

Livestock Sector Policy and Food Security

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INTRODUCTION

Population growth and, more important, increasing disposable incomes, have led to a rapid increase in demand for livestock products, which is likely to continue well into the future. So far, the sector has responded to this growth in demand by increasing livestock numbers, shifting towards shorter-cycle species, accelerating production cycles (to a large extent due to increased use of concentrate feeds), consolidating into larger farming units and vertically integrating throughout globalized supply chains. This has ensured increased supplies of livestock products for the larger and more affluent populations. But the process has also led to several negative developments including environmental degradation and pollution; emergence of new pathogens including antibiotic-resistant strains of bacteria; loss of biodiversity and genetic resources; acceleration of climate change through livestock-associated emission of greenhouse gases; and marginalization of smallholder livestock keepers, for whom livestock rearing remains a key livelihood and risk-mitigation activity. These developments point towards an urgent need to balance the strong, mostly private-sector driven, expansion and transformation of food animal production with public policy attention to enhance the contribution of livestock to food security, poverty alleviation and rural development while addressing major challenges related to animal and human health and the environment.

LIVESTOCK'S ROLES IN FOOD SECURITY

In the 'developing world', the livestock sector makes major positive contributions to food and nutrition security for both rural and urban people. Globally, the sector serves as an important source of livelihood for about 1.7 billion people in developing countries, of which one billion are estimated to be poor. The sector's potential contributions to poverty reduction, food and nutrition security and sustainable development are therefore significant but, unfortunately, often undervalued. The lack of appreciation of livestock's importance in developing economies results in its widespread neglect by policy-makers in their social agendas while the sector is under close public scrutiny with regards to its negative impacts on the environment and human health.

Livestock contribute directly to food and nutrition security by increasing the *availability of edible animal products* such as meat, milk and eggs. Animal sourced food (ASF) is of high nutritional value as it is dense in essential nutrients and the latter are of high bio-availability. Even small amounts of ASF provide protein and micronutrients that boost dietary adequacy especially for lactating women and children. Provision of a highly digestible and nutrient-dense diet in early life is essential for physical and cognitive development, which has been shown to be closely linked to lifetime productivity and earning potential. Indirectly, the sector makes substantial contribution to local economy by stimulating the demand for non-tradable non-farm products. Evidence suggests that the impact of livestock on household incomes via

this multiplier effect is among the highest compared to other sectors and sub-sectors of economy (FAO, 2012).

Depending on the abundance of land, animal source food is to a larger or lesser extent derived from natural resources that cannot otherwise be converted into human food. The often cited argument that livestock are the ‘largest land user, occupying 70 percent of the world’s agricultural land’ needs to be put into the context of the ‘type/quality’ of agricultural land ‘used’ by livestock. Of the world’s 5 billion ha of ‘agricultural’ land, 1.5 billion (30 percent) are considered as arable while the remainder is classified as ‘permanent pastures’, i.e. land that does not lend itself to cropping and thus contributes to global food production by grazing livestock. Between 25 and 30 percent of the world’s arable land is used for the production of animal feed, mainly in land abundant countries of the Americas. In addition to grasses, livestock convert crop by-products, which are not suitable for human consumption into valuable food. In India for example, milk is produced almost exclusively from crop residues and agricultural by-products and India’s annual milk output of 120 million tons covers the total caloric requirements of approximately 100 million and the protein needs of more than 150 million people.

Livestock furthermore contribute to food and nutrition security by enhancing the *availability of crop-based food products* through the provision of traction and dung, which provides nutrients and organic matter required to maintain (and improve) soil fertility and texture. It has been estimated that livestock still provide traction for about 50 percent of the world’s farmers to cultivate their lands and organic fertilizer for most of the world’s cropland (World Bank, 2008). Although the trend is toward larger scale industrial livestock production, about three-quarters of the meat and milk produced in the developing world still come from mixed farming systems, where by-products of livestock (manure, traction) and crop (crop residues) are used, and which are highly resource efficient through the recycling of nutrients.

In addition to increasing the total availability of food, livestock play a role in food and nutrition security by enhancing *access* to food. Not only do they provide an instrument through which landless households can engage in food production but also a means to generate (self-)employment by processing of animal products (not only food items, but also non-food items such as fibers, hides, skins, horns, etc.) and hence income that can be used for the purchase of food. ‘Employment’ within the farm household is particularly important for women, the elderly, the poorly educated, and ethnic minorities that have limited opportunities to find employment in the formal and informal labor markets outside their homestead.

Livestock furthermore improve *availability and / or access* of poor households to food by providing ‘financial’ and ‘insurance’ services, which mitigate against climatic and market shocks, risks poorer segments of society are particularly vulnerable to.

