



Poverty, pastoralism and policy in Ngorongoro

Naomi Kipuri and Carol Sørensen
Edited by Ereto II / IIED

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Lessons learned from the Ereto I Ngorongoro Pastoralist
Project with implications for pastoral development and
the policy debate

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Maasai woman with goats, Longido, Tanzania

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Acronyms

AU	African Union
CAHW	Community Animal Health Worker
CBO	Community-Based Organisation
CBPP	Contagious Bovine Pleuro-Pneumonia
CSO	Civil Society Organisation
DANIDA	Danish International Development Assistance
ECF	East Coast Fever
EIA	Environmental Impact Assessment
Ereto I	Ereto-Ngorongoro Pastoralist Project, Phase I
FAO	Food and Agriculture Organisation
GCA	Game Controlled Area
GIS	Geographic Information System
GMP	General Management Plan
GoT	Government of Tanzania
HIV/AIDS	Human Immune Virus/Acquired Immune Deficiency Syndrome
IFAD	International Fund for Agricultural Development
IIED	International Institute for Environment and Development
IRA	Institute for Resource Assessment
ISW	Information Sharing Workshop
LDC	Livestock Development Centre
LU	Livestock Unit
MNRT	Ministry for Natural Resources and Tourism
MCF	Malignant Catarrhal Fever
MS-TCDC	Training Centre for Development Cooperation in Eastern and Southern Africa
NCA	Ngorongoro Conservation Area
NCAA	Ngorongoro Conservation Area Authority
NDA	Ngorongoro District Authority
NGO	Non-Governmental Organisation
NORAD	Norwegian Development Assistance
NPA	Ngorongoro Pastoralist Association
NSGPR	National Strategy for Growth and Poverty Reduction (also <i>Mkukuta</i>)
PAR	Participatory Action Research
PC	Pastoralist Council
PFO	Project Field Officer
PINGO	Pastoralist Indigenous NGOs Forum

PLA	Participatory Learning and Action
PRSP	Poverty Reduction Strategy Process
PVP	Private Veterinary Practitioner
RECONCILE	Resource Conflict Institute
SPILL	Strategic Plan for the Implementation of Land Laws
SUA	Sokoine University of Agriculture
TAPHGO	Tanzania Pastoralist and Hunter-Gatherer Organisation
UDSM	University of Dar es Salaam
URT	United Republic of Tanzania
VIC	Veterinary Investigation Centre
WCED	World Commission on Environment and Development

Map of Tanzania showing Ngorongoro Conservation Area



Introduction

Although Tanzania relies on pastoralists and agro-pastoralists for most of its meat and milk, recent years have seen pastoralist production systems operating under growing pressure and pastoralist communities becoming increasingly impoverished. A Participatory Poverty Assessment commissioned by Ereto in 2003 identified four key factors that reduce pastoralists' livelihood opportunities and make them vulnerable to poverty:

1. Livestock diseases
2. Drought
3. Fluctuating market prices
4. Unfavourable policies that further marginalise pastoralists by reducing their capacity to cope with stress and increasing their loss of land.

This paper is intended to provide pointers that will help address the fourth constraint to pastoralist production noted above.

Ereto-Ngorongoro Pastoralist Project (Ereto I) is a bilateral project initiated in 1998 by the governments of Tanzania and Denmark, in response to growing concern about the unprecedented and rising levels of poverty among pastoralists in Ngorongoro Conservation Area (NCA). The second phase of the project, Ereto II NPP, began in 2003 and will continue until July 2008. Ereto II expanded operations to cover the whole of Ngorongoro District and added a policy dialogue component.

The positive results achieved by Ereto I show that it is possible to promote sustainable livelihoods and help tackle poverty among pastoralists, by using participatory approaches to work with them on their own development issues and providing appropriate support for their livelihood strategies. This key lesson has far-reaching implications for policy dialogue in the present context of pastoralism and policy formulation in Tanzania.

Current policies are largely unfavourable to pastoralist livelihoods. They are frequently informed by myths and preconceptions reflecting colonial ideas about rangeland management and outmoded development models based on flawed modernisation theories. Over the past decade new understanding of the dynamics of tropical rangeland management has shown that

contrary to popular belief, indigenous pastoralist livestock systems are more productive on rangelands than the exotic ranching systems so often promoted by development agencies and governments. Ereto I was inspired by the models generated by this understanding, and can provide important lessons on how to support pastoralist livelihoods and reduce pastoralist poverty.

The aim of this publication is to present the key lessons learned from Ereto I so that they can be disseminated and fed into policy dialogue on sustainable pastoralist livelihoods. This is a condensed and edited version of the report “Best Practices and Lessons Learned from Phase I of Ereto” (2005) by Dr. Naomi Kipuri and Carol Sørensen, which drew on comprehensive fieldwork throughout Ngorongoro District involving consultations with local stakeholders, verification of the achievements and impacts of Ereto I and stakeholder consultation at regional and national levels. A recurrent theme throughout these consultations was the need to promote a supportive policy framework for sustainable pastoralist livelihoods, and to reduce pastoralist poverty.

This paper begins with a brief overview of pastoralism in Tanzania, the policy environment in which pastoralist production systems operate, and approaches to improving pastoralist livelihoods. Sections two to six look at pastoralist livelihoods and production in Ngorongoro Conservation Area; provide a thumbnail sketch of the Ereto I project; review the impacts of the project; present the lessons learned from Ereto I and consider how these lessons can be linked to policy dialogue on support for sustainable pastoralist livelihoods. The paper closes with some thoughts on the broader implications of taking this process forward.

1. Overview of pastoralism in Tanzania

1.1 A few facts and figures

- 61 million hectares (610,000 km²) of Tanzania's land mass is classified as rangeland, meaning that it is managed according to some kind of pastoralist or agro-pastoralist regime.¹
- There are approximately 17 million cattle in Tanzania (the third highest population in Africa south of the Sahara), 12.5 million goats and 3.6 million sheep.²
- 98 per cent of the national herd, or approximately 16.7 million cattle, are in the hands of pastoralists and agro-pastoralists.³
- 1.5 million cattle, 2.5 million goats and 555,000 sheep are slaughtered in Tanzania each year, producing an estimated 335,000 tons of meat for the domestic market.⁴ Exports of live animals to neighbouring countries are largely unaccounted for.
- Three per cent of the 3.7 million households in Tanzania are pastoralist, and seven per cent are agro-pastoralist.⁵ This amounts to approximately 370,000 households, or 2.2 million people in total. It is not known what the consequences in human, economic or environmental terms would be if these people are forced to drop out of pastoralist production.

1.2 Policy context

Pastoralism and agro-pastoralism are vital to the Tanzanian economy. In fact, the country relies on pastoralists and agro-pastoralists for most of its meat and milk. Extensive research conducted over several decades in arid and semi-arid rangelands has demonstrated that in terms of both protein production per hectare and environmental benefits, pastoral systems are more productive and viable than the ranching and group ranching or sedentary livestock production systems currently promoted by government and other development agents].⁶ Therefore, providing appropriate support for pastoralist livelihoods and economies could generate considerable economic benefits at both the local and the national level.

1. Draft National Livestock Policy 2005.

2. *Ibid.*

3. *Ibid.*

4. Source: Workshop on Rangelands and Livelihoods March 2004, Arusha.

5. 2003 National Census.

6. Homewood & Rodgers (1991); Homewood (1992); Scoones (1992)

Box 1. Pastoralist contributions to GDP

- The traditional sector contributed 70% of the milk produced in 2004.*
- Agriculture contributes 43.2% of national GDP.**
- On average, the livestock sub-sector accounts for 30% of agricultural GDP: 40% of this contribution comes from beef, 30% from milk, and the remaining 30% from small stock and poultry.***

* Draft National Livestock Policy, 2005.

** World Fact Book, 2005.

***Draft National Livestock Policy, 2005.

The principal development policy in Tanzania, the National Strategy for Growth and Poverty Reduction 2005-2010 (NSGPR), recognises pastoralism as a sustainable livelihood and states that one of its goals is *"promoting efficient utilisation of rangeland, empowering pastoralists to improve livestock production through improved access to veterinary services, reliable water supply as well as recognising pastoralism as a sustainable livelihood"*.⁷

Although other policies are supposed to harmonise with the NSGPR, a study commissioned in 2005 by Ereto II to identify and analyse the impacts of existing and emerging policies and laws with a bearing on pastoralism in Tanzania found that this was not the case.⁸ Some do provide opportunities for pastoralists, but most show little understanding of pastoral production systems or recognition of pastoralism as a sustainable livelihood. This is probably due to two main factors: 1) lack of knowledge about pastoralism among policy-makers, and 2) pastoralists lacking a clearly articulated voice and influence in the policy debate.

Even the proposed new Livestock Policy⁹ fails to acknowledge the genetic potential of indigenous livestock breeds and landraces, or the wisdom of extensive grazing regimes in dryland areas. Furthermore, a practice left over from colonial times means that pastoralists are the only Tanzanians who are taxed on their capital, through the livestock head tax. The National Land Policy of 1994 and the Village Land Act of 1999 make legal provisions for securing land rights for extensive grazing systems. However, these are not widely known or exploited, and certain aspects of the Land Act have been described as *"the last nail in the coffin of pastoralism"* (see Box 2 below). Efforts to secure land and resource tenure for pastoralists are generally very

7. NSGPR 2005.

8. Mattee & Shem (2005); Brehonny, Mattee & Nang'oro (2004).

9. URT (2006).



A pastoral homestead, Ngorongoro

limited, and crop growers and private investors continue to appropriate large swathes of pastoralist land, often with direct or indirect support from government and development agents.

Generally, there is considerable interference in pastoralism by policy-makers, development planners and governments “in their common anxiety to modernise livestock production and the pastoralists”.¹⁰ With their lands being encroached upon by both the State and private sector, pastoralists urgently need to make their voices heard and influence the policy process.

Thus, in addition to being vulnerable to drought and disease, pastoralist livelihoods and production are increasingly marginalised by present policies and interventions. The following quotation from the third draft of the Strategic Plan for the Implementation of the Land Laws (SPILL 2005) shows how negative perceptions of pastoralists are enshrined in national policies:

“The sector has been called upon to NOTE with great concern that:

- *Pastoral production has very low productivity levels (meaning it does not address poverty reduction policy)*
- *Pastoralism degrades large masses of land (meaning it is not environmentally friendly)*
- *Pastoralism invades established farms and ranches, forests and wildlife conservation areas, agricultural farms (meaning it violates security of tenure)*

10. Mattee & Shem (2005).

- *At the moment it is impossible to control livestock diseases, thus making it difficult to export meat, milk and livestock due to international demands on livestock health and products free of infectious agents (meaning has marginal support only to economic development).*

Pastoralists have to be given land and told to settle (meaning that nomadic tradition must stop)".¹¹

The SPILL (2005) is not alone in endorsing misconceptions and presenting confusing messages. With many policies reflecting myths about pastoralists and pastoralist production, there is little meaningful support to reduce pastoralist poverty or provide a framework for pastoralist production. This creates a situation where the victims of failed policy (pastoralists) are blamed for its failure.

