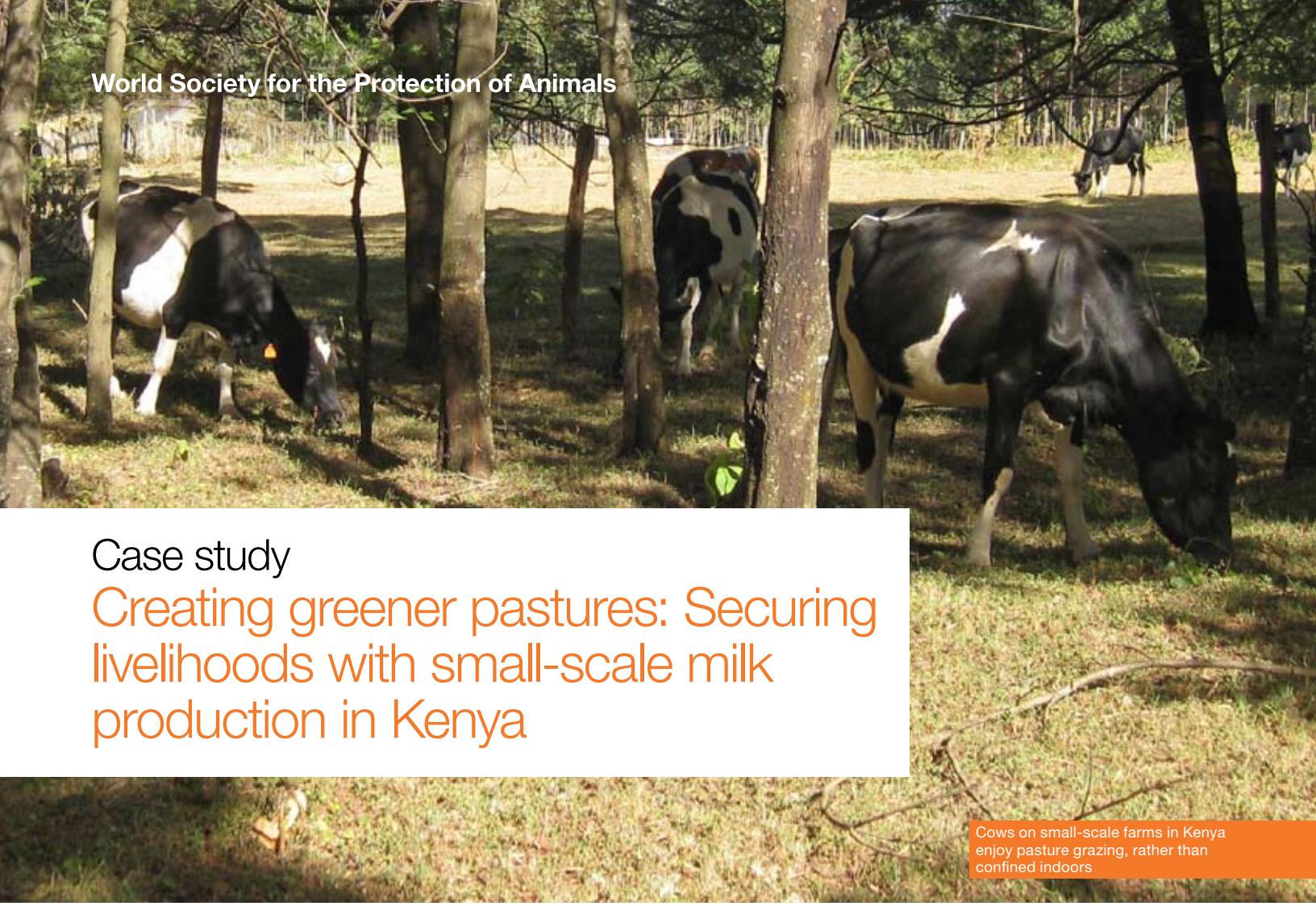

Case study

Creating greener pastures: Securing livelihoods with small-scale milk production in Kenya

Cows on small-scale farms in Kenya enjoy pasture grazing, rather than confined indoors

The dairy industry is vital for the livelihoods and food security of millions of Kenyans. Population growth and urbanisation are driving up the demand for milk and putting pressure on the sector to continuously increase production. This case study shows how a co-operative of small-scale pasture-based dairy farmers is raising productivity, improving livelihoods and increasing food security in the highlands of Kenya.