In contrast to the above listed positive roles, livestock can also have negative impacts on livelihoods and food and nutrition security through a number of pathways. Livestock production can reduce the *availability* of food to humans through direct feed – food competition for natural resources. Feed – food competition is expressed mainly through land allocation to the production of feed and fodder crops (e.g. soy beans and maize) rather than food grains and crops for human consumption and to a lesser extent through the immediate use of food grains as animal feed. In the intermediate term, livestock can also reduce local food availability through detrimental impacts on natural resources (e.g. overgrazing, nutrient deficits and overload and pollution), which diminish their food production potential. In the

long term and on a global scale, livestock can negatively impact food security through greenhouse gas emissions and their contribution to climate change.

Livestock can also negatively affect food and nutrition security by limiting *access* to and *utilization* of food through the transmission of pathogens to humans. The latter comprise ‘classical’ zoonotic diseases and food-borne pathogens (e.g. *Brucella spp.*, *Salmonella enterica*, etc.) as well as emerging pathogens with the potential to cause widespread epidemics (e.g. SARS, avian influenza viruses, etc). The poor are particularly vulnerable to diseases, as they usually have limited access to health care and, if a family member falls ill, they need to divert relatively large shares of their monetary income and / or assets to cover health care costs while at the same time patients’ income earning potential is curtailed. In fact, a number of studies have identified diseases and associated costs as the single most prominent cause for falling into poverty.

LIVESTOCK SECTOR POLICY GOALS AND THE ROLE OF GOVERNMENT

The very rapid growth of the livestock sector over the past decades has been almost purely driven by the private sector, with little public sector oversight. Policy-makers have been mainly concerned with protecting domestic livestock industries, often through import tariffs and quotas, while there has been limited supporting public sector investment/action in safeguarding or promoting public goods needed or affected by livestock sector development. This imbalance in public sector attention has resulted in significant negative externalities of food animal production. With regards to the environment, this imbalance has contributed to widespread land degradation, biodiversity erosion, water pollution and greenhouse gas emissions. In the realm of public health, the livestock subsector has become a major source of human disease risks (e.g. avian influenza H5N1 and H7N9, MERS-CoV, antimicrobial resistance, etc). Socially, current livestock sector development trends tend to marginalize smallholder family farmers while agricultural laborers enjoy little if any social protection.

The livestock sector can make critical contributions to global agricultural sustainability, poverty reduction, and economic growth. However, incentives for the individual producer, if left solely to the forces of an unregulated market, often lead to developments with negative outcomes that diverge from societal goals. These ‘market failures’ need to be addressed and public livestock sector policy and programs should aim to promote the ‘public goods’ that the sector produces or needs for future development, while safeguarding against the ‘public bads’ such as smallholder marginalization, environmental degradation and human and animal health risks.

Governments rarely appreciate the multifaceted roles livestock play in rural household economies and policy-makers are often not aware of the trade-offs and the medium to longer-term implications of their decisions. Livestock development policies tend to focus singularly on marketed products and ‘productivity increase’, a perspective that is obviously far too narrow to satisfactorily address the complexity of animal agriculture in low- and middle-income countries. The divergence in the livestock assessment criteria between policy-makers and a majority of livestock keepers is a root cause of livestock sector development policies that contribute little to enhancing food and nutrition security.

AREAS FOR LIVESTOCK SECTOR POLICY

The rapidly rising demand for ASF demand offers opportunities for rural economic growth, poverty reduction and enhanced food and nutrition security, but it appears that most of the financial gains are captured by larger-scale and corporate enterprises while, as mentioned previously, smallholders are increasingly excluded from large segments of the market. Without active policy support for smallholder farmers this trend is likely to continue.

In the livestock sector, policies have usually been concerned mainly with technical aspects of animal health and production. Although important, public interventions in these domains have regularly disregarded the broader policy and institutional framework in which farmers operate, i.e. the range of incentives and disincentives that underlie household production and consumption decisions. A comprehensive livestock sector policy agenda should view livestock farming from a broader perspective, and take account of the multiplicity of elements necessary to sustain the sector's development. Such an agenda could be subsumed into three major components aimed at assisting farmers in: (i) ensuring the basics of livestock production; (ii) enhancing livestock productivity and competitiveness; and (iii) sustaining livestock productivity and competitiveness (FAO, 2010).

Policies and programmes to assist farmers in '*ensuring the basics of livestock production*' are public actions that both provide livestock keepers with adequate and secure access to basic production inputs, such as land, feed and water for animals, and help them to cope with risks and shocks such as natural disasters (e.g. floods, drought, epidemic disease) and price swings.