Box 2. Alienation of pastoral lands by state and private interests

- 2.5 million hectares (25,000km²) of village and public lands is currently being expropriated for allocation to investors through the Land Bank,*under the Tanzania Investment Act of 1999. Land for ‘investment’ has already been identified in all pastoralist districts.**
- Under the Wildlife Conservation Act of 1974, 3.5m hectares (34,605 km²) of the land managed by pastoralists is gazetted as Game Controlled Areas, where the Minister for Natural Resources and Tourism may make decisions on land use without recourse to the village, district or Parliament.
- Establishing national parks or game reserves on traditional pastoral lands excludes pastoralists from grazing lands, while expanding cultivation and wildlife reserves or parks reduces rangeland resources and increases pressure on the remaining rangelands. Increased incidence of livestock diseases, especially in villages bordering national parks, has led to cattle losses, destitution among pastoralists and long-distance migration to other parts of the country.
- Cultivation of wetlands (on a small scale by local farmers, and by large-scale irrigation projects) leads to a loss of dry season grazing.
- Preventing trans-boundary migrations disrupts seasonal grazing patterns.
- Mining may deprive pastoralists of access to pastures.
- In some cases, public ownership can undermine sustainable natural resource management: for example, when public wells replace privately owned wells, which are sometimes the only instrument for controlling access to pastures and preventing overgrazing.
- Market distortions caused by expansion of the crop sector and large investments in crop production (e.g. donor-driven projects) are fuelling encroachments into ‘marginal’ drylands (i.e. rangelands).
- Decentralisation does not address the needs of mobile populations.

* Mattee, A.Z. and Shem, M. (2005).

** Source: interview with senior land surveyor in the Ministry of Lands.

Based on Mattee, A.Z. and Shem, M. (2005).

11. Third draft of the Strategic Plan for the Implementation of Land Laws (SPILL February 2005), p. 27.

The poor policies and practices that adversely affect pastoralist livelihoods will also have a negative impact on the growth of the livestock sector and efforts to reduce poverty in Tanzania. At present there is no real knowledge base for developing sound policies, due to the lack of recent documented information about pastoralist livelihoods and appropriate basic data. There is little research in Tanzania measuring the productivity of pastoralist and agro-pastoralist production systems, and the role and details of present pastoralist production are not well documented in the literature or in national production assessments. The Participatory Poverty Assessment undertaken in 2002 as part of the Poverty Reduction Strategy Process (PRSP) is an exception to this, although its findings have not been made available.¹² The Participatory Poverty Assessment commissioned by Ereto in 2003 shows that pastoralists are finding it increasingly difficult to respond to stresses such as drought and disease in the present policy context, and clearly signals the need for policies that provide an appropriate framework for pastoralist livelihoods along the lines set out in the NSGPR.¹³ This is why it is important to look closely at the experience of Ereto I when formulating policies or interventions to reduce pastoralist poverty and improve pastoralist livelihoods.

1.3 New approaches to improving pastoralist livelihoods

Approaches to development aid changed greatly in the 1990s, when the benefits of involving communities in their own development were promoted,¹⁴ often through participatory methodologies.¹⁵ As early as 1987, the World Commission on Environment and Development (WCED) recommended that in order to achieve sustainable development, especially in complex ecosystems, the customary institutions that regulate land use should be recognised and measures taken to protect them.¹⁶

Following on from these changes, the past decade saw a major shift in thinking about range ecology and management, particularly in areas dominated by episodic droughts.¹⁷ A new paradigm of pastoralist production systems developed out of this, based on better understanding of the often complex ecosystems in which pastoralists live and from which they derive their livelihoods.¹⁸ The table below compares old and new attitudes to pastoralist development.

12. Workshop on Rangelands and Livelihoods, 25th and 26th March 2004, Arusha.

13. Sangale (2004).

14. WCED (1987); Scoones and Thompson (1994); Chambers (1993), (1997).

15. IIED (1994).

16. WCED (1987).

17. Scoones (1994).

18. Behnke and Scoones (1993).

This shift in approach means that past failures in pastoralist development projects can be explained in a way that does not lay the blame on project beneficiaries, and opens the way for new approaches that can produce more positive outcomes.¹⁹

Ereto I is one of the few programmes to put these concepts into practice, and is an instructive example of an intervention designed according to these new paradigms. The lessons learned from project interventions that are based on local knowledge and practices, take a highly participatory approach and allow interventions to be managed flexibly should be taken forward in project design and policy development.

Table 1. Comparison between old and new thinking about pastoralist development

Area	'Old' thinking	'New' thinking
Objectives	Focus on commodity production: livestock development, introduction of exotic species	Focus on livelihoods: support for pastoral development and self-management or empowerment
Range management	Range modification (legumes, hay, rotation). Restricted livestock movement (fencing, paddocks, legislation)	Focus on improving and rehabilitating key resources Focus on herd mobility and flexibility
Planning	Blueprint development planning	Flexible adaptive planning with local involvement and recognition of uncertainty
Water development	Technical feasibility planning Tenure, water management and conflict ignored	Local involvement in planning Focus on links to pastures and mobility, and on securing tenure, including management
Tenure	Fixed tenure regimes promoted: privatisation, communal regimes Conflict issues ignored	Flexible tenure: complex mix of overlapping and integrated regimes Focus on negotiation, mediation and arbitration to resolve conflicts
Institutions and administration (projects, veterinary services, etc.)	Service delivery package through centralised extension services Extension workers for technical delivery	Pastoral organisation for local management issues Extension workers as institutional organisers

Adapted from Scoones, 1994, page 34

19. Scoones (1994).

2. Pastoralist livelihoods and production in NCA

This section briefly describes the historical context of Ngorongoro Conservation Area (NCA) and pastoralist livelihoods and production in NCA, to present the project context and background to the lessons it provides with implications for policy dialogue.

2.1 Ngorongoro Conservation Area

2.1.1 Historical context

Ngorongoro Conservation Area is located in Ngorongoro District, an area some 14,000km². It has a population of approximately 120,000 people, whose main livelihood activity is pastoralist livestock production. The district is dominated by tourism and conservation interests, containing Loliondo and Sale Game Controlled Areas (GCAs), NCA and the Lake Natron Ramsar site, and bordered by Serengeti National Park to the northeast, Maswa GCA to the southeast and Monduli GCA to the west.

NCA covers 8,300 km² of Ngorongoro District, and is currently home to approximately 50,000 people, 97 per cent of whom are pastoralists. There are six wards and 14 villages in NCA, which are represented on Ngorongoro District Council. NCA was envisaged as a multiple land use area where dif-



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Ngorongoro crater

Serengeti Compensation Scheme. These became defunct in the early 1960s, and by 1994 the three dams constructed under the scheme had collapsed, become unusable or silted up. Over time access to the Ngorongoro, Olmoti and Empaki craters, Olduvai Gorge and the Highland Forest was restricted and managed burning of pastures and cultivation banned, increasing the constraints to pastoralist production. Provision of services such as education, health and veterinary care was also very poor (See Box 3).²⁰

2.1.2 Administration

There are currently four main institutions of authority in NCA:

- i. The District Administration, with a local government structure of villages and wards operating from the District capital Loliondo;

Box 3. Summary of the key provisions of the Ngorongoro Conservation Area Ordinance, Cap. 413 (revised)

NCAA

The Ngorongoro Conservation Area Authority is a body corporate with a Board of directors composed of a Chairman appointed by the President; the Conservator as the Secretary; and 6-11 members appointed by the Minister. The law does not provide for any representation of the local community on the Board, or for prior consultation with the local authority.

A Conservator, appointed by the President, is the principal executive officer, responsible to the Board.

Control of entry, residence and settlement

The Authority may, with the consent of the Minister, make rules prohibiting, restricting and controlling entry into and residence within the Conservation Area. The Minister can specify who is exempt from these rules, thus replacing the previous formula limiting Maasai people's right of entry and residence.

The Conservator is empowered to issue permits allowing people to enter and/or reside within the Area, subject to whatever terms he sees fit, and can require anyone in the Area subject to these rules to produce their permits.

With the Minister's consent, the NCAA can make rules requiring resident pastoralists and others to apply for a certificate of residence.

Control of cultivation and grazing, protection of natural resources

In the interests of soil conservation, the NCAA can prohibit, restrict, limit or control the use of land for any purpose whatsoever: grazing, watering and moving stock; firing, clearing or destroying vegetation; using wells, boreholes, waterholes; gathering honey or forefarming st products; and cultivating land.

20. Ereto II NPP Project Document, p. 89.

- ii. The Ngorongoro Conservation Area Authority (NCAA), which is an autonomous parastatal organisation;
- iii. The Pastoralist Council (PC), which advises the NCAA on funding for community developments;
- iv. Informal Maasai customary structures with age-set and clan leaders.

The overlap of authority and interests between these institutions creates a complex situation and can lead to conflict between the different bodies.

NCA was initially managed by the colonial District Officer, assisted by an advisory board established in 1961. Following the independence of Tanzania, the Ngorongoro Conservation Area Authority (NCAA) was established in 1975 as an autonomous parastatal organisation, with its own Board of Directors appointed by the Minister for Natural Resources and Tourism (MNRT) and a chairman appointed by the President.

Day-to-day management of NCA is in the hands of the Conservator, who wields immense powers as chief executive of the NCAA.²¹ The NCAA has been financially self-supporting since 1989, through income from tourism. Some of this (five per cent) is paid in taxes to the central government and the District, and the remainder is administered by the NCAA, which is monitored by the MNRT through the Wildlife Department.

As a governmental authority, the NCAA has legislative powers enabling it to issue general and special rules and orders regarding the management and affairs of NCA and the conduct of its residents. This has implications for any interventions and projects in NCA.

Although the NCAA has succeeded in promoting tourism, the dwindling rhino population, illegal exploitation of the northern highland forest, increase in invasive unpalatable plant species in the area and spiralling poverty among local people have raised questions about its capacity to conserve wildlife and its ability to fulfil its obligations to residents under the terms of the Ordinance. An Ad Hoc Ministerial Commission on Ngorongoro appointed in 1998 recommended that the NCAA establish a community development department to improve the status of resident Maasai in NCA, along with a community council modelled on the existing workers council. Furthermore, the Commission noted that poverty in NCA has increased due to the lack of community representation in NCA management.²²

21. Shivji & Kapinga (1998).

22. United Republic of Tanzania (1990).

A Pastoralist council (PC) was established in 1994 as a forum for discussion between the NCAA and residents, and as an advisory body to the NCAA and Board of Directors. Since then it has gone through various changes, including incorporation into the NCAA Ordinance in 2000. During Ereto I, the PC was composed of village chairmen, ward councillors, ward youth chairmen and ward women's representatives, as well as the Conservator and six selected customary leaders. Its work mainly focused on education and training, providing scholarships for secondary and tertiary education for young students from NCA.

2.2 Pastoralist livestock production systems in NCA

The 2002 national census recorded a total of 56,856 people in NCA, mostly pastoralists keeping East African Zebu cattle, different kinds of goats, sheep (including Maasai red sheep) and donkeys, which are used to transport goods and belongings. Livestock are crucial to the pastoralist livelihood economy, which also includes homestead farming, remittances from waged labour and trade in livestock and commodities.

Rainfall in NCA is highly erratic within and between seasons, with occasional severe localised droughts lasting between one and three years. Vegetation production is determined by altitude and rainfall. Pastoralists and certain wildlife species seek out areas where resources are plentiful and avoid those affected by disease or drought.

There are two main interlinked systems of herding practiced in NCA: home-based grazing and extensive grazing (see Tables 2 and 3 below):

1. Home-based grazing is practiced throughout the year. It may involve the whole herd or just a few milking animals kept close to home to cover certain household needs.
2. Extensive grazing takes place in both the dry and rainy seasons, and may involve large numbers of livestock belonging to many owners travelling long distances in search of resources.

