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Case studies on
Remuneration of Positive Externalities (RPE)/
Payments for Environmental Services (PES)
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The Livestock and Biogas Enterprise Project in Kiserian, Kenya shows how the pre-existence of local initiative and local business leadership ultimately helped to add all kind of new social and environmental services to the business to the core slaughterhourse business that started as a informal community arrangement in 1981.

Even though technical and financial support from outside organizations were required to make the establish a formal company , comply with regulation and upgrade the equipment, the business remained Maasai-led and Maasai-owned.

It was the entrepreneurial spirit of the Maasai that ultimately led to the financial sustainability of a rural business project that also generates lots of positive externalities for society and the environment. In view of reduced reforestation thanks to the sale of biogas as a by-product of the business (substituting fuel for cooking and heating) and the reuse of waste as manure there must be a public interest that this business continues to exist in order to preserve its positive externalities.

The case illustrates that there should not just be remuneration of positive externalities to compensate for market failure but also rewards for the creation of new markets that have a large public good character. The management of the slaughterhouse has plenty of ideas how it would invest a financial award from the government because it can hardly cope with the demand and still needs to overcome a lot of technical and non-technical barriers to make its new environmental products (organic manure, biogas) a commercial success.

Livestock and Biogas: Positive Externalities generated by the Keekonyokie Slaughter House in Kiserian, Kenya

Overview

The Keekonyokie Slaughter House was founded in 1981 by a group of Keenkonyokie Maasai in the town of Kiserian, south of Nairobi without external support or funding. The purpose was to offer better market access to Maasai pastoralists and to enable them to become part of a community-owned business that does not just generate its own revenues but assists its members with many social institutions that are designed to improve the health and education of their families as well as the maintenance of Maasai traditions. In 1992 the hitherto informal business was registered as a company under the name of Keekonyokie Butchers Limited. The business operates in a large and complex market system involving a terminal livestock market that interfaces with a meat market and other associated service providers.

In 2005, the company started to construct and operate a biogas plant with the support of GiZ. The purpose was to convert slaughterhouse waste into energy and bio fertilizer. This was part of an effort to fulfil National Environmental Management Authority (NEMA) requirements for slaughterhouses to stop the discharge of waste water in rivers causing environmental degradation. In 2011, the company presented a prototype on the packaging of biogas, which it intends to sell to local residents in addition to the already existing the sale of biogas to larger local institutions and its use as an energy source of the slaughterhouse.

Unlike in the classic PES scheme where the initiative comes mostly from a mediating institution that brings potential buyers and sellers together to negotiate a voluntary contract, ensures compliance and funds the initial stage of the project, the initiative this case came from the local people themselves and it was not linked to a particular payment but to the need to comply with environmental regulation. Despite being a profitable enterprise, the slaughterhouse produces many positive social and environmental externalities for the region.

