ABSTRACT

Livestock – a fundamental component of African society and a potential route out of poverty

This abstract is based on a full-length paper written by Kimberly Fornace, Karl M. Rich, Tom Randolph, Martin Upton and Jonathan Rushton in 2012. The paper is one of a series of economic papers commissioned by GALVmed and produced by a team from the Royal Veterinary College, University of London, led by Jonathan Rushton. The series aimed to address the overarching question: Africa, economics, and poverty – what do livestock add and how can this contribution be improved?

Introduction

Livestock are a fundamental feature of African societies with an evolving role driven by the needs of people and the presence of disease. Livestock generate many positive aspects such as food, companionship, and inputs for crop production, yet they can also have negative impacts on the environment, through emerging diseases and inadequate incorporation of poor people into the systems. A challenge for society is maximizing the positive aspects that livestock bring and minimizing the negative consequences – both require investment in people, infrastructure, and institutions.

This paper builds on the accompanying paper by Upton (2012) to examine further how livestock’s roles in Africa can be improved, particularly with regard to poverty alleviation and how to limit the negative and enhance the positive benefits that society gains from the sector.

Although livestock production may not be the fastest pathway out of poverty, they could contribute more to poverty alleviation and economic growth in Africa. Continuing to under-invest in livestock development in Africa will, this paper argues, be detrimental to society, limiting opportunities for purposeful economic activity of millions of poor people and running the danger that some negative impacts of the sector are not mitigated.

The importance of livestock in Africa

Livestock production is important in Africa to meet growing demand for meat, milk and eggs, and to increase income, nutrition and welfare of the rural poor. Growing demand for the animal sourced foods is driven by population growth, urbanisation and rising per capita incomes: as people’s incomes increase they spend more on animal source foods. Nearly all the poor and more than half the continent’s total population are engaged in agriculture, including livestock production.

Meeting increasing local and regional demand

By 2050, it is predicted that demand for livestock products will have doubled. Meeting this demand represents an opportunity to develop the livestock industry and improve livelihoods of producer and consumers alike. However, increasing livestock production without putting in place sustainable management practices and policies risks exacerbating existing environmental and health issues.

Population growth rates in African countries are amongst the highest in the world. By 2050, the population of sub-Saharan Africa will approach 2 billion. Currently two-thirds of the population live in rural areas with most involved in smallholder agriculture. Per capita incomes have, on average, doubled in the decade to
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2010: higher incomes are associated with increased consumption of meat, milk and eggs, and decreased consumption of complex carbohydrates. Still, however, more than a quarter of Africans are classified as undernourished.

By 2035, most African’s will live in cities. *Per capita* consumption of livestock products is higher in urban than rural areas: better infrastructure and more supermarkets in urban areas increase availability. Urban dwellers also tend to consume more processed and pre-prepared foods, creating opportunities along value chains.

Most smallholders are net buyers of food. Besides increasing imports, the only way to benefit both producers and consumers of livestock products is to reduce the cost of production and increase productivity. This has been achieved elsewhere through investment in research, extension and identification and management of market failures for inputs and outputs. Thirty years of low investment in livestock development in Africa, however, means that Africa has stood still while the rest of the world has moved on.

**The benefits from livestock development investments**

Between 1990 and 2008, the number of people living in extreme poverty in sub-Saharan Africa increased by almost 100 million: today more than half a billion people survive on less than USD 2 a day and a large proportion of these keep livestock.

Agriculture occupies more than half the African population yet contributes just 13% to continental GDP: the proportion contributed by agriculture is greatest in the poorest countries. There is a real opportunity to both increase national incomes and reduce poverty through agricultural development.

Livestock development can create ‘pathways out of poverty’ by improving household security, reducing vulnerability and increasing incomes. Livestock’s contributions are complex and include food production, income, manure production, draft power, savings and investment, and enhanced social status. Many of these contributions are hard to measure and non-market outputs, such as manure and draft power, can be highly valued by livestock keepers. The link between livestock production and household consumption is not clear, although it appears that interventions that include nutrition education components can improve both production and household nutrition.

Increasing livestock productivity can also improve livelihoods beyond the farm by creating employment and economic benefits along livestock product value chains.

Extensive studies have shown that agriculture-led growth is more effective than non-agriculture-led growth in terms of reducing poverty and that staple-food led growth, including livestock products, is more effective than export-crop led growth in generating multiplier effects through the rest of the economy. Time series data for the period 1961 to 2003 suggests that in Africa and elsewhere livestock productivity improvement, through improved breeding, husbandry and animal health, can be an important driver of national economic growth. Income from livestock, especially the regular flow of income from milk sales, is linked with consumption of other products, while livestock sales can help the poor cope with emergency expenditures.

Livestock value chains link those involved in transport, storage and processing of perishable products and input delivery chains involve suppliers of genetic or breeding inputs, feeds and animal health services. All these activities also have their own sets of linkages, resulting in a network of interdependent units rather than a single chain.
The largest group of beneficiaries from livestock production, processing and retailing improvements will be consumers through the provision of stable and safe supplies of animal sourced food. Rural inhabitants would also benefit from the creation of opportunities outside of farming where such opportunities are largely absent.

Adding value to Africa through mitigating the negative consequences of livestock production

Livestock production and processing can cause negative impacts on the environment and create risks of disease emergence. Some examples are presented below.

Livestock account for three-quarters of global agricultural land use. In Africa increased supply of meat in recent decades has been achieved through increased herd size of ruminants and expansion of land area utilised. This approach is not sustainable; increases are needed in productivity.