Table 2. Summary of home-based grazing regimes

Home-based grazing	Management considerations
<p><i>Families in NCA generally stay at home throughout the year, keeping milk cows and some small stock near a water source. These animals are reared for food, for sale or to cover contingencies on the homestead. The rest of the livestock are herded in extensive grazing systems that respond to a complex variety of conditions.</i></p> <p><i>Livestock return home every night, herded by boys or young warriors.</i></p> <p><i>Home-based regimes are determined by residents in pastoralist areas.</i></p> <p><i>Rules are established at specified intervals, depending on the purpose of the grazing. Non-compliance is sanctioned through fines.</i></p>	<p>Dry and wet season grazing reserves: Grazing reserves are set aside for use in the wet and dry seasons. The community decides when they can be used, according to prevailing conditions. Disease avoidance: Herders avoid areas infested with liver fluke, ticks or tsetse fly, and areas grazed by wildebeest, which spread Malignant Catarrhal Fever (MCF).</p> <p>Calf grazing reserves: Areas with suitable grazing close to the homestead are set aside for calves.</p> <p>Milk cow grazing reserves: Areas with suitable grazing and water sources are set aside for milk cows.</p> <p>Movement: Routes are agreed to enable livestock to access water sources and pasture.</p> <p>Controlled access to grazing: rules are established to control grazing by the main herd, which may only move to fresh pastures when new boundaries to the grazing area have been agreed upon.</p>

Source: Interviews with pastoralists throughout NCA

Management considerations in both systems centre around available pastures, reliable water sources, disease avoidance and herd composition.

Transhumance in NCA varies from quite localised but still extensive livestock grazing regimes to far-ranging grazing patterns. This may involve whole families, apart from school children, who are lodged with relatives.

Production management strategies implemented in conjunction with these grazing strategies include:

- Seasonal burning of pasture to control ticks and weeds and restore soil fertility
- Immunising livestock and using veterinary drugs to control disease
- Controlled breeding to optimise desired characteristics and synchronise births.



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Dry season grazing in the highlands of Ngorongoro

The overriding production management objective is to increase off-take from cattle, sheep and goats, producing more milk and butter for consumption and sale, and meat, skins and livestock for sale. Herds are taken to be sold in Kenya or Arusha, where they are bought by traders and sold on again – often ending up in the Middle East. Trecking routes through NCA are fiercely protected to prevent other livestock from accessing these lucrative markets, and are one of the main causes of strife with neighbouring agro-pastoral groups. Taking other people's livestock to market is a good way for young men to earn money, as it is better paid than manual labour in NCA, and herders get a percentage of the selling price, which can be used to buy goods such as drugs to sell on the return journey. Income from selling stock is used to pay school fees, hospital bills, marriage costs, improve breeding stock and housing, buy veterinary drugs or backpack sprayers, purchase food, pay wages or start some other form of business.

There is some up-to-date data on the total number of cattle and small livestock in NCA, but little or no recent data on the dynamics of the pastoralist livestock economy or the internal dynamics of pastoralist herds in NCA (or elsewhere in Tanzania). This makes it hard to assess the impact of management strategies and interventions, as total numbers reveal less about management than an analysis of herd dynamics.²³

23. Arhem (1981); Homewood and Rodgers (1991).

Social capital is another important factor in successful pastoralist production. This is built on strategic alliances, marriages and other ceremonies cementing friendships; or by giving and loaning cattle and other livestock. These alliances provide a form of insurance against the risk of losing livestock, help secure rights to grazing and water resources, and facilitate access to specialised labour.



Martin Enghoff

Boma in Endulen showing livestock and small-scale farming

2.3 Pastoralist land tenure and management

Settlement and land management in NCA is shaped by livelihood enterprises involving whole families. Each age group and gender has well-defined roles in managing livestock and raising social capital, and if one family lacks the labour required to manage their livestock, they team up with other families to run a joint enterprise.

An essential characteristic of pastoral land tenure in Africa is that land belongs to a group or 'family' that is linked by descent or cultural affiliation. It is not 'owned' in the sense that users enjoy unlimited rights to exploit or

Table 3. Summary of extensive grazing regimes

Extensive grazing regimes	Management considerations
<p><i>Livestock are guarded by warriors. They track water and pasture resources, usually far from the home base, in well-known seasonal grazing regimes commonly used by pastoralists from the area.</i></p> <p><i>Extensive seasonal grazing regimes in NCA are complex, responding to a range of factors: rainfall, pasture conditions, reliable water supplies, security, use rights and disease avoidance strategies.</i></p>	<p>Rainfall and pastures: pasture quality and quantity in NCA is determined by rainfall. Records show that rainfall there is unpredictable and extremely localised, both within and between years. Mobility to track pasture and water is an essential feature of extensive grazing strategies.</p> <p>Reliable and abundant water sources: This is a pre-requisite for livestock keeping everywhere. In NCA, cattle can only graze the nutritious short grass plains in the dry season, once wildebeest are three months old and have left the area. The only naturally occurring dry season water sources in the short grass plains are springs. The mountains and forests of the Northern highlands have abundant water sources, but less nutritious grazing and more ticks. Pastoralists use rotational grazing patterns to capitalise on plentiful resources and reduce risk.</p> <p>Established use rights to water and pasture resources: There are well-established customary rights to grazing and water resources in NCA, which are accessed via family and other relationships with rights holders. Granting access builds social capital, which is an integral part of the pastoralist economy.</p> <p>Disease and tick avoidance strategies: There are various strategies for avoiding flukes, worms, ticks, etc., but the need to avoid MCF (a deadly disease cattle pick up from wildebeest) has the most significant bearing on extensive grazing patterns in NCA. Wildebeest go to the short grass plains to calve at the beginning of the rainy season, and because cattle have to avoid these areas for three months after the wildebeest have calved, they cannot access these pastures when they are most productive.</p> <p>Herd composition: Deciding where and how the herd will be handled depends on the management objective. Grazing strategies vary, depending on whether steers are to be fattened, heifers and small stock to be matured or mated, or calves to be grown. To make the best use of resources, herds are often split and tended with other livestock with the same management needs.</p>

Source: Interviews with pastoralists throughout NCA

dispose of it at will, but held in trust by the living for future generations. To ensure that they inherit the land currently enjoyed by the living, levels of use are limited by the right of usufruct – the right to enjoy the products of the land only insofar as it does not cause damage or reduce its future productive capacity. Thus, “pastoralists are custodians of the land”.²⁴

Customary rights to grazing in NCA lie with households within clans. Customary leaders are in charge of regulating access to a given resource, enforcing arrangements through a system of fines and other social sanctions. In times of stress, as water and pasture resources become increasingly scarce, access becomes more restricted and herds are eventually moved elsewhere as a temporary measure to avoid damaging resources.



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Maasai warrior driving cattle to pasture

2.4 Contributions from pastoralist livestock production

Studies in NCA estimate that on average 10 to 15 per cent of cattle from any herd are sold per year, depending on herd size. These figures do not take account of the contributions to livelihoods and the economy from milk, butter, blood, meat, fat, manure, skins and other livestock products, or transport and environmental benefits. Off-take figures for sheep and goats are more difficult to estimate, but herd composition shows that these herds are also commercial. Livestock are taken to markets outside NCA, usually in Arusha or Kenya, where they are sold and traded on to various meat markets in the region or in the Middle East.

24. Lane (1995).

In addition to the commercial aspects of livestock production, pastoralist livestock management strategies help maintain the landscape, wildlife and biodiversity of NCA, which was made a designated UNESCO Cultural Heritage Site in recognition of pastoralist management of the area. There is a strong argument for acknowledging the significant contribution that pastoralism makes to the lucrative tourist industry in NCA, which in gate fees alone generated around 11m US\$ in 2005 (see Box 4).

Box 4. Complementarity of pastoralism and wildlife-based tourism

Tourism contributes 12% of GDP.* Pastoralist land management is considered to be compatible with tourism and wildlife conservation goals,** and pastoralist land management encourages tourism.*** Income from tourism in pastoralist areas is thus largely dependent on pastoralist land management.

* NSGPR 2005

** General Management Plan 1998

*** Source: NCA brochures

2.5 Constraints to pastoralist production

Under the NCA Ordinance, the NCAA is mandated to control all land use, commercial activity, entry and residence within NCA. Despite recognising pastoralism as a sustainable land use system,²⁵ the NCAA has restricted pastoralist grazing and land management practices with the stated intention of preserving tourism and conservation interests in NCA. Thus, pastoralists are excluded from prime grazing sites in various parts of NCA, and must get permits to take livestock to the Ngorongoro crater to access mineral salts. They are not allowed to burn pastures and, under an amendment to the Ordinance made in 1974, may not cultivate land in NCA (although the President has given temporary dispensation for each family to cultivate a one-acre home garden). It is debatable whether village by-laws or other village-based regulations on pasture and water use are binding within the legal set-up of NCA, and whether customary arrangements are recognised.

The NCAA also controls the movement of people and livestock into and within NCA, thereby restricting or controlling trade, the provision of veterinary drugs and services, and transhumant grazing patterns.

25. General Management Plan 1996.

Livestock diseases are a significant constraint to livestock production, and treating or avoiding these diseases is a recurring cost for livestock keepers. East Coast Fever (ECF) has the biggest economic impact, killing an estimated 70 to 90 per cent of non-immunised calves in NCA each year, depending on the level of tick infestation. This makes it hard to maintain a milking herd, let alone a commercial herd, and selective breeding is difficult with such high rates of calf mortality.

Other constraints to sustainable livestock production are poverty, lack of adequate water to support grazing, loss of livestock and access to grazing land due to cattle raids, lack of sustainable water for domestic use and the influence of MCF on grazing patterns.



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Warriors preparing to brand cattle

3. Ereto I Ngorongoro Pastoralist Project

Ngorongoro Pastoralist Project (Phase I) is a bilateral project initiated by the governments of Tanzania and Denmark on 1st July 1998 to reduce poverty among pastoralists in Ngorongoro Conservation Area.

Its aim was to address the acute poverty in NCA identified by an Ad Hoc Ministerial Commission in 1990,²⁶ and by further studies in 1994 and 1998, which showed that 35 per cent of adults and 55 per cent of children in NCA were undernourished or malnourished.²⁷ This project combined efforts by the Government of Tanzania, pastoralist communities and Danida to tackle the dreadful situation caused by poverty in NCA. It was launched in a context of unfulfilled promises, mistrust among local communities and an apparent lack of understanding and commitment to the principle of multiple land use on the part of the NCAA. At a meeting of Maasai leaders (*Ilaigwanak*) on 10th August 1998, the project was given the name 'Ereto', which means mutual assistance in the local language, (Ki)Maa.

Community participation was an integral part of the project methodology, with local involvement formalised through quarterly information sharing workshops (ISWs) to plan and monitor project activities. These centred around the four components of the project:

1. Restocking destitute families
2. Water and pasture development
3. Support for private veterinary services
4. Empowering local institutions and communities.

The aim of the project approach was to empower local institutions and communities by involving them in decision making and the implementation and monitoring of activities such as restocking, water development and veterinary services.