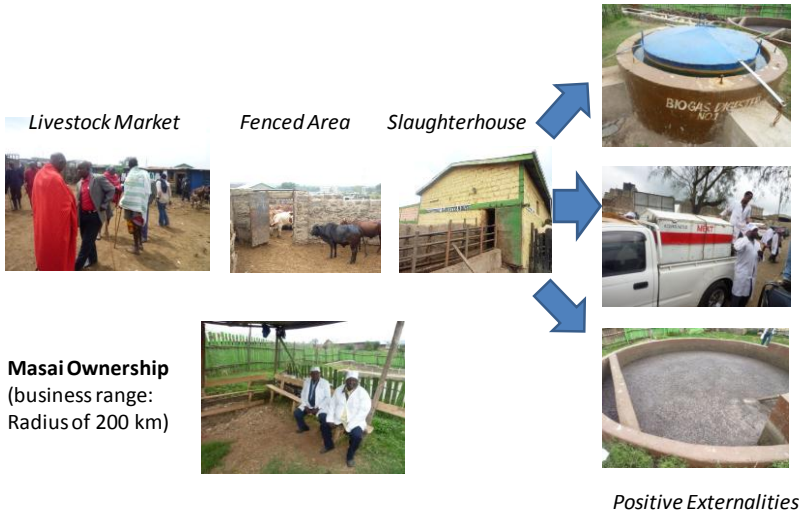


Figure 1: Schematic diagram of the key roles

Positive Social Externalities

In 1981 16 members of a Keekenyokie pastoral community decided to establish a slaughterhouse in Kiserian. The purpose was to sell their meat directly in urban markets . This helped the Masai pastoralists to get a 30% price premium for their livestock. It eventually made the Keekonyokie livestock market the largest pastoralist-owned livestock marketing and processing enterprise in East Africa. It has given improved livelihoods to more than 100,000 households in Kajiado and northern Tanzania.

The business eventually organized itself as an integrated value chain where its members benefit from the business as sellers of cattle and stockholders of the slaughterhouse company.

The business was not just designed to generate revenues but also to reduce risk and uncertainty for its members, to serve as a social insurance mechanism and to support Maasai cultural activities: In order to ensure continuity of business even during droughts, each member contributes between one and five cattle for the purpose of restocking. These animals are bought through the revenues of the slaughterhouse. Special contribution are given to members particularly affected by drought.

Social insurance mechanisms further comprise contributions to health/education/funeral expenses for members and their families Finally there is support for Maasai cultural activities: Members meet once a month to discuss the proper share of the revenue for each member minus social and cultural contributions. For special cases and occasions individual members contribute extra funds

Background

The economic challenges and opportunities of a slaugtherhouse that grows rapdily

Keekonyokie Slaughter House provides a slaughter service to livestock traders, meat brokers and butchers. It is an integrated business incorporating meat processing, a meat wholesale "supermarket", cold storage, hides and skins and intestinal meats that is popular with the bottom market segment. There are also other value addition activities that have been introduced recently which includes meat deboning, mincing and vacuum packing.

It has created the critical positive enabling environment for a vibrant local meat business to operate. It offers a "guaranteed" market for livestock and various kinds of social support mechanisms to its members, therefore greatly reducing the risk associated with the sale of livestock

As a result, the slaughterhouse has grown from processing on average 30 cattle per day in the 1980s to around 180 per day in 2010. It attracts pastorlists from the southern rangelands and parts of rift valley and northern Tanzania. Every day on average 200 cattle and 400 goats valued at KSh 5m (around US$ 60'000) change hands in the market in Kiserian for slaughter, resale or restocking the range. The slaughterhouse itself makes a daily turnover of between KSh 60'000-100'000 (US$800-1200) in slaughter fees and employs 172 people. Many more are employed in associated service businesses such as cleaning, money transfer, meat transport and other value addition.

Converting an environmental challenge in another opportunity

With growing demand came growing environmental problems, especially concerning the disposal of slaugtherhouse waste. The company was suddenly confronted with the need to compliance with expensive National Environmental Management Authority (NEMA) requirements for waste management, public health and sanitation for abattoirs. Instead of viewing it as a problem, the Maasai entrepreneurs saw it as a stimulus for environmental innovation thanks to more strict national environmental regulations responding pro-actively by looking for outside expertise and technology to address the problem.

In 2005 the slaughterhouse gained technical and financial support from the German Group for International Cooperation (GiZ) when it decided to invest its resources in the construction of a fixed dome biogas plant to convert the liquid animal waste into useful new products. The biogas plant has a capacity of 450m3 capacity. It can store 200m3 of biogas that is piped to a generator set (20 KVA) capacity. Currently the biogas is being used to generate electrical power for the meat cold room, meat processing equipment and hot water for sterilizing and washing the abattoir. Excess biogas is also sold to large local institutions, such as hotels, that pick it up themselves. Various prototypes have already been developed to supply biogas also to the local communities as cheap cooking gas to replace the charcoal obtained from cutting of trees. It started first with the idea to fill discarded car tyres with biogas and then sell the sealed product to local households. However the government did not approve of such products for safety reasons. The new product prototype consists of a gas container that can be refilled after use (see Picture 1). The business idea has been submitted to the Africa Enterprise Challenge Fund (AECF), which provides grants and interest free loans to businesses who wish to implement innovative, commercial viable, high impact projects in Africa (http://www.aecfafrica.org/). In addition to that, the plant produces 10 tons of liquid fertilizer per day. The liquid organic fertilizer sold to local farmers to replace the expensive chemical fertilizer and increase food self sufficiency of local communities.

