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STRENGTHENING SECTOR POLICIES FOR BETTER FOOD SECURITY AND NUTRITION RESULTS

Livestock



These policy guidance notes have been produced in the frame of the strategic partnership between the Food and Agriculture Organization of the United Nations (FAO) and the Directorate for International Cooperation and Development of the European Commission to boost food and nutrition security, sustainable agriculture and resilience.

The livestock policy guidance note was developed by a multi-disciplinary team of the Food and Agriculture Organization (FAO) under the direction of Berhe Tekola, Director of FAO's Animal Production and Health Division. Overall guidance was provided by Henning Steinfeld, Chief of the Livestock Information, Sector Analysis and Policy Unit. The note was prepared by Joachim Otte (Team Leader) with contributions from Alejandro Acosta (Livestock Policy Officer), Mark McGuire (Senior Programme Coordinator, Strategic Programme 1 Team) and Esther Wiegers (Food Security and Nutrition Consultant).

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This policy guidance note is part of a series that the Food and Agriculture Organization of the United Nations (FAO), the Directorate for International Cooperation and Development (DEVCO) of the European Commission and partners are producing to support policy makers address the food security and nutrition situation in their country. Each note provides guidance on how to sharpen the focus of sector policies in order to achieve sustainable food security and nutrition outcomes.

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Introduction

The purpose of this guidance note is to deepen the understanding and illustrate, with case examples, how change within existing policies and instruments that govern the livestock sector can help to improve and accelerate positive impact on food security and nutrition, focusing in particular on smallholders. The note identifies a range of guiding questions and issues to be taken into account when attempting to align livestock-related policy agendas with food security and nutrition concerns.

The livestock sector plays an important role in enhancing food security and nutrition, mainly through consumption and income. Livestock increases the availability of animal sourced foods (ASF) - meat, milk and eggs -, which are of high nutritional value and essential for physical and cognitive development. In contrast, the livestock sector also negatively impacts food security and nutrition outcomes through feed – food competition for natural resources, environmental degradation, foodborne diseases transmitted by ASF, zoonoses and human diseases emerging from livestock, and its contribution to climate change via greenhouse gas emissions.

Over the last decades, the livestock sector has been impacted by emerging trends and challenges that affect the food security and nutrition status of its producers, in particular smallholders, as well as consumers. Key among these are the rapid expansion, structural change and geographic shift of livestock production.

In trying to accommodate the emerging trends and challenges, policy-makers need to strike a balance between short-term gains and longer-term sustainability needs, the different interest groups, and the domestic priorities and international agreements. The livestock sector is governed by a broad spectrum of policy instruments, each with its own specific objectives, which may be competing or contradictory and could have different implications for food security and nutrition.



Key messages

- Livestock enhance food security and nutrition through many direct and indirect pathways.
- Livestock can also adversely affect short- and long-term food security through zoonoses¹ and food-borne diseases, use of land to produce feed rather than food, negative environmental impacts, and greenhouse gas emissions.
- Due to strong growth in the demand for meat, milk and eggs foreseen over the next decades, development of smallholder livestock has considerable potential to contribute to reducing rural poverty and improving rural food security and nutrition.
- Management options for sustainable intensification of smallholder livestock production exist, but their adoption requires context-specific adaptation and policy support.
- With few exceptions, growth of “industrial” livestock production systems, largely driven by private investors targeting urban consumers, outpaces growth of rural smallholder livestock production.
- Given the complexity of livestock sector development, the formulation of adequate policies and regulatory frameworks requires well-functioning institutions with appropriate technical skills and negotiation capacity to positively influence national and international policy dialogues across the broad spectrum of stakeholders.
- There is a clear need for coherent policies across various policy domains to enhance the livestock sector’s contribution to food security and nutrition while addressing concerns related to the environment, animal and human health, and climate change.

¹ Diseases transmitted between animals and humans

In addition to sector-specific policy domains (e.g. animal health, extension, management of animal genetic resources), the sector is governed by a set of “exogenous” policy domains (e.g. environment, health, border protection, land (use) rights). This complicates the task of formulating policy frameworks that guide sector development onto desired trajectories. It also makes predictions of impacts of policy change a challenging undertaking. Further, experience from West Africa indicates that enhancing the role of livestock for food security and nutrition is hampered by the fact that food security and nutrition experts are generally poorly informed about livestock and their role in supporting livelihoods. On the other side, livestock experts pay little attention to food security and nutrition, their main aim usually being to increase production, i.e. availability, with little concern about access and utilization (Alarcon and Dominguez-Salas, 2015).

Purpose of this guidance note

This guidance note aims to support both livestock and non-livestock experts in facilitating policy dialogue to sharpen the focus of the policy agenda for smallholder livestock on food security and nutrition concerns. It tries to identify conflicts and trade-offs between livestock policy objectives and food security and nutrition objectives, and suggests policy options to build on potential synergies. It tries to support decision-makers and partners in the livestock sector in addressing the following questions:

- How can the livestock sector better contribute to food security and nutrition among (agro)pastoralists and smallholder livestock keepers in the face of increased global demand for livestock products, market failures, and environmental and health concerns? What changes are needed and how can these be achieved?
- What are the conflicts and complementarities between livestock sector objectives and food security and nutrition ones? What changes are needed to reduce conflicts and strengthen synergies among policies and programmes?

- How can these changes be achieved, i.e. how can the livestock policy agenda be best influenced in order to shape livestock policies for food security and nutrition, resolve trade-offs and conflicts across sector policies, and exploit synergies for greater impact on food security and nutrition outcomes?

In order to tackle the overarching question of what changes are needed to existing policies and how these changes might be achieved, a step-wise approach as outlined in the introductory guidance note is adopted. The first step is a situation analysis, to understand the way that livestock contribute to food security, nutrition and health, and to identify specific livestock governance challenges impacting the food security and nutrition situation of smallholder producers. The second and third steps draw on existing policy reforms to identify the range of policy options that could be applied to improve coherence between livestock and food security and nutrition policy objectives. The fourth step focuses on how to facilitate policy change by developing an understanding of the political economy of the livestock sector.



Background

The livestock sector: trends and challenges

Over the last decades, the livestock sector has been impacted by emerging trends and challenges that affect the food security and nutrition status of livestock keepers, in particular smallholders, as well as consumers.

According to UN projections, the current world population of 7.3 billion is expected to reach 8.5 billion by 2030, with most of the growth occurring in sub-Saharan Africa and Asia (UN, 2015). Population growth will be coupled with increasing disposable incomes, which in turn translates into substantial growth in demand for higher-value food items, such as ASF and fruits and vegetables. Between 2000 and 2010, *per capita* consumption of cereals in developing countries stagnated, while for meat, milk and eggs it grew 25, 47, and 24 percent, respectively. Demand growth for ASF is projected to continue well into the future and will outpace population growth in all developing regions (FAO, 2012).

Urban populations are growing faster and generally have higher disposable incomes than rural populations, leading to a concentration of demand for ASF in urban areas and away from traditional rural production areas. Furthermore, food preferences of urbanites are likely to “westernize”, moving away from traditional diets based on local food items to items that can readily be purchased in international markets and are to a large extent produced in industrial systems. The relative contribution of agriculture to national gross domestic product will shrink, as will the role of agriculture for employment.

The livestock sector is responding to the growth in demand for ASF by increasing livestock numbers, relying more on shorter-cycle species (poultry and pigs), accelerating production cycles, and consolidation into

larger farming units. An associated livestock sector trend is the increasing concentration of ownership by large national and international corporations. The latter often goes hand in hand with vertical integration whereby corporations gain control over the entire value chain from feed production to processing, and in some instances even retail. Given the high levels of investment in technology required for intensive livestock production systems, smallholders tend to be increasingly excluded from benefiting from the growing demand for livestock products. This model of growth and development of the livestock sector has largely been driven by private investors, mainly targeting urban consumers, while governments have rarely sought to contain its negative social, environmental (e.g. pollution) or public health consequences (emergence of zoonotic diseases).

A substantial share of agricultural land is degraded and, without corrective action, degradation of agricultural land will progress. At the same time, climate change is predicted to reduce precipitation and crop production potential in tropical regions, particularly in sub-Saharan Africa and South Asia, regions with the highest rates of food insecurity. Climate change is also expected to increase the frequency of extreme weather events (droughts, storms and floods), thereby enhancing production risks of farming.

In view of these trends, the goal of livestock sector development can no longer be simply to maximize productivity, but to optimize sector performance across a complex landscape of production, environmental, and social justice outcomes. This will require differentiated and nuanced policies able to: (i) reduce global growth in demand for ASF by promoting consumption restraint by the affluent and avoidance of wastage; (ii) bring about better use of crop by-products as animal feed and reduce reliance on feed crops; (iii) increase overall resource-use efficiency of the livestock sector; (iv) curb negative environmental effects of animal production; and (v) address imbalances in food systems governance.

Livestock sector linkages to food security, nutrition and health outcomes

The livestock sector plays a crucial role in food security, nutrition and health. Livestock increases the availability of edible animal products like meat, milk and eggs. ASFs are dense and palatable sources of energy and high-quality protein and also provide a variety of essential micronutrients, some of which, such as vitamin A, vitamin B12, riboflavin, calcium, iron,

zinc, and various essential fatty acids, are difficult to obtain in adequate amounts from plant-based foods alone (Murphy and Allen, 2003). ASFs provide multiple micronutrients simultaneously, which can be important in diets that are lacking in more than one nutrient (Box 1). These characteristics make ASFs important for population groups with limited food intake capacity relative to their needs, such as young children, and pregnant and lactating women.

Box 1

Nutritional benefits of (small amounts of) animal source foods

“Hidden hunger”, i.e. various forms of micronutrient (minerals and vitamins) deficiencies, affects some 2 billion people globally. The highest health burdens of hidden hunger are caused by zinc and vitamin A deficiencies followed by iron deficiency. Deficiencies in zinc, vitamin A and iron lead to impaired growth, compromised immune function and, in the case of iron, impaired cognitive development and reduced work capacity.

An important factor contributing to these deficiencies is the consumption of mainly plant-based diets that are low in micronutrients and have low micronutrient bioavailability. Children have particular difficulties in obtaining adequate energy and nutrient intake from bulky plant-based diets.