26. United Republic of Tanzania (1990).

27. McCabe (.2002).

3.1 Baseline information

Baseline information gathered in preparation for the first phase of Ereto I included a water and socio-economic study on Ngorongoro Conservation Area, geographic information systems (GIS) coverage, and feasibility studies and research on grazing regimes and livestock diseases. The project also commissioned further studies on the feasibility of water developments, private veterinary services, gender, HIV/AIDS in Maasai communities and the institutional situation in NCA.

3.1.1 Poverty

Ereto I was designed and developed on the basis of data generated by the 1994 census of livestock and human populations in NCA, summarised in Table 4 below. The census records a human population of 42,508 people (4,842 families in 9,195 households averaging 4.6 persons per household), and a livestock population of 115,468 cattle and 193,294 sheep and goats.

Table 4. Wealth classification in NCA, 1994		
% of households in NCA	Classification	LU per household*
21%	Destitute	Fewer than 2.1
16%	Very poor	2-5
21%	Poor	5-10
20%	Middling	10-20
22%	Wealthy	Over 20

Source: Ereto I project document

* Potkanski (1997) defined one Livestock Unit in Ngorongoro as equivalent to one head of cattle or seven small stock.

3.1.2 Livestock production

The water and socio-economic study on Ngorongoro Conservation Area showed that the NCA has forbidden grazing and settlement on several prime grazing grounds: the Ngorongoro, Empakai and Olmoti craters, the Northern Highland Forest Reserve, the Lemakorot and Orsirwa mountain slopes and the Laitoli and Olduvai archaeological sites. Several other key grazing areas are inaccessible due to lack of reliable water supplies in the dry season or the presence of wildebeest (which are carriers of MCF when calving) in the wet season.

After 36 years of conservation management, a four- to five-fold increase in wildlife biomass and 23 per cent decrease in livestock biomass²⁸ has compressed herds into smaller grazing areas and compromised customary rotational grazing patterns (which in combination with a ban on burning may account for the increase in unpalatable species in the highlands and the rise in livestock disease throughout the area). All these factors combine to reduce livestock production and increase poverty.

3.1.3 Livestock disease

Studies on livestock disease undertaken prior to Ereto I showed that NCA is affected by most of the livestock diseases prevalent in East Africa.²⁹ Distribution varies according to habitat preference and the significant variations in altitude and climate within NCA. Pastoralists have well known disease avoidance strategies in their grazing regimes, but find it difficult to put them into practice because of NCAA restrictions on pasture management and reduced access to grazing areas. In the past, they used extensive grazing regimes and minimised the risk from ticks by moving their livestock to the short grass plains in the rainy season while highland pastures were burned. Nowadays, prolonged grazing in the highlands (due to the increased wildebeest population on the short grass plains) and the restrictions on burning pastures have created serious problems with disease in the area, increasing the need to employ new or additional strategies to control disease.

The most economically significant disease is East Coast Fever (ECF). Depending on the level of tick infestation, this kills off 70 to 90 per cent of annual calf production, making pastoralist livelihoods precarious and vulnerable to even small shocks. Ormilo (Bovine Cerebral Theileriosis) may account for up to 30 per cent of adult cattle mortalities.

Veterinary services used to be provided exclusively by the NCAA through the community development department. In addition to being expensive, service was generally very poor: in 1997, only four of the 23 veterinary staff employed by the NCAA were trained, dips were not operational and spray acaricides were unavailable. The NCAA-run veterinary stores had few drugs, and livestock keepers complained about the lack of available, effective and affordable drugs. In order to bring veterinary services closer to communities, NORAD (Norwegian Development Assistance) provided funding for

28. Ereto I Project Document p. 89.

29. 1997 Project Document p. 63.

the NCAA to build four livestock development centres (LDCs), which were later handed over to Ereto I for private veterinary services. Ereto commissioned the Veterinary Investigation Centre (VIC) in Arusha to conduct continuous surveillance and mapping of livestock diseases in NCA.



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Fresh milk is shared among all family members

3.2 Project logic and activities

The 1998 NCA General Management Plan (GMP) states that pastoralism should be promoted as a sustainable land-use activity. In aiming to reduce pastoralist poverty and improve livelihoods by addressing the constraints to pastoralist production and participation in local development, Ereto I supported this policy and the principles of multiple land use set out in the NCA Ordinance.

Project activities also tied in with the Government's policy of a) involving the private sector in the provision of services such as veterinary care and water development, and b) strengthening the capacity of NGOs to increase community participation in initiatives affecting local livelihoods.

Over the years practitioners working with participatory methodologies have developed a range of Participatory Learning and Action (PLA) tools, many of which were employed during Ereto I. These included mapping, network mapping, well-being ranking, pair-wise ranking, pie charts, historical pies, calendars, time use, problem and solution trees, stepping stones and Venn diagrams. These tools were specifically selected and modified in order to learn about and describe the dynamics of pastoralist land, water and livestock management, and to enable local people to describe their situation – a novel experience for pastoralists, as most have no formal schooling and few speak Kiswahili, the national language of Tanzania.



Women doing Daily Time Use diagrams

Key activities under the four components of the project are briefly described below.

3.2.1 Component 1: Restocking destitute families

This aspect of the social programme was one of the most important components of Ereto I. It was designed in direct response to the poverty in NCA, with the immediate objective of:

Poverty reduction and improved living conditions for the Maasai in NCA through strengthened pastoralist organisations and traditional clan-based mutual support systems.

Box 5. *Ewoloto*

In this traditional form of mutual assistance, clans give poor members up to 9 young female animals (heifers and sheep or goats) to allow them to build up a herd that can sustain the household.

In Ereto I, the community had to donate livestock in order to initiate project assistance. The project then matched the number of livestock given by the community and provided additional support in the form of maize for human consumption (45 kg per month for 3 years) and veterinary services for the donated livestock.

The strategy for achieving this was to build on an indigenous mutual assistance mechanism known as *ewoloto*, in which young female livestock are transferred to poorer households in the family to help alleviate poverty. *Ewoloto* is an important clan-based social institution that provides a safety net to prevent clan members from falling below the poverty line. Ereto I helped revive this practice, which had been waning in the project area due to the high levels of poverty.

By the end of the project cycle in July 2003, some 3,400 poor and destitute pastoralist households (37% of households in NCA) had been restocked with a total of around 30,600 livestock units through *ewoloto*, in order to reintegrate them into society and provide them with seed stock for a viable livelihood. The communities donated half of the animals required for restocking and managed the exercise, while the project supplied the remaining livestock and further support in the form of food and veterinary services for the 3,400 restocked households. Over half of these households were headed by women. Table 5 shows the distribution and gender of the 3,400 re-stocked destitute families in the NCA.

Table 5. Distribution and gender of the 3,400 re-stocked destitute families in the NCA

Ward Sex	Nainokanoka Ward	Naiyobi Ward	Olbalbal Ward	Endulen Ward	Kakesio Ward	Oloirobi Ward	Total
Men	386 (39%)	267 (57%)	221 (42%)	334 (55%)	128 (47%)	205 (39%)	1,541 (45%)
Women	614 (61%)	203 (43%)	304 (58%)	276 (45%)	142 (53%)	320 (61%)	1,859 (55%)
Total	1,000	470	525	610	270	525	3,400

3.2.2 Component 2: Water and range management

This was the second most expensive undertaking by Ereto I, accounting for 30 per cent of the total budget. The immediate objective of the water supply and range management component was:

Pastoral water supply for humans and livestock rehabilitated and construction of new water points initiated; improved range management and controlled burning introduced.

When the project started in July 1998, a private water-engineering firm was commissioned to identify options for key water development works, on the basis of the findings of the Water Resource and Socio-economic Study commissioned by Danida in 1996.

Potential sites for immediate water works were identified in collaboration with the NCAA, the PC and communities, and the findings presented for discussion at a three-day workshop in August 1998. This was a historic moment for the project, as it initiated the practice of including customary leaders, the PC and the NCAA in project activities. The follow-up Information Sharing Workshops (ISWs) became the main vehicle for participatory project planning during the first phase of the project shown in Table 6 on page 28.

The private water-engineering firm continued to provide professional input during Phase I: conducting feasibility assessments, designing construction works and helping prepare tenders for construction works. The NCAA conducted Environmental Impact Assessments (EIAs) on the identified sites prior to final approval by the project steering committee. Phase I also saw the rehabilitation of the defunct Serengeti Compensation Schemes from the 1950s.³⁰ The rehabilitation and construction works were intended to make valuable pasture available for grazing and thus improve livestock production. Interventions to develop reliable and strategic water sources had to fit into the local framework, which called for a thorough understanding of existing grazing regimes and grazing potential in NCA. Therefore, the project developed PLA methodologies to capture and describe the extensive grazing patterns of pastoralist land use and enable communities to plan for development interventions.

30. These were supposed to compensate the Maasai who had been moved from Serengeti to NCA for the loss of the permanent waters of the Moru Springs in Serengeti. Several schemes, funded by taxes raised from Maasai pastoralists, were completed in the 1950s (Fosbrooke, 1962).

Table 6. Technical and community aspects of developing water and pasture resources

TECHNICAL ASPECTS	COMMUNITY ASPECTS
<p>Stage 1: Inception Information Sharing Workshop (ISW) to prioritise areas for water and pasture development</p>	<p>Stage 1: Inception Ereto works with communities to record existing water and pasture use and extensive grazing regimes</p>
<p>Stage 2: Preparation Feasibility studies based on ISW priorities conducted by in-house consultant engineers ↓ Designs drawn up by in-house consultant engineers ↓ Agreed designs approved by district and regional water engineers and the NCAA ↓ Project SC approves allocation of funds ↓ Environmental Impact Assessment conducted by NCAA and suitable contractor found to undertake works</p>	<p>Stage 2: Preparation Ereto works with communities to identify water use committees according to each user group's priorities, taking account of extensive grazing systems Committees often established through village assembly (e.g. <i>Meshili</i>) or other meetings ↓ Water user committee registered with village government ↓ Ereto and water user committee work with communities to establish rules and regulations for managing water and surrounding pasture resources</p>
<p>Stage 3: Construction Works commissioned and commenced ↓ <ul style="list-style-type: none"> • Timely reporting to stakeholders • Contractors train identified people • Ereto trains identified people In-house consultant engineers oversee contractors' work to ensure quality control</p>	<p>Stage 3: Construction Water user committees liaise with contractors/ engineers, Ereto and communities ↓ Water user committees identify community members for relevant training (on laying pipes, digging trenches and wells, constructing pressure tanks, etc.) ↓ Water user committees oversee works and contributions from local communities, including planting, protection, etc.</p>
<p>Stage 4: Community management Completed works handed to Ereto by in-house consultant engineers and contractors When necessary, Ereto provides management support through consultations When necessary, Ereto provides training on maintenance</p>	<p>Stage 4: Community management Ereto hands completed water works to established water user committee ↓ Water user committee registers rules and regulations for managing the water source with the village government ↓ Village government incorporates these rules into by-laws ↓ Water user committee manages water source and surroundings in accordance with by-laws</p>



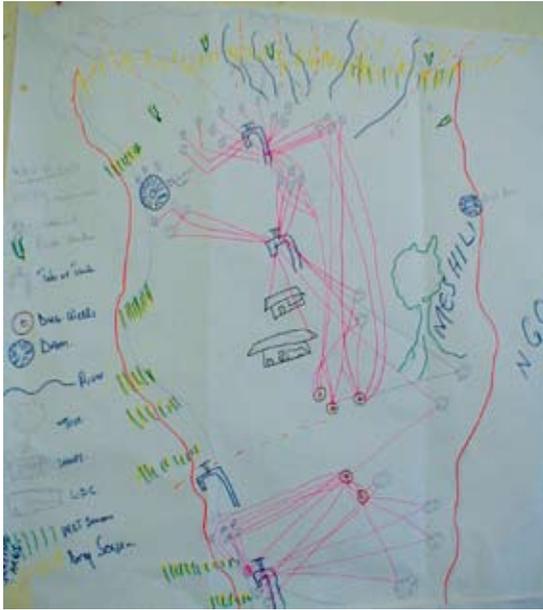
John Rowley

Women collecting water from a refurbished water point

Project staff were trained in PLA methodologies to strengthen their capacity to facilitate community participation in project activities. Selected members of the NCAA, the PC and community were also trained in PLA methods. Communities worked with project field officers (PFOs) to identify needs, prioritise project interventions and organise themselves to manage development interventions; and technical and community aspects of the project were often combined so that communities could interact with the contractors or consulting engineers. Figure 1 shows a map drawn by women and men showing the links between water resources, homesteads and grazing areas in different seasons.

