowing calves to graze during the dry season. The survey was conducted at the end of the wet season. Herbaceous cover was > 60%. Standing biomass was about 2.5 t DM ha⁻¹. Range condition was excellent and the trends upwards. The main threat was by the invading Commiphora africana with density of 200 trees ha⁻¹.
7.3. Current trends

Development of Kaalo, if uncontrolled, will increase conflicts in natural resource management. The opposite will be true if kaalo is perceived as an intensive range management system. Then kaalo may put discipline into management where the natural resources are abused.

The kaalo system, if developed following the Booran techniques will gradually change resource tenure regimes as opposed to rapid alteration. By setting certain rules over size of grazing land that can be allocated to kaalo and their communal nature, encroachment on the communal ranges will be controlled, at least in the near future. The threat is from urban residents who use their political connections and more affluent lifestyles to develop private resource tenure regimes. This category of people prefer to establish private kaalo or by ignoring communal rules undermine indigenous natural resource management (Box 9).

**Box 9. Conflict over use of kaalo land in Diid Hara**

A conflict that implicates the officials of the PA has been going on for six months in Diid Hara. Earlier, 12 olla-encampments set aside a communal grazing reserve as Kaalo following the rules of resource allocation established by the Booran. Then a group from outside the area, among them a PA chairman settled about 2,400 heads of cattle in the reserved area. The trespassing group used the influence of the PA official to resist complaints of the community. The community took the matter to the Woreda administration but without amicable solution so far.

Undermining the community's authority makes the indigenous institutions lose its powers to regulate resource use. By contrast, if the decision to allocate resources follow the indigenous model, then the process of resource privatisation will be gradual and adaptive. Sudden resource alienation creates shocks that might lead to the breakdown of the indigenous institutions. It may be concluded that developments that undermine a system that is already operating under tremendous pressure is likely to create a greater pressure. More so, if the action of the community meant to alleviate poverty is incapacitated by administrative interventions. The breakdown of natural resource management in the lowlands is therefore not due to the inability of the Booran to cope with the fast evolving land tenure regimes, rather, it is because the means used to make the adjustments have been lost to them (see Chapter 8).
Consequences of no Policies in the Rangelands

In the Lowlands of Booran, development interventions failed to meet the desired goals (see Chapter 6). This is not to suggest that development interventions were conducted with that intention. Rather, to imply that development efforts were based on externally driven goals that lacked local priorities. Developments focused on components of pastoral system, ignoring the "the whole". Attempts to institute new range management system and reorganising land tenure caused irreversible damage to the rangelands. Despite this, the trend of development implemented in the Lowlands of Booran is bound to destabilise the indigenous range management system unless the processes are halted and reversed.

8.1 External conflicts over resources

The Lowlands is experiencing external and internal pressures that threatens ownership rights of the grazing lands. Externally, the Booran for decades resisted encroachment by the ethnic Somalis. Before the invasion of Italy in 1930s, the Booran claimed that their grazing lands in the Liiban Woreda for example, was bordering Silium, between Aere Gebaye and Filtu. The tide changed during the period of Italian occupation. The invading Italian army employed the Somali irregulars (Banda) who traditionally conflicted with Booran over grazing lands. After the Italians were defeated, the retreating irregulars turned their guns on the Booran. This was the period when the Booran in the Liiban were threatened with extermination. The impoverished population with the help of the British army escaped to the Diirre (during the period called baara qooleni Liibani dufte-i.e., the time the destitutes from Liiban arrived). The conflicting groups took over the grazing lands from which the Booran were displaced. It was the British and the returning Ethiopian administration that forced the Somalis to return the looted livestock and some part of the grazing land. To stabilise the situation, the Ethiopian administration under Major Johannes Abdo helped by the leaders of the communities established Tribal Conventions on grazing rights during the Imperial Government. The convention acknowledged that

"...the territory [is] to be the collective property of the Borana tribe. According to the same treaties, other tribes have temporarily assigned grazing and water rights over the eastern and northern portion of the awraja which they had already conquered..." (p.23) [Thus] "...although traditional rights recognised by the local government are to be properly dealt with ...the existing tribal [conventions], widely recognised by the pastoralists, must not be upset. This will avoid political unrest and tribal warfare". (p.35).

The conflicts between the Somali ethnic groups and the Booran are partly due to different land use strategies. Whereas the Somali groups moved as a family, the Booran land use by the foora-herd management system is intermittent. When the Booran moved out of the wet season and into the dry season rangelands, the Somali groups occupied the wet season rangelands, resisting the return of the Booran. Through this persistent pressure they succeeded in removing the Booran from "over
two-thirds” of the traditional grazing lands. The Booran preferring to settle the conflict, continuously appealed to the Ethiopian administrations.

The Ethio-Somali Ogden war of 1973 was partly fought in the lowlands of Booran. Introduction of sophisticated weaponry into the conflict adversely affected the pastoral economies of the region. The insecurity caused by the Somali Abbo Liberation Front (SALF) spear headed by the Garre displaced the Booran from the Eastern grazing lands. In the process, the Booran lost access to the Tulla well complexes of Goof and Lae and the surrounding grazing lands (Annex 1). The final loss seems to have been sealed when the Somali refugees termed “returnees” were settled in the contested area. Alteration of the ethnic demography by thousands of Somalis who claimed residence made the Booran a minority in their own land. In a recent article, Marco Bassi discusses the implications of settling the “the returnees” in the Booran territory.

The displaced Booran population and their stock are pushed into the Diirre, the Golbo and the Talteli Woredas. The human and livestock populations doubled, increasing pressure on the rangelands. Furthermore, the foora herd management systems that were traditionally sent to the grazing lands of the Goof and the Lae mada were forced to share grazing with the waara herd management system. The Booran clans who owned wells in the Goof and the Lae mada were forced to excavate Tulla wells that had fallen into disuse (Chapter 4) and to participate in farming (Chapter 7).

The Booran traditionally shared grazing with the Garre and the Gabra amicably. These groups were allocated specific days at the wells to water livestock. The different groups had used the grazing lands without any hindrance until arm conflicts were introduced. The conflicts were not over resource user rights but over territorial rights. In the long-term it will be the amicable arrangement of resource tenure rights that secures peace.

8.2 Implications of the Land Proclamations for the pastoral lands

The policy of land privatisation and investments is encouraging changes in ownership rights of resources in the rangelands. The policy encourages transfer of communal rights to private ownership on the presumption that alternative exploitation of the resources can economically and politically be justified. The policy designed for the resources in the highlands are being implemented in the rangelands without clear understanding of the implications. The ramifications of this policy for the pastoral areas of Ethiopia are too distressing to be disregarded. Two Federal Negarit Gazeta Proclamations are relevant to the land policy. The Federal Negarit Gazeta. [18] year No.1 Addis Ababa - 21 August 1995 under Article 40, 5th item states;

“Ethiopian pastoralists have the right to free land for grazing and cultivation as well as the right not to be displaced from their own lowlands. The implementation shall be specified by law” (p.14).160

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156 Bassi 1997
157 The latest petition was presented by the Booran leaders to the Regional President of Oromiya and Federal President during the Assembly of the Gumi Gavo of 1996, which the two presidents attended (see Huqqa 1997:27-28).
158 Messele 1997
159 Marco Bassi 1997
160 Federal Negarit Gazeta 1995
According to the Federal Negarit Gazeta of the Federal Government of Ethiopia no. 54 of Proclamation no. 89/1997 under rural land administration. Part 2 Section 6:

A land management plan should contain at least: (1) ensure free assignment of holding rights both to peasants and nomads, as well as free choosing of lands and displacement from holdings on any grounds other than total or partial assignment of holding effected pursuant to a decision by the Regional council, (2) assign holding rights sufficient for subsistence, both to peasants and nomads, subject to the particular condition of the locality.

The two Proclamations affirm property rights of the peasants and the pastoral peoples to their land. The present land use conflicts and reassignment of land in Booran will therefore be examined in light of the Proclamations.

Economic justification of ranch development on communal rangelands (see below) with little knowledge of the ecology and little regard for the indigenous production system is unlikely to succeed. Previously, development efforts had lacked comprehensive understanding of the indigenous range management system, values and concepts of resource tenure. If lessons from other countries of Sub-Sahara can help, Ethiopia is well advised to be cautious with developments designed for the lowlands.