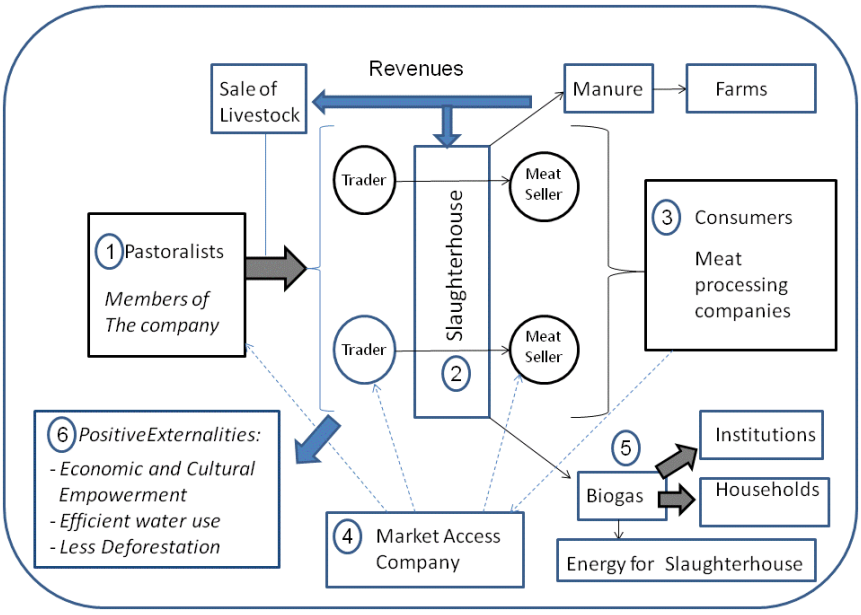
A business that creates positive externalities

The Illustration below shows how the Maasai-owned company works and how society and the environment benefit from it: Pastoralists (1) who are also the shareholders of the slaughterhouse business sell their cattle to traders on the livestock market in front of the slaughterhouse in Kiserian. They subsequently pay the slaughterhouse (2) for processing the meat, which they subsequently sell to brokers who pick up the packed meat to sell it to the wholesale and retail players who supply the market for meat processing and the consumer market in Nairobi (3). The market access company (4) ensures that in this value chain pastorlists are not shortchanged due to their ignorance about current demand and supply.

Finally, there are the new by-products that add value and sustainability to the business. Thanks to the construction of the biodigester the slaughterhouse is able to produce biogas for the local energy market and organic fertilizer for farmers. These activities help to save water and they decrease the dependence on charcoal as the main source of energy in the region, which helps to decrease the need for deforestation.

All these benefits come in addition to the fact that the Slaughterhouse business has become a very important employer in the region and uses every single part of the cattle (including bones, hides, horn, etc) which limits food waste. At the same time, the slaughterhouse business produces a lot of positive externalities for the Maasai pastoralists who are not just generating additional revenues through more market transparency and shares in the companies but also have become active learners themselves attending trade fairs and pastoralists field schools (5).

In addition, the business may slowly move from a generator of negative externalities to a generator of positive externalities for the environment thanks to its investments in hygienic standards and the biogas digester that allows to sell two additional products with public good character (manure for soil replenishment of nearby farms, biogas energy for households and hotels replacing charcoal and thus contributing to the reduction of deforestation). This case is crucial to illustrate that the remuneration of positive externalities must not just be about addressing market failure but it should also award market success that proved to be economically, socially and environmentally sustainable.