Setting the context

The importance of milk production, processing and marketing to the wealth and food security of the Kenyan people cannot be overstated. Today, dairy production is Kenya's leading agricultural sector[1], with almost 2 million small-scale farmers[2] depending on it for their livelihoods and food security. Small-scale farmers are the backbone of the dairy sector, delivering 80 per cent of all milk in the country[3]. Domestic production meets current demand, despite milk consumption in Kenya being among the highest in the developing world. At an estimated 145 litres per person per year, Kenya's milk consumption is more than five times that of other East African countries[4]. The country farms 70 per cent of all improved dairy breed cattle in eastern and southern Africa[5].

In addition to providing milk – important for both income and nutrition – dairy cattle also provide manure, marketable products such as calves and beef from culled dairy cows, and intangible benefits including financial security and social status.

LELBREN's 300 female members are active in contributing to the governance of the co-operative

A new model for farmers

Economic liberalisation in the 1990s saw a rapid growth in the private sector and the collapse of the state owned and highly subsidised Kenya Co-operative Creameries – the largest dairy co-operative of the time[6]. Many small-scale farmers suffered in the post-liberalisation period as the institutions that previously supported them ceased to exit.

Lessos Livestock Breeding Network Dairies Limited (LELBREN) was founded in 2004 to overcome these challenges and provide support to the production and marketing of milk from small-scale farms. What started as a community-based organisation of 29 farmers is now a limited company with a Board of Directors elected by the current membership, which in 2012 stands at almost 4,000 small-scale dairy farmers.

LELBREN aims to improve the livelihoods of the community through advising on improved farm management, increasing milk distribution levels and facilitating access to markets, knowledge and inputs by dairy farmers.

Co-operatives and farmers' organisations like LELBREN play a fundamental role in supporting the production, processing and marketing of milk from pasture-based systems, as well as increasing productivity, incomes, and supporting livelihoods and food security. This model of farming, supported by LELBREN, has made a positive impact on the following areas:

Economy, jobs and livelihoods
The co-operative directly employs 25 members of staff, 50 milk truck drivers and provides benefits to almost 4,000 members. Profits made by the co-operative are redistributed to members, who are also given opportunities to have their say about governance.

Importantly, the co-operative has over 300 female members, who are actively involved in decision making for the future of the initiative. The continued growth in membership has attracted business opportunities from service providers in the area, increasing economic development in the region.

Environment
Most small-scale farmers produce a mix of both crops and livestock, recycling the manure back into agriculture or using it to produce biogas. The co-operative provides technical support to members on biogas production and manure and pasture management. Supporting and educating farmers in these environmental processes helps to reduce greenhouse gas emissions and pollution from manure and avoid soil degradation.

Public health
A fleet of trucks link producers to two collection centers, ensuring that milk does not spend long periods in hot conditions. A new cooling plant has opened to serve farmers in more remote areas. The co-operative also provides veterinary support to farmers, meaning animals are in good health and diseases that might compromise milk quality are not left untreated.

Land use
Mixed farming combines crop and livestock production and allows manure from livestock to be recycled back into agriculture. In the highlands, dairy is part of a portfolio of farming activities and acts as insurance against crop failure or low tea prices – tea production is a large economic activity in the region.