A major asset of Ethiopia is its people, indigenous institutions, livestock and land resources. In the Lowlands, the communities have developed coping strategies over centuries to optimise production in a harsh environment. Development and relief efforts by the Government and NGOs have not strengthened the capacity of the pastoral peoples to survive. On the contrary, their institutions which is the strength of the indigenous management systems have been weakened. Dependency is created and the system of self-help disabled. The justification for land alienation is often that the land will be put to a better use and that the community will be benefiting from the development that takes away part of their grazing land! No investment, e.g., water development on private ranches, building of veterinary clinics and employment opportunities for the displaced would be compared with the opportunities forgone for losing the land.

8.3. Alienation of communal resources: who are the losers?

Implications of land alienation in Booran should therefore be understood from five angles. (1) Effects on the integrity of communal grazing lands and the concepts of tenure rights. (2) Implications of the Federal Government Proclamations. (3) effects on future survival strategies. (4) real cases of land alienation and. (5) implications for development programs with stake in Booran.

According to the custom, the authority of land ownership lies with the Raba gada. They create rules and regulations on how resources can be reallocated. One of the tasks of the Assembly of Gumi Gayo every eight years is to make Pronouncements of new rules to cope with ecological, socio-economic and political changes. Hence, the loss of land can only be confirmed at the Assembly of Gumi Gayo. Without this authority land may not be disposed or sold. The communities of the Dedhu or the mada have user and management rights but lack judicial powers to dispose land.

161 The exceptions is the experience of CARE-Ethiopia
162 Messele 1997
When the notion of resource ownership with regards to *kaalo* was established, the custom by making allowances provided individual members an opportunity to improve grazing conditions and increase community survival under the changing resource access rights. There are no individual losers in the arrangement. The limitations created by partitioning of land affected everyone. But the rules would not allow the same individuals to sell or dispose the land. Those who are allowed to farm and establish *kaalo* do so with authorisation of the community. Individuals benefit from resource user rights through networks of friends and relatives. Once the need for using the land ends, ownership entrusted with individuals are terminated. The resources then revert to a communal status. Therefore, the period of occupancy would not change property rights of the resource. This is momentous, considering that the pastoral lands have not been adjudicated and legal framework have not been worked out. Therefore, those who cultivate, do so on private basis. Either way they would not be allowed legally to sell or use such public land as collateral for bank loans or credits from financial institutions. A further reason why the land cannot be disposed as a private resource is that grazing lands comprise ritual and well sites that would not be violated.

The two Proclamations of the Federal Government of Ethiopia related to the pastoral lands confirmed that the pastoralists of Ethiopia have entitlement to free land. This fundamental point can be interpreted to mean that the Federal Government of Ethiopia fully acknowledges traditional ownership rights of land by the pastoral peoples, where they can graze and cultivate without being hindered (i.e. freely). The Proclamations affirmed that pastoralists cannot be displaced from their land. The Negarit Gazeta # 54 of Proclamation no. 89/1997 goes even further to explicitly say that their displacement cannot be on "any grounds" other than when the Regional Councils have conducted comprehensive reallocation and distribution of land according to laws to be specified. The same Proclamations emphasise that even ecological uniqueness of the locality need to be considered. From the Proclamations, it can therefore be discerned that they are the policy guidelines to rural lands and that implementations of land tenure rights should be guided by them.

Notwithstanding that the policy makers are taking risks by allowing privatisation of the communal grazing lands under the idea that "*land is not utilised*", specific policies that guarantee proper use of the rangelands are currently lacking. The idea of un-utilised land is an antithesis of pastoral land use. The notion of "space" as perceived by the pastoralists is different from those of the administrators and technicians. According to the pastoral concept of space, there is no land which is unused or unoccupied. Land is used adaptively in response to erratic rainfall distribution and variations of pasture. The grazing systems involve rotational use between the wet season and the dry season rangelands. It is to be appreciated that pastoralists do not permanently settle as farming communities do, rather they move from one resource to another. Hence, the notion of "idle land" as applied to crop lands is not applicable to the lowlands.

The policy of encouraging the Booran and others to misappropriate land is bound to cause conflicts which can be avoided. Despite the suggestion that development of ranches will be beneficial to the community (through employment and facilities) and the state (through taxes) such expectations are far from reality. On the contrary, establishment of ranches on communal grazing lands would mean that pastoralists may be displaced from the grazing lands. It implies that they would lose the land during the season it is usually used. Furthermore, the areas allocated to private or group ranches are the better parts of the rangelands. The remaining areas are either too degraded or infested with bush encroachment. Loss of key grazing lands, will exacerbate environmental degradation and worsen drought survival strategies on the remaining land. It would be recalled that ranches were introduced into Booran Plateau two decades ago to promote a Western model of development but failed. The experience is not restricted to the lowlands of Booran but have occurred in Kenya among the
Masai, Samburu and in Tanzania among the Barabaig and in other countries of the sub-Saharan Africa.

Currently, land speculation under the investment policy in the lowlands is being applied without considering guidelines set down in the Federal Negarit Gazeta Proclamations. There is a growing concern that public grazing lands will be misappropriated by few individuals. The participation by the few Booran in land speculation is an attempt to reduce political conflicts from within. Division of land into ranches is bound to create more pressure on the grazing lands which is already deteriorating. Land misappropriation will destabilise the pastoral economy, resulting in the loss of the communities' adaptive strategies. Hence, their suffering is bound to be more severe when drought strikes again.

Division of land into ranches is not what the Booran have envisaged, nor accept as a community if consulted. As one *Hayu* puts it

"we feel cheated that our land can be given to one or two rich people, while we, with birth rights to the land are condemned to perish. This is a development which has shocked us..."*

Another *Hayu* of the *gada* of *Konitu* had this to say on the subject

"one rich man has one source of support for the country. One thousand Booran who are displaced can serve the State in a thousand ways. But by alienating our land the state seems to have ignored this fact".

A prominent elder in *mada* Romso, Chachu (Jarso) Ifo had this to say

"Ranch development is a new idea, where either Booran are displaced or settled on others' ranches as tenants. In Ethiopia land Feudalism has been abolished. It is not easy to appreciate how such a system can be imposed on Booran".

The problem was summed up by Kura Tuuto, the *Qallu* of Oditu:

"The Booran leaders were not consulted on allocation of land to individuals. The *Qallu* were not consulted. The *Raba gada* were not consulted. The *Hayu* were not consulted and the Booran elders were not consulted. The people who were consulted are those from towns with political offices. These individuals are influenced to co-operate with the administration, but they have little interest in the community...By the time the community hears about it, the signatures of prominent persons have been presented to the authorities. Booran leaders have access only to the Woreda administrator. They tell the Booran that the decision has been made by the government and its final. We Booran think that the decisions are not in our interest. What is occurring in Durre is something new and it scares every one".

These sentiments reflect general misgivings of the community about the current land speculations in the lowlands of Booran. There is a growing concern that giving ranches to one or two politically correct individuals would initiate a land rush. The individuals acquiring public land are rich traders

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162 Obi 1996a
163 The consultant was informed by the Dirre Woreda administrator that allocation of land to groups or individuals was not requested by the Booran but it was in accordance with the government's policy of promoting privatisation of the economic sector.
164 The *Qallu* are the ritual leaders.
and urban dwellers. The appropriators of the ranch lack management skills to demonstrate good range management knowledge let alone being a good model for the Booran. Rather, their goal is to acquire land through official channels and use them as collateral for bank loans. Two cases are provided as an illustration (Figs 17-18, Box 9).

8.4 A private Ranch? The mystery of profiteering from public land

In October 1997 two business men from the Mega town hired labour to fence 23 km² of land in Sigaa Bordee, an area traditionally used for dry season grazing by six PAs: Dubluq, Madacho, D'oqqole, Gololcha, Qarsaa Haroo Guchii, Dadacha Qanchara, Kulaa and Aagirte (see Fig. 17). The land was fenced without consulting the communities affected or the Booran leadership. In the enclosed area is the only traditional surface pond whose konfi- is Hodo Liiban Hodo. The communities in Aagirte and Kulaa get their supplies of water from the alienated pond. Loss of this land violated the property rights of the pond excavated by the resources of the community and their traditional grazing land used as communal kaalo (Box 10).

Fig. 17. Sketch map showing approximate location of the private ranch in Dubluq
The grazing land now enclosed by the ranch was possessed by the PAS of Aagirte, Doria, Haroo Guchtii, Kulas and Sodd for the dry season grazing. Discussion with some of the community members suggests that the land was given out to private developers without the consent of the community. The administration suppressed the community's voice except if this was done on individual basis. Those who expressed dissatisfaction were threatened with police arrests for trespassing violations.

The consultant was shown a copy of a letter of complaint sent to the Woreda Administrator in Mega dated 23/2/1990 Ethiopian Calendar (E.C.). The following is a translation of the letter written in Oromiffa and signed by 127 elders.

