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RELMA's experience in eastern and southern Africa

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East Africa

World Agroforestry Centre
TRANSFORMING LIVES AND LANDSCAPES

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Abstract

This paper is part of a broader synthesis of more than three decades of Swedish development cooperation in the agricultural sector of eastern and southern Africa. The paper focuses on livestock, an important sub-sector that is not adequately understood, particularly its role in the “critical triangle” of development: food security, poverty and environment protection (Vosti 1995). Our discussion centres on how the livestock sub-sector was incorporated in land management in the region and how it relates to the global development goal of meeting the needs of the present without comprising the ability of future generations to meet their own needs. A synopsis of the livestock programme focus, approaches and methods used to achieve programme objectives are discussed. Finally, the experiences and lessons learnt are presented and way forward suggested in the context of emerging sustainable development issues.

Keywords: Livestock, food security, poverty, environment, land management, eastern and southern Africa

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Introduction

Swedish development support to agriculture in eastern and southern Africa received a fresh impetus after the 1972 UN Conference on the Human Environment held in Stockholm. The cooperation has its roots in a bilateral programme with Kenya on soil and water conservation that began in 1974, funded by the Swedish International development Agency (Sida). Over the next eight years, the programme expanded beyond Kenya to become the Regional Soil Conservation Unit (RSCU). RSCU, in turn, evolved into the Regional Land Management Unit (RELMA) in 1997.

Sida's initial support to soil and water conservation programmes in Kenya was in response to increasing land degradation, which threatened the livelihoods of many smallholder farmers in the region (Stahl 2000). The emphasis on livelihoods was in line with the overriding aim of Swedish development cooperation, which revolves around a 1962 resolution by the country's parliament stressing the need to focus on "raising the living standards of the poor" (Sida, 2003).

The overall aim of poverty alleviation is closely linked to what Vosti (1995) describes as the "critical triangle" of development goals. In the triangle, sustainable use of the environment is necessary to maintain long-term efficiency in poverty reduction. At the same time, stress on the environment is the result of growing demand for scarce resources, and pollution generated by rising living standards among the relatively affluent. In contrast, the poor and the hungry destroy their immediate environment in order to survive.

The 1972 Stockholm Conference introduced environmental concerns to the formal political development sphere, but it was the Brundtland report, commonly known as *Our Common Future*, that placed environmental issues firmly on the political agenda. This report started discussions on the environment and development as a single issue (WCED 1987). In the early years of the ensuing debate, livestock was largely seen as the main culprit in environment degradation. Even its role in food security was not adequately acknowledged.

This earlier misconception of the role of livestock in sustainable development influenced global thinking about the sub-sector. As a result, livestock had a low profile in the first phase (1982-1992) years of Sida's support for land management in the region.

Agenda 21, the declaration of the 1992 Rio summit on the environment and development, brought more commitment to action and led to the birth of the UN conventions on climate, desertification and biodiversity. This landmark declaration changed the global outlook on livestock and sustainable development.

In response to the Agenda 21 resolutions, a multilateral livestock-environment initiative was formed to address the role of livestock in the food security, poverty alleviation and environmental protection (World Bank 1998). This initiative and the ensuing discussions produced scientific evidence showing the importance of livestock in the global endeavour to attain food security and protect natural resources.

The immediate post-Rio developments, coupled with increased understanding of the multi-dimensional nature of poverty by the global community, broadened Sida's programme beyond technological interventions. The programme widened to include marketing, farmer cooperation, institutional, policy and legal issues.

It is against this backdrop that we present, in the rest of this paper, experiences and key lessons on livestock and sustainable development from RELMA's integrated land management programme in eastern and southern Africa.

Role of livestock in integrated land management

Development trends in sub-Saharan Africa in the early 1990s caused major concerns. Human-induced soil degradation and rapid population growth were identified as major threats to sustainable development in the region.