ASFs provide multiple micronutrients simultaneously, which can be important in diets that are lacking in more than one nutrient. Micronutrients in ASF are also often more readily absorbed and bioavailable than those in plant-based foods (Murphy and Allen, 2003). Furthermore, meat increases iron and zinc absorption from fiber and phytate-rich plant staples (Gibson, 1994). Brown *et al.* (1998) note that

only ASFs have the potential to provide enough calcium, iron and zinc for infants. In the case of vitamin B12, all requirements must be met from ASF, as there is virtually no vitamin B12 in plant-based foods.

Just 100 gram of cooked beef provides an entire day’s recommended intake of protein, vitamin B12 and zinc, and contributes substantially to meeting the riboflavin and iron recommendations. Likewise, 100 gram of milk provides substantial amounts of calcium, vitamin B12, vitamin A and riboflavin. Thus, small amounts of ASF added to a plant-based diet can compensate for many of the vitamin and mineral inadequacies.

Studies of children in various countries have shown that both their physical and mental development were strongly and positively associated with the amounts of ASF in their diet (Calloway, Murphy and Beaton, 1988, cited by Bradford, 1999; Leonard *et al.*, 1994; Grosse 1998, cited in Tangka, Jabbar and Shapiro, 2000; Neumann *et al.*, 2003; Neumann *et al.*, 2007; Whaley *et al.*, 2003). The benefits of ASFs appeared to be related more to micronutrient than to protein content (Allen *et al.*, 1992; Murphy and Allen, 1996, cited by Bradford, 1999). The impact on child nutrition may be greater when households are isolated from markets, presumably due to consumption of ASF that would have otherwise been sold (Hoddinott *et al.*, 2014).

Around two thirds of the global 5 billion hectares classified as “agricultural” land are unsuitable for crop production and can only be used for food production by grazing livestock. Livestock not only provide a means of utilizing grasslands to support human livelihoods but also convert large amounts of plant materials associated with the production and processing of food crops that are not edible by humans (e.g. straws, stovers, oilseed cakes, brewers grains) into valuable food. Fadel (1999) has estimated that every 100 kg of crop-derived food yields 37 kg of animal feed by-product. For example in India, dairy cattle and buffalo, which are almost exclusively fed on crop residues and by-products, produce enough milk to cover the caloric needs of around 115 million people and the protein requirements of about 230 million people. Livestock further contribute indirectly to food availability by increasing crop output through providing manure, which is a valuable source of organic plant nutrients and reduces the need for chemical fertilizers.

In addition to increasing food availability, the livestock sector enhances access to food through sale of animal products and employment. Livestock-derived income can stem from the sale of animal products, renting out animal services, processing of animal products and enhancement of household labour productivity through use of animal power. According to Davis *et al.* (2007) two out of three households in developing countries earn income from livestock. Notably, livestock’s share of income was highest in the poorest income quintile, which shows that they are particularly important to the poor. It has been estimated that, globally, rural women represent two-thirds of low-income livestock keepers (Thornton *et al.*, 2003). Thus, to optimize their impact on food security and nutrition, livestock sector policies and interventions need to consider gender aspects (Box 2) in animal production, processing and marketing (HLPE, 2016).

Globally up to 1.3 billion people are employed in different livestock product value chains (Herrero *et al.*, 2009). Trading and processing jobs in the livestock sector are especially high in the informal sectors of countries in Asia and Africa. Street food is a large part of the informal sector in most developing countries

and therefore a major source of income and employment for the poor. ASFs are among the most commonly sold street foods (Perry and Grace, 2009), and it is poor women who do most of the work preparing and selling these foods

Livestock further contributes to food and nutrition security by helping producers become more resilient to climatic and market shocks and smoothing out seasonal consumption. Diversification into livestock is a common strategy among a wide spectrum of rural households. Livestock enhance the flexibility and thus stability of food production (Bradford, 1999). Livestock are generally more adaptable to environmental shocks than crops are, and are able to digest a wide variety of feedstuffs, thereby having the capacity to survive dramatic reductions in specific feed resources. Furthermore, they are mobile, which increases their survivability, and offers households the possibility of keeping them in case of displacement.

In addition to the above outlined positive impact pathways of livestock on food security, nutrition, and human health, livestock sector development may also have adverse food security, nutrition and health outcomes.

As the livestock sector grows and intensifies, competition over land allocation for the production of feed and fodder crops as opposed to food grains and crops for human consumption as well as the use of food grains as animal feed can reduce the food availability to humans. Currently, around 0.5 billion hectares, or 33 percent of available arable land, are used for the production of animal feeds. However, this is mainly the case in land-abundant countries, while in most developing countries only small shares of arable land are devoted to feed crops. In the USA and Brazil for example, less than half of crop calories are destined for human food, while in India, representing a situation of land scarcity, more than 90 percent of crop calories are destined for direct human consumption (Cassidy *et al.*, 2013). Food-feed competition thus operates at global rather than local scale, and market forces will largely determine whether countries use surplus land for food production (for export) or for other purposes.

Box 2 Livestock and gender

In many developing countries, livestock are an important asset for rural women because it is often easier for them to acquire livestock, whether through inheritance, markets or collective action, than it is for them to purchase land or other physical assets or to control other financial assets (Rubin *et al.*, 2010). Consequently, livestock assets are generally more equitably distributed between men and women than are other assets like land (Flintan, 2008). However, women tend to more easily access small livestock such as poultry and small ruminants, as they can be kept around the house, are more affordable than expensive dairy cattle, and require less veterinary care and technical knowledge for their maintenance.

Within households, livestock ownership varies by region and is often complex. Even in pastoral societies, women (and male children) can own livestock. Among the agro-pastoral Fulani in Nigeria, for example, women own around one quarter of all cattle, while small ruminants are more often the property of women than men (Waters-Bayer, 1988). By contrast, in mixed crop-livestock farming systems in northern Ghana, tradition prevents women from owning cattle. Decisions on the disposal of livestock (sale, slaughter, transfer) are generally taken in consultation between male and female household members, irrespective of ownership (Tangka, Jabbar and Shapiro, 2000).

Within livestock-keeping households, the roles of men, women, children and the elderly in livestock husbandry vary from region to region

and are determined by tradition, farming system and an array of socio-economic variables (Tangka, Jabbar and Shapiro, 2000). It is rare for a particular livestock-related activity to be carried out exclusively by men, women or dependants.

Neither formal livestock ownership nor labour allocation to livestock-related tasks guarantees control over the products. For example, women may own (dairy) cattle and/or be responsible for milking, while men remain the decision-makers on milk sales (Valdivia, 2001; Tipilda and Kristjanson, 2009). Even *de facto* control over livestock or livestock-derived income is restricted by a household member's responsibility for meeting family welfare objectives according to the household's resources and needs (Tangka, Jabbar and Shapiro, 2000).

Technology change affects men and women differently. Many interventions aimed at intensifying livestock production, such as shifting from grazing to stall-feeding or by keeping potentially higher-yielding, but also more demanding, breeds, increase the workload of women and girls, because the intensification lies in their traditional tasks (Okali and Sumberg, 1985; Mullins *et al.*, 1996; Wangui, 2008).

Overall, household power dynamics, which are embedded in specific socio-economic contexts, are too complex and diverse to permit simple predictions about the gender-specific impacts of livestock promotion (Otte *et al.*, 2011). A thorough situation analysis is key to assess the different impacts that livestock interventions can have on rural women and men.

In addition to feed – food competition for natural resources, livestock may compromise food stability in the long term through their contribution to climate change via greenhouse gas emissions (the amount of which is debatable), environmental degradation, biodiversity loss and water scarcity. Current understanding of the impact of these factors on food security is rather limited. However, it is likely to be highly variable across regions and socio-economic groups as the vulnerability of food systems is not determined by the nature and magnitude of environmental stress *per se*, but by the combination of the societal capacity to cope with, and/or recover from, environmental change (Gregory *et al.*, 2005).

With regards to human health, negative effects to households and communities of keeping livestock include zoonotic and food-borne diseases. Diarrheal diseases cause about 1.9 million deaths per year, mainly among children in poor households in low-income countries, and most are caused by food-borne pathogens, such as *Salmonella* and *Campylobacter*, transmitted in animal-derived foods (Schlundt *et al.*, 2004). A recent review found that domestic animal husbandry was associated with human diarrheal disease in 20 out of 29 studies (Zambrano *et al.*, 2014), the surmised pathway being faecal-oral pathogen transmission to young children in the household. Common among poorer households, sub-clinical environmental enteric dysfunction, the aetiology of which still needs to be established, has recently been found to be a major determinant of child stunting (Crane *et al.*, 2015).

Further, increasingly developing and developed countries suffer from adverse health effects associated with excessive consumption of red meat and processed meat, such as overweight and obesity, related chronic diseases, and some cancers (Neumann *et al.*, 2010). However, at the current

low levels of consumption of ASFs by the rural poor, even small increases in ASF intake provide nutritional benefits that far outweigh any acute or chronic disease risks associated with the high consumption of ASFs in high-income countries or high-income households in developing countries (Randolph *et al.*, 2007).

The above-described pathways linking livestock to food security, nutrition and health are manifold and may substantially differ between settings in terms of importance. A key implication of this multiplicity of pathways is the difficulty of determining the impacts of any type of livestock intervention on food security and nutrition and human health in a given setting. The pathways that offer the greatest potential contribution to human welfare will differ from country to country, and between livestock production systems. National and regional policies to increase the contribution of livestock to food security and nutrition must therefore be similarly diverse.

Policy-makers rarely appreciate the complex roles livestock play in rural household economies, and livestock development policies tend to focus singularly on marketed products. This market perspective is obviously far too narrow, as livestock keepers are often willing to keep animals of low physical productivity in their herds, owing to the many collateral services they provide. This apparent divergence in the livestock assessment criteria used by policy-makers and those used by livestock keepers is a root cause of livestock sector development policies that contribute little to poverty alleviation and enhanced food security and nutrition.



Stepwise approach Addressing food security and nutrition in the livestock sector

This section addresses a series of questions and issues aimed at identifying trade-offs and synergies between livestock policy objectives and food security and nutrition objectives, to suggest policy options to help improve impact, and to identify windows of opportunity for policy change and become more effective at influencing the livestock policy agenda in support of the eradication of hunger, food insecurity and malnutrition. Case materials will be used to highlight the specifics of the different steps.