Animal welfare
Well managed pasture-based dairy systems provide excellent health and welfare for dairy cattle. The cattle experience good health with a low incidence of mastitis and lameness. In case of illness or disease, veterinary care is available via the co-operative. During the dry season, pasture is supplemented with hay or silage.

A growing business

The LELBREN co-operative is comprised of small-scale dairy farmers from the Lessos area of Nandi and Uashin Gishu Counties in the highlands of the Rift Valley Province of Kenya. The Nandi and Uashin Gishu Counties have a population of nearly 1 million people[7] and the main economic activity is agriculture – dairy farming and tea production. The area has moderate to very high rainfall concentrated in seven months of the calendar year, which makes it ideally suited for grazing systems.

LELBREN began after negotiations and an agreement with the New Kenya Co-operative Creameries, a state owned milk processing facility which began after the collapse of the original facility (of the same name) in the 1990s. Under this agreement, the New Kenya Co-operative Creameries pay LELBREN a premium price for every litre of milk – standing at 32 Kenyan Shillings from 2012. The farmers receive 29 Shillings per litre – substantially more than they would receive if they sold their milk to the open market. LELBREN retains a small sum for administration and development. It is evident from the rapid growth in membership to LELBREN that farmers recognise the financial benefit of being part of the co-operative.

Indeed, LELBREN's growth has attracted business opportunities and service providers such as banks, IT companies, dairy equipment, veterinary and artificial insemination services, which has led to setting up service points and establishing business relationships. In an area where the poverty index was estimated at 47.4 per cent in 2005–2006, LELBREN is proving to have a positive impact on the economic development of the area[8].

LELBREN has two 'bulking centers' where milk is collected, weighed and recorded. The co-operative also has an agro-veterinary supply shop stocking drugs, feeds and dietary supplements available to farmer members on credit.

The co-operative model

Each member pays an annual subscription of 800 Kenyan Shillings which entitles them to hold equal shares. Under co-operative rules, one member equals one vote towards the process of electing the Board of Directors (responsible for the management and future direction of the co-operative).

This model results in improved governance as evidenced by transparency in management and leadership and the participation of the membership holders in organisational decision making. Another benefit of the co-operative is gender empowerment. LELBREN has over 300 female members who contribute to being part of active voices in the governance of the co-operative.

The advantages of pasture-based systems

The members of LELBREN are small-scale farmers of both crops and/or livestock; the vast majority of their dairy production is pasture based. Access to pasture is beneficial to both animal health and welfare. Productivity in small-scale pasture-based systems in Kenya is on average low – around 1,510 litres per year[9]. This low yield form of dairy farming was an incentive for some farmers to invest in zero-grazing systems which confine cows year round, with feed brought to them. The intensive zero-grazing system may produce higher average yield compared to the pasture-based systems but has the disadvantage of high production costs[10].

Co-operatives like LELBREN are having a positive impact by supporting small-scale farmers to increase the productivity of dairy animals in pasture-based systems, and in many cases achieving the same or higher productivity levels as zero-grazing systems. Some LELBREN members that invested in zero-grazing systems have now reverted to the pasture-based system due to the high inputs required for intensive farming such as labour, feed supplementation and housing costs. Inaccessibility to reliable production services (such as artificial insemination) and incidences of diseases such as mastitis, lameness and infertility have also contributed to farmers reverting back to higher welfare, pasture-based systems.

Further vital services for farmers

In partnership with government, academia, intergovernmental organisations and non-governmental organisations, LELBREN offers members a number of extension services. Members can receive support and training for capacity building, management and technical aspects of dairy, biogas production, pasture management, construction, business development, and have access to inputs. For example, LELBREN offers Good Dairy Farming Practices courses to farmers that cover (1) animal health; (2) adequate housing conditions; (3) adequate feeding and water, (4) milking hygiene; and (5) manure management to reduce the environmental pollution.