Facts such as those given by Oldeman et al (1990) supporting the view of livestock as a culprit and overgrazing as the main cause of soil degradation (Table 1) triggered a heated debate. It was in the thick of these discussions that RELMA organised a workshop to promote livestock as "a crucial factor for ecologically sound land management in the eastern and Southern Africa".

The workshop identified key areas of intervention that would strengthen soil and water conservation programmes supported by Sida. The forum also suggested ways to increase the efficiency of livestock production to reduce poverty, promote economic growth and ensure sustainable use of resources.

Integrating livestock into conservation efforts

Strong links between bilateral programmes in the various countries and the regional programme was an important feature of RELMA's approach. Kenya's pioneering National Soil and Water Conservation Project (NSWCP) provided many lessons for

other regional programmes. These were Soil Conservation and Agroforestry Project in Arusha (SCAPA) Tanzania, the Soil conservation, Agroforestry Extension (SCAFE) Zambia, and Uganda Soil conservation and Agroforestry Project (USCAP).

With the exception of SCAPA, all these bilateral programmes, which were closely linked to RSCU and RELMA, evolved into bigger national projects, namely, NALEP in Kenya, ULAMP in Uganda and Land Management and Conservation farming for Zambia. In Tanzania, Sida support to land management changed to back district-managed land management projects (LAMP) in line with the official decentralisation process. There was a similar programme in Ethiopia, the Sida-Amhara Rural Development Programme, but it was not a direct off-shoot of RSCU program like the bilateral land management projects in the other country as those in the other countries.

The collaboration between RSCU/RELMA and the country programmes was strategic. It provided a platform for cross-fertilisation of ideas and experiences in the region. For instance, vegetation strips and multipurpose trees and shrubs first used for soil erosion control in Kenya's NSWC project spread to the rest of the region, opening the way for livestock interventions. The species promoted included Napier grass (*Pennisetum purpureum*), Nandi setaria (*Setaria anceps*), Guatemala grass (*Tripsacum laxum*), Donkey grass (*Panicum trichocladum*), Creeping signal grass (*Brachiaria humidicola*), Makarikari grass (*Panicum coloratum*) and Tall Signal grass (*Brachiaria ruziziensis*), all good for forage (Mwaniki 1993).

Nitrogen-fixing and fodder tree or shrub species used in agroforestry -- such as Calliandra (*C. Calothyrsus*), Mulberry (*Morus alba*), Sesbania (*Sesbania sesban*) and Luecaena species -- were also introduced to improve soil fertility and provide fodder.

Intensifying smallholder dairy production

Another important feature of Sida-supported land management projects was their concentration in high rainfall areas in the region, which fall under the East African Highland agro-ecological zone in the first two decades starting in the early 1970s. In these areas, soil degradation is severe as a result of exploitative agricultural practices and population pressure, which has led to sub-division of farms into unviable sizes (Oldeman 1990). Further more high soil nutrient losses of over 8 kg of Nitrogen (N), Phosphorus (P_2O_5) and Potash (K_2O_5) per cultivated hectare in Ethiopia and Kenya, and were nearly 70 kg per hectare in Uganda (Stoorvogel and Smaling 1990).

In these areas, livestock intensification, specifically dairying, was suggested as a win-win intervention to reduce poverty, promote growth and enhance sustainable natural resource use. Exotic breeds were introduced and cross-breeding programmes set up. Production of forages for a cut-and-carry system intensified.

These interventions have revolutionised the smallholder dairy industry in the region. In Kenya, there are more than 600,000 smallholder farmers producing over 80% of marketed milk (Omore et al 1999). Indeed reports from the smallholders indicate that dairying is a profitable route out of poverty, but technological interventions have to be accompanied by marketing and policy support (Staal et al 2005).

Kenya has the most vibrant smallholder dairy sector in the region, with 71% of improved dairy animals are in East and southern Africa (Thorpe et al. 2000). Much of this success can be attributed to a supportive policy on breeding that provided artificial insemination services in the 1960s (Mwangi et al. 2005).