By the end of Ereto I defunct water resources had been rehabilitated and new ones developed, thereby increasing available grazing land in NCA, improving herd mobility and production and reducing conflict. Table 7 below shows the water projects completed during Ereto I.

Figure 1. Map drawn by women and men showing the links between water resources, homesteads and grazing areas in different seasons in Meshili



3.2.3 Component 3: Support for veterinary services

Livestock disease is one of the major causes of livestock deaths and pastoralist poverty. Therefore, establishing and supporting private veterinary services in order to reduce subsidies and increasingly deliver services through private veterinary practitioners (PVPs) was an important element of the project. The aim of this support was to achieve sufficient control over livestock diseases to enable pastoralists to continue to select and improve breeds, and thus help improve living standards in their communities. The immediate objective of the component providing sustainable support for pastoralist production was:

Private veterinary service established.

Ereto I helped establish two private veterinary practices in NCA. This is in line with Government of Tanzania (GoT) policies banning the provision of clinical veterinary services and sale of drugs by the government or its agents.

Table 7. Summary of water projects completed by Ereto I

Location	Water project
Kakesio Ward	<ul style="list-style-type: none"> – Rehabilitation of silted Olotanaudo dam (November 1999 – January 2000) – Rehabilitation of Kakesio borehole, installation of wind pump and delivery system for humans and livestock (November 2000 – April 2001) – Four hand-dug wells constructed and fitted with hand pumps (November 1999 – July 2001)
Endulen Ward	<ul style="list-style-type: none"> – Replacement of the silted Bitin dam with Ngarusi dam (NCAA and in-house engineers agreed Bitin was wrongly sited in black cotton soil, causing massive environmental impact. (August 2000 – November 2000) – Construction of Esere water system for humans and livestock (October 2000 – April 2001)
Olbalbal Ward	<ul style="list-style-type: none"> – Construction of rock-catchment dam in Gol Mountains (October 2001 – December 2001) – Rehabilitation of Njureta windmill in Gol mountains area (August 2000 – November 2000) – Rehabilitation of Endodol pipeline water delivery system (human and livestock) in Ngoile village (September 2000 – April 2001) – Construction of Ilangaar’ tutukie pipeline water delivery system (human and livestock) in Meshili village (July 2000 – April 2001)
Oloiribi Ward	<ul style="list-style-type: none"> – Reconstruction of Irmisigiyo earth dam (November 1999 – February 2000) – Construction of earth dam on the natural pans of Ndepes (October 2001 – December 2001)
Nainokanoka Ward	<ul style="list-style-type: none"> – Reconstruction and extension of Mungi River pipeline water delivery system for humans and livestock (April 2003 – November 2003)
Naiyobi Ward	<ul style="list-style-type: none"> – No water project started. Research showed that there is an existing and under-utilised water pipeline to the village, as well as good water access in all areas, including undeveloped water supplies (e.g. Kapinjiro)
NCA (general)	<ul style="list-style-type: none"> – Water Inventory and Feasibility Study conducted by in-house consultants in collaboration with communities and NCAA/PC. Available in all villages in NCA (2001)

During the first phase of the project, the two private veterinary practices treated 27,200 cattle and 34,000 goats provided through ewoloto. The idea was to promote the delivery of professional veterinary services and get herders used to using private veterinary teams to deal with the most common diseases and problems affecting their livestock. There was a net gain of 34 per cent for cattle and 46 per cent for small stock. The short-term aim was for the PVPs to build up practices during the project period; the long-term aim was to support the privatisation of veterinary practices in NCA in

order to provide resident pastoralists with a reliable and sustainable veterinary service.

During the project, six Livestock Development Centres (LDCs) were equipped and operated as sales centres for private vets; vets were trained in ECF immunisation; 31 Community Animal Health Workers (CAHWs) were trained to improve service delivery in remote areas; community leaders, vets and community development professionals were trained on Contagious Bovine Pleuro-Pneumonia (CBPP); and the Veterinary Investigation Centre (VIC) in Arusha was commissioned to monitor diseases in NCA.

By the end of Ereto I, private veterinary services had been established, giving pastoralists modern and accessible options for treating livestock diseases. Private vets were contracted to service restocked households and set up practices serving other livestock keepers in NCA. The project paid for treatment given to ewoloto livestock, while other livestock keepers were charged for veterinary services.

3.2.4 Component 4: Empowering local institutions and communities

In 1990 the Ad Hoc Ministerial Commission noted that poverty in NCA had increased due to lack of community representation in the management of NCA. Efforts to strengthen pastoralist communities and civil society organisations need to take account of the overlap and imbalance of power between



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Community animal health workers trained to administer drugs



Community meeting in Olbalbal. Women group leader and young spokesman addressing the crowd together

the four main authorities in the area: the local district authorities, the NCAA, the PC, customary leaders and other institutions (non-governmental and community-based organisations, etc.). The immediate objective of the component to empower pastoralist communities was:

The pastoralist community to become increasingly independent and self-managing within the overall framework of the principles of land use and conservation laid down in the Conservation Ordinance of 1959.

The NCAA played an important role in water resource development during Ereto I, conducting Environmental Impact Assessments on proposed water projects prior to its implementation, sitting on the tendering committee and helping consultants and communities identify suitable sites for water developments. It also provided staff housing, Livestock Development Centres and some office space; and through PC funding provided restocked

families with free maize, as well as contributing to the cost of the water and range management component and setting up offices. It was interested in joint efforts to restructure the PC, and was part of the project steering committee, with a Liaison Officer who acts as the main interface between the project and the NCAA.

The Pastoralist Council (PC) is formally part of the NCAA structure. Its 40 or so members include village chairmen, ward councillors, youth and women's leaders and traditional leaders, plus the NCA Conservator. However, many local people and other stakeholders question the PC's legitimacy as a representative of NCA communities, as apart from the *Ilaigwanak*, its members are drawn from local government structures, and it is seen as an executive arm of the NCAA. This compromises its ability to function effectively, since its main task is to attend to the development needs of NCA residents in accordance with the NCA Ordinance – presenting their concerns to the NCAA; maintaining communication between pastoralists, the NCAA and Ngorongoro District Council; and resolving conflicts between these institutions and pastoralists in NCA. The PC advises the NCAA on the administration of funds allocated for community development initiatives, and PC members sat on the Ereto I steering committee to approve plans, budgets and reports.

The 36 or so customary age-set and clan spokesmen (*Ilaigwanak*) in NCA, who ultimately represent their whole community (including women), have seen their role overshadowed by the NCAA and PC. Nevertheless, they are more respected by the Maasai than members of Parliament, councillors and other aspiring leaders – who may to some extent be recognised, but are not necessarily admired. Ereto I earned a good deal of respect and acceptance from the community by working with the *Ilaigwanak*.

There are a number of non-governmental organisations (NGOs) and community-based organisations (CBOs) in the district. NGOs concerned with pastoralist development include advocacy umbrella organisations such as the forum for Pastoralist Indigenous NGOs (PINGO) and Tanzania Pastoralist and Hunter-Gatherer Organisation (TAPHGO), which are based in Arusha. They occasionally work on advocacy issues in NCA, but have much more influence outside the area due to the political issues in NCA and the rather unclear status of the PC. Apart from the Ngorongoro Pastoralist Association (NPA), a kind of 'shadow' PC, and NGOPADEO, a small localised NGO, neither of which seem to function, there are no operational NGOs in NCA at

present. This lack of effective or credible NGOs and CBOs in the area is unusual in Tanzania today.

The collapse of the NPA meant that Ereto I had no equal or credible 'partner' to work with on the poverty reduction objective. The mid-term review recommended that the project should assist the PC and communities in carrying out development interventions themselves. Unfortunately this was not possible because neither are legal bodies that can be held accountable for funds and project interventions, so project support had to be restricted to training and information sharing, and planning, implementing and monitoring project activities. Nevertheless, some progress was made in enabling local people to take control of their own development.

In addition to reducing poverty and hunger in the short term, one of the aims of the restocking component was to strengthen communities and enable their leaders to manage their own development agendas. To achieve this, procedures for restocking were first identified and agreed with local leaders. These procedures focus on community control throughout the process of identifying suitable *ewoloto* recipients, purchasing and distributing livestock and monitoring the impact of restocking. *Ewoloto* committees were responsible for ensuring that monitoring was conducted and reported back to Information Sharing Workshops on a quarterly basis. These community-based exercises in monitoring impact and helping restocked families deal with contingencies not only had an impact on the success of the



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restocking programme, but also strengthened local leadership capacities. Participatory procedures for assessing and understanding the dynamics of poverty in pastoralist areas were developed through Participatory Learning and Action (PLA) methods, which allowed project staff and local people to better understand, assess and monitor poverty within communities.

The water development component also helped strengthen local people's ability to undertake and manage their own development initiatives, by combining the technical and community aspects of water development works, as shown in Table 6 on page 28.

Thus, working with local institutions such as the PC, communities (including women) and customary leaders to implement the project (especially the restocking component) increased the capacity of pastoralists in NCA to become more independent and manage their own affairs. The PC and selected community and committee members attended training to enable them to better manage and maintain initiatives, and communities were closely involved in project interventions through information sharing and planning and monitoring activities. In order to increase women's role in the development process, efforts were made to ensure that women were included on the various committees.

However, the communities' inability to establish a credible NGO to continue activities at the end of the project cycle (as envisaged in the 1997 Project Document) will make it difficult to sustain this momentum. The failure of grassroots organisations such as the NPA and the Ilaigwanak Trust highlights the difficulties local people face in establishing their own organisations in the context of the NCAA Ordinance and the PC's perceived lack of independence and legitimacy. When asked, members of the PC said that they did not want to be independent of the NCAA.³¹ The challenge for the PC is to decide whether to remain under the wing of the NCAA or to reach out to communities and make their voices heard, particularly by the NCAA.

31. They feel that they have more influence within the NCAA than outside it. Moreover, operating as independent agents could deprive them of benefits of up to 600 million TZ shillings a year, which they now administer as part of the NCAA.

4. Impact of Ereto I on pastoralist production and livelihoods

The main impacts of Ereto I were identified through fieldwork and at a workshop held in Endulen, Ngorongoro on 30th March 2005, when critical questions were asked about the project's effects on the livelihoods of communities in NCA. This section summarises the findings regarding its impact on poverty, livelihoods and production, veterinary services and the capacity of communities in NCA to manage their own development initiatives. These findings contribute to a knowledge base that can be used to:

- a) link the experiences of Ereto I to the policy dialogue component of Ereto II; and
- b) utilise the experience of Ereto I to develop and replicate programmes to tackle pastoralist poverty and/or support pastoralist livelihoods.