FAO Support through Market Access Companies (MAC)

The Slaughterhouse business also benefited from the service of a Market Access Company, which is part of the Rural Knowledge Network (RKN) Concept developed by FAO with the purpose of making better use of information and communication technologies to facilitate better market access for small-scale farmers and pastorlists. It links value chain players to markets, finance and market information (Nyende 2011).

The MAC is currently piloting the Transaction security services (TSS). This system provides the buyer and seller with the delivery of the agreed volume and quality of produce at an agreed time and place. TSS is a branded service with a well laid out process and protocols for its operation and quality assurance. In the case of the slaughterhouse business it involves buying livestock from producers and tracking all the intermediate costs to arrive at the net profit. This is then shared transparently as a bonus. The TSS model therefore promotes traceability and transparency along the chain. MAC is also providing a service to the informal meat processors by charging a fee for vacuum packing and meat mincing.

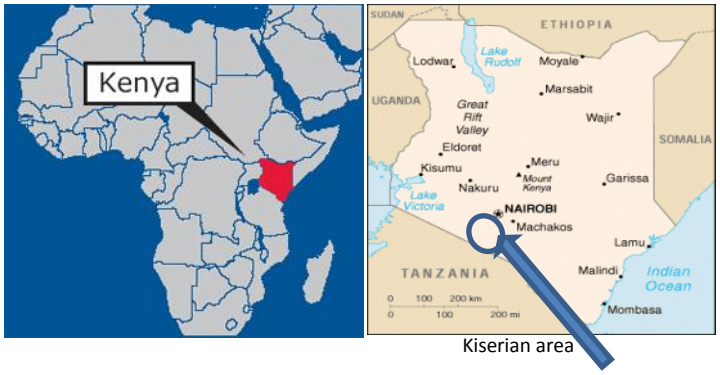
Finally the MAC is also the force behind the Keekonyokie Pastoralist Field School. It was established to serve as a local learning centre through which the pastoralists engage and learn various livestock production technologies within their own value systems. It involves the use of visual illustrations of various aspects of livestock production, marketing, natural resource management, and policy analysis.

It also has demonstration sites for pasture conservation and water harvesting.

Lessons learned

Overall, the slaughterhouse business of Kiserian demonstrates how development organizations that seek to improve livelihoods and the natural resources of poor farmers and pastoralists can build on already existing local initiatives and enable them to add value and sustainability to their particular business.
The Slaughterhouse business was initiated as community initiative by a Maasai group in the early 1980s without any outside help. They gradually learned how to run their business more successfully. This eventually gave them the confidance to register as a formal company in the early 1990s. This led to more profits and thus allowed for more investments in abattoir management and technology to cope with the growing demand. On the other hand, the board of the company had to learn how to comply with the formal environmental law of Kenya. This was one reason why they started to make long-term investments such as an upgrading of the slaughterhouse facilities to comply with hygienic standards, and installing a biodigester to reduce waste water, to gain energy from biogas plant and to produce manure for the surrounding farmers.

However, if one visits Kiserian, it can still look frightening and messy because the slaughterhouse occupies a large space in the center and the small town is hardly able to cope with all the cattle traders and the waste produced. But it must have looked even more frightening 20 years ago, when there was hardly any technology available to cope with the waste. In view of the need to improve infrastructure and cope with the growing demand, the Maasai board of directors is now looking for more investment, preferably in the form of matching grants. They have realized that investment can be even more valuable for the long-term financial sustainability of their business than donations since investors do not just bring funding but also a lot of know-how on how to run a formal business and find solutions to new challenges through innovation.
The directors have reason to be proud of what they have achieved so far for their business, their community and their families without having lost control of their business to outside owners.



Kiserian area

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