

Livestock and the Poor: Issues in poverty-focused livestock development¹

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Abstract

Livestock directly aid the lives and livelihoods of the world's most vulnerable and marginalized citizens. Livestock development, however, has had a very mixed record with regard to poverty alleviation. Part of the problem is that while the rhetoric of 'poverty-focused' projects and programmes often dominates, livestock, as a tool for poverty alleviation, is poorly understood. First, very little work has been done to further explicate poor livestock keepers as a distinct and important subset of the poor. Second, both the internal forces impacting households and the wider macro-economic events predicted to affect the livestock sector, are rarely accounted for by projects and programmes. Hence, the following paper explores some of the issues surrounding pro-poor livestock development. The cycle of poverty for livestock keepers is described and a new approach to livestock development offered. Equally, a definition of poor livestock keepers is detailed and the forces predicted to impact livestock production in the coming decades discussed.

Introduction

Over the course of the last decade, the fight against global poverty has galvanised the world community. Development projects and programmes are increasingly justified and funded solely on their potential to aid the poor. Equally, the lessons learned from previous drives to eradicate poverty appear to have been taken on board. It has been recognised that to lower poverty levels, it is first imperative to understand the lives and livelihoods of the poor. Therefore, current approaches generally focus upon the multitude of activities that poor households pursue. Animal husbandry is one such activity. Indeed, it has been estimated that at least one third of the poor rear livestock (LID, 1999). Therefore, livestock keepers are one of the largest subsets of the global community of the poor.

In recognition of the importance of livestock to the livelihoods of the poor, donors, governments and NGOs have channelled resources to the livestock sector. Early projects tended to be top-down, technology-driven interventions while more recently the focus has been on holistic, participatory and community-based projects and programmes. Indeed, the role of livestock in poverty alleviation has generally mirrored current conceptual notions regarding the state of poverty itself. For example, during the 1970's, poverty was generally deemed a quantifiable condition, described by first, income and later consumption deficits. Livestock projects, during this period, were often justified by the argument that a strong livestock economy would provide trickle down benefits to the poor. Large-scale projects and programmes aimed at improving productivity, at the national level, were common. In the 1980's, notions of poverty as a deficit of consumption began to receive more attention. Definitions of poverty began to include notions of food and livelihood security. Consequently, support for livestock was included as part of wider packages for community development.

During the 1990s, with the advent of Participatory Poverty Assessments (PPAs), the discourse on poverty subtly changed again with the psychological aspects of being poor increasingly emphasised. Feelings of

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powerlessness, vulnerability and increased fear and anxiety were frequent findings in participatory poverty assessments (World Bank, 2000). Again, another livestock development trend became apparent and projects were increasingly justified on the grounds that livestock could enhance well-being and decrease a household's vulnerability to shocks and disaster. The inference here was that livestock could ameliorate some of the adverse psychological impacts of poverty.

Most recently it has been recognised that poverty is a 'multi-dimensional' phenomena with differing implications for the individuals and communities involved. Current descriptions of poverty focus on the consequences of deprivation (World Bank, 2000). Thus, for the person involved, poverty is often equated to ill-health and hunger, lack of choices and opportunities, low education levels and high mortality rates in addition to a lack of access to capital. Further, at the community level, the poor are often deprived of services and are faced with political and institutional structures, which at best are not geared to addressing their needs and at worst are biased and discriminatory. Livestock development, again, has reflected the conceptual changes. Programmes, at the national level, are often aimed at strengthening institutional frameworks. Conversely, at the community-level, the majority of interventions attempt to enhance food and livelihood security.

Nevertheless, within the livestock sector the transformation from top-down, technology driven projects to more community-based initiatives has not been entirely seamless. The track record of both past and present livestock development projects is mixed. Indeed, a recent review concluded that the majority of animal health projects were not having their intended impact on the poor (LID, 1999). Reasons offered for the poor performance included the lack of a poverty focus and failure to deliver the outputs (*ibid.*).

More fundamentally, however, the overall lack of impact may be due to the continuing tension between the two, often conflicting aims of livestock development: technological inputs to increase production vs. community development to reduce poverty. Many practitioners believe the problems of the poor may be considerably aided by technological solutions and that community development approaches cannot be scaled-up. Conversely, for the proponents of community development, many technologies are viewed as lacking relevance to the wider problems of the poor and as such are doomed to failure. Consequently, within the livestock sector, many practitioners belong to either upstream or downstream philosophies and livestock research and development activities broadly follow the division.