During the project review mission in October 2005, Ereto was referred to as a **lifeline for pastoralist communities**. The project made a substantial input into pastoralist production in NCA by increasing the amount of available water and pasture, supporting the provision of reliable veterinary services and drugs, and strengthening social capital by supporting customary poverty reduction strategies. Its impact on production systems was recognised by several reviews and assessments.³²

The study team also reported that the people interviewed repeatedly stated that the project has helped build up hope and new vigour in pastoralist communities of NCA. This is a significant development, as past experience has made people mistrustful of the promises and motives of most of the authorities in the area.

32. Ereto NPP. Report of the gender study, Stella Maranga, MS-TCDC, December 2001; "What residents say about Ereto performance and possible expansion of the programme" – workshop held on 11th – 13th December 2002, facilitated by Alfred Sakafu and Alais ole Morindat; Review of Lessons Learned in Phase I and Issues to be considered in Phase II, John Rowley, ITAD, November 2002; Evaluation of Ewoloto Programme, Alais ole Morindat, MS-TCDC, Arusha, Tanzania, December 1999; Joint review cum Pre-Appraisal of Ereto NPP, March 2002, Joint Review Team, Danida/MNRT.

4.1 Impact of Component 1: Restocking destitute families

Overall it was reported that communities in NCA were economically empowered and strengthened through *ewoloto* – see Table 8. Beneficiaries of the restocking component could engage in other community activities that had previously been difficult or impossible for them to undertake, and their reintegration into the community as pastoralists helped reinstate the occupation as a sustainable livelihood. Pastoralists without livestock suffer from low self-esteem, calling themselves ‘People with nothing’; owning livestock raises their status in both their own eyes and those of other community members. Interviews in the area indicate that *ewoloto* is a practice that rekindles hope and love within communities.

Those interviewed during fieldwork for the Lessons Learned study all agreed that the restocking programme has reduced the incidence of starvation, begging and scavenging for food. Before *ewoloto*, few livestock products were available for food and people had been reduced to a diet of porridge or gruel made of maize meal. The health and nutrition of the whole community improved as milk became available and protein was added to their diet. This was said to be particularly noticeable among children.



Martin Enghoff

Marketing milk in Piyaya at local market

Project assistance with customary restocking has revitalised this traditional form of support. There have been reports that several beneficiaries of project-funded *ewoloto* are now restocking other poor households as their livestock reproduce, and that more people plan to do this for others. This, together with the massive project input into restocking, will allow the intervention to be sustained. The restocking exercise also revived other customary poverty reduction mechanisms, such as lending goats and cows for milk. New forms of mutual assistance are also emerging, such as fund-raising efforts by elders in Olbalbal to restock destitute households, assisting poor people with ECF immunisation, and better-off relatives paying school fees and hospital bills so that vulnerable families do not have to sell their livestock to do so.

This type of mutual assistance, and the fact that poor people are now able to sell their own livestock products to pay for contingencies, lessens the burden on many pastoralist households as it enables poor relatives to manage their herds independently and contribute to livelihoods.

Table 8. The impact of restocking, as reported by beneficiaries

Issue	Before the project	After the project
Status of destitute	Begging food	Self-reliant and proud
Food security	Food insecure	Food security improved
Relationships	Tense, frequent quarrels and marriages breaking up	Relaxed, harmony and marriage relationships cemented
Nutritional levels	Low	Enhanced
Welfare	Dependency on relatives	Self-sustaining and self-supporting
Participation in community activities	Low, aloof.	Active participation in community activities
Inclusion in development processes	Excluded	Inclusion; active in development
Marriage difficult to achieve	Some could not get married due to lack of dowry and subsistence herds for starting family	Now could get married as they could now afford dowry and allocate to wife for subsistence
Self-confidence	Low self-esteem	Enhanced self-esteem
Engagement in pastoral economy and production	Disengaged	Re-engaged

4.2 Impact of Component 2: Water and range management

Fieldwork conducted in NCA in March/April 2005 identified three fundamental features of the pastoralist production system:

- Mobility as a strategy for tracking abundant resources and limiting risk
- Social solidarity and networking as insurance against hard times
- Pastoralist production as part of a wider livelihood strategy

The findings of this fieldwork and the study team workshop confirmed that Ereto I had a positive bearing on production and livelihoods throughout NCA.

For example, improving the dam at Irmisigiyo and water supplies at Meshili and Ngoile allows families to keep some home-based milk cows in the area throughout the year, meaning that they no longer have to move with these livestock to access water, milk and other livestock products in the dry season. Reliable water supplies help schools and clinics function better, reduce water-borne diseases and improve human hygiene. Human nutrition has also improved as milk production increases with access to water, and women's workloads are lessened by livestock coming home earlier for milking.



Martin Enghoff

The Ngorongoro crater is an important grazing area for wildlife

Constructing a dam from the natural pans at Ndepes has extended the period when there is water in the area, so that livestock do not have to compete with wildlife at the springs on the edge of the crater (putting herders' lives at risk). Grazing in the Gol mountains is severely constrained by the influx of wildebeest at the beginning of the rainy season and lack of water in the dry season. The rock-catchment dam in the area has extended grazing there further into the dry season.

With access to water near good grazing and more pastures for dry-season grazing, livestock suffer less stress, stay in better condition and grow faster. Increased rotational grazing allows pastures to be used more sustainably, as they can be rested and the impact of grazing reduced.

The level to which these impacts can be sustained and the water development infrastructure maintained will depend on how useful communities find the water developments, whether they are able to avoid political interference and retain control of the water works, and whether the Government and NCAA support the idea of increasing accessible grazing for pastoralist production.

4.3 Impact of Component 3: Support for veterinary services

Providing private veterinary services for pastoralists in areas like NCA has proved to be fairly effective and generally viable. If private veterinary practitioners (PVPs) and Community Animal Health Workers (CAHWs) can ensure that good, reliable drugs are available where and when they are needed, diseases can be treated and livestock production increased.

Ereto trained PVPs and introduced the ECF immunisation package in 1999. This has had an immense impact on livestock production in NCA, as before it was introduced ECF accounted for the loss of an astonishing 70-90 per cent of each year's calves, depending on the tick population. Since the package was introduced over 80 percent of immunised calves survive each year, and livestock health, growth and maturity rates have improved. Higher calf survival rates allow herders to implement livestock production strategies, practice selective breeding and sell more stock.

At the end of Ereto I an audit was commissioned to look into the status of the veterinary service. This found that it was economically viable, but that there was no real commitment on the part of either the PVPs or the project to ensure the transparency needed for it to be sustainable in the long term.

The PVPs did not follow the checks and balances designed to track the handling, distribution and administration of drugs to *ewoloto* families, and project management was ill equipped to monitor these arrangements).³³

The challenge in developing veterinary services (and for Ereto II) is to provide support in a way that helps private vets build up sustainable practices, employ reliable assistants and build consumer confidence in the quality of service. This support may require a long time frame, and will need commitment from the NCAA and Ngorongoro District council to limit the monopolies presently in place.



Martin Enghoff

Community meeting in Olbalbal. One of the young spokesmen is addressing the crowd

33. The 2004 assessment report on the veterinary services component of Ereto I notes poor accounting systems, non-compliance with PVP contracts, lack of quality control, poor quality drugs, etc. This prompted another review of the veterinary services through a consultancy study at the onset of Ereto II.

4.4 Impact of Component 4: Empowering local institutions and communities

While empowering local institutions and communities was the specific focus of this component, it was also one of the outcomes of the restocking and water and pasture development components. The restocking process strengthened community leadership (both customary and formal) as trust was established between the project and community members at every level. By mobilizing people to contribute livestock and facilitate the social programme, the restocking exercise strengthened traditional leadership roles and made local people active participants in the process rather than passive beneficiaries of it. Reviving social institutions, encouraging communities to participate in their own development and thus increasing their capacity to take charge of it, are all forms of social empowerment that have positive emotional and psychological effects on individuals and the community as a whole. This was reinforced through training on human and land rights, which increased people's ability to understand and operate in the political sphere.

The distribution of *ewoloto* livestock to destitute households headed by women was particularly helpful in empowering women. There were women on every *ewoloto*, water user and grain distribution committee, and this helped promote recognition of their potential to contribute to development activities, but it is also clear that it is crucial to maintain the focus on gender issues and reintegrate women's demands into the development process. By listening to and including women, the project was able to redirect water development interventions to include delivery of water for domestic use, so that the home-based grazing systems could be sustained and families less exposed to the stress of moving to access food.

Involving pastoralist communities in the identification of strategic development and priority needs has improved water and grazing resources for livestock production and helped reduce conflict between pastoralists. Participation in the development process increases their technical skills, enabling them to access information and knowledge and acquire skills in animal health, water management and information sharing. It also made the outcome of this process more sustainable, because communities: a) contributed to the development of the water delivery infrastructure, b) own the water infrastructure, c) can manage and repair the delivery system, and d) because water and pasture resources are protected by village by-

laws. Some communities are now independently managing the construction of new, self-funded water development schemes.

However, although the project has enabled communities to participate in decisions regarding their own self-improvement, they have often been frustrated by what they understand as a lack of goodwill and cooperation from the NCAA, its far-reaching powers over access to natural resources and its resistance to other actors operating in the area (such as NGOs or researchers).³⁴ So, while communities may know more about their rights, there is still a feeling that they are not permitted to enjoy them.³⁵

34. For example, the local NGO PADEO received a written reprimand for 'sneaking' into NCA in early June 2000 to deliver training on land rights; HAKIARDHI was not allowed to run the land rights training requested by the PC in 1999; and some anthropology researchers were prevented from conducting their studies in 2002.

35. This is illustrated by an anecdote from one of the elders in NCA: "Ngorongoro is full of wildlife so NCAA bought a bus, from revenue collected on our account, to take their staff's children to school every day so that they do not get killed by wildlife. But our children do not get such privileges. Don't the lives of our children have value?"

5. The lessons learned from Ereto I

Twelve lessons with policy implications were learned from the fieldwork, interviews and workshops held during the consultancy.³⁶ These are key pointers for future implementation, research and analysis, are critical for focussing attention on pastoralist livelihoods and production, and have significant implications for developing informed messages that can improve policy dialogue on pastoralism as a sustainable livelihood.

LESSON 1: BUILDING ON CUSTOMARY MECHANISMS TO ALLEVIATE POVERTY IS EFFECTIVE, AND SUPPORTING CUSTOMARY POVERTY ALLEVIATION MECHANISMS HAS POSITIVE, FAR-REACHING IMPACTS ON COMMUNITIES

The project built on a customary poverty alleviation system (*ewoloto*) and provided additional support to tackle the prevailing poverty among pastoralists in NCA: first, by contributing half of the animals required for the restocking; second, by supplying restocked households with maize for three years; and third, by providing veterinary services for *ewoloto* livestock for two years.

The key to poverty alleviation in this context lies in ensuring that target communities are in charge of the design, implementation and monitoring of all activities. This helps minimise mistakes, improve design, build genuine partnerships and trust, and increase the ownership and sustainability of the intervention. Building on locally accepted mechanisms is of crucial importance.

