Small Livestock Production as an Economic Activity, Small Enterprise Development and Poverty Alleviation Strategy: The Case of Eldoret East District, Uasin Gishu County

***Situma[1] M. K; Nandwa J.Musambayi[2]; Dr Omboto[3] P. I.; and Yegon[4] E.J.**
situmaclare@yahoo.com, nandwajnusambayi@gmail.com, piomboto@yahoo.com, ripejoy@yahoo.com

1. Kitale Technical Institute
2. University of Eldoret
3. Moi University
4. Ministry of Agriculture

Abstract

The first Millennium Development Goal is to eliminate extreme poverty and hunger. In Africa despite an abundance of resources, the incidence of poverty is still high. Poverty in the midst of plenty is one of the central challenges in today's global economy. Uasin Gishu County ranks as a major food producer in the country yet poverty incidences are still estimated at 41.86%, Kenya (2007) since the agricultural sector is still the backbone of Kenya's economy, it is inevitably the key to food security and poverty reduction. Currently it contributes 26 per cent of the Gross Domestic Product directly and another 25 per cent indirectly. The sector comprises six sub sectors -industrial crops, food crops, horticulture, livestock, fisheries and forestry. Livestock sub sector has huge potential for growth that has not been exploited. Small livestock production is the predominant economic activity in the rural areas though it is not thought of as a major enterprise, the main focus being on large animals. This paper seeks to underscore the importance of small livestock production as an economic activity that contributes to farming systems and to people's livelihoods. This awareness should be translated into policies that support the development of integrated farming including small livestock production systems suitable to cultural and social realities. They should therefore be part of national and international poverty reduction strategies.

Key words: **Small Livestock Production, Economic Activity, Poverty Alleviation Strategy, Small Enterprise Development.**

Introduction

It is an unfortunate fact that small animals don't have the prestige among Third World farmers that large animal's do (perhaps this arose because children can look after goats and sheep but it takes men to look after cattle). Even sheep and goats are not accorded the same stature as cattle Hugh Popenoe (2010)

The first millennium development goal is to eradicate extreme poverty and hunger. Kenya has a projected population of 37.2 million people with about 80% living in rural areas (GOK, 2008). The population in absolute poverty is estimated at 45.9%
According to the Strategy for Revitalizing Agriculture (2004), 87% of all poor households reside in rural areas where their main activities are in agriculture.
Vision 2030 has identified agriculture as one of the key sectors to deliver the 10 per cent annual economic growth rate envisaged under the economic pillar. To achieve this growth, transforming smallholder agriculture from subsistence to an innovative, commercially oriented and modern agricultural sector is critical, of Kenya (2007) and Kenya Vision 2030, Nairobi, Kenya.

Livestock plays an important economic and socio-cultural role among many Kenyan communities. The livestock sub sector contributes to the food and cash needs of the farmers, and provides employment to about 10 million people, contributes 7 per cent to the Gross Domestic Product and 17 per cent to the Annual GDP, and provides 50 per cent of the agricultural labour. Both crop farmers and pastoralists keep livestock for food and income generation Kenya (2007). The key livestock sub sectors are beef, dairy, sheep, goats, camel, poultry, piggery and emerging livestock.

SMALL LIVESTOCK

While large livestock mainly refers to cattle, smaller livestock usually refers to sheep, goats, rabbits, ducks, chickens and the like. Small Ruminants, Such As Sheep And Goats, Fit Well Into Smallholder Farming Systems. Their grazing preferences enable them to feed on weeds, shrubs and other plants that other species of domestic animals tend to refuse. Their small size means they require less space than larger animals and they are less likely to damage and compact soils. They are easier to work with than large ruminants and are cheaper to buy and maintain.
Moreover, under the right conditions, they can be quite prolific. The range of products produced by small ruminants is easy to market because demand is high yet largely unfulfilled.
Hence there are considerable opportunities for smallholders to use such animals more effectively and efficiently and thus increase their contribution to livelihoods.
Sheep and goats are widely distributed throughout the world, but policy-makers and administrators tend to overlook their contributions to the economy, rural and peri-urban livelihoods, and the empowerment of women, other marginalized groups and food security.
Small livestock therefore include;

Poultry

The widespread use of poultry in Third World villages demonstrates the importance of small, easily managed, household livestock. This is due to their Small size, the ability to forage for themselves, and a natural desire to stay around the house put chickens, ducks, guinea fowl, and other birds among the most vital resources of rural areas, a resource to be taken seriously.