"The letter is addressed to the Diirre administrator based at Mega on the complaint by the elders of the mada of Dubluq on the loss of the communal grazing area reserved for kaalo grazing. The kaalo land has been preserved and managed by the community of Aagirte and the neighbouring areas since the time of the Derigue in 1972 (E.C.). We owned and managed the same kaalo land for 18 years. The kaalo was established for the benefit of the livestock. Livestock of 29 olla in the area during this period benefited from the kaalo managed by the community. The animals comprise of horses, camels, cattle and small stock are managed here during the dry season. In addition, there are farms where people are cultivating. The fact that we are users of this land is known to the Raba gada and the Qallu who are our traditional leaders. Since the administration gives priority to those activities that benefit the community, our use of this land was beneficial to the community according to this policy. Now with the coming of the dry season we have no grazing reserve for our animals. To deny us this beneficial use of the land is to cause untold problems for our livestock. We are angered and disappointed by this. It is for this reason that we have written to the administration in a democratic manner. We are not satisfied that the land we have reserved as kaalo for 18 years is given to people without our knowledge. When we asked why our kaalo is given to individuals we were referred to the Chaafe of Oromiyya about the matter because giving of the land is claimed to have been authorised by the President of the Oromiyya state. We were told regardless of the objections we had, the decision has been approved. We have decided to write this letter as beneficiaries of this resource and that our complaint is not that of residents from outside. We are the elders involved in the discussions and decisions for this resource for 18 years. We the undersigned are not satisfied with the matter and confirm that the land has not been given according to our consent". Signed by 127 elders.

8.5 The proposed group ranch

The second case is that of a proposed group ranch (150 km²) by traders, people working with the administration and few rich stock owners. The grazing land coveted is the dry season and drought year grazing reserve used by the PAS of Erdar, Gorille, Melbana, Diid Chinha and Boku Luboorna (Figure 18. Box 11). The administration had informed the community about the proposed ranch. However, there was no unanimity for its support. The individuals applying for the ranch have not made their agenda might be a threat to the communities interests.

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166 I was informed by a reliable source that the private investors have decided to sell the ranch at a high profit to a rich developer. If confirmed, this is in violation of the Federal Government’s Proclamations and merely confirms the communities concern that land alienation is not for a development of the resource but a speculative investment by individuals whose arms are to reap profits from a public commodity.

167 Each member would unofficially approach individual pastoralists to contribute specific numbers of steers which would be deposited with him. The member would use the total livestock acquired through his networks as his capital for investing with the group. The anonymous investors would depend on the good will of the member as they will not be issued with official shares or certificates, for the livestock deposited. This is like giving cash to a bank accountant across the counter without the depositor having an account with the bank. Who would blame the bank accountant if later he denies any knowledge of such money deposited with him? Luckily banks do not operate that way. By contrast, the proposed ranch might, in case of financial loss for any reason, e.g. diseases, loss to drought or collapsed livestock markets, neither the Booran or the State would support the claimants. This is implied that the members of the proposed group ranch are planning to use their investment to gain access to public resources for which there is no accountability and transparency.
Figure 18. Sketch map showing the approximate location of the land proposed for the group ranch in the Diirre Woreda
Box 11. Interview with Ato Tesfy Gollo, the chairman of the proposed group ranch

Consultant: Ato Tesfy thank you for agreeing to this interview (the consultant explains the purpose of the mission).

Consultant: Where were you born Ato Tesfaye?

Tesfaye: I was born in Yabalo.

Consultant: Would you in detail explain to me about the ranch? Why are you applying for and what are your objectives are?

Tesfaye: There are 16 of us who applied for a group ranch, led by the chairman. We hope to raise our membership from the current 16 to 25 in future. Our first goal is to fatten livestock for internal and external markets. The second goal is to benefit the neighbouring Qebelle financially.

Consultant: How would you do this?

Tesfaye: The ranch will develop facilities and demonstrate better management of livestock. Then through the ranch we hope to encourage others to obtain their own ranch. Already the community has established Kaalo which they manage communally.

Consultant: How did you decide where to locate your ranch?

Tesfaye: We looked around and selected a suitable area. The area lies between Meliana, Goniile and Boku Lubooma (see Figure 18).

Consultant: SORDU has established ranches in Booran which failed. Why did you not apply to be given these ranches so that you can demonstrate their profitability?

Tesfaye: We had initially applied to be given the SORDU ranches but we were told that some other investors had applied. These are people from Yabalo.

Consultant: One reason for the failure of SORDU ranches was lack of forage for livestock during drought years. What would you plan to do in your case?

Tesfaye: We shall feed

(Consultant: Where are you getting the capital to develop the ranch?

Tesfaye: Initially, each member will contribute up to EB 10,000 as the starting capital and the rest of the capital will be loans from the bank. We estimate a total investment capital of EB 5.0 million.

Consultant: What kind of development would you plan?

Tesfaye: Fencing will be the first exercise, then water will be developed and the bush will be cleared. Militia will be employed to guard the property of the ranch.

Consultant: Ato Tesfaye, since the land you propose to use as a ranch is a communal grazing area of the Booran how did you put your case before them?

Tesfaye: It was the administration that presented our case to the community. We were also present. The administration convinced the community about the benefits of having ranches.

Consultant: But this is a private investment, why should the administration be involved?

Tesfaye: The state is concerned about the security.

Consultant: You have identified a key grazing area as your future ranch, would you consider that this will cause problems for the community?

Tesfaye: The population of Booran is increasing. Their range management is inefficient and destructive to the environment. Even destitutes would like to buy livestock and put them on the same rangelands. We feel they must change their ways of using land.

8.6 Property rights of the salt craters : private or communal?

Like the Tulla wells which were discussed earlier (see Chapter 4), access to the salt licks of the three craters in the Dirre Woreda is an essential part of the Booran pastoral production system (Chapter 3). Salt from the four craters (Soda, Magaado, Diilo and Gorai) are sources of income for the Booran. They pay state taxes on the salt and Magadi-soda mined from the craters. The tax has always been a bone of contention between the Booran and the state, with the Booran complaining whenever it is raised. Before this period, the salt and the magadi-soda served as a currency which the Booran used in the long distance trade with the farming communities in Ethiopian highlands and the Luq-Benadir trade with the Somali coast during the 17th and the 18th Centuries. It remains the principal means of exchange for grain and the subsistence economy.
The importance of salt and the magadi-soda should be understood in three perspectives. First, the sources of the salt licks are an essential supplements for the livestock. Hence successful livestock breeding depends on availability of salt supplements. Second, the Magado, the Diilo and the Gorai craters are fed by springs that serve sources of water during the dry season. Third, the three **booqe** are part of the ritual land of the Booran. The salt forms one of the ritual items that the **gada** exchanges with the Konso during the final years before the handing over-ceremony. The three **gada** are by tradition entitled to untaxed 100 donkey loads of salt as part of the ritual ceremony. In addition, there is an annual ritual ceremony called **korma Afaan Damama**-the ceremony of the bull of Damama that is performed at the Soda crater. This annual ritual is essential for proper utilisation and better yields of the salt craters. The reason why the three sources of salt are under **Raba gada**, is what makes them the property of all Booran. Access to the three salt craters have therefore no substitution. Their alienation will undermine authority of the traditional leaders, an issue that is bound to increase public discontent.

During the field study, there were “confirmed” rumours that the Soda salt crater will be taken over by a developer. A notice in the government daily (Addi Zemen 14 December 1997) to inform the public about the intent to contract the Soda salt to a private developer has been put up. The consultant was informed that the Booran have sent their objection to the proposed misappropriation. This matter was discussed with the Booran throughout the Diirre and the Arero Woredas and with the local Administrators. It will be important not to ignore the communities concern but to carefully access the implications of the loss of this resource. This is essential because there is yet no information available on the commercial value of the salt from the Soda crater. Those who visited the crater would have noticed its small size. The lake periodically dries up during droughts. Moreover, there is no assessment of the springs that feed the crater lake. Without such basic information misappropriation of such a key resource on economic justification is unconvincing.

The thinking of the Booran on this matter is rational. They predict that if allowed, the private investors would replace the **hobolayo** or employ some of them, but the rest of the Booran would lose the opportunity to collect the salt (see Chapter 4). They would be obliged to buy salt at the rate established by the investors. Traditionally, **hobolayo** would not increase the price of salt unreasonably, because if they did so, people would be encouraged to collect their own salt. The extra charge is for their labour. They predict that if the salt is commercialised, the Booran would be forced to sell livestock to buy salt just as they buy grains from the commercial market. This means that the price would be controlled by the supply and demand. The compromise is to increase revenues through taxation and investing some of the capital generated to improve facilities such as schools, hospitals and providing drinking water for the PA of Soda and the surrounding.