8 | **FIGURE 1. Four steps for addressing food security and nutrition outcomes in policies**



Step 1 CONDUCTING A SITUATIONAL ANALYSIS

Discussions on livestock sector policies/policy instruments and related adjustments should be embedded in a sound understanding of the underlying causes of food insecurity and malnutrition of those dependent on the sector. A situational analysis involves gaining insights about the nature of the food security and nutrition problems that affect those that depend on the sector, as well as the way the sector contributes to or challenges food security and nutrition. A situation analysis for the livestock sector would address the following issues:

- i) **What is the current food and nutrition situation and how many of the food insecure/malnourished depend on livestock for their livelihood?**

A first, rough, indication of the general status of food security and nutrition in a given country can be obtained from global databases maintained by FAO (e.g. number of undernourished, *per capita* availability of selected food items), UNICEF (e.g. indicators for child under-/malnourishment), the World Health Organization (WHO) (e.g. health burden attributable to various forms of under- and malnutrition), the World Bank (e.g. poverty rates) and other international organizations. However, these datasets fail to provide information on where the food-insecure/malnourished are located and what livelihood strategies they pursue. Hence, they provide little information on the food security and nutrition situation among livestock dependent populations.

More detailed information can be obtained from country food security profiles prepared by various international agencies (e.g. FAO, WFP, USAID) using secondary information, which is in some cases complemented by field surveys. Periodic Living Standards Measurement Surveys (LSMSs), intended to yield a nationally representative picture of a broad array

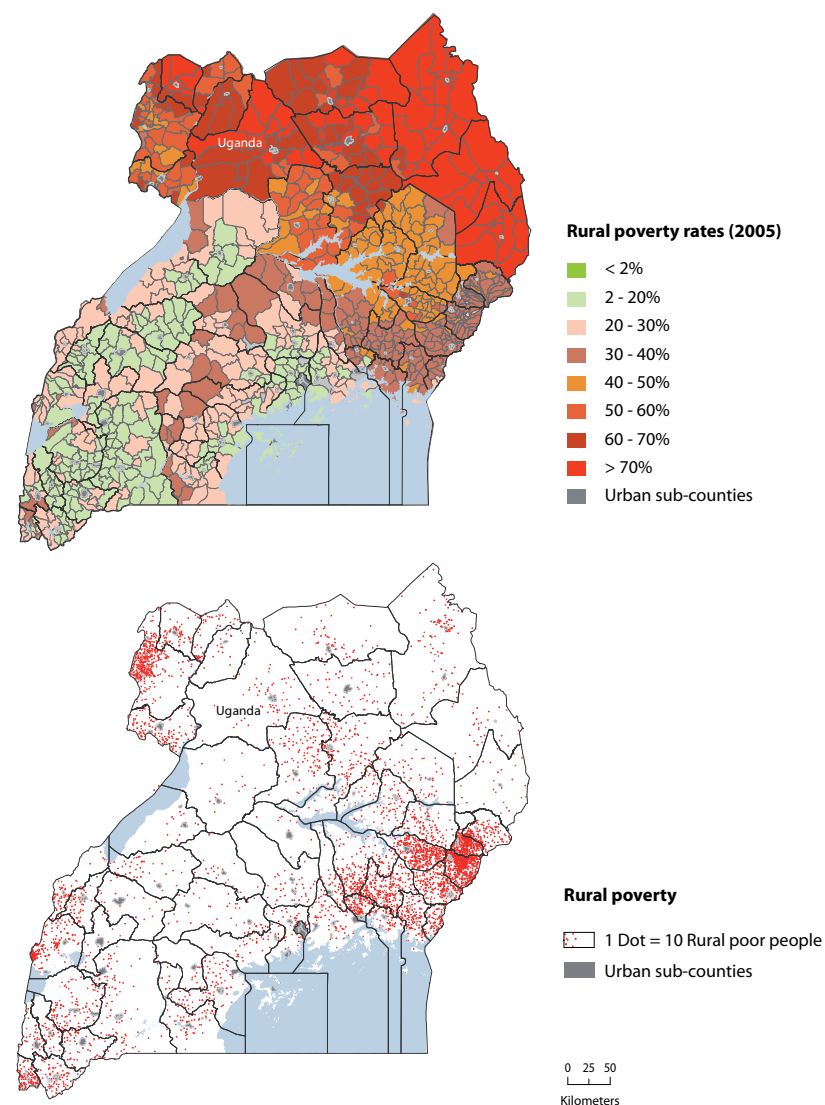
of variables determining “living standard”, are an important source of information to obtain a more nuanced understanding of the determinants of poverty, food insecurity and malnourishment and the extent to which livestock keepers are affected (LSMS-type surveys usually also assess livestock ownership). At present, efforts to compile and link databases on livestock production, health status and food consumption statistics into composite one-stop sources are incomplete. To get a more complete picture of livestock-nutrition-health linkages, country- and region-specific online and bibliographic searches need to be supplemented by in-country interviews and visits to relevant ministries, donor programmes and non-governmental and civil society organizations (CSOs) to compile information, disaggregating data by gender whenever possible.

Figure 2 provides an example of maps depicting: (a) rural poverty rates (proportion of people living below the national poverty line); and (b) rural poverty density (number of poor per km²) in Uganda.

With respect to livestock, nearly 70 percent of rural Ugandan households own livestock of one sort or another, and smallholders and pastoralists dominate the sector. “Livestock dependence” of rural households in Uganda is thus a matter of degree, and it is difficult to estimate the number of food-insecure, livestock-dependent households. In a Comprehensive Food Security and Vulnerability Analysis (CFSVA) carried out by WFP in 2008, the highest prevalence of food insecurity (20 percent) was observed in Karamoja (northeast), a sub-region with poor soils and harsh, semi-humid to semi-arid climate, in which agro-pastoralism and pastoralism are important livelihood strategies.

The maps in Figure 2 demonstrate an important phenomenon in poverty analysis: the distribution of poverty rates is often quite the reverse of the distribution of poverty densities. The poorest (and generally most food-insecure) people tend to live in more sparsely populated areas, whereas the largest absolute numbers of poor people are usually to be found in or close to the more densely populated areas.

FIGURE 2. Rural poverty rates (a) and densities (b) in Uganda



Source: UBOS, 2006.

The policy implications of these maps are that decision-makers face an important trade-off between targeting poor areas or poor people in comparatively better-off areas. The former is likely to require relatively high *per capita* investments in infrastructure and public services, while the latter would rely more on institutional interventions that facilitate participation in economic activities such as improving access to credit. Such a dilemma can only be resolved with better information on the relative costs of delivering different interventions and their expected impact.

ii) Who are the food-insecure/malnourished in the livestock sector? Which population groups are most affected? What are the processes / circumstances that keep some people in the sector in a condition of food insecurity and malnourishment?

Most literature on the livestock sector distinguishes between 'production systems', e.g. pastoral / agro-pastoral, mixed crop-livestock and industrial systems. Although this classification is useful from a technical perspective, it only provides a limited understanding of the contribution of livestock to the overall livelihood strategy associated with each system. Stamoulis and Zezza (2003) offer a generic typology of food-insecure households, which may be linked to the livestock production systems classification and thereby serve as a starting point for an analysis of who the livestock-dependent, food-insecure and malnourished are and what their main constraints might be. The four household types, all of which may keep livestock, are:

■ **Herders, fishers and forest-dependent households**

These are natural-resource-dependent households, prone to food insecurity to the extent that they compete for resources with expanding agricultural activities, or that the *per capita* availability of resources has been declining (in quantity and/or quality).

Among livestock-keeping households, herders (i.e. pastoralists and agro-pastoralists, which rely on natural grasslands) are the group most reliant on their animals for food and the provision of income to purchase plant-derived food and household items. The diets of herders, although often poor, contain the largest share of ASF of the four food-insecure groups, to the extent that half of the total energy intake of children under five may come from milk.

In addition to growing constraints in quantity and quality of grazing areas, herders' livelihoods are often threatened by conflict, erosion of rights to access common property land, movement restrictions, and poor availability of public services.

Households depending on natural resources will be the group most affected by the trends outlined earlier, particularly by the predicted reduction in quantity and quality of natural resources and impacts of climate change.

■ **Food-producing (farming) households in "marginal" lands and remote areas**

These are farm households in marginal lands and remote rural areas that suffer from low productivity (or size) of their natural resource base and difficulty in accessing markets.

In food-insecure farming households, livestock, if owned, are part of the mixed farming system, increasing total farm output with the

important collateral function of stabilizing production across seasons, insurance, savings and social networking. Diets usually do not contain much ASF as, with the exception of poultry, the animals themselves represent important assets that are sold, when the need arises; if markets exist, animal products such as eggs and milk may be also be sold to provide cash income.

Livestock are rarely the main source of household income (< 20 percent of total household income), and marketable surplus is very small. The main constraints to improving food security through farming are the limited farm size, sub-optimal production practices, high crop and animal losses, and deficits in input and output markets. For farming households, the increase in demand for high-value food items presents an opportunity to increase incomes; at the same time, concentration of demand in urban areas and greater trade openness exposes them to international competition and potential barriers to market participation. Furthermore, these households have to overcome growing natural resource constraints.

■ **Rural landless and non-farm rural households**

These are households that depend mainly on wage labour, to a large extent on other farms, and non-farm income opportunities for their livelihoods. Hunger among this group is linked to their weak position in the labour market, lack of social capital, and their poor access to productive resources.

These households, although they may keep some livestock, face space and labour constraints to the number and types of animals they can keep. Thus, although this type of household may keep some small stock such as poultry or goats or a draught animal to rent

out, livestock dependency is limited in comparison to the previous groups. As rural women can frequently only access small livestock due their lack of financial assets, they are highly represented within this group.

The situation of rural landless and non-farm households will mainly be determined by the overall trends in rural development, farm and non-farm, which is, however, strongly dependent on the development of the farming sector.

■ **Poor urban households**

Wasting related to infectious diseases is more prevalent in urban areas, compared to stunting (resulting from chronic malnutrition), which is more prevalent in rural areas. In urban areas, sanitation and hygiene may therefore be a critical part of a strategy to address malnutrition. Similar to rural landless households, urban households may also keep some livestock for own consumption or sale, but their food security and nutrition status is mainly determined by food and labour markets.

The food security and nutrition of poor urban households is likely to be more dependent on overall national and regional trends in economic development, as opposed to those specifically affecting the agriculture sector.