The extent of sustained damage by overgrazing is much debated. Some studies indicate that currently, one-fifth of land used by livestock is overgrazed, especially in arid areas. One-third of the world’s cereals are fed to animals. The livestock grazing density in sub-Saharan Africa needs to increase by 50% by 2050 but at the same time climate change will reduce forage by up to a quarter. Improved crop technologies and land management practices are needed to enable further intensification of livestock production in Africa, which, together with reduction in food waste levels, are needed to meet future demand.

Africa is highly vulnerable to drought and water scarcity, as well as water and vector-borne diseases. Inadequate water availability and poorly managed water resources constrain livestock production and impact on human health through pollution and disease.

Awareness of the importance of ecosystem services, such as food supply and carbon sequestration, is increasing. By encroaching on ecosystems, livestock affect carbon and nitrogen cycles, biodiversity and disease emergence. Potential strategies to increase agricultural productivity whilst minimising environmental damage include stopping agricultural expansion, closing yield gaps, increasing agricultural resource efficacy and increasing food delivery by reducing the current 50% of food wasted during production, storage and distribution.

Changes to ecologies and environments are altering infectious disease dynamics, especially through increased contact between people, domestic animals and wildlife, while intensification of livestock production and more complex food supply chains can be associated with increased risks from infectious diseases.

Zoonotic diseases, i.e. diseases that can be transmitted from animals to people, have cost the world around USD 200 billion over the past decades and a future global pandemic could cost much more. In addition, increased consumption of livestock products represents an important public health issue due to obesity and diet-related non-communicable diseases.

Changes in agricultural practices are recognised to be important drivers of emerging diseases, such as highly pathogenic avian influenza. The transboundary nature of some diseases has implications on productivity and growth across countries. Spatial expansion and intensification of livestock industries can alter the environmental, biological and social factors affecting disease emergence and dissemination. Further
research is needed to increase understanding of how agricultural practices affect disease emergence and how control strategies can mitigate these.

Whilst emerging diseases are threats for the future, endemic zoonotic diseases, such as Rift Valley fever, affect poor people in developing countries today. In industrialised countries the risk of such zoonotic diseases has been successfully controlled; in poor settings, however, effective control measures are often not used. Effective control requires integrated approaches coordinated by the public sector, which also needs to ensure control measures do not negatively affect the livelihoods of the poor.

Investing in veterinary services improves disease control and reduces impact of disease outbreaks. Globally, the veterinary pharmaceutical industry is worth around USD 22 billion annually, but the Africa market, excluding South Africa, represents less than 1% of this total. Limitations include lack of resources to license and test veterinary drugs, wide availability of poor quality and counterfeit products, and weak distribution systems. Recognising these weaknesses, several recent African initiatives have focused on strengthening veterinary medicine regulations.

Dynamic methods of measuring livestock contributions needed to guide investment
The effective development of livestock industries and interventions to minimise negative consequences requires accurate population, production and consumption data. Existing data, however, tends to be static snapshots that do not allow assessment of the contribution of livestock to poverty alleviation. In addition, there have been few attempts in the sector to utilise systematic impact assessments or improved methodologies, such as the randomised control trial. Further research is needed to apply improved approaches to data collection and analysis across a wider range of livestock interventions to guide future investments.

Actions and policies
Policies are needed in three main areas to increase the contribution of the livestock industries to poverty alleviation, while ensuring benefits are distributed equitably and negative environmental and health consequences are mitigated.

Policies that address the need for productivity gains: Education initiatives, such as farmer field schools, can increase productivity and technology uptake, increasing profits and enhance livelihoods of smallholders. Business training can help farmers avoid costly errors, such as paying excessive interest rates, improve their financial management and enable them to take advantage of new business opportunities. Farmer education can also improve productivity whilst limiting environmental damage. It is worth emphasizing that enabling policies are not only needed downstream but on all parts of the value chain.

In addition, information and support are needed by farmers as well as others working in livestock value chains. Mobile phones are providing new opportunities to communicate best practices and information on markets, weather and disease risk, as well as to collect information on disease outbreaks, which strengthens veterinary services.

Further research is needed on livestock nutrition, production, processing and markets in resource-poor settings.
Policies supporting infrastructure for livestock value chains: Policy measures are needed to encourage investment in facilities to improve efficiency and capacity to produce marketable livestock products. Lack of transport networks and cold chains are a major barrier to market access. Inadequate processing, marketing and storage facilities lead to significant wastage of perishable foodstuffs and poor sanitation contributes to food borne diseases. Initiatives to develop market cooperatives and cold chain facilities can reduce food waste, increase food security and reduce the pressure on the environment.

Policies encouraging mitigation of negative externalities: Minimizing harmful effects of the livestock industry requires measures targeted at both the demand and supply sides, encouraging responsible consumer choices and limiting local pollution and environmental degradation from livestock production. Policies encouraging mitigation of environmental and health impacts targeting both consumers and producers include: structured assessment of land use and working with communities to avoid overexploitation, incentives to limit greenhouse gas emissions and pollution of water; strengthening of veterinary and health systems; processes to avoid overeating of highly processed livestock products. Overarching policies on distribution of benefits include monitoring livestock food systems to enhance equity in livestock value chains and gender sensitive actions to ensure all household members benefit from positive changes.

Conclusions
Over recent decades Africa has underinvested in livestock development; even those investments made cannot readily be assessed in terms of impact or value. But at the same time rapidly increasing demand for meat, milk and eggs is changing food systems and causing both positive and negative impacts.

Under investment leads to: poor availability of technology and information; continuing circulation of livestock and zoonotic diseases which limit market opportunities and discourage investment; and reliance on systems that encroach on new land and create negative impacts on the environment.

Sustained public investment and political support is required for the people and institutions needed for an effective livestock sector. This can be informed by the successes achieved through major investment in research and extension in developed and, more recently, emerging economies.

To realise the benefits from this important sector, African governments must include livestock development in their debates on agriculture and food policy.