### 8.7. Should it be so?

In the emerging conflicts of interests between the communal resource users and private investors, the losers are the community. Those who acquire public land for economic development are still entitled to the communal resources. They maintain two management systems. The traditional herding and farming which still relies on the communal grazing land and the ranch business for which they have exclusive rights. Using their traditional entitlement and networking, the ranch appropriators are bound to put the ranch livestock on the public range during the wet season and

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168 Legesse 1973
169 Damama is a ritual site on the edge of the Soda salt crater.
use the ranch for the dry season grazing. It may be appreciated that the ranch developers also own large herds. They will therefore put double pressure on the land, without improving the range condition.

From lessons learned elsewhere in Ethiopia, e.g. among the Afar, the Jile and the Karayu Oromo, land loss by the pastoralists is a traumatic experience. It threatens survival strategies against drought. Loss of land leads to breakdown of the social structure, exacerbating political conflicts.170,171

Proper resource management is not only the responsibility of the state but also the responsibility of its peoples. It is by making the citizens accountable and respecting their rights that the integrity of the Regional and the Federal States’ resources can be managed on sustainable basis. The government has the responsibility to put into a process, development policies which reduce conflicts in the rangelands. The way forward is to develop guidelines based on the local ecology and the indigenous economy. It would be essential that the processes of change ought to be gradual and careful. It is hoped that the low potential areas will be put to better production with the appropriate technologies in future. Understanding limitations of the systems and their potentials for development is more appropriate than applying unworkable policies.

170 Sorenson 1995
171 Hogg 1997
Indigenous Drought Coping Strategies

The Booran have comprehensive knowledge of drought. They call drought *oola* - that means failure of rain when expected. Drought occurs when the normal pattern of rainfall is disrupted and the expected wet season extends into the dry season. The accumulated stress result in drought (see Figure 2). Drought occurs if *gaana* rains fail when expected. If the *gaana* and the *hagaya* rains fail in a row the combined dry seasons create severe stress. The forage fails to grow, livestock is deprived of food and their productivity becomes reduced, while mortality rises. In the Diirre and the Liiban production systems, drought is not caused by lack of water. Water scarcity is a serious constraint only in the Golbo production system of Arbaale, Saake, Diilo, Gorai and Magado. These areas lack adequate forage reserves, forcing herders to delay watering for 3-4 days. The poor nutrition combined with long walk to water causes increased livestock mortality.

Generally, some areas of the lowlands will always be stressed because of rainfall failure or poor rainfall distribution. The population responds by moving to places with more rain or better water supplies. The stress if severe creates a localised drought as opposed to a regional drought. This type of drought was survived through mobility. Periodically, rainfall becomes insufficient, resulting in regional drought. Then options for livestock and human movements become limited. The overgrazing leads to livestock deaths. Greater livestock losses are followed by food scarcity for the human population, the condition which might turn into a famine (*sammuut’e*).

9.1. Drought and famine in the Booran oral history

The Booran oral tradition suggests that drought is cyclic. They associate regional droughts with the *gada* cycle. The Booran social life is governed by the *luba* generation class that assumes ritual responsibility every eight years-in a set of 40 year cycle from father to the sons. The *luba* class belongs to five different *gogeesa*. Fathers and sons belong to the same *gogecsa* but different *luba* class. The seven 40 year *luba* class cycle (i.e. 280 years) called *maqabaas* is associated with drought, famine, heavy rains and disease epidemic. The history of drought form important bench marks in the Booran oral tradition (Table 21).

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172 Oba 1997a,b  
173 Legesse 1973
Table 16. Oral history of major droughts and famine in Booran

<table>
<thead>
<tr>
<th>Gada</th>
<th>Maqabaas</th>
<th>Events as remembered</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boru Lukku 1593-1601</td>
<td>Libaas</td>
<td>The earliest famine remembered.</td>
</tr>
<tr>
<td>Gobba Alla 1689-1697</td>
<td></td>
<td>During the famine of the gada of Gobba Alla all ungulates were said to have perished.</td>
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<tr>
<td></td>
<td></td>
<td>It was recalled that the Booran social structure broke up, and the process of handing over</td>
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<tr>
<td></td>
<td></td>
<td>power was delayed. The stress continued into the gada of Dawe Goobo.</td>
</tr>
<tr>
<td>Dawe Goobo 1697-1705</td>
<td>Darar</td>
<td>Regional drought.</td>
</tr>
<tr>
<td>Wale Wachu 1713-1721</td>
<td>Moggasa</td>
<td>Famine that caused many deaths.</td>
</tr>
<tr>
<td>Bulle Dadacha 1760-1768</td>
<td>Sabhaq</td>
<td>Oola Bulle Dadacha.</td>
</tr>
<tr>
<td>Saako Dadacha 1800-1808</td>
<td>Darar</td>
<td>Oola Saako Dadacha</td>
</tr>
<tr>
<td>Sokhore Aina 1825-1833</td>
<td>Sabhaq</td>
<td>The famine was called sabdi gada.</td>
</tr>
<tr>
<td>Mad’A Boru 1833-1841</td>
<td>Moggasa</td>
<td>The famine of gada Sokhore stretched into the gada Mad’a Galma. The famine is popularly</td>
</tr>
<tr>
<td></td>
<td></td>
<td>called Hagaari gada Mad’a Oola.</td>
</tr>
<tr>
<td>Jaldeesa Guyo 1852-1860</td>
<td>Fullasa</td>
<td>Oola gada Jaldeesa</td>
</tr>
<tr>
<td>Haaro Adhi 1868-1878</td>
<td>Darar</td>
<td>Famine</td>
</tr>
<tr>
<td>Diid Bitaata 1873-1880</td>
<td>Libaasa</td>
<td>The d’aachi of this famine was a return of the Libaasa of Boru Lukku (1593-1601). The</td>
</tr>
<tr>
<td></td>
<td></td>
<td>famine was made severe by the conflict between the Booran clans. The conflict called</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Tillo Waaraba led to fighting between the Booran clans for nine years over the appointment</td>
</tr>
<tr>
<td></td>
<td></td>
<td>of Hayu councillors. The rainfall failed and springs of the Tulla dried up.</td>
</tr>
<tr>
<td>Liiban Jaldeesa 1880-1888</td>
<td>Moggasa</td>
<td>Chiina Tute garacha: The rinderpest epidemic.</td>
</tr>
</tbody>
</table>

174 Cattle epidemic was combined with rainfall failure.  
175 The Booran recall that during the famine, the Qallu of Oditu survived because his slave girl fed him on the foetus of cattle that died of starvation.  
176 The conflict of Tillo Waaraba undermined the Booran social cohesion, which the invading Ogaden clans used to an advantage by conquering much of the Easter grazing lands.  
177 This was the period when the prosperity of the Booran of the previous centuries came to an end. Booran pastoralism was destroyed by the virulent rinderpest epidemic.
9.2 Drought Grazing Reserves

Drought coping mechanisms depend on the security of the resource tenure and on adherence to the traditional values (see Chapter 8). The community at the Arilha and the Dedha levels co-operate to improve drought survival. Majority of the livestock are sent to the foora-herd management system. Access to drought grazing reserves are crucial. For example, the Wachille Dedha has limited water supplies. The community takes livestock to the Dawa River during periodic droughts. In the Liiban Woreda, drought was not a major threat. The Liiban Booran had several drought escape areas. The area of Gargalat (Diid Galgala) before it was converted into the Walensu Ranch was the traditional drought grazing area. The preservation was by a community wide grazing control. Other areas that served as drought refuge were the forest of Sagan, the Ganale River and the Chaari system. The latter has adadi wells with rich grazing lands. The Chaari production system (the Liiban Woreda) are avoided during the wet years due to infestation with tsetse flies. During drought the livestock grazed in the Chaari production system, watering at the Dawa River.

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178 During Chiina the oral source suggest that there were about 1000 viable households that survived. The Booran were settled in few villages called nanno magalata (the encampments of the horn). Following massive loss of human population, ownership violations of the wells occurred (see Chapter 4). Despite general impoverishment, the gada met and followed up genealogies of the living members to restore the Konfi. Orders were sent out to protect all the Tulla wells by closing the openings (kaala). Those left with few cattle shared with others. Individuals were restocked by “future cattle pregnancies” as mature cattle were not enough to go around.

179 The oldest age-group of Booran of Wakhor Maakhu were said to have been killed off by the famine. Cynically, the oral-source say that the famine actually looked for them.