LESSON 2: REDUCING POVERTY THROUGH RESTOCKING LIMITS PASTORALISTS' VULNERABILITY TO SHOCKS AND CONFIRMS PASTORALISM AS A SUSTAINABLE LIVELIHOOD

One of the indicators of success for restocking is that families manage livestock independently and are able to pay for essential services such as schooling and healthcare. Ereto records³⁷ indicate that restocked families experienced a net gain of 34 per cent for cattle and 46 per cent for their goats over a period of three years, proving that they were able to manage a productive herd successfully.

36. Workshops held in Endulen on March 30th 2003 and Dar es Salaam on May 24th 2005. See also draft report for a full list of the people met, workshop reports and a full list of the literature, including all documents produced by Ereto I.

37. Such as the Project Completion Report October 2003.

The revitalisation of customary restocking interventions throughout NCA has lowered the number of unproductive people that livelihood and production systems have to support, and reduced the burden of poverty on individual herd owners. This means that in general, households are now less vulnerable to poverty-related contingencies, and that people can better invest time in production and livelihood strategies and afford to assist poor relatives.

LESSON 3: DEVELOPING WATER POINTS TO ENSURE MOBILITY WITHIN PASTORALIST GRAZING SYSTEMS IS VITAL FOR SUSTAINABLE PASTORALIST PRODUCTION

Mobility is crucial in dryland regions because the primary production of pastures is determined by the huge variations in altitude, soils and rainfall (which varies between and within seasons). Pastoralists use seasonal grazing strategies to track these resources and avoid the impacts of drought and disease.

Over time, their access to grazing and water resources has been limited by NCAA regulations, deteriorating water supplies, wildlife and cattle raids. As pastures become limited, livestock and communities are increasingly vulnerable to shocks caused by drought, hunger, poverty and disease. And when drought forces them to break the rules, herders invariably come into conflict with the NCAA. In order to improve the situation, Ereto I rehabilitated several defunct water supplies and developed new water resources to increase the amount of land available for grazing.

Providing strategic and reliable water supplies that are designed to enhance herd mobility and allow pastoralists to track available grazing resources has had a positive impact on production. It is reported that livestock and pastures are more productive, livestock are healthier and that there are fewer conflicts. Investigations by the study team suggest that longstanding rotational grazing regimes can be re-established and that the allegedly negative impact of grazing on the environment and wildlife habitats can be limited through collaborative efforts to establish and maintain strategic water supplies.

LESSON 4: IMPROVING DOMESTIC WATER SUPPLIES FOR HOUSEHOLDS AND LIVESTOCK IS ESSENTIAL IN ORDER TO ENHANCE LIVELIHOOD AND FOOD SECURITY

PLA work with communities showed that the first priority for both men and women in pastoralist communities is a reliable, year-round domestic water supply to cover household needs and service a small household herd.

The impact of improving domestic water supplies so that families can remain in their homes is considerable: there is less stress on the household, children can attend school throughout the year, young livestock are properly sheltered, old people and small children do not have to leave home, property is not lost or stolen, and so on. Importantly, water near the home also increases food security, as the necessary livestock can be kept near the home and continue to produce milk.

LESSON 5: COMMUNITY INVOLVEMENT IN DEVELOPING WATER SUPPLIES INCREASES SOCIAL RESPONSIBILITY AND IMPROVES LIVELIHOODS

When Ereto I agreed to construct a pipeline from the Ilangaar'tutukie spring to Meshili village, local people constructed a seven-kilometre road by hand so that the cement, pipes and other equipment could be carried up to the spring. They did this on their own accord, with no advice or training from the project. Similarly, when the project agreed to rehabilitate the Endoldol pipeline to supply Ngoile village, local people dug trenches and raised money to change the direction of the pipeline so that it better served their needs. Both villages elected water committees to agree on the design of the pipeline, oversee community contributions and labour and manage the pipeline infrastructure.

The shift from functional participation to self-mobilisation in building the pipeline has had a positive effect on the villages' capacity to mobilise for other things; and levels of trust, responsibility and organisational skills were enhanced through project efforts and the experience of working with water and ewoloto committees.

LESSON 6: WATER SUPPLIES FOR EXTENSIVE PASTORALIST GRAZING REGIMES MUST BE RELIABLE

Livestock are usually only watered every second day during the dry season, when they are taken to graze one day and watered the next. In some areas with no standing water, such as the Gol Mountains and Kakesio, water sources are scarce and livestock have little or no opportunity to graze while tracking water points because of the distances involved. They become vulnerable to disease and shocks under these conditions, so it is essential that the source they are tracking will deliver water.

The case study on the Kakesio windmill clearly shows that pastoralist communities are not prepared to invest in unreliable water delivery systems. Although community leaders were ready to collect money to pay for the

regular maintenance and minor repairs required by wind-powered pumps (and had done so), they were not willing to repair the wind pump when it became clear that there is not always sufficient wind in Kakesio to power it. Instead, they planned to use the money collected to build a small dam.

CASE STUDY 1

Impact of water development on services in Meshili and Ngoile villages

- In April 2001, Ereto finished constructing the Ilangaar'tutukie pipeline to Meshili village and rehabilitating the Endoldol spring pipeline to Ngoile village
- Prior to this there was no water available in Meshili & little available in Ngoile. Without water being available, it was difficult to get teachers to live in the villages. The few teachers required that each child brought a container of water each day for the teachers, in addition to their own drinking water needs. This meant that children often came late.
- Before the water was provided by Ereto, the clinic demanded that patients supplied their own water needs, and even simple treatments were constrained by lack of water
- Now teachers are willing to work in the villages & children have their water needs satisfied. And now clinic staff can perform their duties and patients have better access to treatment
- The community at Ngoile, having finished the pipeline, decided that they would build their own school. The children had to walk eight kilometres from Ngoile to Meshili and some of the children came from beyond Ngoile. With experience of organising, labouring and raising money for the pipeline, and with water available for building, the village set about building their own school. The school now functions and school teachers are prepared to live there, even though it is remote. The village is proud of its school.
- Both Meshili and Ngoile have a strong representation of women on the water committees, some of whom are *ewo/oto* recipients
- Both Meshili & Ngoile have several Ilaigwanak (customary Maasai age set leaders) on the committees, representing all age sets

CASE STUDY 2

Kakesio windmills

In 2001 Ereto I rehabilitated a deep borehole in Kakesio, originally established in the 1950s as part of the Serengeti compensation scheme. Ereto installed a wind driven pump, cattle troughs & domestic points. Prior to installation, it was agreed between communities, Ereto and the water engineers that the wind pump be installed as an experiment as wind supplies in the area were not recorded or well known. A water user committee was elected by the user community & registered with the village council. The pump was installed by technicians from the neighbouring ward in Miatu District, so spare parts & technical expertise was available close by. Community members were trained in windmill & pipe maintenance. The tank & troughs were installed in collaboration with the water user committee. On completion in April 2001, the windmill & infrastructure was handed over to the water user committee.

In April 2005, interviews showed that communities in Kakesio knew that the windmill was their property & their responsibility, & that there was a committee responsible for maintenance. The windmill had broken down & the committee had collected three million shillings (UDS 3,000) to repair the windmill. However, at a village meeting, it was decided that the windmill might not be the most appropriate means of solving water shortage problems of the area because:

- 1) the rods broke down regularly
- 2) the windmill needed a lot of maintenance
- 3) there was not always enough wind to drive the pump, making water delivery unreliable

As the communities pointed out, *"especially in the dry season, water supply for livestock has to be reliable because they are only watered every other day & already stressed: if there is no water for them when they have trekked many kilometres to drink, they may die"*.

It was therefore decided that the money collected to repair the windmill should be used for other water development projects: community members want to use the collected money to experiment with the small rock catchment water harvesting arrangements for domestic water proposed in the water inventory and feasibility study commissioned by Ereto 1

Source: interviews in Kakesio, March 2005



Diagram of access and use of different water points from different bomas

LESSON 7: THE KEY TO DEVELOPING SUSTAINABLE WATER SUPPLIES IN PASTORALIST AREAS IS TO ENGAGE WITH CUSTOMARY LAND AND WATER TENURE ARRANGEMENTS

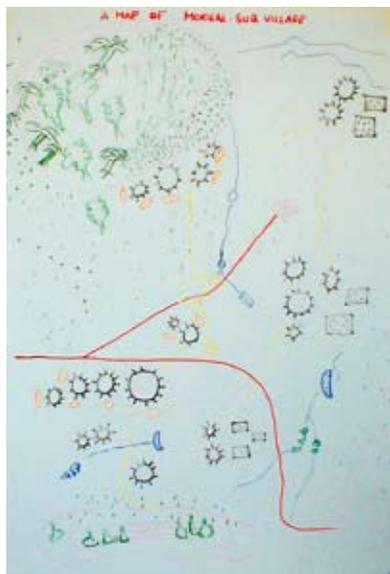
Fieldwork in NCA suggests that customary arrangements for managing water and land use are still respected in parts of the Gol Mountains, Meshili, Kakesio Ward and most of Nainokanoka Ward, and that livestock keeping has little or no negative impact on the environment. Customary leaders control access to water and pasture resources across NCA, and these controls are quite effective if they are recognised by outsiders.

However, there has been a significant increase in cultivation in areas where these rights and regulations have been eroded and challenged through outside influence, and invasive unpalatable species now dominate pastures where rotational grazing is no longer practiced. Therefore, it was important for the project to identify customary arrangements for managing land and water, to ensure that interventions fit within the local framework and are consistent with existing values.

During the information sharing workshops the project was advised to use a broader approach that incorporates customary systems into interventions, so participatory methodologies were developed to enable all sections of society to take part in the design and monitoring of project activities. Customary leaders are active in water user committees in most areas where Ereto I completed water development interventions. This helps ensure that interventions are consistent with local values and arrangements, although more research is needed to understand the committees' roles and mandate and identify the many challenges they face.

Community leaders were trained in PLA and reportedly some are still using the exercises in planning work with the communities within their own wards (e.g. Olbalbal). Figure 2 presents a map drawn by elders in Mokilal, showing natural resources, human settlement and water development,

Figure 2. A map drawn by elders in Mokilal, showing natural resources, human settlement and water development



Some PC and NCAA staff were also trained in PLA techniques. However, despite the training neither body has utilised participatory methods in land use planning and zoning, or applied them in their new General Management Plan. A much longer time period is required to establish genuinely participatory integrated land use planning in NCA.

LESSON 8: CLEARLY DEFINED AND RESPECTED OWNERSHIP OF WATER RESOURCES PROMOTES SUSTAINABLE WATER DELIVERY FOR PASTORALIST PRODUCTION AND LIVELIHOODS

Water management schemes involve many actors, and it has to be made very clear who the beneficiaries are to prevent powerful individuals or the local elite from appropriating interventions (this also applies to restocking). One of Ereto I's most critical tasks was to actively promote ownership during the design and construction of water schemes, and to transfer ownership of water resources to the registered water user committees once the works were completed. More analysis is needed to understand the dynamics of these committees and learn what makes some work and others not function well or at all.

Despite investing heavily in water development and putting a lot of effort into working closely with communities, there have been problems managing some of the completed water schemes. For example, once the project was phased out of the Nainokanoka pipeline, certain village councils tried to take control of water resources that had been handed over to water user committees – leaving the communities struggling to retain control over the operation and maintenance of their new water system. The same thing happened in Endulen, where the dam at Ngarusi was in poor condition. However, in other places, communities were able to retain control over their water resources and manage and maintain the infrastructure.