Findings from the CFSVA carried out in Uganda by WFP (WFP, 2009) can again serve as practical illustration for the above. The prevalence of food insecurity within the four main livelihoods groups defined in the study is presented in Table 1.

“Agro-pastoralists” represent one type of natural-resource-dependent household. With 16.8 percent of agro-pastoralist households being food-insecure, they are the least food-insecure of the four groups, despite making a living in very harsh environments. As agro-pastoralism is practiced by a minority of Ugandan households, this group only represents a small proportion of food-insecure households. Food insecurity among non-livestock-keeping natural-resource-dependent households was 43.6 percent. It could thus be argued that providing livestock to these currently “not livestock-dependent” households would significantly reduce their food insecurity.

Ashley and Nanyeenya (2002) examined livestock ownership and benefits in rural households in three districts of Uganda. Overall, 78 percent of surveyed households held livestock of one kind or another, which implies that livestock were held across livelihoods groups as defined in the CFVSA. The majority of livestock were kept in small herds and flocks (less than five animals). Although on average they only contributed around 5 percent of households’ total cash income, farmers ranked livestock among the most important means of livelihood. The common reasons that Ugandan farmers gave for keeping

chickens, goats and pigs indicate that these animals serve mainly as a tool for insurance and savings, to be cashed in during emergencies or when an investment opportunity arises (Ampaire and Rothschild, 2010). Thus, for the majority of livestock-keeping households, survival of animals was far more important than yield.

Against the above background, Dorward *et al.* (2005) distinguish three broad types of strategies employed by households to manage their livelihoods:

- **“Hanging In”**, where activities are conducted to maintain livelihood levels, often in the face of adverse socio-economic circumstances. Within this strategy the main functions of livestock will be to contribute to subsistence consumption and act as buffer and insurance.
- **“Stepping Up”**, where current activities are conducted, but with investments to expand them in order to increase production and income to improve livelihoods – for example through accumulation of productive livestock. As animals also hold value as savings, these can be used to “buy in” to other assets needed to gain entry to other livelihood activities (the “stepping out” strategy).

TABLE 1. Livelihoods groups and food insecurity in Uganda, 2008

Livelihoods group ¹	Proportion in sample (%)	Prevalence of food insecurity (%)	Proportion of food insecure (%)
Agro-pastoralists	7.3	16.8	5.2
Agriculturalists	47.3	27.6	54.9
Agro-labourers	14.1	39.9	23.7
Agro-traders	4.5	19.7	3.7

Source: WFP (2009).

¹ It should be noted that pastoralists did not appear in the sample, which is likely to be due to their mobility and the limitations of the sampling rather than their not existing within the population.

Box 3

Strategic Objectives of Uganda's National Dairy Strategy 2011-2015

The overall goal for the dairy sector is to contribute to improving household income, nutrition and livelihood of the dairy farmers through increased production and productivity, value addition and marketing of the milk and milk products. This goal will be achieved through attainment of the eight strategic objectives described below.

1. Increased dairy production and productivity

Strategy: Introduce appropriate technologies

Outcome: Milk production increased by 40% over the five-year period at an increment of 8% annually

2. Uganda's dairy products promoted

Strategy: Promote value addition, and improve quality standards and domestic consumption by targeting youth training institutions and processors

Outcome: High-quality products

3. Partnerships and networks among the dairy stakeholders promoted

Strategy: Promote public-private partnerships

Outcome: Harmonized sector operations

4. Institutional capacity within the dairy sector strengthened

Strategy: Strengthen capacity of the Dairy Development Authority (DDA) and other stakeholder institutions

Outcome: Improved efficiency

5. Capacity along the dairy value chain built

Strategy: Train various stakeholders

Outcome: Improved efficiency, increased production

6. Relevant infrastructure for the dairy sector developed

Strategy: Encourage public-private partnerships for establishment of relevant infrastructure

Outcome: Improved infrastructure

7. Monitoring and evaluation within the dairy sector strengthened

Strategy: Develop and support stakeholder-based monitoring and evaluation

Outcome: Reliable sector information

8. Dairy sector information system established and managed

Strategy: Create a database

Outcome: Reliable information on the sector

- **“Stepping Out”**, where existing activities are conducted to accumulate assets which in time can provide a “launch pad” for moving into different activities that have initial investment requirements but lead to higher and/or more stable returns – for example the purchase of vehicles or buildings (for transport or retail activities), the financing of children’s education (investing in the next generation), or migration.

Different sets of policies (livestock-related and other) will be required to support each of the three livelihood strategies. Policies reducing vulnerability (e.g. early warning systems, establishment of grazing reserves) would be required to support “hanging-in”, policies facilitating access to resources enhancing productivity (e.g. extension and animal health services, credit arrangements accepting animals as collateral for loans) would help poor livestock keepers to “step up”, while labour market policies and public investment in rural infrastructure could stimulate the emergence of alternative livelihoods, allowing livestock keepers to “step out”.

Step 2 MAPPING THE POLICY LANDSCAPE

Having understood the food security and nutrition constraints of livestock-dependent populations and factors that affect the contribution of the livestock sector to food security and nutrition, the next step identifies and describes the main policy measures in the sector that have or could have a positive or negative impact on food security and nutrition (in the short and longer term). A first step towards reviewing national policies affecting the livestock-dependent poor is to collate those policy documents that may have an impact on the livestock sector. Two types of policy documents are recommended for collation: (a) broad development and agricultural sector policies and strategies, as these may have implications for the livestock sector; and (b) specific agricultural and livestock sector policy documents. The following aspects could be addressed:

- What are main national policy measures in the livestock sector? What are their specific policy objectives and target groups? What challenges do they address?**

Livestock sector development is affected by a variety of public policies, including macro-economic (e.g. fiscal, monetary), institutional (e.g. decentralization, civil sector reform) and social (e.g. social protection, food for work) policies, agricultural sector policies (e.g. agricultural credit, rural infrastructure) and, finally, by livestock sector-specific policies (e.g. animal health, breeding and breed conservation, animal welfare).

Depending on the relative importance of livestock in agriculture, countries may or may not have a comprehensive livestock sector development strategy (LDS). Quite often, the livestock sector is treated as an “appendage” to agriculture without an overall vision for the sub-sector. However, despite the absence of an overall LDS, countries usually have an array of issue-specific policies and associated regulations, such as animal health, or development strategies for specific species or commodities (e.g. poultry, dairy). The thrust of these livestock species-specific strategies tends to be enhanced productivity (usually in terms of animal yields) and increased national production, with market-oriented producers and value-chain actors as main target groups. See Box 3 for an extract of Uganda’s National Dairy Strategy 2011-2015, which is illustrative of many national livestock sector and sub-sectoral development strategies.

In addition to national, livestock species-specific development strategies, countries will have policies and regulations in place for the control of animal diseases and the provision of animal health and other support services to the livestock sector. Policies on disease control and provision of livestock support services are of particular importance for poor livestock keepers. Areas where poor livestock keepers predominate generally do not generate sufficient demand for privately delivered quality animal services and thus rely on public

services. However, government-supplied animal health services tend to have little outreach and focus on large animals such as cattle and buffaloes. This focus tends to ultimately affect mainly rural women who, as mentioned previously, are the main owners and usually rely heavily on small livestock such as poultry and small ruminants for their livelihood. Regulations governing the activities of community animal health workers provide an indication of the “pro-poorness” of animal health services. Another indication of the latter is the list of animal diseases for which national control programmes exist and the applied control measures. Most countries have a control programme for foot-and-mouth disease, which affects cattle and is a major barrier for export, but few have one for Newcastle disease, which regularly decimates backyard poultry.

A third major livestock area for which countries tend to have a specific policy relates to animal breeding. Here, again, the focus usually is on enhancing production potential rather than adaptive traits. A common strategy to achieve this goal is the importation of exotic genetic material, which requires a production environment that resource-poor livestock keepers can rarely provide.

Further areas that might be covered by policies formulated by the ministry in charge of livestock may cover aspects of animal feed production, management of grassland/pastures, slaughterhouses, and milk collection and processing.

ii) How are they aligned to other sector policies? How do they relate to international/regional agendas or agreements?

It is not uncommon for the policies formulated by the ministry responsible for livestock to be poorly interrelated, as they seldom derive from a comprehensive livestock sector development strategy. Livestock sector policies may be formulated at different times and under different governments with different overall objectives. Furthermore, specific policies

may be formulated in the face of “pressurizing” events such as disease outbreaks or food scandals without much attention to collateral policy elements. The result can be a set of fragmented and incoherent policy elements, which do little to orient livestock sector development towards enhancing food security and nutrition.

Policies that affect the livestock sector are also formulated by other line ministries such as: the Ministry of Health, charged with public health and disease control, which includes those of zoonotic importance; the Ministry or Office of Planning, Finance and Economic Development, which is the main agency for government budgets and all financial activities, including the harmonization of donor aid; the Ministry of Internal Affairs, which provides law enforcement and regulatory support, including the control of entry and movement of animals and animal products at internal and external border points; the Ministry of Trade, which defines trade and tax zones; the ministry in charge of natural resources, which may define property and access rights to land; and the ministry overseeing the formation and regulation of cooperatives. These ministries compete for scarce public resources and may have interests that are in conflict with those of the ministry in charge of livestock. For example, the ministry responsible for natural resources may prefer to designate land as a natural reserve, restricting access to livestock keepers; the Ministry of Trade may insist on high tariffs on inputs to livestock production to increase government revenue; and the Ministry of Health may insist on food safety standards which are very difficult to attain in prevailing value chains for ASF.

A frequently quoted example of a policy change that severely affected livestock keepers is Jamaica’s market liberalization in the late 1990s. Removal of tariffs on agricultural produce resulted in a steep increase in imports of milk powder from the EU to the detriment of Jamaican dairy farmers. Many farmers abandoned dairying, and annual domestic milk production declined from 40 million to 15 million litres in the decade following market liberalization (Miller *et al.*, 2007).