180 The cyclic drought of the gogeesa of Bule Dabassa is recalled by a water song, sang by an old lady to console her cow called Guguf (the stumbler).

181 The droughts of hides and skins

182 In Kenya the Booran named the drought after the massive famine relief (yellow maize) which helped the population to survive. In Ethiopia the Booran refer to the period as Oola mid'aan Haaro—the famine relief distributed by Mr. Haraldur Olatsson of NCA.

183 The return of events in 100 year cycle is called adhaal. So the saying d’aachi adahaal an laate i.e., D’aachi returned in 100 year cycle.
Drought is least stressful in the Liiban production system than in the Diirre production system and most stressful in the Golbo production system. In the Diirre production system, the population of Dh'aas suffers more drought stress than the other Dedha. There are two reasons for this. First, the construction of Dh'aas wells makes watering difficult. The rump is too steep for drought weakened cattle. Second, bush encroachment has resulted in reduction of forage, being more depleted during drought.

The human and the livestock populations of the Golbo production systems are vulnerable to drought because (1) the rangelands are in bush climax stages, producing forage far below the potential. (2) The main source of forage is annual grasses. (3) Watering at the craters of Magado, Diilo and Gorai creates pressure on the drought weakened livestock because the tracks are too narrow and steep for them to pass with ease. (4) Water pan developments resulted in concentration of livestock population and increasing environmental degradation. The Golbo production system was grazed during the wet season by the livestock of the communities living west of the Yaballo-Moyale highway. During the dry season, the population returned to the home Dedha. This pattern broke down after the insecurity period of the 1970s.

The oral source suggests that drought is increasing in frequency these days. The conditions of the range have been deteriorating since the gada of Gobba Bulle (1968-1976). The Booran suggest that 2-3 years of favourable rainfall is followed by drought, either locally or regionally. They say that rainfall distribution is becoming more patchy. They argue that the normal dry spell is behaving like a drought, leading to livestock deaths. They speculate that the severity of weather is caused by lack of livestock food. More livestock die by stress than two-three decades ago. Following the deterioration of range condition, the livestock economy is no longer able to meet all the dietary needs of the population.

Survival of livestock was safeguarded by access to drought grazing reserves (see Fig. 3 and Fig. 6). The drought grazing reserves of the foora-herd management system in the Goof and the Lae Dedha have been lost through tribal conflicts. In the Liiban Woreda, the drought escape areas in the Guiji have been converted into farming, while access to the Ganale River has been lost due to ethnic conflicts. The Diirre population is forced to remain within their traditional wet season and the dry season grazing lands with no prospects for taking the livestock to the traditional drought refuge areas. Loss of traditional drought grazing reserves induced livestock population crashes.

9.3 Social security networks

The Booran pastoralism is a redistribution system. Cattle and milk are the commodities for distribution. Through the network livestock of the disaster victims are replaced. The normal distributions are to support the gada, the Hayu and the ritual (Qallu) leaders. It has been estimated that livestock redistribution through reciprocal transfers, payments for rituals, rites of passage, contributions to well digging and repairs, bride prices and others annually amounts to 2% of the total livestock of the whole tribe.

184 Dr. Layne Coppock (1994) has hypothesized that the increased frequency and severity of drought is caused by increased human and livestock density, rather than changes in patterns of rainfall.

185 During the Assembly of Gumi Gayo of 1996, the Booran petitioned the Regional and the Federal Government of Ethiopia on the loss of their grazing lands (see details in Huqqa 1997).

186 Coppock 1994
Drought has direct effects on food security. Traditionally, the Booran relied on livestock for food. During drought bush meat and fruits were consumed. Families with food scarcity slaughtered bulls and shared the meat with the neighbours. During famine, the impoverished population found support among the farming communities. Others became hunter-gatherers. The majority coped by seeking help from indigenous social security networks to spread risks. The functioning of the networks depends on survival of the livestock economy. There are networks of friends, kin and descent groups. The redistribution is in conformity with mutually developed social responsibilities and customs (aada seera Booran). Transfer of milk cows (ameesa) is the usual intra-household food security sharing. The sharing is for a period until food security of the household improves. Transfer of milk herds between friends and relatives called dabare is mutually binding between the borrower and the giver. The dabare mutual assistance is differentiated from clan and sub-clan obligations called buusa gonofa. When dealing with shortfalls caused by drought and ethnic wars, livestock losses are replaced through a social security system called hirba (to repair).187,188

Figure 19 is a schematic representation of the clan (goosa) and sub-clan (miilo) social security administration. The social institutions are linked to the political organisation of the Booran represented by the Hayu at the gada level, at the sub-clan level by the Abba qae, at the family cluster level by the Jaalab and the abba waara at the household (waara) level. People of the same maana share common ancestry. The jurisdictions of the abba Qae is called gaadisa (meeting shade) where matters of the clan and sub-clans are discussed. The gaadisa that deliberates the clan and sub-clan support system are widely distributed. Two to three Dedha are combined to form a social security zone or gaadisa. The individual sub-clans, each belongs to a different gaadisa where they deliberate assistance to members independently. The Abba qae of a sub-clan who chairs the social security deliberations of buusa gonofa are assisted by the jaalab. Issues that require attention of the abba qae are debated before they are forwarded to the social security gathering. Through the networks, clans and sub-clans are linked. The exception is the Liiban Booran who are not part of the social security networks of the rest. According to the custom, the destitutes in Liiban are not authorised to visit the Diirre Woreda to solicit clan assistance and vice versa. The clans in Liiban rely on their own resources. This tradition is associated with the ritual role of Liiban. Ritual destitution is an undesirable state of human dispossession that denies individuals their fuller ritual functions. According to this tradition, destitution is something that the society attempts to contain from spreading like an infectious disease.189,190

In the Diirre and the Golbo productions, destitutes who lost pastoral viability are restocked by the home gaadisa before they are transferred to the neighbouring gaadisa. Members of the clan in different gaadisa have reciprocal rights. The rights require that each and individual gaadisa meets its obligations before transferring destitutes to the next gaadisa. The home gaadisa also requires that the immediate waara and balbala social security networks make the necessary contributions of the “first aid” (quulamo) before the matter is raised in the annual assemblies (koora deebanu).

187 Messele 1997
188 Tache 1996
189 The Liiban Booran have other peculiar traditions. For example, if a person dies, the death would not be announced, except in the immediate neighbourhood. Beyond the specified areas, neighbours are not involved in the burial. Even relatives who are not at the locality would not be involved. They rather make casual visits as in normal occasion. In any case, they are not allowed to weep.
190 The Booran in Liiban attribute their robust pastoral economy to the adherence to these ancient customs.
9.4. Household food security networks

At household level, families of different wealth ranks depend on each others’ resources for survival. Poor households depend on wealthy households. The dependency is mutual, with each household in the network reciprocating. This type of network is exclusive to women. The household reciprocal relationship is called maarro or simply “giving in turn”.  

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191 Oba 1994a, 1997
Sharing of *marro* involves exchange of minor food items and services. The giving and taking establishes networks. Sustenance of the relationship depends on continuous exchange of goods and services. When this fails for one or another reason, the relationship becomes dormant. *Marro* sharing between people who are related by birth or through marriage become an occasional affair. This type of sharing can be extended to all relatives. Materials exchanged through occasional sharing are more substantial in value than everyday sharing. In other cases, the focus of sharing is by people who share the encampment. The relationships are stronger between some households than in others. Households that build solid reciprocal relationships voluntarily exchange goods and services. *Marro* is not a debt. There is no requirement that the participants pay for the services, yet the societal expectations is just that. Those who fail to reciprocate will lose access to the network.

The Booran suggest that these robust institutions are weakening. They attribute this to weakening of *aada seera* Booran. Others have attributed the failure to widespread poverty. Although evidence of the declining livestock per capita have been suggested, this is contradicted by a similar evidence that the Booran today have more livestock than few decades back. Despite such claims the Booran are increasingly depending on outside assistance than mobilising their resources.

### 9.5. Food aid and its implications

The community of the lowlands were introduced to large scale famine relief programs following the droughts of the 1970s. During the drought, the victims were provided with free grains, followed by rehabilitation. The final goal was to link food and development. The assistance with food security focused on five general areas.

- Food for Work used to help pastoralists save assets.
- Destitutes restocked and returned to pastoralism.
- Pastoralists helped to use cash from livestock marketing to bulk grains.
- Destitutes helped to grow grains.
- Monitoring and Early warning.