Unlike Kenya, lack of good breeding material was reported to be a major setback among the smallholder dairy farmers in the-Sida supported land management projects in Tanzania and Uganda (Karwitha et. al. 2002). Unfortunately, the sub-sector's growth, particularly in the number of farmers keeping cross-breed dairy cows, is not adequately supported by the other aspects such as feeding, disease control and marketing. As a result, the overall efficiency of the exotic breeds is below expectation, with the animals producing far below their genetic potential (Mwangi et. al. 2005).

For instance, King et al 2005 note that the Holsteins are less productive than local animals when compared on a lifetime basis and where ambient temperatures and humidity are high. Similar observations were made in Tanzania and Uganda, where most cross-breeds were found to produce less than 10 litres a day.

To address some of these problems, RELMA produced a manual, *More Milk More Forages* (Kitalyi et al. 2005), for smallholder dairy farmers. The publication – produced in highly participatory approach, with contributions from technical experts, intermediaries and farmers – suggests solutions to the problems facing the small-scale dairy farmer.

RELMA's collaboration with the Sida bilateral programmes in Tanzania and Uganda, through SCAPA and ULAMP, respectively, demonstrated increased benefits of integrating livestock and crops on farms. Livestock proved to be a crucial link in nutrient cycling on small farms, maintaining viability and environmental sustainability of agricultural production. Similar observations have been made by Shepherd and Soule (1998) who reported the benefits to farms when livestock is used as a conduit for nutrient flow onto farms through feed collected elsewhere and brought onto the farm.

The challenge of marketing and policy environment

In all the smallholder dairy projects, milk marketing came out as the main challenge. A study on milk marketing in Nyandarua, Kenya, showed that there are numerous problems in the production-to-consumption chain. These problems related to policy, laws, regulations and standards. Furthermore, smallholder producers were not adequately involved.

This prompted another study on participation of smallholder producers in the process to rationalise and harmonise dairy policies in the region. (A summary of the highlights is shown in Box 1). The study was undertaken parallel to a regional project coordinated by the Eastern and Central African Programme for Agricultural Policy (ECAPAPA), a sub-regional institution that was working on similar issues at higher level in an initiative involving the COMESA, the Common Markets for Eastern and Southern Africa (ASARECA/ECAPAPA 2004).

Box 1 Making dairy policies work for the smallholder dairy farmers: The case of eastern Africa.

Key issues in smallholder dairy farming

- Smallholder farmers are the major stakeholders in the dairy industry in most eastern Africa region (in this case Ethiopia, Kenya, Tanzania and Uganda). They deliver more than 80% of the marketed milk.
- Dairy policies in the region favour cold-chain milk marketing and distribution, but the infrastructure for such a system is not well developed.
- Kenya has the highest number of dairy cattle (over 3 million) in the region. Ethiopia, with the highest total cattle population (over 34 million), has the smallest dairy herd (157,000).
- The market for processed dairy products is small, although policies favour milk processing. In Kenya, only about 15% of milk is sold to processors. The figures fall to 5% or less in Uganda, Tanzania and Ethiopia.
- The region is a net importer of dairy products, but the amounts imported are relatively small.
- Intra-region trade in milk and other dairy products is minimal.
- Smallholder dairy producers and small-scale milk traders are rarely involved in discussions on policies and laws. They are not well informed of existing dairy policies and laws.
- Economic liberalisation has led to governments moving away from interventions that support the dairy farming such as provision of subsidised inputs, services and in-calf heifers. This has left the smallholder dairy farmer vulnerable to the whims of price changes in a free market.
- Most dairy cattle in the region mainly feed on forage, which can support production of only up to 10 litres of milk a day, even where an animal's genetic potential can allow for higher yields.

Source: Muriuki and Kitalyi 2005

Livestock in sustainable dryland management

Livestock has had a low profile in the global debate on poverty reduction and sustainable development. Yet it is a major source of livelihoods and plays a significant role in environmental issues, particularly in drylands.