Box 4

Global and regional multi-stakeholder institutions and processes contributing to livestock policy debate

Few international/intergovernmental actors, arenas and processes are specifically concerned with livestock-sector issues. Among the most important are:

- The **World Animal Health Organization (OIE)** operates through specific technical commissions; the Code Commission, which continuously updates the Terrestrial Animal Health Code, is one of its most important instruments. OIE's main concern is prevention of the spread of disease through international trade. Consequently, OIE is a strong advocate of national and regional control and eradication of epidemic diseases (e.g. foot and mouth disease, peste des petits ruminants). It sets the standards regulating international trade in livestock and livestock products. In addition to this standard-setting role, OIE compiles global information on important animal diseases and determines countries' official status with respect to specific diseases, and thereby is the gatekeeper to international market access.
- **FAO** acts as convenor for a number of intergovernmental commissions dedicated to agriculture (Committee on Agriculture, Commission on Genetic Resources for Food and Agriculture) and livestock-sector issues (Commission on Livestock Development for Latin America, and the Animal Production and Health Commission for Asia and the Pacific). The Commission on Genetic Resources has developed a Global Plan of Action for Animal Genetic Resources, which provides a framework for the sustainable use, development and conservation of the world's livestock diversity and was adopted by the international community in 2007.

- The **World Health Organization (WHO)**, which has a global mandate for human health, engages in issues of livestock-sector policy to contain harm to human health arising from zoonotic diseases and ASF. Thus, the Severe Acute Respiratory Syndrome (SARS), Nipah, highly pathogenic avian influenza (HPAI) and recent Ebola crises have prompted WHO to call for interventions in the livestock sector. With regards to ASF-borne threats to human health, WHO, jointly with FAO, through the CODEX Alimentarius Commission, sets standards to regulate the safety of animal feed and ASF.

In response to the increasing incidents of emerging human diseases linked to animals (e.g. SARS, Nipah, bird flu, swine flu, Middle East Respiratory Syndrome), OIE, FAO and WHO have formed a "Tripartite Alliance" to address threats to human health arising at the human-animal-ecosystems interface. The alliance concentrates its efforts on strengthening national human and animal health systems in Asia and sub-Saharan Africa and promotes a "One Health" approach at national and regional levels.

The World Trade Organization (WTO) is the international organization dealing with the global rules of trade between nations. As such, it has no direct interest in the livestock sector of any particular country, but, as international trade in goods and services has reached unprecedented levels, WTO rules impinge on many sectors in most countries. For the livestock sector, WTO rules are not limited to sanitary aspects as laid out in the Sanitary and Phytosanitary Agreement, but encompass import tariffs and quotas, production and export subsidies, and labelling requirements for animal products. As in other international rule-setting organizations, developing countries have little participation in elaborating international trade norms and standards, which are therefore more aligned with the interests of developed countries.

(cont.)

Box 4 (cont.)

- **The Interafrican Bureau for Animal Resources of the African Union (AU-IBAR)**, has the mandate to provide leadership in the development of animal resources, including fisheries and wildlife, in Africa. An important area of focus is the development and promotion of common African positions within the global animal resources arena. Only recently, upon request of AU members, IBAR formulated a Livestock Development Strategy for Africa, which intends to position the livestock sector as key driver for rural economic growth.
- The **Global Agenda for Sustainable Livestock** is a partnership of livestock-sector stakeholders committed to the sustainable development of the sector. The partnership unites the forces of the public and private sectors (producers, research and academic institutions, non-governmental organizations, social movements and community-based organizations, and foundations).
- **Dairy Asia** is a multi-stakeholder partnership focusing on building a sustainable dairy sector in Asia and the Pacific region. The role of Dairy Asia is to enhance rural livelihoods, improve nutrition and contribute to economic prosperity. The partnership facilitates knowledge and information exchange about dairy development across Asian countries. The main functions of these multi-stakeholder platforms are awareness raising, information exchange and promotion of collaboration. Frameworks developed through the multi-stakeholder processes provide general guidance but usually lack national specificity, do not necessarily reflect national priorities, and are seldom connected to funding sources necessary for the implementation of proposed measures. However, alignment with international frameworks provides direction and may facilitate access to external and internal funding.

In Tanzania, the Ministry of Natural Resources and Tourism established protected areas for wildlife conservation. One of the aims was to increase revenue from tourism. However, the initiative negatively affects livestock keepers in adjacent areas due to loss of traditional grazing areas, livestock predation by wild carnivores, and wildlife damage to their crops. In addition to national forces exerting influence on the policy landscape, policy-making is influenced by countries' association with Regional Economic Communities (e.g. Association of Southeast Asian Nations, South Asian Association for Regional Cooperation, East African Community). Major lending institutions such as the World Bank and the International Monetary Fund can also influence national policies through conditions tied to the provision of assistance. For example, privatization and decentralization of animal health services have been widely promoted by the World Bank, the results of which have not always been favourable to livestock keepers in more remote areas. Finally, international standard setting bodies such as the CODEX Alimentarius Commission and the World Organization for Animal Health (OIE), endorsed by the World Trade Organization (WTO) and its Sanitary and Phytosanitary Agreement, have a strong bearing on national policies affecting livestock keepers (Box 4).

Given the complexity of policy arenas and actors, achieving (complete) policy coherence across various policy domains is likely to be elusive. However, on the positive side, the complexity also provides more entry points and windows of opportunity to stimulate policy reforms.

iii) What is the history of these policy measures (when and why enacted, level of engagement of different stakeholders)? To what extent are they implemented/enforced?

Sorting the compiled policy documents in temporal order draws attention to the sequential process of (livestock) policy-making and may provide clues as to why (and in whose interest) a certain policy was formulated. An example of a timeline of livestock sector-relevant policy formulation and the outcome of a policy reform is presented in Box 5. The example illustrates that policy-making is a continuous, iterative process, shaped and constrained by legacies of the past and that implementation of policy reforms may not lead to the desired outcomes.

In other cases, policies may not lead to intended outcomes simply because they are not implemented. Lack of implementation can be due to various causes – for example: lack of finance, which would need to be provided by the ministry holding the purse strings; lack of enforcement of regulations, which might need to be provided by a ministry other than the one passing the regulations; or internal administrative resistance, for example where a central authority issues a policy that requires implementation by administrative units not under its direct control.

Step 3 ANALYSING THE POLICY FRAMEWORK

In this step, the set of relevant policy measures are analysed for their impacts on food security and nutrition. The aim is to review conflicts and complementarities between different objectives of livestock-related policy measures and food security and nutrition ones. This step also includes identifying gaps within and across the identified policy measures in order to yield policy options for enhancing the sector's contribution to food security and nutrition, including the use of complementary policies. In the absence of evaluations of policies, information relies on policy analysis, studies and expert opinions. Such an analysis could address the following topics:

- i) **Have food security and nutrition considerations been included in the different policy instruments?**
What are the intended results and who is targeted?

Most policy/strategy documents related to agriculture in general or specifically to the livestock sector open with a broad statement about the enhancement of food security and nutrition being one of, if not the main, goal(s) of the proposed measures. However, food security and nutrition is usually understood as food availability at national level, without consideration of the elements of access, utilization and stability. Furthermore, the perspective is that of striving to meet food demand and to reduce or avoid import dependency and expenditure of foreign exchange rather than to satisfy basic nutritional needs. Consequently, increasing production, productivity and sector competitiveness are the major policy goals, theoretically leading to higher producer incomes and enhanced rural and urban food security and nutrition. Central to this vision is the transformation of smallholder subsistence farmers into market-oriented producers, predominantly through technology transfer. The proposed policies/strategies are often blind to the context in which smallholder farmers operate and their ensuing capacity and willingness to adopt technologies that may increase output on the one hand, but increase production costs and risks on the other.

Following the above development paradigm, the main areas of public investment in agriculture/ livestock development strategies tend to be extension and training, research, plant pest/animal disease control, marketing support and in some cases input provision and agriculture-specific infrastructure. Analysis of actually expended government budgets, in absolute and relative terms, over the past 5 to 10 years will provide some understanding of the actual commitment of the government towards promoting the development of the agriculture sector, to which livestock may be a large contributor. Relative tax rates on agricultural (livestock) and non-agricultural production as well as export and import tariffs on agriculture vis-à-vis other sectors, and of livestock products vis-à-vis other agricultural commodities, provide further clues as to the priority ranking of agriculture, livestock and food security and nutrition in national policy.

Box 5

Timeline of policy development in Uganda between 2000 and 2005 and the case of veterinary services reform

The table below presents a timeline of national policies, programmes and plans impacting the livestock sector formulated in Uganda between 2000 and 2005. As can be seen, formulation of the Livestock Development Strategy is preceded, and followed, by a number of other policies that address specific aspects of the livestock sector as well as by policies that provide the larger context in which livestock sector development should be placed.

Year	Policy / programme / plan
2000	Poverty Eradication Action Plan 2 Plan for the Modernization of Agriculture Agricultural Advisory Services Programme
2001	Land Sector Strategic Plan Policy for the Delivery of Veterinary Services
2002	Veterinary Drug Policy
2003	Meat Policy Food & Nutrition Policy Agricultural Research Policy Microfinance Outreach Plan
2004	Tsetse and Trypanosomiasis-Free Zones Policy Livestock Development Strategy
2005	Animal Feeds Policy Tick & Tick-borne Diseases Control Policy Poverty Eradication Action Plan 3 Marketing & Agro-processing Strategy

The policy for the delivery of veterinary services was prepared in a period when the international policy discourse focused on structural reform entailing decentralization and privatization of government functions. Consequently, the policy foresaw the devolution of responsibility for the provision of veterinary services to district level and the privatization of clinical services and tick control, both of which had previously been provided by government. One result of decentralization was a reduction in the national capacity to control epidemic diseases, as each district set its own disease control priority, and the necessary chain of command to effectively deal with epidemic diseases was broken. A result of privatization was the collapse of tick control (ticks and the diseases they transmit cause major losses to livestock keepers), as the government-operated system of dip tanks was not replaced by a corresponding private sector service. This led to a considerable increase in losses for livestock keepers from ticks and tick borne-diseases, triggering the formulation of the 2005 tick and tick-borne disease control policy. Thus, despite good intentions, the veterinary services reform did not have the effect of bringing better services closer to livestock keepers.

Thus, while individual livestock policies matter, in fact it is the overall governance system – including all policies and the way they jointly provide (dis)incentives to all actors in various economic sectors and their sub-sectors – that ultimately determines whether the development of the livestock sub-sector will benefit the poor and food-insecure.

ii) What are the actual and potential effects (positive and negative) of the different policy measures on food security and nutrition, currently and possibly in the medium to long term?