#### 9.5.1 Food for work (FFW)

Food aid organisations, the DPPDC and NGOs promoted FFW as an alternative to free food distribution. FFW is seen as a tool for linking development and food aid. The policy is based on the concern that uncontrolled use of free food creates dependency. Despite the extensive use of FFW and promotion of food aid in this form, available evidence suggest that the success should be interpreted in terms of not what is achieved, but what is not. Access to FFW results in less demand on indigenous institutions. Availability of the food scheme may have increased food distribution through mutual networks, yet it removes the responsibility from the indigenous institutions, transferring it to the food aid organisations. This has been promoted by a tendency by aid workers to assume that pastoralists in general are helpless. Yet, available evidence would show that these assumptions are misguided. Thus, during the future attitude to food aid should change from provisioning to strengthening of the indigenous institutions. Conversely, it may be claimed that this is precisely what FFW is meant to be doing with the following assumed advantages:

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192 Coppock 1994
193 Coppock 1994
• saving assets by helping pastoralists to forgo disposal of their valuables
• saving human lives when the rural population is most vulnerable
• providing labour for community based development, e.g. bush clearing
• reducing the pastoralists vulnerability to increasing market prices of grains
• increasing food that may be distributed through the social security networks.

FFW relies on availability of food aid through the government or aid agencies. Some aid agencies make contributions to drought amelioration work conditional to the defined tasks. The problem of FFW is in its goals and administration and unforeseen side effects. In the Ethiopian highlands where FFW has been extensively used, the achievements are measured in terms of hectares of terraced hill sides, improved water catchments, construction of rural access roads, tree planting and community water projects. In the rangelands the evidences are less obvious. The chief weakness being that developments are done on ad-hoc basis. FFW is focused on short-duration projects with poor follow ups. Furthermore, the work is often not translated into activities which communities consider as priorities. Food aid agencies decide the type of projects rather than linking FFW distribution to the community projects. Other disadvantages of using FFW are given by Urstad\(^\text{194}\)
• social obligations are eroded and collective actions lost
• negative effects on local grain markets FFW has displaced the power structure within the community by putting more power in the hands of the FFW workers.

Additional weaknesses of FFW is that it is

• not linked to long-term projects such as sustained schemes for improving food security. The obvious limitation being an inability to plan development using FFW, since the availability is sporadic.
• Projects stop when FFW is exhausted even though they are incomplete.
• FFW not distributed in time after the work has been done.\(^\text{195}\)
• FFW has not been used to strengthen existing coping strategies.

During the future, FFW should be given as loans for making investments. The community pays back the food loans or use the money as revolving funds for community projects.

9. 5.2 Bulking grains

Aid agencies were concerned with improvement of food security of pastoral households. A common practice is for the pastoralists to sell livestock and buy grains from the market during the dry season when food from livestock (i.e. milk and meat) is inadequate. During the dry season, the price of grains would rise against livestock prices. The unfavourable terms of exchange put the pastoral households in perpetual food insecurity. The Booran are advised to sell when prices of livestock are favourable against low grain prices. It was supposed that if they bulked and stored grains they would deal with food emergency situations more successfully (see Chapter 7).

\(^{194}\) Urstad 1997
\(^{195}\) In Erdar, our Team was asked why after six months the FFW for cleaning bushes had not been distributed.
9.5.3 Growing own grains

Another approach by CARE-Ethiopia was to conduct trials of dry-land farming. The targets were destitute families who were victims of the droughts of the 1980s and the ethnic wars. These families were initially settled and given famine relief. They were given loans for agriculture implements, improved seeds, oxen for ploughing and fertilisers. Loans were given to the community, rather than to individuals.

Farmers are lacking suitable seeds. Seeds may be provided through loan schemes such as those established by the Bureau of Agriculture. Fertiliser loans are expensive, and their yields not any superior than cattle manure.\footnote{Discussion with the CARE-Ethiopia Team in Yaballo}

9.5.4 Restocking destitutes

CARE-Ethiopia and other development projects involved in restocking selected the Ardha as the target population. The destitutes were identified through the Hayu and the Jaalab. Returning the destitute households to pastoralism involved reconstituting the lost herds. Traditionally, this was the function of the clans through the social security system of buusa gonofa. It was presumed that the indigenous institution of buusa gonofa had failed to function, hence the justification for aid agencies to play the role of the clans. Whereas, restocking was considered as a strategy to strengthen the Booran pastoral system and preserve the family's economic integrity, the help was not built on the indigenous social security system of buusa gonofa. Furthermore, Restocking has not guaranteed survival of the herds. Rather, the restocked families continued to experience food insecurity. Restocking would be more effective if it was planned to compensate for the short falls in the clan resources. Availability of restocking through aid agencies implied that the poor rather than pressing their clans for support were encouraged to depend on outside assistance. The immediate effect is failure by the Booran to conduct regular consultations for redistributing livestock. Given the opportunities, it is prudent for them "to play poor" to gain access to external resources. This is a distinctive rural psychology that development agencies misunderstood. There are of course, genuine cases that needed help, but the insufficiency of clan resources have not been established. During the future, it may be necessary to provide assistance to the clan social security system to make them more robust than providing assistance to individuals (see below).

9.6 Livestock marketing

The livestock economy will remain the backbone of the lowlands for years to come. Nonetheless opportunities exist for diversification of the pastoral economy through monetarization and increased investments in the consumer sector. This has been the trend in many East African Pastoral communities.\footnote{Oba 1997b} Some leading pastoralists have began to invest in buildings, hotels and lodgings in the urban centres. Others are running small-retail businesses. A common question often posed is why the Booran do not sell their livestock before drought and bank the money. The Assembly of Gumi Gayo in 1996 had also made a similar recommendation. It should be remembered that marketing has low capacity and banking facilities are inaccessible.

The markets are concentrated in urban centres located along the Addis Ababa-Moyale Highway. The largest cattle market is that of Dubluq which handles between 200-500 heads of cattle on each
Majority of the Booran have no access to the functioning markets. Because of long distance to markets and unattractive prices, the producers are confronted with the choice either to dispose livestock at unfavourable prices or return home with them.199

The chief reason for selling livestock is to buy grains.200 The demand for grains and reasons for selling livestock are higher during drought years than during normal years. Livestock is traded for grains to balance energy requirements. Following the drought stress the population of livestock supplied to the market increases, while their prices fall. GRM201 quotes a case during the 1983/1984 drought when cattle prices fell by 60% as compared to the 1991-1992 drought when the price of cattle declined by 90%. The grain prices over the same period were increased by 150%.202

Livestock marketing data from the Arero, the Nagele, the Moyale and the Dubluq markets demonstrated the low marketing volume. Substantial proportions of the livestock on offer were returned (fig. 20a-d). On average 14.1% of the cattle on offer at the Arero market were returned, compared with 57% in the Nagele, 34.5% in the Moyale and 44.2% in the Dubluq markets. The evidence implies that the Booran have limited opportunities to transport their livestock to the terminal markets in the highlands where there is a greater demand for meat. The low marketing capacity may explain lack of variations in average prices offered to the producers at the Dubluq market over a four year period (1993-1997). Similarly, the cattle: grain price ratio showed little variations.

This is in contrast to the established notion that prices of cattle tends to be lower during the dry season and rises during the wet season, behaving inversely to prices of grains. Figures 21 show a monthly averages of the cattle and grain prices at the Dubluq Market.203 Contrary to what is often claimed prices of cattle and grains were lower during the dry months of December to March and higher during the wet months. This may be inferred that prices of livestock and grain were not controlled by supply and demand, rather influenced by availability of food damped on the market by the famine relief organisations. More relief food is provided during the dry months when the demand for grains is greater, but because of the surplus, the pastoralists find it unnecessary to sell more livestock. During the wet season (May to August) the increase in price of grains may be due to two reasons. First, relief food supplies may have reduced with improvement of milk yields during the rains. Second, the self-grown grains that were still on the farms and the declining supplies on the market lead to a slight increase in the market grain prices.