The strategy that guided Sida's development cooperation in eastern and southern Africa did not include livestock issues among the priorities for drylands. Strategic priorities included water, soil conservation, methods for popular participation, dryland forests, as well issues of resource ownership and user rights (Bjorkdahl 2002).

On livestock, the strategy document states that only aspects relating to fodder would be given priority. This policy statement limited the scope of livestock interventions in drylands by Sida-supported land management projects.

The first intervention in the drylands within Sida's regional framework was collaborative work with the VI Agroforestry project, run by a Swedish non-governmental organisation, in West Pokot Kenya. The project, which started in the 1990s, used enclosures to rehabilitate land in West Pokot, where land use was mainly communal. [The approach and impact of this intervention is documented in Makhoha et al (1999)].

An analysis of the work in the context of UNCCD in 2002 showed that land tenure is a core factor in sustainable land management in drylands (Cohen 2002). The enclosure movement in West Pokot Kenya demonstrated an advantage for users to hold land individually or as a group rather than having it held in trust by another entity. In general, enclosures on individual holdings posed little difficulty, and the owners could easily see the advantage gained by having it enclosed.

On many group ranches, introduction of the enclosures generated demand for formal title deeds. The enclosures also improved range productivity and conditions as well as the carrying capacity of the enclosed areas.

However, there were disputes over the procedure of selecting sites for enclosures. The enclosures were created without clear legal rights, which could create conflict within the community.

A similar intervention has been used in western Tanzania, but with differences. Traditional fodder enclosures known as 'ngitili' were revived using local social institutions. A range of science-based agroforestry practices was then introduced within the enclosures. Farmers adopted improved land management technologies (Mulenge 2005).

The Tanzania approach has better prospects for sustainable land management in the drylands of eastern and southern Africa because most of the pastoral communities in the region have the tradition of deferring an area for dry season feeding that suits this intervention.

Three key studies were done to document Sida's experience in drylands. In West Pokot, a socio-economic study was conducted to find out how the community perceived the interventions and gather knowledge on the local farming system.

The research found that farmers had a wealth of knowledge on their farming system. This finding triggered another study, in 2000, to document indigenous techniques for assessing and monitoring range resources in East Africa (Nyariki et. al. 2005). Six pastoral communities, two from each country, were studied and the field reports enriched at a regional workshop that brought together diverse stakeholders.

In southern Africa, a field study and participatory workshop produced a publication on rangeland development in Southern Province of Zambia (Chileshe and Kitalyi 2003).

These three studies showed that farmers are highly knowledgeable about their farming systems. The findings support the current dryland development paradigm which appreciates that communities have a wealth of knowledge and coping mechanisms to adapt to aridity (World Resource Institute 2005).

Lessons learned and way forward

Targeting priority agro-ecological zones

We are at a time when the global community has declared total commitment to poverty eradication in developing countries (UNDP 2005). We are also on the verge of what has become known as 'livestock revolution' -- an anticipated fast growth in consumption of livestock products in developing countries (Delgado et al. 1999). These developments suggest that improving the production and productivity of livestock kept by resource-poor people would improve livelihoods and alleviate poverty.

Small-scale land users or smallholder producers, the ultimate target groups of RCSU and RELMA programmes, were once among the most common terms in development. However, in more recent trends *poverty* indicators are used to target the *poor*, although there is a general consensus that the two terms are difficult to define. While the rich perceive poverty as deprivation of material well-being, the poor see it as a more multidimensional social phenomenon.

An analysis by Thornton et al (2003) based on mapping poverty and livestock in the developing world indicated that two thirds of the poor in the five RELMA countries are livestock keepers (Figure 1). Eighty percent of livestock keepers are sedentary, living in mixed rain-fed systems. These are the same areas, which have had serious human-induced soil degradation and, therefore, where synergetic effects between crop and livestock integration under smallholder settings play an important role in maintaining soil nutrient status.