Table 1. Ensuring the basics for livestock production

Goal	Rationale	Interventions (e.g.)
Securing access to land, feed and water	Livestock producers need adequate and secure access to land (and associated feed and water resources) to start producing livestock products and by-products	<ul style="list-style-type: none"> ▪ State-driven land and agrarian reform ▪ Market-driven land reform ▪ Regulation of land rental markets ▪ Land titling ▪ Recognition of customary tenure ▪ Land co-management
Providing insurance and risk-coping mechanisms	Variable returns prevent livestock holders from making efficient use of their resources and lead to adoption of conservative investment decisions	<ul style="list-style-type: none"> ▪ Livestock insurance ▪ Early warning systems ▪ Contingency plans ▪ Emergency feeding ▪ Grazing reserves ▪ Destocking support ▪ Restocking support ▪ Disease prevention measures

While secure access to basic production inputs and to risk-coping mechanisms are preconditions for engaging in production, they are not sufficient for livestock keepers to produce market surpluses and escape from food insecurity. Policies and programmes aimed at *enhancing livestock productivity* include all actions intended to facilitate access of livestock keepers to animal health services, credit and output markets – both national and international – all of which are critical for farmers to generate and market production surpluses and for improving livestock's contribution to household incomes.

Table 2. Enhancing livestock productivity and competitiveness

Goal	Rationale	Interventions (e.g.)
Securing access to livestock / animal health services	Livestock keepers are often poor, poorly educated, dispersed and unable to demand public and private livestock services effectively	<ul style="list-style-type: none"> ▪ Decentralization ▪ Cost recovery ▪ Joint human-animal health systems ▪ Sub-contracting ▪ Subsidies for private service providers ▪ Community animal health workers ▪ Membership-based organizations ▪ Subsidies for livestock farmers ▪ Research and development
Securing access to credit and other inputs	Imperfect and asymmetric information and high transaction costs limit farmers' access to credit and other production inputs, as private agents are rarely willing to serve poor and dispersed livestock producers	<ul style="list-style-type: none"> ▪ Portfolio diversification ▪ Livestock as collateral for loans ▪ Warehouse receipt systems ▪ Member-based financial institutions ▪ Mobile / branchless banking ▪ Credit bureaus and scoring
Promoting access to national (and international) markets	The capacity of markets to indicate how livestock producers should allocate their productive resources is constrained by poor communication and transport infrastructure, lack of or limited information, unequal bargaining power, etc.	<ul style="list-style-type: none"> ▪ Lstk farmers / traders associations / cooperatives/producer companies ▪ Periodic markets ▪ Contract farming ▪ Market information systems ▪ Commodity exchanges ▪ SPS standards ▪ Disease-free (export) zones ▪ Commodity-based trade ▪ Quarantine zones ▪ Trade-enhancing infrastructure ▪ Certification and branding

In order to avoid being forced out of the livestock sector, farmers must be able to respond and adapt to changing market conditions and consumer demand. Policies / programmes that aim to *sustain livestock productivity and competitiveness* include research and development, environmental protection and all other public actions necessary to support the sustainability and competitiveness of livestock farmers in the medium to long term.

Table 3. Sustaining livestock productivity and competitiveness

Goal	Rationale	Interventions (e.g.)
Promoting the provision of public goods: research	Private research centres are willing to invest in profitable breeds/technologies, but poor livestock holders rarely constitute an attractive market for the private sector	<ul style="list-style-type: none"> ▪ Decentralization ▪ Matching research grants ▪ Levy-funded research ▪ Competitive research funds ▪ Strengthened IP rights ▪ Participatory livestock research
Promoting the provision of public goods: food safety, quality, environmental protection	Livestock production systems may be associated with negative externalities, which need to be dealt with through collective action	<ul style="list-style-type: none"> ▪ Controlled grazing ▪ Co-management of common pastures ▪ Livestock zoning ▪ Discharge quotas ▪ Payments for ecosystem services ▪ Marketing of environmental goods ▪ Environmental taxes

There is a often lack of understanding by policy-makers about the distribution between public and private sector roles as well as about local, national, regional and global policies and norms in fostering and guiding livestock sector development. For public agencies mandated to support agriculture the most important role does not concern public expenditure, but policy-making, coordination, regulation, strengthening of public-private partnerships in the implementation of specific public good tasks and the provision of services that the private sector will not provide. As animal agriculture is heterogeneous and highly complex, livestock sector development requires approaches that are carefully adapted to local conditions, and large-scale blueprint planning is likely to fail. The formulation of context-specific, broadly accepted and implementable policies will require appropriate stakeholder engagement in the formulation process and the willingness to policy modifications in the light of monitoring and evaluation feedback.

CONCLUSION

Historical evidence shows that state interventions have been important in supporting critical stages of agricultural development, but also that the most essential public interventions for supporting agriculture do not necessarily lie in the agriculture sector itself. This also holds true for the livestock (sub-)sector and many policy instruments are not necessarily linked to the specific domains of governmental livestock departments. For instance, livestock policy-makers are not responsible for regulating micro-credit in rural areas nor are they responsible for the national research policy. In order to be more effective in promoting food and nutrition security and through inclusive and sustainable livestock sector development, livestock sector policy-makers need be willing to engage in policy issues that are outside their traditional domains of expertise and develop partnerships and collaboration with other public and private sector actors that play essential roles in supporting livestock sector development.

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