Furthermore, at the global level, the livestock sector is undergoing rapid transformation. Indeed, never before in history, has the demand for livestock products been at such a high level. Nor has the sector been exposed to as many negative and positive driving forces. As de Haan *et al.* (2002) notes:

The global livestock sector is changing fast. With a strong and growing demand, rapid institutional and macroeconomic policy changes, and a fundamental shift in the functions of livestock, there is a significant danger of the poor being crowded out, the environment eroded, and global food security and safety compromised.

Thus, livestock development is under increasing pressure to address the rapidly changing needs and demands of both the poor and the expanding global population.

Consequently, it is apparent that livestock development is now at a crossroads. Although more and more evidence is available to illustrate the importance of livestock in poverty alleviation, projects and programmes are mired in less than positive outcomes. Given the problems of the poor, there is an urgent need for a new paradigm of livestock development, which incorporates both people-centred and technological solutions to the specific needs of poor livestock keepers.

Therefore, the following paper is divided into three sections. The first section offers a profile of poor livestock keepers and a definition of poor livestock keeping households. In the second section, a new approach to poverty-focused livestock development is detailed. Finally, in the closing section, the wider forces predicted to impact development practice and policy, within the livestock sector, are discussed.

Profiles of the poor livestock keepers

As a target group, poor livestock-keepers represent a dynamic spectrum varying from households where livestock comprise only a small portion of their livelihood activities to those in which livestock are the main component (Heffernan and Misturelli, 2000). Poor households also have a varying dependency upon livestock off-take and products. Therefore, attempts to categorise poor livestock keepers by either the number of animals owned or the household dependency upon off-take may be misrepresentative. For example, Swift (1988) describes a pastoralist household as one where over 50% of the gross revenue is derived from livestock, or equally, where 15% or more of the total energy consumed is derived from livestock products. However, the definition excludes many destitute herders who rely on alternate income generating activities to supplement household income. Moreover, after a drought, many families whose herds have been devastated may not fit the above criteria and as such would not be defined as 'pastoralists'. The literature is equally exclusive regarding the poor in other production systems. Indeed, in other farming systems, the poor are often referred to as 'subsistence' farmers. However, linking poverty to basic needs alone ignores the social and economic dimensions to survival at this level. Poor livestock keepers are frequently landless and politically powerless, lack access to credit, insurance and drought contingency planning (Heffernan and Sidahmed, 1998). As such, poor livestock keepers are those who are economically and/or socially at risk and whose animals, at most, provide subsistence or the minimum augmentation of daily nutritional requirements (*ibid.*).

Thus, by definition, a poor livestock keeper does not own enough livestock to meet basic subsistence needs, yet depends upon his or her livestock. However, defining the poor in relation to livestock must encompass a spectrum of farming systems, and is therefore dependent upon bio-physical and socio-economic influences (*ibid.*). For example, some livestock keepers will not be able to derive any off-take from herds while others will be forced to sell livestock assets to meet basic needs. With regard to food security, the majority of the poor are relatively more dependent upon non-livestock food sources. Yet the overall contribution of livestock to household livelihood security will be greater for poor households than for those who are comparatively better-off (*ibid.*).

The benefits of disaggregating livestock keepers from the more general population of the poor are twofold. First, by better understanding the needs and requirements of livestock keepers as a target group, development interventions may have greater impacts. Second, by focusing attention on specific livelihood outcomes e.g. increased incomes from livestock keeping, there is potentially a greater chance of achieving poverty alleviation goals. Nevertheless, although the above working definition enables practitioners to better identify poor livestock keeping households, the obvious next question is where do these poor livestock keepers reside?

Livestock production systems and the poor

Historically, the literature on livestock production provides little insight as to the location and/or nature of poverty (Pilling, 2003). Indeed, livestock systems have been traditionally classified in three ways: by their associated agro-ecological characteristics, by their level of intensification, or by the level of migration i.e. nomadic, transhumanant or sedentary (Jahnke, 1982; Wilson, 1995; Seré and Steinfeld, 1996). One of the most thorough and hence, widely adopted classification systems is that offered by Seré and Steinfeld (1996). In recent years, Seré and Steinfeld's system has received renewed interest by groups attempting to 'map' the number of poor livestock keepers (Perry *et al*, 2002). As the following table demonstrates, the classification categorises livestock production into three primary systems with further subsystem orders (Seré and Steinfeld, 1996).