A livestock sector policy agenda, which seeks to enhance food security and nutrition in all its dimensions, should view livestock keeping from a broader perspective, and acknowledge that no single policy measure is likely to guide livestock sector development onto the desired path but that positive development requires a set of conditions to be in place. Such an agenda would pursue a two-pronged approach through policies that: (i) reduce vulnerability; and (ii) create conditions for growth (Dorward *et al.*, 2004a; 2004b; Pica-Ciamarra, 2005).

Policies that reduce vulnerability address: (a) prevention and management of natural disasters; (b) access to land; (c) access to water; and (d) access to feed. Disaster risk reduction and secure access to basic inputs allow poor livestock keepers who have few other choices to “hang in” and is a precondition for making productive use of livestock assets rather than using them to manage risks. Insurance can encourage prudent risk-taking and increase productive outcomes – even for the poorest households. Examples of policies that aim to reduce vulnerability are the drought early warning system of Kenya, livestock insurance in Mongolia, and the drought contingency plan of Rajasthan, India.

Policies that create conditions for growth should aim to facilitate access to: (a) agricultural extension and animal health services; (b) credit; and (c)

improved input and output markets. Access to production-enhancing inputs and markets is necessary for smallholders to invest in their livestock and “step up”. However, it must be borne in mind that under conditions of low market opportunity, technological developments are unlikely to improve livelihoods by promoting increased production. Without markets to dispose of incremental production, more production may have little value. Greater security and faster accumulation may be more important goals (Dorward *et al.*, 2005).

Examples of the above policies that are likely to have a positive impact on food security (these impacts are rarely empirically assessed) are:

- **Colombia:** the productivity and competitiveness of the dairy sector in selected regions of the country were enhanced through the EU-supported implementation of the National Policy for Competitiveness and Productivity, which promotes horizontal and vertical integration of dairy chain actors and strengthens the institutional framework governing their interactions.
- **Ethiopia:** the development and implementation of appropriate standards, certification procedures, environmental management approaches, and traceability systems through public-private dialogue, supported by the EU, is likely to improve animal health and foster investment in the sector, thereby sustaining the livelihoods of 5 million livestock keepers.
- **Malaysia:** the Sarawak Economic Development Organization supports Dayak farmers, a marginalized ethnic group native to the interior of Borneo, by providing poultry-farming contracts. Most farmers participating in the scheme have reported net gains in their real incomes (Morrison *et al.*, 2006).
- **Mali:** the subcontracting of animal extension services by regional agricultural chambers, which has contributed to extending the coverage and increasing the quality of animal extension services in rural Mali (Fermet-Quinet and Gautier, 2002).

- **Malawi:** the Opportunity International Bank of Malawi opened in 2003 with the stated objective of providing financial services to the poor. It provides mobile banking services and group loans using peer pressure as a substitute for collateral. The bank serves more than 65,000 clients, the majority of whom are women living below the poverty line (Mallik, 2007).

Animal health policies that impose measures and standards which smallholders have difficulties to comply with undermine their food security, at least in the short term. For example, Thailand banned the practice of mobile duck-raising during the first wave of highly pathogenic avian influenza, as mobile ducks were incriminated in disease transmission. In addition, millions of chickens, many belonging to backyard producers, were culled and chicken houses destroyed. These operations had major detrimental impacts on producer households, many of which gave up poultry-raising altogether. Overly stringent regulation of animal health service provision restricts outreach and thereby access by poor livestock keepers. Creation of disease-free zones to access export markets, which come at a high cost, does not normally translate into significantly enhanced food security: as additional production leaves the country, national prices for ASF may rise and export revenues mostly accrue to those who are food-secure. Application of food safety standards from developed countries to largely informal markets, the main food outlet for smallholders and poor consumers, is likely to reduce food security and nutrition for large shares of society in low-income countries (see Box 6).

Formulating policies that balance the need for regulation that serves international commitments and/or standards, and the need for enhanced food security and nutrition (beyond food availability) in an environment of competing interests and budgetary constraints is not an easy task.

iii) How can the livestock sector better contribute to rapidly increasing the intake of a nutritious and safe diet among those affected by stunting, wasting and micronutrient deficiencies? What change is needed and how can this be achieved?

Thornton *et al.* (2003) estimated that globally around 45 million poor livestock keepers (below national poverty lines) depend on grasslands, i.e. areas in which crop production is not feasible, while around 550 million poor livestock keepers practice mixed crop-livestock farming.

Box 6

Regulation of milk safety in Uganda

In Uganda's dairy sector, after liberalization in the 1990s, largely unregulated and small-scale traders started to dominate the market. There was little or no quality control of milk, leading to potential risks to public health. As a consequence, the Government of Uganda passed the Dairy Industry Act, which established the Dairy Development Authority, responsible for regulating the dairy market, especially in terms of setting quality standards and controlling milk and dairy products. Small traders, plant operators and processors found themselves increasingly unable to comply with these standards, which threatened their livelihood. To represent the interests of the informal milk-marketing sector and of small processors (milk-boiling and cooler operators), the Uganda National Dairy Traders Association was established. The association managed to negotiate standards that were better adapted to local conditions, e.g. by advising buyers of raw milk to boil milk before consumption. The association now has more than 1,000 members and handles more than 300,000 litres of milk per day.

Box 7

**Livestock interventions
and nutrition**

Leroy and Frongillo (2007) reviewed 14 studies on the impact of interventions promoting animal production on nutritional status and on six nutrition-related outcomes: production, household income and expenditure, caregiver income, caregiver time and workload, zoonosis, and dietary intake. All studies evaluating the impact on household income or expenditure reported a positive effect on these outcomes. The studies generally reported a positive impact on dietary intake. Only four studies evaluated the impact on nutritional status and found a positive effect, but it is unclear whether the improvements in dietary intake and nutritional status were a direct effect of increased production or an indirect effect of increased income. The interventions associated with clear improvements in dietary intake and nutritional status belonged to two groups: women either played a critical role in the intervention or the interventions included a nutrition education component. None of the studies examined the impact of the promotion of animal production on zoonosis.

In Bangladesh, for example, improving semi-scavenging smallholder poultry production directly increased the number of eggs households consumed, from two to five per week, while the household consumption of poultry meat increased from 62 to 105 g per week. In addition to increasing consumption of eggs and poultry meat, improved poultry production also increased household consumption of fish, milk and vegetables (Nielsen 1998). Improvements in dietary intake thus resulted from both increased production and increased income.

Similarly, in India, a project that trained smallholder households in backyard poultry keeping and supported the provision of preventive veterinary services by community poultry health workers significantly decreased mortality, resulting in larger flock sizes, more sales and increased household consumption of birds. The average household income from poultry (and consumption of poultry) increased five-fold over the baseline figure at the start of the project (SA PPLPP, 2016). The project demonstrates how laborious but simple interventions can rapidly lead to dramatic improvements in subsistence production and food security.

A concern of a number of authors of studies assessing the impacts of interventions to improve animal production is that the market orientation of smallholders may lead to women losing control over income to men.

Although livestock dependency is higher in the former group, crop-livestock farmers constitute the vast majority of food-insecure livestock keepers.

The primary strategy by which the livestock sector can contribute to improving the diets of these poor, food-insecure livestock keepers is by directly putting ASF on their plates. This requires policies and programmes that target the livestock species kept by food-insecure households, e.g. chicken and small ruminants, and/or products that are managed by women, e.g. milk, to increase the likelihood that additional ASF or revenue from its sale is invested in nutrition of the family and particularly in the nutrition of

children. Furthermore, these programmes need to address the problems of the target households and find context-specific solutions that do not require large investments. For the poor, reduction of losses is usually more important than increasing yields, and preventive interventions are generally less costly than reactive measures.

Interventions designed with the above in mind have generally been found to have a positive impact on dietary intake (see Box 7) even if some of the additional ASF is sold. Furthermore, the inclusion of nutrition education and behaviour change components has been shown to make food-based

interventions more effective (Leroy and Frongillo, 2007). In fact, it has been seen that improvements in community knowledge on nutrition or female education can have as much or more impact on nutrition than changes in income or food prices (Christiaensen and Alderman, 2001). Although the impact of increasing animal production in low-income households on the risk of zoonoses has not been assessed, it would be advisable to also include education on food safety and hygiene in these programmes.

For (agro-)pastoralists, the group of livestock keepers with the highest dependency on livestock and generally high rates of food insecurity, insurance against catastrophic livestock losses is paramount. Traditional risk reduction strategies comprise maintaining mixed-species herds (which also graze more efficiently), splitting herds and sending them to different grazing areas, and keeping a relatively high proportion of “seasoned” animals, which may not be very productive but have proven their survival qualities. Food insecurity of herders can best be reduced by policies that ensure continued access to grazing areas and water points, provision of protection against epidemic diseases, and contingency plans in the event of severe feed shortage.

In Mongolia, the government, with assistance from the World Bank, and in collaboration with private insurance companies, has established a system of livestock insurance that links payouts to an index of aggregated criteria, such as livestock losses over a geographic area, rather than households’ or businesses’ actual individual losses (De Angelis, 2013). This World Bank initiated Mongolia index-based livestock insurance (IBLI) has proved to be an effective method of distributing the risks associated with extreme weather incidents, which are predicted to increase in frequency. Furthermore, by use of differential premiums, IBLI can be used to encourage sustainable livestock practices that decrease herders’ vulnerability. Studies indicate that IBLI would be applicable to other countries with substantial pastoralist communities, such as Kenya (Chantarat *et al.*, 2011).

iv) How can the livestock sector better contribute to food security and nutrition in the long term, especially among smallholders, in the face of increased global demand for livestock products, market failures, and environmental and health concerns? What change is needed and how can this be achieved?

The current expansion of markets for ASF in developing countries, and their large degree of diversity, represents enormous income potential for the smallholder livestock keepers. However, policy decisions will greatly determine which benefits of the growing food demand go to rural smallholders and which to rapidly expanding agrifood industries. Regrettably, livestock’s potential for poverty reduction associated with appropriate sector development remains largely unexploited due to: market and institutional imperfections; prevailing policy paradigms with a systematic bias towards industrialization and concentration favouring large- over small-scale operators; and the under-provision of public goods and services, the consequences of which disproportionately affect smaller operators.