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199 There are two livestock markets per week
199 Gaigallo 1997
200 Coppock 1994
201 GRM 1989
202 Gaigallo 1997
203 The data was kindly supplied by CARE-Ethiopia
Figure 20a-d. Cattle on offer rejected at different markets in 1997.\textsuperscript{204}

\textsuperscript{204} Data supplied by the GTZ-BLPDP
Figure 21. Four-year monthly averages (1993-1996) of cattle and grain prices at the Dubluq market.
The fall in price during the months of September-November may be related to the greater quantities of grains released to the market by the agro-pastoralists. Following increased supplies the price of grains were depressed. The pattern of grain and livestock marketing data do not explain the often assumed unfavourable cattle : grain ratios. I shall argue that the Booran have a favourable terms of trade between cattle and grains as long as grains are locally available and relief food damped on the market depresses the grain prices. It should be appreciated that the pastoralists sell a greater proportion of the grains they received from the famine relief organisations to buy consumer goods, including alcohol which they now consume in huge quantities.²⁰⁵

²⁰⁵ Tache 1996
Future prospects for the Indigenous Range Management of the Booran

10.1. Strengths of the indigenous range management knowledge

The Booran pastoralists until a few decades ago were considered among the most successful in East Africa. It has been suggested that the indigenous range management system was efficient, comparable to the results demonstrated by controlled studies.\textsuperscript{206,207} Successful land use depended on sound ecological response and sociological organisations. Indigenous rules and regulations that ensured proper use of the natural resources were applied. The stable political organisation of the \textit{gada} generation class created a corresponding stability in pastoral production system. The social institutions and the networks created by the clan structure and the link to the \textit{gada} generation class served as a distributive system. A number of other factors also contributed to the success:

- Grazing resources were vast, geographically distributed and varied
- The unity and cohesiveness of the community
- Management of multi-species herds
- Stable indigenous water sources in the Tulla well complexes
- Complex institutions of water management
- Comprehensive knowledge of the range and spatial temporal distribution of resources

The Booran have traditionally occupied a vast and rich rangelands. The lowlands are differentiated into diverse ecological systems that offered diverse grazing resources. The system of land use relied on mobility for the \textit{foora}-herd management system and semi-sedentary life style for the \textit{waara}-herd management. The indigenous pattern of land use was rotational, between the wet season, the dry season and the drought grazing rangelands.

Central to the success of the Booran pastoral system and their social coherence is the advanced institutions of water management. They have property rights to wells and ponds that are used to regulate grazing.

10.2. Why the indigenous system of resource management is failing

A decade after the initial assessments, the Booran rangelands are being degraded and the community is losing self-reliance.\textsuperscript{208,209} What has gone wrong with the system now?

In the past, human populations were controlled by episodic events related to periodic droughts, famine, political perturbations and epidemics. They had traditionally relied on livestock as the main

\textsuperscript{206} Nicholson 1983, 1987
\textsuperscript{207} Upton 1986
\textsuperscript{208} Coppock 1994
\textsuperscript{209} Oba 1997c
source of food. Following the increase in human population the traditional food no longer provides for all their needs.

Furthermore, the political perturbations had a long lasting effect on the Booran pastoral economy. Conflicts over the grazing lands and principal water sources put the system under pressure, gradually reducing self-sufficiency. Several factors identified in this report have contributed to this. The external pressure caused by insecurity compressed the population into a fraction of the former territory. Following this, the traditional flexibility of land use was lost, increasing ecological degradation.

The situation was not reversed by development projects. Rather, rangeland development changed the indigenous patterns of land use, creating additional pressures on the deteriorating range resources. Water provision in the wet season rangelands induced the population to settle around the perennial ponds, intensifying land use. Further to this, key grazing lands were alienated as ranches, aimed at demonstrating alternative forms of land use, but miserably failed.

The deteriorating conditions of the rangelands are shown by bush encroachment and changes in structure and composition of the herbaceous vegetation. The increase in woody cover lead to a decline in the grassland: woodland ratio. Following this, the forage scarcity has increased, resulting in severe stress on livestock during drought years.

The Booran responded to the external loss of land and the internal deterioration of the rangelands by adopting farming to increase food security. The communal rangelands were enclosed to develop fodder banks. The result is that the resources are being eroded from within and without. Consequently, the robustness of the communal resources have decreased. The indigenous pattern of the wet-and-the dry season grazing that allowed intermittent use of the rangelands have broken down. Loss of mobility implies that the indigenous system of land use is no longer sufficiently responsive to ecological and climatic variability. This has made the whole system to be increasingly vulnerable to climatic change.210

10.3. Options for future development

I shall suggest that during the future, the pastoralists need empowerment. Modernisation is not necessarily a threat if the changes improved, rather than made them more vulnerable. Earlier it was observed that rangeland development failed due to unworkable policies. Developments in the lowlands seldom considered consequences of the interventions. Thus, in future development agencies and the government ought to

- Consult the communities on development agenda
- Promote resolution of land use conflicts between different ethnic groups
- Empower the communities to make decisions on resource allocation
- Allow processes of indigenous resource tenure rights to evolve
- Ranch development as a policy has long-term negative effects on the communal resources. It would be judicious if processes of dividing communal lands is preceded by a clear policy. The long-term implications of the environment and the socio-political conditions must be weighed.

The immediate effects of ranches is displacement of the population, alienation of land, increase

210 Oba 1997c
pressure on the remaining land and increase in land speculation. Thus, ranching should not be an option for the lowlands of Ethiopia.

- As an alternative, the current management of the resources using communal fodder banks should be promoted. The community should register such lands with their PAs to avoid land grabbing through land speculation.
- Development of fodder banks ought to be integrated into bush encroachment control projects.
- Haphazard water development in the rangelands be stopped.
- Give priority to water for human use. In the Golbo production systems of Gorai, Magado, Balale, Saake and Diilo, provide water for livestock and human use.
- Integrate water development into natural resource management.
- Avoid drilling bore-holes in the Tulla well complex zones.
- Improve livestock marketing.
- Open highland markets to the Booran livestock traders.

10.4. The Booran perception of the future

In thinking about the future, the Booran are not any different from other pastoral communities in the lowlands. During the previous decades their lives were shattered by political upheavals. The national politics changed natural resource administrative borders. The pastoralists feel trapped and helpless. They feel that the opportunity to decide their future has been lost to them. Thus, asking the Booran to explain what they wished to do during the future and what they aspire for, are issues that the community is unwilling to discuss freely. One elder in Liiban answered "the future is not in our hands...what we are experiencing now, we never did...we cannot talk about the future, when we do not know what happens now". When asked what is the solution, "only God has the answer" he replied.

The community displays a great deal of frustration and apathy. They blame most of their troubles on the emerging politics and loss of land. It is to be recalled that the Booran leaders during the Assembly of the Gumi Gayo of 1996 presented a petition to the Presidents of the Regional and the Federal States. They had complained about:

- their land being occupied by the opposing pastoral groups
- Loss of the grazing lands and wells in the Goof and the Lae mada
- Violation of their resources
- Annexation of their land to the Region 5 of the Somalis
- Settling of the Somali refugees in their territory, registering them as residents

The Booran consider their future survival and hopes to be directly connected to the resource tenure rights. Other priorities include:

- Safety of the grazing lands from grabbing by private investors
- Safety of the soda crater and other mineral-salt sources in Diilo, Magado and Gorai from alienation
- Putting a stop to the process of dividing the land into private ranches
- Recognising of indigenous resource tenure rights, including communal Kaalo lands
- Education for the community on farming, livestock marketing
- Improving livestock health

211 Traditionally the Gedeo (Daraasa) region was an important livestock marketing centre for the Booran
212 Huqqa 1997
213 Bassi 1997
• Improving human health
• Developing drinking water
• Respecting the indigenous management systems
• Respecting the indigenous leaders
• Improving livestock marketing infrastructure
• Availability of suitable seeds for planting
• Supporting during the drought years
• Educating the younger generation

10.5. community based proposals for improving food security

Currently, the communities efforts to cope with drought and aid agencies involved are not integrated and co-ordinated. The indigenous coping strategies operate outside the formal drought management programs. Thus, it may be essential to co-ordinate the two systems. The integration may be achieved by establishing drought management committees. The aims of the indigenous drought management committees are to

- Participate in drought early warning
- Participate in community mobilisation during emergencies
- Co-ordinate grazing and other development activities
- Provide advice to the aid agencies
- Assist development work

The committee is made up of men and women from each Ardha. The drought management committee should be linked to other development activities (see Part D of the Report).

Food insecurity often occurs because farmers take their produce to market only, which are bulked by the traders. When agro-pastoralists grains are exhausted, the traders release the grains into the market, increasing grain prices. Farmers can be helped by being made aware of the importance of saving grains. An important strategy is for farmers to sell grains to a community store. They may purchase back the grains at less the market price. This will improve food security throughout the community. Each PA may establish a food store where all the members deposit their grain reserves. The PA then provides grain loans to the members. The system should work similar to a bank account. Customers deposit and withdraw grains, receiving grain loans on the family accounts. The grain loans are paid following drought recovery with an interest of 5% on the amounts supplied. The aim is to help pastoralists save assets. Those who cultivate would repay their loans after the harvest. Proper functioning and co-ordination of the food security stores will be the responsibility of the Drought management committees, being supervised by the DPPDC.