Poultry Pen

Poultry: 2014

Poultry species

- Chickens

Chickens are the classics in backyard poultry keeping. The time investment in a small flock of hens is about 10 minutes a day for feeding, watering, and egg collection, plus 30 minutes a week to clean the coop.
Hens lay eggs without roosters, and egg production is therefore possible to accomplish without much noise. There are many elegant ways in which chickens can be incorporated into gardening.

• *Pigeon.* These birds forage widely but return home, thereby providing the farmers with squab, one of the tastiest of all meats.
• *Quail.* Small and efficient, they, too, are suited to home rearing, and in Japan and a few other countries, large numbers are raised commercially in very small spaces.
• *Guinea Fowl.* One of the most self-reliant of all domestic birds, this native of Africa is raised in huge numbers in Europe—notably France. Its potential for increased production elsewhere is exceptional.
• *Turkey.* The traditional turkey of Mexico still exists as a scavenger bird in villages and household backyards. Unlike the highly selected modern breeds, it is self-reliant, robust, and disease-resistant.

Rabbits- Like chickens, rabbits exemplify the vast possibilities that small livestock offer for increasing meat production in the most poverty-stricken parts of the world.

Rabbits 2014

Rabbits are probably the livestock best suited for most including urban environments. They are hardy, do not require much space, and make very little noise. Rabbit manure composts easily and is far less smelly than that of poultry. Cages and hutches can be built cheaply, often with recycled materials. Rabbits are considered pets; thus, there are no legal restrictions on raising a small herd of rabbits for home consumption in an urban setting.

Rabbit meat is very lean, and probably healthier than many other meat choices. The greatest challenge for a rabbit-raising business is that not many people are inclined to eat an animal they are used to considering a pet. Rabbit rearing can be accomplished without much noise.

Sheep and goats

Sheep and goats need substantial investments in housing and fencing. The time investment for a small flock can vary from 5 minutes a day (free roaming in a large garden) to an hour or more if animals are enclosed.

Sheep and goats

Due to continuing rural-urban migration, over 50% of the world's population now lives in densely populated urban areas. They rely heavily on all sorts of markets for their daily food needs. These are supplied through overstressed, complex agro-logistical networks that often fail. This course focuses on how rural production and urban market systems can be integrated such that rural and urban communities can access nutritious food that is both affordable and acceptable (Wageningen UR, 2014).

Handling pens

Sheep and goats need to be handled, either in groups or individually, for vaccination, treatment, mating, weighing, etc. Handling pens are useful in reducing injury and stress on animals and workers. An ideally-out for a handling pen includes a receiving pen, forcing pen, crush, sorting gate, foot bath, dip or spray race (long and narrow passage wide enough for only one sheep or goat), draining pens and a holding pen. In particular, the receiving pen should match the number of animals expected to be handled at one time. Under the current smallholder conditions of Ethiopia, one handling pen per village may serve the purpose as long as complications with disease transmissions are minimal (Girma Abebe and Alemu Yam, 2005)

Sheep pen-2013

Sheep and goats-2014

Bees

Honey bees are present almost everywhere, and honey and wax are high-value products that demand little processing and can be stored and transported easily. Innovations in equipment and techniques have made beekeeping successful in the tropics without requiring sophisticated hives or elaborate training. Raising bees can also benefit the many crops that require pollination.

Fish Farming

Aquaculture potential in the country is enormous (currently, it contributes 2.5 % to our fishery while it has potential to contribute close to 50 % to Kenya's fishery output) and its utilization requires moderate investment and technology.