The effects of these policies are most obvious in the poultry sector. In the Philippines, for example, in the early 2000s, more than 80 percent of broilers came from six large companies engaged in breeding, feed formulation, contract-growing, and processing branded meat products. Independent medium-sized farmers supplied the remainder and were largely dependent on the integrators for day-old-chick supply. The integrators are organized into a marketing association and have access to dressing, freezing and storage facilities to partly weather a temporary glut in the broiler market. In contrast, independent commercial producers are more vulnerable to market changes. Each day of delay in marketing output results in higher feed costs without corresponding net benefits. Integrators also have access to cheaper feed corn (35 percent tariff compared to 60 percent effective rates paid by everyone

else). Under these conditions, even large-scale independent commercial raisers are not in a position to compete effectively, while smallholders are relegated to niche markets for native chicken.

Much of the growth in demand is concentrated in urban centres, and this has several implications. First there is a need to develop the physical communications, transport and marketing infrastructure to link rural producing areas with the towns. There is a continuing need for public sector investment in its improvement. Second, rural producers face competition from suppliers in other parts of the country, with possible advantages such as a peri-urban location, and increasingly from imported produce. Consumer choice will depend not only on price, although costs of production must be kept down to competitive levels, but also on quality, health standards and possibly the processing and marketing of the product. Smallholder livestock producers therefore require an expanding agribusiness sector and finance for processing and marketing, in addition to infrastructure and technological development. Given the possible economic advantages of large-scale processing and marketing, a case can be made for policies aimed at developing vertical linkages between commercial or co-operative companies and smallholder producers (Upton and Otte, 2004). Farmers Choice in Kenya (<http://www.farmerschoice.co.ke/>) and Kalahari Kid in South Africa (<http://www.kalaharikid.co.za/>) are examples of partnerships between commercial enterprises and smallholder producers that have led to the innovative involvement of smallholders in modern value chains.

Support to rural producers through policies that create the conditions for growth, which include improvements in market access through physical and institutional investment, could allow a large number of smallholders to “step-up” and lead to an increase in rural incomes. These efforts should pay particular attention to gender inequalities in rural areas, featuring a specific focus on rural women. Despite its smaller output compared with that of staple crops, productivity and income growth in the livestock sector have strong

income-multiplier and poverty reduction impacts. These result from increased demand for goods and services among rural households benefiting from income improvements, and through linkages with the staple crops sub-sector as a generator of by-products for livestock feed. A combined strategy for rural livestock and staple crop productivity growth, exploiting the close linkage between these two sectors, would have the strongest income multipliers and poverty reduction benefits. Increased farm incomes in turn stimulate the rural non-farm economy and provide avenues for other smallholders to “step out”.

In addition to its social and economic benefits, a strategy that aims to connect rural producers to urban markets through improved infrastructure and supportive linkages with agribusinesses for processing and marketing is likely to reduce livestock concentration, which decreases pollution from animal wastes and encourages better use of agricultural by-products for animal feed. As a downside, prices of ASF for urban consumers will probably be higher than would be the case if demand growth were met mainly by capital-intensive, high-tech production facilities located close to consumption centres.

Step 4 CONSIDERING THE POLITICAL ECONOMY

Policy change is a complex process, in particular for sectors like livestock in which a wide range of competing objectives are frequently vested: economic growth and export earnings, employment, equality, food and nutrition security, environmental conservation and climate change adaptation. This final step in assessing the scope for policy interventions to support the integration of food security and nutrition considerations in policies impacting the livestock sector involves looking for the best ways to influence the livestock policy agenda. While policy analysis could yield various options for policy adjustments in the livestock sector that are technically viable, these can be politically unfeasible. Therefore, it is important to understand the political economy behind public policy-making and implementation that affects decision-making in the livestock sector in order to influence the

way sector-specific challenges to food security and nutrition are expressed, identify promising policy options and gain the commitment and will of major stakeholders to support change.

A political economy analysis of the potential for policy change to support the transition to a more nutrition-focused livestock sector would include the following steps: (i) identifying stakeholders, their interests and their power to support or block policy change and implementation; (ii) assessing the feasibility of envisaged policy changes combined with an understanding of who the winners and losers are likely to be; and (iii) gaining insights about strategic options for promoting policy change.

i) Who are the stakeholders in the livestock sector, what are their interests and what is their power to influence policy making?

Stakeholders in the livestock sector, as elsewhere, comprise three broad groups: (i) producers and other value chain actors; (ii) consumers/society; and (iii) governments/public sector. However, heterogeneity prevails within these broad groups, whose members often have diverging and at times even competing interests.

■ **Producers and other value chain actors**

The policy interests and influence of producers and other value chain actors are determined by enterprise ownership (corporate vs. private/family), size and scope of the enterprise, commodities handled, and placement in the value chain.

Large-scale corporate, often transnational, enterprises are major and very influential stakeholders in the livestock sector. They include feed producers, pharmaceutical companies, providers of breeding stock, companies managing the main production stage (which may actually outsource some production to contract farmers), processors and retail chains/supermarkets. This “industrial complex” is well-organized

(often through federations), well-connected, financially powerful, and highly influential at national, regional and global scale. Transnational corporations have outgrown national regulatory frameworks and are the major agents attempting to regulate agrifood conditions to provide stable environments of production and consumption that will allow them to plan investment, sourcing of agricultural raw materials, and marketing. The sector is now focused on food – industry and services – rather than on agriculture (Bernstein, 2016), and is thus more concerned about urban consumers than about rural producers. Large/medium (export) market-oriented enterprises constitute a second sub-group of livestock sector stakeholders. These enterprises are often owned by national “elites” and, although less influential (and less interested) in international policy issues, they often carry significant weight in national policy-making. Investment in peri-urban commercial poultry production, which can be undertaken anywhere as long as capital and labour are available, is not uncommon among local elites in low- to medium-income countries. In addition to commercial producers attempting to take advantage of growing urban demand for ASF, agents involved in import and export of livestock commodities or inputs to livestock production usually also have a strong interest in livestock sector policy. Since imports/exports are a source of government revenue, their interests align with those of at least some parts of national government. In Botswana, for example, the strongest obstruction to the formulation of sustainable cattle sector policies was the vested interest of a small but influential socio-economic elite, which gained from the cattle sector’s integration into the world trade system through the beef protocol under the Lome Convention, which gave the African, Caribbean and Pacific Group of States countries access to the European Community market on preferential terms (Mulale, 2002). Small-scale producers and informal market agents represent a third

sub-group within this group of stakeholders. These households operate at local scale and are engaged in a number of diverse activities, livestock not necessarily being the most important. They are rarely organized, diverge in their interests, and seldom have a unified voice in livestock policy matters. At times, they passively resist policy measures that they perceive as inappropriate, but generally they “*trade collective interests for private gains*” (Leonard *et al.*, 2010). Non-governmental organizations and the development community act as advocates for this sub-group in various policy arenas.

■ Consumers and society at large

The main concern of low-income consumers is the availability of affordable and safe food that also satisfies food preferences and social food norms. Therefore, access is more important than source, and the interests of low-income urban consumers may be completely opposed to those of low-income rural producers. Urban consumers, even if poor, have far more policy influence than rural producers, and although they are usually not directly concerned with livestock policy, their demands for affordable and safe food often seem to be easier to meet (at least in the short term) by policy support to large-scale industrial production and/or imports than by investment in rural development and domestic supply chains.

A large number of CSOs representing the interests of better-off consumers and society at large engage in policy processes that affect the livestock sector. Some CSOs are mainly concerned about environmental impacts of livestock sector developments, others more about the social impacts, and still others more about animal welfare aspects. A considerable number of CSOs rally around pastoralist issues. Thus, in some cases the interests of CSOs may be aligned with policies that would improve food security, while in others this might not be the case. Managing the conflicting interests of producers and consumers of

a commodity within an economy as well as the diverse interests within producer and consumer groups is a fundamental challenge for government policy decision-makers, but also provides entry points for policy influence.

■ Governments/public sector

The government/public sector spans wide array of institutions and instruments.

Global intergovernmental organizations and regional economic communities provide supranational governance structures that shape international and national policy agendas (see Box 4), but national governments are at the core of policy-making. As already pointed out, no single ministry is in charge of all aspects related to livestock sector development, and the different ministries may have competing interests. The ministry of agriculture, which is usually the ministry concerned with livestock, tends to be one of the less influential ministries, while the ministries of planning, finance, commerce, and industry usually dominate national policy-making. As in most countries policy-makers are elected, and political incentives exist to implement policies, which provide short-term solutions for national food security as opposed to long-term policies, that promote stable access to food. It is thus a common finding that governments allocate a greater share of scarce funds to support more vocal urban constituents rather than to connect less organized and less educated rural constituents to urban markets (Woolverton *et al.*, 2010).

Within countries, rivalries may also exist between different levels of government, from the centre to the periphery. Depending on the mode of central fund allocation and powers and responsibilities of sub-national governments, the latter may be quite influential in determining livestock sector policy and its implementation. Local taxes on livestock transactions, poor maintenance of public infrastructure such as markets

or watering points, reluctance to comply with national disease control policy at subnational level, etc. can seriously undermine any well-intended national policy (e.g. Ilukor *et al.*, 2012; Msellati *et al.*, 2012).

The international community and individual countries have established a number of instruments to assist them in promoting their policy interests outside their own territories. These instruments include international development banks, aid agencies and research institutes. International development banks have strong leverage on national policies through loan conditionality. Depending on the weight of livestock sector engagement in their portfolio, some of these “public sector instruments” have become stakeholders in the sector in their own right.

ii) What is the feasibility of reforms in the context of the national political economy; who stands to benefit and who stands to lose; what might be unintended consequences from policy reforms?

With the aim of improving the political feasibility of policy reform, Reich (1995) has proposed a policy mapping model that lists the following six dimensions to be taken into consideration for policy change to succeed: (i) the consequences of policy reform efforts, i.e. who will benefit and who may lose; (ii) stakeholders’ objectives (and how the proposed policy change would affect them); (iii) likely positions of support and opposition taken by key players; (iv) the relationship of players in the policy network; (v) the transitions underway that create opportunities; and (vi) the construction of strategies for change.

A prerequisite for any policy reform proposal to be successful is consistency with the broader political objectives pursued by government and alignment with overarching national policies, e.g. changes in livestock-sector policy need to be consistent with the broader agriculture policy; changes in the provision of public animal health services need to be aligned with the national policy of civil service delivery.