Technical support at the farm level and the facilitation of access to inputs such as feed and veterinary care has seen gains in productivity and the welfare of both animals and the community. It is estimated that average annual milk marketed per household has increased from 1,880 litres in 2008 to 2,880 litres in 2010, a 53 per cent increase[11]. Higher productivity and a premium price for milk resulted in farmers increasing their earnings by 18 per cent per litre in 2009[12].

A glimpse into a LELBREN farm

Mrs Bitok's farm, is representative of a typical LELBREN homestead. The 17-acre family farm relies on communal grazing – animals owned by different family members graze together. Mrs Bitok farms a mix of crops and livestock: tea, maize, dairy and sheep.

The family has been in the dairy industry for the last 10 years and dairy is now their primary source of income. The farm has seven robust Friesian/indigenous crossbreed cows, one bull and four calves. The crossbreed stock is ideally suited to the local conditions. With an income of about 300,000 Kenyan Shillings (USD 3,500) in 2011, the family considers the enterprise profitable. Further, the evening milk (about 15 litres) is retained for household consumption, allowing each family member at least two glasses of milk per day.

LELBREN has grown rapidly since its foundation in 2004, to almost 4,000 members in 2012

Veterinary services are available through local animal health assistants and veterinarians. Extension services and training on dairy production is provided by LELBREN both at the farm and in workshops. Routine ectoparasite and endoparasite control is undertaken and vaccination regimes against blackquarter, anthrax, foot and mouth disease and lumpy skin disease are also carried out as part of the government's disease control programme. All animals receive additional mineral supplements; lactating cows are supplemented with wheat bran and hay once a day, and dairy meal concentrate offered during milking. Water is available to the animals on demand from a well source at the homestead.

Mrs Bitok started dairy production using high-yield cows in a zero-grazing system but encountered many problems: the artificial insemination services were unreliable, with a lack of breed choice and pedigree records; the system had high operational costs; and supplementary feeds were unavailable. The final incentive to change to the current pasture-based system was the poor health and infertility of the dairy cows – the high-yield breeds had high incidence of mastitis and two cows were culled when they repeatedly failed to conceive.

The farm now uses crossbreeds suited to the local conditions and bull insemination. The current pasture-based system provides similar levels of productivity per cow to zero-grazing with the advantage of better animal health and welfare. Animals are separated according to gender and age and have separate sleeping paddocks. Manure does not accumulate on the ground with the positive result of better leg and udder health.

The farm practices rotational grazing, with animals periodically moved to fresh paddocks to allow grass to regrow. In collaboration with government extension personnel, LELBREN provides technical support for pasture improvement. Best practices are illustrated at LELBREN farmer demonstration farms (referred to as 'field schools'). The recommended grass seeds (Boma grass and napier grass) are available at the LELBREN agro-veterinary shop.

LELBREN provides members with contacts to partners that advise and provide capital and technical support for infrastructure development such as biogas digesters and washer wells. As a result, Mrs Bitok now has an anaerobic digester and collects manure from the sleeping paddocks for the generation of biogas for use in home cooking. This minimises greenhouse gas emissions while providing a renewable source of energy for the household. The exhauster effluent is used as fertiliser for maize and vegetable gardens.

Mrs Bitok's animals provide her family with an adequate source of both income and nourishment

Conclusions

- Networks of small-scale pasture-based dairy farmers can create local employment, generate economic growth and make a positive contribution to livelihoods and food security
- Co-operatives can offer premium market prices for milk, transparency in management and leadership, and gender empowerment by attracting female members and encouraging their active participation in decision making
- Marketing and technical support for pasture-based dairy systems can increase milk productivity per cow and bring overall benefits to both the health and welfare of dairy cattle and the environmental stewardship of the land
- Partnerships between farmers' organisations, government, academia, intergovernmental organisations and non-governmental organisations can offer unique benefits to individual farmers. These benefits take the form of capacity building, training, credit and access to veterinary care and inputs such as feed – all of which contribute to the overall sustainability of the dairy enterprise.

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