The future of Fisheries in Kenya and in particular, the strategy to improve food security and reduce poverty lie in empowering the farmers to practice sustainable aquaculture. It is for this reason that the Ministry of Fisheries Development is aggressively promoting aquaculture development in the Country.

Fish Pond

Fish pond 2014

Small Livestock as a National Resource

Sheep and goats

Sheep and goats play a key role in pastoral households' food security and incomes owing to their short-generation intervals, high adaptability and versatile feeding habits.

The country has an estimated 13 million goats and 10 million sheep. Annual meat production is estimated at 84,000 tonnes of mutton and chevron worth Ksh. 14 billion.

Poultry

Kenya has an estimated 28 million birds out of which 76 per cent consist of free-ranging indigenous chicken, while 22 per cent are commercial layers and broilers.

Other poultry species like duck, turkey, pigeon, ostrich, guinea fowl and quail make up 2.2 per cent and are becoming increasingly important.

Annually, the country produces about 20 tonnes of poultry meat worth Ksh. 3.5 billion and 1.3 billion eggs worth Ksh. 9.7 billion (ASCU).

SMALL LIVESTOCK PRODUCTION IN ELDORET EAST DISTRICT

The major small livestock enterprises in the District include goats, sheep and poultry.

Sheep industry

The sheep industry contributes greatly to farmers' incomes in the district.

Population figures (2010)

Division	Merino	Corriedale	Hampshire Down	Dorper	Red Masai	Crosses	Total
Ainabkoi	3166	1350	674	700	4050	12742	22682
Moiben	970	278	350	1150	2898	15074	20720
Total	4136	1628	1024	1850	6948	27816	43402

Source; Farm Management Guidelines 2010

Goat industry

Goats are kept in large numbers in the lower parts of Moiben division. The main breeds are the small East African goats and their crosses. Few dairy goats are also kept. Demand for dairy goats is high but supply for the same is not readily available.

Goat population figures (2010)

Division	E.A. Goats	Toggen burg	Kenya Alpine	Saanen	Galla	Total
Ainabkoi	3707	196	12	28	0	3943
Moiben	54149	18	0	0	300	54467
Total	57856	214	12	28	300	58410

Source: Farm Management Guidelines 2010

Poultry

Poultry production does well in the district, despite the many challenges the Industry has been facing. Commercial Poultry farming is spreading to the rural areas.

Most farmers target the fast growing town of Eldoret as market outlet for their broilers and eggs. Common Interest groups are target groups for disseminating poultry technologies. However, the industry has been constrained by frequent disease outbreaks e.g. New Castle disease, Gumboro and coccidiosis despite the efforts made by the extension officers in training farmers on disease control. High cost of inputs and day–old-chicks, poor market and lack of market information has been a limitation to the industry.

Poultry Population (2010)

Divisions	Local birds	Layers	Broilers	Turkeys	Geese	Ducks
Ainabkoi	45272	9850	4675	280	320	850
Moiben	132,321	7,000	4700	224	129	390
TOTAL	177,593	16,850	9375	504	449	1240

Number of Commercial Farmers:

Division	No. of farmers with layers	No .of farmers with broilers.	Total
Ainabkoi	95	60	155
Moiben	65	45	110
Total	160	105	265

Source: 2013

Fish Farming

The Uasin Gishu region is endowed with good climatic conditions, good soils, permanent rivers, springs and over 100 dams with a total water mass of 23,410,580m^3. These factors make the region highly potential for aquaculture. However, these potentials have not been exploited to significant levels due to:-

Poor methods of fish husbandry techniques currently employed by majorities of our farmers.

A perception of skepticisms with regards to the economic viability of fish farming as an alternative land-use in the region, poor financial investments in the industry.,

IMPORTANCE OF SMALL LIVESTOCK

Alders (2004) says Poultry production can contribute to sustainable food security in many developing countries by providing income to poor farmers, especially women.