As policy change redistributes resources within society, some groups will benefit more than others, while some groups may actually lose out. The likely consequences, intended as well as unintended, of a proposed policy change for various sectors of society should be understood beforehand, as they will determine who may support the policy change, who may oppose the change and who may be indifferent. Quantitative, society-wide *ex-ante* policy impact assessment requires capacities and tools that are usually beyond the scope of the ministry responsible for the livestock sector and are under the purview of other ministries such as the Ministry of Planning or the national office/agency tasked with policy analysis. For livestock-sector reform, close collaboration between the ministry concerned with livestock and the national planning unit would enhance the scope and credibility of any *ex-ante* impact assessment. A number of tools for assessment of likely impacts of changes within the livestock sector have been developed (some examples are presented in Box 8). These tools may be useful to obtain insights into the anticipated impacts of policy reform within the livestock sector. They could also provide input into more comprehensive assessments carried out by the agency tasked with broader policy impact analysis, which may reveal unintended consequences.

A technical analysis of likely impacts of policy change is necessary but is not sufficient to ensure that current policy will actually change, even if overall impact is highly positive. Policy reform is a political rather than technocratic process, and proponents of reform may be too weak or the opposition too strong for the proposed reform to be accepted. The non-recognition of Community Animal Health Workers (CAHWs) in Kenya provides an example of a drawn-out policy process in which opposing forces prevail despite more than 20 years of CAHWs working in pastoral areas of the country, demonstrated evidence of positive impact, and lobbying by civil society, international non-governmental organizations, FAO and the African Union. At the same time, Kenya lacks a feasible strategy for providing veterinary

Box 8

Examples of tools for livestock-sector policy and investment analysis

The **Livestock Sector Investment and Policy Support Toolkit (LSIPT)** is a comprehensive analytical tool designed under the leadership of the World Bank and with the scientific contributions of FAO and the French Agricultural Research Centre for International Development. The LSIPT contains five modules and provides various functionalities such as analysis of: livestock production systems; economy and vulnerability of livestock-dependent households; value chains; and the contribution of livestock to poverty alleviation and national GDP. Possible investment scenarios or technical changes can be simulated using the models, which can help decision-makers in choosing the most appropriate investment options.

EXTRAPOLATE (EX-ante Tool for RAnking POLicy ALTErnatives) is a decision support tool to assess the impact of different policy measures. By disaggregating the effects of policy interventions, the tool facilitates discussion of the relevant issues and enables users to visualize the predicted impacts of policy interventions, based on numerical analysis. The tool serves as a “filter” that allows the user to sift through, in an *ex-ante* fashion, a range of policy measures to identify those that could be applied in a specific situation to achieve particular outcomes that further particular policy objectives. The tool is participatory in nature, encouraging stakeholder involvement and discussion around the likely impact of policy change.

The **Global Livestock Environmental Assessment Model (GLEAM)** is a modelling framework that simulates the interaction of activities and processes involved in livestock production and the environment. The model is developed to assess livestock’s impacts, adaptation and mitigation options at (sub)national, regional and global scales. GLEAM differentiates key stages along livestock supply chains such as feed production, processing and transport; herd dynamics, animal feeding and manure management; and animal products processing and transport.

Dynmod is a simple herd-growth model for ruminant livestock populations. It can be used for fast and crude *ex ante* or *ex-post* demographic diagnostics in various applications such as livestock population management, herd production estimation or exploration of scenarios in development projects. Dynmod simulates the dynamics of the size of a livestock population and the number of animals produced per year, calculates live weights, meat production and secondary productions (milk, skin and hides, manure) at population level, as well financial outputs that can be used in more integrated financial calculations (e.g. cost-benefit ratios or internal return rates). Finally, Dynmod provides crude estimates of the population feeding requirements in dry matter.

services to pastoral areas, and preventable livestock losses remain high, despite the policy aspiration of increasing livestock exports.

Combining the analysis of the consequences of policy reform for different stakeholder groups with an assessment of relative stakeholder power and possible coalitions that stakeholders may form will provide an indication of where opposition and support are likely to come from and may inform the design of “compensatory policy elements” that might satisfy those whose interests are challenged.

Items (v) and (vi) of Reich’s list, which relate to the development of a strategy for policy change, are covered in the next section.

iii) What are the strategic options for promoting policy change?

In addition to knowledge of the main stakeholders and their interests, policy reform requires an understanding of how policy is made and implemented in a given country. In general, national processes of livestock-sector policy-making largely reflect the general “style” of policy-making, and an important aspect of the political system is the degree to which consensus is required to achieve policy outcomes, as this will determine the required degree of stakeholder inclusion. In Uganda for example, the President has the strongest direct influence on what farmers do. Thus, getting the ear and capturing the imagination of the President would be the fastest and most reliable way of influencing agricultural policy to help small-scale farmers (CCAFS, 2010).

Generally, policy-making takes place within communities of people who know each other and interact. Thus, to influence policymakers, one needs to join their networks, forge partnerships and build coalitions. Identification of key individuals who can help (policy champions), formation of a group of like-minded people who can network with others, and recruitment of good “salespeople” who can convince the sceptics are important activities in any endeavour to promote policy reform (see Box 9). The evidence in favour of the proposed policy reform needs to be

Box 9

Enhancing livestock-sector policy formulation and implementation

In many, if not most, countries, evidence-based livestock policy formulation is hampered by a scarcity of comprehensive, reliable, and up-to-date data. Available data are usually scattered over different institutions and may be inconsistent (e.g. different national institutions may have different figures for the size of the national herd). In Africa, AU-IBAR is trying to address this problem by supporting inter-institutional collaborative and improved data collection and management through the establishment of national Animal Resources Data Management Platforms.

Data availability is necessary but not sufficient for sound policy formulation. An additional element for improving livestock-sector policies is capacity building in data management, analysis and interpretation, and policy formulation and implementation at various institutional levels.

Furthermore, stakeholder dialogue is an element of good practice in policy development. To foster participatory policy-making, AU-IBAR is supporting Member States and Regional Economic Communities in establishing national and regional policy hubs. These hubs are multidisciplinary platforms bringing together key stakeholders from the government, civil society organizations, livestock producers, livestock keepers and the private sector to foster the formulation and implementation of livestock-sector policies.

Finally, Public-Private-Partnerships (PPPs) are becoming an increasingly important component in policy design. For policy implementation, the private sector is tasked with designing, building, financing, and operating infrastructure facilities previously provided by the public sector, while public funding is reserved for providing essential public goods. PPPs are necessary to accelerate policy implementation, as estimated demand for investment in public services shows that government and even donor resources fall far short of the amount required.

convincing (based on official country data and elaborated with the participation of respected national experts), should preferably use concepts policymakers are familiar with, and be conveyed through trusted information channels.

If national non-governmental organizations are influential, then major non-governmental organizations will be important partners in the policy dialogue. In case the intended policy reform requires implementation by decentralized government offices, then local and provincial governments may be the key agents to involve in the policy reform process. In all cases, key ministries to engage in policy formulation and analysis are Agriculture and Food, Health, Environment, Finance, and possibly Trade. To ensure that policy dialogue considers how gender inequalities affect the livestock sector and that measures to redress such inequalities are integrated, it is recommended that the ministry responsible for women's affairs/gender equality also be involved.

The chances of success for any policy reform depend on the proposed degree and complexity of change and the related strength of its opponents and supporters. Incremental policy changes, sequenced over time, are less likely to face strong opposition than sudden and dramatic policy shifts. Furthermore, although efficiency and social justice considerations may argue for narrow targeting of benefits to the poor, political incentives point towards broader targeting that reaches some of the more politically influential groups. If benefits only accrue to groups that are not politically organized, the prospects for creating an adequate constituency supporting the reform by lobbying, negotiating, developing alliances and forming coalitions remain poor.

Timing is another critical element influencing the likelihood of policy reform. Change is usually more possible at the beginning of a regime, and major concurrent events can open up political windows for reform (Reich, 1995). It is important to be aware of political developments in areas beyond agriculture and livestock, as these may create favourable circumstances for policy entrepreneurs to promote their ideas, even if these do not relate directly to the event opening the reform window.

Policy reform may not have the desired impact due to problems of implementation. CCAFS (2010) observes that the preparation of policies and plans has become a business in itself – central government officials are much more accountable to produce the policy documents than they are to create change on the ground. Similarly, Van de Walle (2005) notes that in low-income countries there is often very little participation before policies are decided and that the real participatory politics that shape the actual policies take place during implementation. Examples of this sequence of events abound. For instance, policies rapidly introduced to control HPAI during the initial crisis in the early 2000s (e.g. mass culling of poultry) proved to be beyond the implementation capacity of most countries (e.g. Bangladesh, Indonesia, Viet Nam) and had to be revised in the face of opposition from poultry keepers, traders, local authorities and CSOs. It is therefore crucial to understand and provide incentives for those tasked with implementing policy change. Otherwise, government officers and “street bureaucrats” might slow down or even block reform simply by inaction.



Concluding remarks

For global reduction of poverty and food insecurity and malnutrition, development efforts need to focus on regions and countries where most of the poor, food-insecure and malnourished live – sub-Saharan Africa and poorer regions of South and Southeast Asia, regions in which people are still heavily dependent on agriculture. In this context, livestock has considerable potential to enhance food security and nutrition through two distinct pathways:

- Livestock can directly provide food and act as a “safety net” for the extremely poor and vulnerable. This is particularly the case for grassland areas, where livestock are one of the most important pillars in support of poor peoples’ livelihoods. However, efforts to improve food security through livestock promotion need to be accompanied by nutrition, food safety and hygiene education.
- Given the strong growth in demand for ASF, livestock sector development can also act as a “cargo net” for those rural livestock keepers who have sufficient human, physical and social capital to take advantage of market opportunities. Promoting smallholder-friendly livestock sector development would have two co-benefits: (a) stimulation of rural economic growth through farm–non-farm linkages; and (b) reduced environmental footprint of livestock keeping (Henderson *et al.*, 2016). Both outcomes enhance food security.

The livestock sector is heterogeneous and highly complex, and affects a large set of stakeholders. Transaction costs and the risks of coordination failure are therefore high. Guiding livestock sector development onto a path where it best serves food security, nutrition and poverty reduction objectives requires strong public leadership across a variety of policy domains. For public agencies mandated to support agriculture, this means that their most important role concerns not public expenditure, but policy-making, coordination, regulation and the provision of services that the private sector will not provide. Therefore, state capacity is a precondition to formulate and implement policies that support smallholder agriculture and enhance food security in all of its dimensions.

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