By targeting women groups and the community at the Ardha level, the programme if co-ordinated might succeed. This will be an important food security strategy for the residents of the Golbo production system. The population of Arbaale, Saake, Magado, Gorai and Diilo are vulnerable to food insecurity. The situation is aggravated by lack of accessibility to grain markets. An important stimulant is to establish livestock marketing centre in Diilo. The cash from livestock sales and supplies of grains would promote food security.

Food security may be addressed more effectively if there is proper understanding of the rationale of the Booran for growing crops. It is never their aim to replace livestock by farming. Rather, farming

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214 This will assume availability of reliable food distribution system
is established as a complementary activity to livestock herding. Growing crops is perceived as a coping strategy to lessen demand on cattle for food. Thus, successful farming will automatically result in herd expansion. The Booran may be helped to invest their earnings from farming into alternative economies as a coping strategy to diversify income. An important option is investing in urban housing and consumer trade. If achieved, this will immensely improve food security situation for individual households.

- After each drought, the Booran clans assess destitute members and determine the level of support following the traditional social security networks of buusa gonofa. Aid agencies that wish to support, either through farming schemes, or restocking should as a condition, require the community to provide matching funds or numbers of stock. Among the Booran, livestock distribution is the responsibility of the clans. However, loans on implements and grains would be a community responsibility.

- The Drought Management Committee doubles as the grazing committee in the Dedha Council. They monitor information on the grazing conditions. Their most valuable role is the coordination with the DPPDC. The community wide information would be delegated to the organisation, to support prompt action. An additional important role of the committee is to organise range rehabilitation. They would be responsible for supervising implementation of the community action plans (see Part II). Among their responsibilities would be promotion of fodder banks, bush encroachment control and support to women income generation.

- The role of marro as an indigenous household food security has not been adequately investigated. It is recommended that a detailed study be conducted to determine how women organisations among the pastoral households be supported and their resources mobilised.
Concluding remarks and Recommendations

Changes in the Booran rangelands may have began during the previous decades but accelerated recently. The emerging political arrangements that replaced the traditional Booran political structure and the insecurity of resource tenure have had a lasting effect on the pastoral economy. Loss of resources following ethnic conflicts and rearrangement of local administrative borders following the emerging Federal state of Ethiopia has caused the Booran to be compressed into only a fraction of the former vast rangelands. Within the reduced grazing home range, population pressure on the grazing resources and water has increased. The pressure on the environment has resulted in range deterioration. The grazing lands are overgrazed and the former grasslands invaded by unpalatable woody species.

Consequently, the productivity of livestock has declined and drought survival by livestock has deteriorated. Each drought kills more stock than the previous. It is probable that drought recovery is becoming slow as the resource needed are diminishing. Under the condition, dependence on livestock as a source of food is declining, while the consumption of non-pastoral foods are increasing. These are either supplied by the aid agencies, self - grown or purchased at the local markets. Former grazing lands are being converted into crop lands and enclosed fodder banks which are putting additional pressure on the limited resource. The evidence shows that the self reliance which characterised the Booran pastoral economy over centuries is being eroded and dependence on outside aid is increasing.

Development interventions that were aimed at changing the pastoral subsistence system to the consumer economy were considered a progress. Development was aimed at commercialising the pastoral production system through livestock marketing and ranching. Moreover, it was argued that the chief constraints of the Booran rangelands was availability of water. Development of ponds in areas traditionally reserved for the wet season grazing changed the traditional grazing patterns and induced sedentarization. The rangelands that were grazed for short duration under the indigenous system are now grazed much longer, causing ecological degradation. The Booran traditionally used water as a tool to manipulate grazing. They are cautious about excessive use of water in the rangelands. They have less desire for more livestock water to be developed in the Lowlands. Rather, their priorities are in development of water for human and calf consumption. Cisterns as the source of domestic water is gaining acceptance. However, drilling of bore-holes in the Tulla well complexes should be discouraged. It would, however, be necessary to develop an environmentally sound water scheme in the Golbo production system, where the supply is scarce.

Ranches have not demonstrated economic returns that the planners had predicted. They did not improve livestock drought survival. It is therefore surprising that lessons of privatising communal rangelands that earlier failed are being reintroduced into the lowlands of Booran. Prospects for private ranches have induced unprecedented property speculation in the lowlands. Decisions on privatisation of the communal grazing lands are conducted without sufficient consultations with the Booran. The implications of displacing the population have not been given the consideration it deserves. If not reversed, the process of privatisation of the pastoral lands will have dire

 Maintenance costs and the cost of environmental damage are far greater than the investment.
consequences for the entire Lowlands of Ethiopia. It is advised that careful policies that acknowledge the uniqueness of the rangelands be enacted and all the development options considered before land is misappropriated. The danger of privatising the communal grazing lands is that it might commence land speculation. Developers who use the public land as collateral for bank loans are putting at risk the masses who might be displaced. In this scheme net benefits which are often quoted as the reason for land alienation are minute over and above the loss of self-reliance and increased dependence on food aid.

RECOMMENDATIONS

The future direction of development in the Lowlands of Ethiopia in general and the Booran in particular are to

- promote and strengthen the indigenous range management.

- Establish a clear policy on the rangelands and give guidelines on how the resources can be developed on sustained basis

- Develop the policy on solid scientific and indigenous knowledge systems and to be guided by them. The evidence shows that the Lowlands have potential than hitherto realised. Given that the arid and semi-arid rangelands are non-equilibrium systems, where conditions cannot be predicted with certainty, controlled management as envisaged by ranching is not practical. The most optimal mode of land use are opportunistic movements which the pastoralists have developed. However, it should not be forgotten that the Booran system is changing and mobility is gradually declining. The community has used internal mechanisms to adjust resource exploitation and allocations. The use of Kaalo is one such process of internal response to external pressure on the land. The development process should guide the community in the direction and at the pace they are developing. Use of communal Kaalo in settlement areas can be used for improving range management and controlling land use. It is an emerging form of resource tenure that if misused can be destructive, but if used properly guided might be applied for intensive natural resource management. The system may be an alternative to group or private ranches in the pastoral areas. The economics and its ecological implications cannot be dismissed without proper understanding

- Conduct adjudication of pastoral lands based on solid policy that safe guards the interest of the majority and the minorities. The policy should be guided by comprehensive understanding of the arid zones of the country and their resources.

- Unplanned water development has transformed resource use patterns and degradation of the environment. Future water development programs should distinguish between water for human and calf and livestock use. It is suggested that establishment of additional semi-permanent ponds be discouraged. Water development should focus on improving existing facilities and providing drinking water in form of cisterns.

- In the Golbo production system where wells are located in the craters of Magado, Gorai and Diilo, greater deaths of livestock during drought are to a large extent contributed by the steep and narrow stock routes. DPPDC should use its food reserves through FFW and assist the
community to improve the stock routes. Water for human and calf consumption should be developed using the resources of the community. The water technology to be promoted are that of the cistern. Development projects should provide cement and other materials at affordable prices.

- Bush encroachment control need to be linked to development of fodder banks at the community level. Control should begin with key range areas where young tree populations have invaded. Bush control should not be indiscriminate but selective. In Part II of the report more practical approaches to bush control are given.

- Development of fodder banks have been encouraged by the Assembly of Gumi Gayo. Enclosure of communal land for fodder banks and farms are changing resource tenure. It is crucial that Booran understand full implications of changes in resource tenure. It might be prudent to integrate development of fodder banks with bush control. As an inducement, individual encampments may be allowed to enclose areas currently being threatened by bush-encroachment. By integrating range rehabilitation into indigenous patterns of land use, the Booran will be helped to improve use of the range resources.

- Development projects should help farmers to improve farming techniques and use suitable seeds for the lowlands. There is need to develop farming systems according to the potential of the land. Farming packages developed in the highlands have little prospects due to unreliability of rainfall and infertile soils. Thus, in the lowlands improving livestock productivity and proper management of the rangelands need to emphasised.

- Currently, ideas of livestock banking are being discussed by development agencies and researchers. It is presumed that if Booran sell excess livestock and bank the money, they will have economic capacity to cope with persistent food insecurity. But so far, livestock marketing is poor and banking facilities are unavailable. The other problem is one of attitude, which Coppock (1994) described as "opportunistic gambling". The Booran will support the idea of banking in principal. It is suggested that the idea of banking be pursued to develop community confidence in monetary investments. Herders frequently bank some of the earnings from cattle sales with friends who run retail business. The money banked is used as collateral for establishing credit facilities.

- The idea of banking could be popularised using such development groups as women and men. More public education and availability of facilities will encourage the Booran to save money in banks. Booran elders told us it would be more acceptable to them if they are assisted by their educated children to bank money. They attribute their under development to lack of education (see Part II).
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