It makes good use of local resources, requires few inputs and makes important economic, religious, social and cultural contributions to household livelihoods.

The potential contribution of small livestock to locally managed, sustainable and cost-effective survival strategies should be promoted in the development process. Within sub-Saharan Africa, livestock are perceived as playing a major role in poverty alleviation (Peden et al., 2007; ILRI, 2000, 2002)

Factors that smaller livestock such as sheep, goats, rabbits, ducks, chickens and many other have in common, are that they are relatively undemanding in their feeding requirements and easy to house and manage. They provide the same products and services as larger livestock, such as cattle, but are less risky, are easier to replace as they are not so costly and reproduce faster.
By optimizing the management of the animals as well as the integration of the animals into the farming system, the total production of the farm can increase considerably. The raising of small animals also offers opportunities for a regular cash income throughout the year. Small animals are often cared for by women and children, and the introduction of milk goats to HIV/AIDS affected families in Tanzania has proved to be a viable strategy in improving the nutritional status of these families (Kinsey, p 18).

Smaller livestock are seen to be largely benefiting women. Studies by ICRISAT (2007) have demonstrated that women tend to have access and control of benefits derived from small livestock (cf. Van Koppen et al., 2005). Aredo et al (undated) further point out that marketing for large livestock such as cattle is tilted in favor of males. In such circumstances, promotion of small livestock such as goat and chicken might help reduce poverty amongst the women.

Although animal science has traditionally emphasized bigness, smallness has its advantages. Some of these are summarized below:

Economic
Microlivestock lend themselves to economic niches that are not easily filled by large livestock. Much of their potential is for subsistence production. They are promising for the many peasants who, being outside the cash economy, are now unable to purchase meat, milk, cheese, or eggs. These people can afford only animals that can be raised within the home or backyard under ambient climatic conditions and on feeds that are cheap and easily available.

A subsistence farmer is likely to benefit more from small species than from large because of several factors:
• The animals are less expensive to buy.
• They are less of a financial risk to maintain. (A farmer with several small animals is less vulnerable to loss than a farmer with a single large animal, a feature that is particularly important in subsistence farming where success determines whether the family will survive.)
• They give a faster return on investment. (Small size generally signifies high reproductive capacity and a fast turnover.)
For instance research has shown that half a hectare of Napier grass can support five dairy goats but only one dairy cow. See table below on profits based on average prices in Kenya for 2009

	Milk yield per day (liters)	Selling price (Ksh per litre)	Daily Income (Ksh)
One Dairy Cow	20	30	600
5 Dairy Goats	5 x 2.5= 12.5	100	1250

• They provide flexibility. (Farmers can more easily change the size of their herd or flock to match the amount of feed available at a given time. Also, they can sell animals according to the family's fluctuating needs for cash or food.)

Reproduction
Many small animals have high reproductive capacity with short gestation periods, large numbers of offspring, and rapid juvenile growth. They tend to reach sexual maturity at a younger age than large animals, and the interval between the generations can be very short. Thus, meat or other products can be produced more rapidly and more evenly throughout the year. Cows, for example, produce a maximum of one calf per year. A goat can produce 2-6 kids per year; a chicken, more than 100.

Adaptability and Hardiness
The survival rates and manageability of many small breeds and species can be outstanding. Smallness is often an adaptation to harsh environment. Indeed, a major promise for Microlivestock is in special environmental niches.

Urban and Peri-urban Agriculture.
Some small species can be raised in cities, where poverty and malnutrition are often worse than in rural areas. It is estimated, for instance, that one million livestock exist in Cairo, not counting the pigeons that are raised on countless rooftops. Goats and cattle are common in urban India, and many Third World cities have far more chickens than people in other developed cities.

Limited Land
Small animals are likely to become increasingly important. As human populations increase, the space available for growing forage decreases, and this phenomenon favors small animals. Many villagers already have little or no pastureland. Some live in areas where crops are grown on almost every square meter almost every month of the year. Small livestock are potentially important for urban areas of developing countries as well. There, too, land is at a premium and is usually inadequate for raising conventional livestock.