The status of communities, village governments and other institutions in the overall framework of the NCA Ordinance is an important issue, as individuals and communities alike are uncertain about their rights and obligations as residents of NCA. Although there are registered villages with legitimate village governments, it is debatable whether village by-laws or other village-based regulations are binding within the legal setup of NCA, and whether customary arrangements are recognised. Communities in NCA need to be better informed about their (institutional) rights in order to develop effective strategies for establishing sustainable land and water management regimes.



Livestock tagged after vaccination

LESSON 9: ECF IMMUNISATION INCREASES PASTORALIST PRODUCTION, ALLOWS FOR SELECTIVE BREEDING AND HIGHER OFF-TAKE, AND CAN PROVIDE THE BASIS FOR PRIVATE VETERINARY PRACTICES

Research in NCA shows that the tick-borne disease ECF was the greatest killer of livestock in the area, and that immunisation can reduce calf mortality rates from 70-90 per cent to just 4-7 per cent per annum. Pastoralists from all over NCA report that immunised calves grow faster, breed earlier and are more disease resistant than those that have not been immunised. Higher calf survival rates allow them to breed cattle for desired characteristics such as milk production, ability to withstand drought, etc., and increase off-take from their herds, as they can sell livestock while maintaining a large enough herd to make a livelihood.

In 2003 the private veterinary practitioner contracted by Ereto I to treat *ewoloto* livestock reduced his sales outlets and drug stocks in an attempt to make the exercise more profitable. He continued to provide ECF immunisation across NCA, and said that this generates enough income to maintain his other distribution and service outlets in NCA. In 2005, ECF immunisation cost 6,000 TZ shillings (6US\$) per calf, payable in cash.

LESSON 10: OUTREACH CAHWS LINKED TO PRIVATE VETERINARY SERVICES ARE ESSENTIAL FOR EFFECTIVE VETERINARY SERVICES IN PASTORALIST AREAS

The private veterinary services supported by Ereto I show that if effective and reliable drugs are available to treat livestock, pastoralists are prepared to pay for them. However, to be sustainable, the service has to be i) appropriate to the pastoralist production context, and ii) given effective policy support.

When the project stopped providing material support and other handouts, the PVP found that sales were insufficient to keep him operating full-time, although he still has sales outlets in most of NCA and comes to the area to immunise cattle against ECF. There is unfair competition from the District Veterinary Officer and his assistants, NCAA staff, small-scale entrepreneurs selling drugs at markets, small shops in NCA and herders returning from markets with veterinary drugs.

Pastoralists suggested a two-pronged approach to veterinary support:

1. Community Animal Health Workers (CAHWs) can play a vital role in improving livestock production in pastoralist areas. These are trusted and capable herders selected for training by the community; individuals who know the conditions and constraints to livestock production, are skilled animal handlers and can ensure that drugs are available where necessary because they come from the pastoralist community.
2. The PVP for the locality should preferably be a local pastoralist with a sound livelihood in the area. This would make PVPs more likely to remain in NCA and better able to cope with seasonal fluctuations in drug sales, as they would have a parallel livelihood option (keeping livestock). They might also accept payment in kind for drugs and services, which would help herders with cashflow problems.

The Government intends to provide guidelines, a training curriculum and a legal framework for CAHWs to operate in. This will make it easier for Ereto II to support PVPs by working with CAHWs, and improve the viability and sustainability of the initiative. However, the challenges of passing legislation and securing effective commitment and further support remain. At present, government-employed vets and veterinary assistants are dispensing private services in pastoralist areas with impunity. With no competition

in pastoralist areas like NCA, government employees will continue to provide inadequate services and pastoralists will carry on treating livestock diseases themselves.

LESSON 11: ALL USERS, INCLUDING WOMEN, SHOULD BE INVOLVED IN DEVELOPING PROJECT ACTIVITIES TO REDUCE THE RISK OF INTERVENTIONS BEING APPROPRIATED BY POWERFUL GROUPS

This lesson is critical in reducing the risk of powerful groups appropriating interventions for their own economic or social benefit and excluding the less powerful. Lessons 4 and 7 above (where ownership of water development schemes is disputed despite the project attempting to involve a broad range of stakeholders) illustrate the dangers of consulting only small groups or excluding certain sections of society. This usually means that users are excluded from managing the resource, so it is not maintained and falls into repair.

There were also reports of people trying to cheat the *ewoloto* programme in its early days. For example, 'A' would lend poor person 'B' some livestock so that the project would match them as part of the *ewoloto* restocking exercise. Once 'B' received the livestock from Ereto, 'A' would reclaim the loan, leaving 'B' with the animals purchased by the project – or half of what he or she was supposed to get. Apparently a number of people tried this, but on each occasion 'A' was shamed into retracting the loan or making it a genuine gift once the community became aware of their scheme.



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LESSON 12: WOMEN ARE EMPOWERED THROUGH RESTOCKING

Ereto restocked 3,400 poor and destitute households, 55 per cent of which were headed by women. Restocking these 1,859 women seems to have had far-reaching impacts, although they are not well documented in project reports. However, fieldwork for the study clearly indicated that restocking women changed the way that they were perceived, and that they had benefited from the project policy that women should own outright any livestock they received through the restocking programme.

The restocking programme revealed that pastoralist men are willing and able to work with women on poverty reduction and other development activities. Even though water committees are traditionally a masculine domain in pastoralist areas, women were readily accepted onto them once the idea that they can effectively contribute to development activities gained ground.

Lack of education was another factor limiting pastoralist women's participation in project management, which was dominated by pastoralist men. This had an impact on the kind of activities that were planned, although women did become more vocal and demanding at community level, and the drive for inclusion in project activities tended to come from men and women in local communities rather than the project. This was attributed to the new sense of women being able and willing to contribute to development. Women also started to contribute regularly to the public debates and meetings that play an important role in pastoralist communities, and which are only open to cattle owners. Promoting methodologies like PLA gave illiterate women their voice and enabled them to articulate their ideas for project implementation. In Kakesio, where these methods were regularly employed, women became Community Animal Health Workers, despite initial resistance from the project management.

Traditionally, livestock belong to and are managed by men. This is still largely the case for cattle, although women do have use rights to livestock products and in practice also manage part of the herd and monitor livestock diseases. Although the women who received cattle through Ereto I did not always secure more than use rights to these animals, they tended to have greater rights to livestock given through the project (especially cattle), adding rights of disposal and management to their customary use rights. These changes were more likely to be supported by the community if they had a positive impact on poverty alleviation.



Woman, Pinyi

Understanding of women's roles in pastoralist production and livelihoods has been very poorly documented, and certainly requires further research. The general lack of understanding about gender in pastoralism has led to the proliferation of myths and assumptions about pastoralist men and women, which serve to further marginalise women and lead to them being progressively less heard or consulted. Ereto I attempted to remedy this situation by taking a practical approach to working with pastoralist women on poverty reduction and supporting local demands for women to be given first priority in the restocking exercise.

6. Key policy implications

Poverty reduction and the sustainable management of the environment in pastoral areas are two key objectives of Tanzania's National Strategy for Growth and the Reduction of Poverty:

"...promoting efficient utilization of rangeland, empowering pastoralists to improve livestock production through improved access to veterinary services, reliable water supply as well as recognising pastoralism as a sustainable livelihood.." [endnote: NSGRP, 2005]

ERETO's field experience provides a set of lessons with which to shape how in practice the government's commitment to supporting pastoralist livelihoods can be implemented. The three most significant concern (i) pastoral poverty, (ii) water and range management and (iii) adopting a livelihoods approach.

- **Understanding how to reduce pastoral poverty** has been in the forefront of government and donor policy debate for many years in Tanzania and East Africa. ERETO's experience with the restocking component revealed a good deal about the specifics of pastoralist poverty, such as what constitutes a minimum viable herd for pastoralists. Livestock have multiple roles in the pastoralist economy (among others, subsistence, capital investment and insurance needs), and it is clear that to be viable, a minimum herd should consist of more animals than those needed for immediate living requirements. The roles of livestock are varied, complex and will be specific to each family and location. It is also important to consider the age/sex ratio of the herd as well as the number of livestock required, since different categories of animal are needed for different roles – largely to act as insurance by mitigating risks, but also to allow for regular off-take for sale and consumption.

Herders' management objectives are also an important factor that needs to be taken into account when trying to improve pastoralist livelihoods. Pastoralists seek to maintain an optimal balance between pastures, livestock and people in a highly uncertain and variable environment, to meet both their immediate and future livelihood needs. This involves

maximising the size and the returns from their livestock herd in good years to generate a surplus for the inevitable bad years. These returns are not simply the accumulation of livestock, but also the relationships and social networks that will prove significant factors in the survival of the family and their herd during times of drought, disease or raiding.



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- **Integrated range and water management.** Another area of policy concern has been how best to manage rangelands in a sustainable manner. One of the most tenacious misconceptions about pastoralists is that they are nomadic, haphazardly graze their animals and keep as many animals as they can for prestige reasons alone, and in the process spread disease, cause conflict and degrade the natural resource base. Many policies in Tanzania contain specific mention to all or some of these preconceptions and propose measures to address them including instructions for pastoralists to settle in one place, practice sedentary livestock keeping and to sell their surplus animals.

ERETO's work on the range and water component demonstrated how pastoralists in Ngorongoro have very complex grazing strategies that make good use of rangelands in response to seasonal and inter-annual variations in the quantity and quality of pastures and water. Through livestock mobility, animals are able to graze on rich wet season pastures during the rains while retreating to specific strategic areas during the dry season (e.g. highlands). These grazing strategies may cover large distances, but pastoralists are not nomadic *per se*. Each family has a home (*boma*) from which livestock are herded along different routes according to season.

Furthermore, grazing is strictly controlled, particularly in the dry season when resources are scarce. Although resources are shared between different users at different times of the year, rights of control and access are not equal. Local communities have primary user rights to resources within their customary area of residence, while visiting families have to negotiate secondary user rights to water and pasture. ERETO I's work on water and participatory rangeland mapping also demonstrated the critical links between water rights and range management for the sustainable use of pasture, improved livestock productivity and peaceful co-existence of different communities (e.g. water rights normally determine who can access range).

- **Adopting a holistic approach is critical.** ERETO I's work confirms that to address pastoral poverty and strengthen pastoralism as a sustainable livelihood system a holistic approach is critical.

Pastoralism is not just a traditional form of raising livestock. It is a livestock-based livelihood system regulated by ecology with complex modes of social, political and economic organisation with the capacity to adapt to changing environmental and socio-economic conditions. If fully supported, it has the capacity to contribute significantly to the local and national economy in Tanzania. The system rests on three central components:

- The sustainable management of natural resources, including grasslands, browse and water in an environment characterised by low, irregular and scattered rainfall.
- Resilient livestock herds and sustained productivity in the face of environmental variation.

- Functioning social institutions to regulate labour, livestock production, marketing and rules of access and control over natural resources.

To support pastoralism effectively, policy and practice have to address all these three components in an integrated manner in recognition of its systemic nature.

Using the restocking component as an entry point to directly tackle the unacceptable levels of poverty in Ngorongoro in a very practical and immediate way, ERETO I also addressed the other key components of the pastoralist system through its water and range management, veterinary services and community empowerment components. This holistic approach was critical to the project's success in reducing poverty while building the resilience of the pastoralist system to such external shocks as drought and disease.

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