Future efforts should target priority agro-ecological zones and within these, priority livestock systems. For instance, pastoral systems did not receive much attention in the land management programme under review. The Human Development Indices of the pastoral and agro-pastoral communities are far below the national averages. In Kenya, for example, national literacy level is 79%, while for some pastoral communities is at 3%.

Addressing non-technical constraints

In the early years of the Sida programme, the emphasis was on technological interventions, but over the years, there was a shift toward non-technical issues. Now emerging issues in globalisation are dictating that more efforts be made to empower livestock keepers, particularly in organisation. This was a weak point in the whole programme and it could be attributed to the complex nature of livestock systems. The dairy industry was an exception because it had successful cases of highly organised dairy cooperatives or associations, but these have also been weakened by poor policies.

Addressing the non-technical constraints in the sector will increase the contribution of livestock in reducing poverty and improving livelihoods. The current development trends have been shifting focus from technological intervention to issues that are directly linked to economic growth. These include access to markets and the extent to which policies and laws are conducive to poverty reduction. This is an area of interest to international conventions and national commitments (Millenium Project 2005). The main issues for consideration are:

- Policy and legal framework review process and support for pro-poor policies in the livestock sub-sector.¹ One key question is whether policies support producers to get

¹ To quote from the U.S. Agricultural marketing Agreement Act 1937: "Secure fair exchange value for farm products by establishing orderly marketing conditions for farmers while accounting for consumers interests." And Canadian Dairy Commission Act 1966: "... provide efficient producers with the opportunity for fair returns to their investment and labour while providing consumers with a continuous and adequate supply of quality dairy products."

fair returns? Another is whether there is access to affordable inputs for production of quality products?

- International standards and quality for trade in livestock commodities.
- Public–private sector partnership. At national level, a strong partnership is a prerequisite for delivery of livestock services to the poor. Access to regional and international livestock markets depends on a strong public-private sector partnership.
- High transaction costs. In the beef industry, the distance of producers from the main markets increases transaction costs. Producer groups could alleviate the problem.
- Information dissemination. Given that many poor livestock producers are illiterate, information has to be demystified and people empowered to analyse and use it.

Investment in research

Livestock researchers and development practitioners are haunted by the fact that despite a plethora of technologies, poverty is widespread among livestock keepers. There is therefore a need to invest more in livestock research and development from the standpoint of pro-poor development. There still remains enormous untapped potential for livestock research to contribute to economic growth, poverty reduction and achievement of Millennium Development Goals.

However, the high-input technologies that have contributed to a livestock production revolution in developed countries have proved inappropriate to resource-poor livestock keepers in sub-Saharan Africa. This calls for more investments in low-input technologies, policies and processes for sustainable efficient and effective use of natural resources in livestock production. Prospects for increased investment are high with the new political commitment to support market-led pro-poor livestock development shown by the African Union and NEPAD as well as bilateral and multilateral development partners such as World Bank and European Union.

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Appendices

Table 1. Causative factors of human-induced soil degradation (million ha)

	Deforestation	Over-exploitation	Overgrazing	Agriculture activities
Africa	67	63	243	121
Asia	298	46	197	204
S. America	100	12	68	64
C. America	14	11	9	28
N. America	4	-	29	63
Europe	84	1	50	64
Oceania	12	-	83	8
World	579	133	679	552

Source: Mohamed-Salem and Fitzhugh, (1993)

Source: Thorntorn et al. 2002

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26. Status of carbon sequestration projects in Africa: Potential benefits and challenges to scaling up

Who we are

The World Agroforestry Centre is the international leader in the science and practice of integrating 'working trees' on small farms and in rural landscapes. We have invigorated the ancient practice of growing trees on farms, using innovative science for development to transform lives and landscapes.

Our vision

Our Vision is an 'Agroforestry Transformation' in the developing world resulting in a massive increase in the use of working trees on working landscapes by smallholder rural households that helps ensure security in food, nutrition, income, health, shelter and energy and a regenerated environment.

Our mission

Our mission is to advance the science and practice of agroforestry to help realize an 'Agroforestry Transformation' throughout the developing world.

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