So far, however, small livestock have been largely ignored. Compared with cattle, they have been accorded little scientific effort. In the drive towards larger animals, stimulated by experience in the temperate zone, the virtually unstudied gene pool of small species and breeds has been mostly bypassed. There have been few attempts to assess or improve their farm productivity.
This is unfortunate, and it is perhaps due to the fact that small animals may be less efficient at digesting certain foods and therefore technically less attractive than large, modern breeds. But to Third World peasants, an animal's efficiency is far less important than its survivability and manageability. If an animal cannot be raised under village conditions, its feed-use efficiency or milk yield is irrelevant.

SMALL LIVESTOCK LIMITATIONS
Raising small livestock is not a panacea for the Third World's food problems. Efforts to develop them will not be without difficulties. Some likely problems are noted here.

High Energy Requirements
Smaller animals tend to have a higher feed requirement per unit of body weight than large animals. Therefore, for optimum production, some small animals, particularly non ruminants, require feed that is higher in protein and lower in fiber than large animals.

Increased Labor Requirements
The advantages of low investment, fast return on capital, flexibility, and efficient resource utilization are offset by higher demands for labor. Keeping small animals often requires considerable effort, and its economic viability may depend on the availability of cheap and willing labor. Many small animals are raised at home by family members, such as children, the elderly, and the handicapped, who have time available and whose labor costs are nominally zero.

Diseases
Frequent disease outbreaks are a major challenge for its husbandry. Confining any animal in high density invariably increases the potential for the spread of infectious diseases and parasites. Moreover, mismanagement can foster respiratory and gastrointestinal diseases (such as salmonella or coccidiosis) that are rare among scattered populations.

Predation
Small size makes small livestock easy prey. Crow Pick - The crow is a carrion feeder and its beak is heavily contaminated with various organisms. Ewes are commonly attacked when they are down at lambing time and any sheep are likely to be attacked when in low condition, cast in a bore drain, or otherwise in some position where they cannot defend themselves. The usual thing is for the crow to pluck out the eye from its socket. In some cases the wound heals and the sheep recovers minis one eye. In a large percentage of cases the sheep dies in 1-4 days as a result of bacterial infection introduced by the crow.

Complex Logistics
It is complicated and expensive to reach millions of widely scattered small farmers, each having only a handful of small animals. Even though total production may far exceed that of commercial farms raising large animals, the smallholdings are often dispersed, their animals are often used for subsistence rather than commerce, and their managers are often ill-trained and illiterate.

Legislative Restrictions
The use of some small livestock species may be restricted by legislation. For instance, municipal laws prohibits keeping livestock in the municipalities.

Lack of Organized Markets
Small livestock need not be just for home or local consumption; they can also be raised for market. Successful small farm enterprises will need to know what the market requires and be able to respond to it. Traditional markets may well continue to exist, but these new markets represent a challenge to small farmers who will need to be well organized to capitalize on these additional opportunities.

RECOMMENDATIONS
Small livestock production should be integrated into most rural-development projects. Small animals offer a way to improve the lives of people who are hard to reach by other methods. There is need of expanding research on the husbandry, hygiene, nutrition, reproduction, physiology, and breeding.
Experiment stations should produce and promote methods and materials for use in rearing small livestock.
Donors and development institutions, planners, and policymakers should note the potentials of small livestock and the benefits that can be derived from them. Teaching manuals and materials should be produced.
Income and food security: The presence of sheep and goats around the home or garden can provide immediate daily food particularly in the form of milk and its products. Small ruminants not only provide food security through ready accessibility, but they also increase the diversity of food and cash sources and thus reduce the risk that might otherwise be associated with limited food and cash supplies.
Small livestock also improve household assets by providing fuel, clothing and additional sources of income. For example, value can be added to meat by preservation and making better use of by-products including the offal for food, intestines for sausage skins and various organs in cosmetics or as traditional or modern medical products. Women and children are usually the managers, if not actually the owners, of small ruminants. They derive some socio-economic benefits from this activity, not only in terms of access to food and cash (this may be their only source of cash), but also through more subtle changes in their status. This may arise from the empowerment conferred on managers of livestock, and the sense of purpose and cultural identity that may follow, for example, through participating in training and extension activities.
Small ruminants contribute to the livelihoods of all their owners, but particularly to the poor and otherwise marginalized groups including the chronically sick or families that have been affected by sickness

Conclusion
To increase the productivity of small livestock in a sustainable way farmers/ small livestock keepers have to consider the breed, how well the animal is adapted to its environment, general care, the quality of feed supplied, housing, protection from predators and the quality of health care provided.

REFERENCE

Alders R. Poultry for profit and pleasure 2004. 39 pp. ISBN 92 5 105075 9. US$14.00.
FAO Diversification booklet 3. FAO, Rome, Italy
Girma Abebe and Alemu Yami (2005), Sheep and Goat Management Ethiopia Sheep and Goat Productivity Improvement Program

Geoff Pollott and R. Trevor Wilson (2009), S h e e p a n d g o a t s f o r d i v e r s e p r o d u c t s a n d p r o f i t s

Government of Kenya, (2010a) Ministry *of State for Planning & National Development and Vision 2030: Summary Report on the Progress towards Achievement of the Millennium Development Goals (MDGs) in Kenya.* Nairobi, Downtown Printing Works.

Government of Kenya, (2010b) *Ministry of Agriculture: Agricultural Sector Development Strategy 2010-2020.* http://www.kilimo.go.ke/

Government of Kenya, (2010c) *Ministry of Agriculture: Eldoret East District- Farm Management Guidelines 20101`*

Government of Kenya, (2009a) Ministry *of State for Planning & National Development and Vision 2030: Eldoret East District Development Plan for the period 2008 – 2012.* Nairobi, Government Printer.

Government of Kenya, (2002b) *Gender integration in Agriculture and Livestock Extension*

Government of Kenya, (2004) *Strategy for Revitalizing Agriculture* ICRISAT. 2007. Challenge Program on Water and Food, Project 1: Baseline Survey Report: South Africa and Zimbabwe. Bulawayo: ICRISAT

ILRI 2002. Livestock a pathway out of poverty–ILRI's strategy to 2010, ILRI, Nairobi, 24 pp.

LEISA (2005) Small animals, September 2005 Volume 21 No. 3.http://www.leisa.info/

Maarse L. (2010). *Livestock a smart solution for food and farming.* Farming Matters, March 2010 http://www.agriculturesnetwork.org/

.
Microlivestock: Little-Known Small Animals with a Promising Economic Future (Free Executive Summary) http://www.nap.edu/catalog/1831.html Copyright © National Academy of Sciences. All rights reserved. This executive summary plus thousands more available at http://www.nap.edu

Microlivestock: Little-Known Small Animals with a Promising Economic Future http://books.nap.edu/catalog/1831.html ISBN: 472 pages, 6 x 9, paperback (1991)
This executive summary plus thousands more available at www.nap.edu. Microlivestock: Little-Known Small Animals with a Promising Economic Future

Panel on Microlivestock, National Research

Peden, D., G. Tadesse, and A.K. Misra. 2007. Water and livestock for human development. In Malden
D (ed.) *Water for Food, Water for Life.* Earth scan, London, and International Water Management Institute, Colombo. p.4

Van Hoeve E., and B. van Koppen. 2006. *Beyond fetching water for livestock*: *A gendered sustainable livelihood framework to assess livestock-water productivity.* ILRI Working Paper 1. Nairobi: ILRI.

Van Koppen, B., E. Boelee, and S.B. Awulachew. 2005. Integrating Water Needs for Livestock – based Livelihoods in Multiple-Use Water Development Approaches: State of the Art and Knowledge/5478Gaps. International Water Management Institute, 2 September.

Wageningen UR Food security in an urbanizing society (2014), Centre for Development Innovation, The Netherlands