Table 1: Seré and Steinfeld’s Livestock Production Classification System

System	Definition	Sub System	Definition
Solely Livestock Systems	Livestock systems where more than 90% of dry matter fed is from the rangelands and less than 10% of the total value of production comes from non-livestock activities.	Landless	Livestock systems where less than 10% of the dry matter fed to animals is farm produced and average stocking rates are greater than 10 livestock units/hectare.
		Grassland Based	Livestock systems where more than 10% of the dry matter fed to animals is farm produced and in which annual average stocking rates are less than ten livestock units per hectare.
Mixed Farming	Livestock systems where more than 10% of the dry matter fed to livestock is farm produced stubble or crop by-products or more than 10% of the total value of production comes from non-livestock farming activities.	Rainfed	Mixed farming system where less than 10% of the value of non-livestock farm production comes from irrigated land
		Irrigated	Mixed farming system where more than 10% of the value of non-livestock farm production comes from irrigated land

(Seré & Steinfeld, 1996)

As the table demonstrates, the level of dry matter intake is the key criterion for ordering the system. While the classification was obviously never intended as a tool to derive the numbers of poor livestock keepers, it is clear that the relevant social, economic and cultural criteria to assess poverty are missing. Equally problematic is the landless category (Pilling, 2003). In the above system, landless refers primarily to intensive monogastric and poultry production in peri-urban areas. Conversely, for the poor, ‘landlessness’ is rather a more straightforward concept and denotes a lack of access to land. Landless livestock keepers are present in all livestock production systems in developing countries. Therefore, the above classification system, while describing global livestock production, neither details the types of livestock keepers within each system nor outlines the production systems important to the poor.

Poor livestock keepers live on the margins of livestock production systems. For example, in pastoralist production systems, there are generally three distinct populations of the poor, which vary dramatically in their herd management and husbandry strategies. First, there are poor pastoralists who remain active in the livestock economy (albeit at very low levels) and continue to live a more traditional lifestyle in the rural areas. Conversely, the second population of the poor has settled around towns and settlements. In these cases, livestock are one of a range of activities that are pursued. Finally, the third category of the poor resides in peri-urban settlements but via hired or family labour maintain herds in the rural areas. Equally, there is a difference among the groups in the primary species kept. Poor pastoralists who remain in rural areas generally maintain small herds of cattle whereas for their more urban counterparts production tends to concentrate on smallstock. Consequently, the above system fails to capture the nuances needed to specifically characterise poor livestock keepers. Hence, a new typology of livestock production for the poor is required.

As such, the following table describes a simple typology based upon three broad types of production systems: pastoralist, subsistence farming and urban. The intention is not to strictly define each of the different characterisations but rather to offer a broad framework which describes the many and varied types of poor producers.

Table 2: Typology of poor livestock keepers

Livestock Production System	Characterisation of the Poor	Location of Poor Producers	Livestock Species	Herding/Husbandry Patterns	Vulnerabilities
Pastoralist	Lack of access to labour for livestock keeping	Rural	Cattle, Smallstock, Camelids, Yak	Migratory	Drought, Terms of trade, political instability, Poor access to markets, technologies and innovations.
		Peri-Urban	Mainly Smallstock	Mainly around settlements	Drought, terms of trade: livestock vs. grain
		Peri-Urban	Mainly Smallstock	Absentee owners, Herding by relatives, Hired labour	Lack of access to productive resources of animals, Theft
Subsistence Farming	Small land sizes, Land rental, Lack of resources	Rural	Cattle, Buffalo, Smallstock, Poultry	Tether, Cut and Carry, range	Drought, Cost of inputs, Access to services, Population pressures
		Peri-Urban	Dairy, Poultry, Pigs	Stall fed, Cut and carry, roadside	Cost of inputs
Urban	Landless	Urban Slums	Poultry Smallstock, Buffalo, Cattle, Pigs	Roadside, rubbish foraging, Purchased fodder	Space for animals, Legal framework

As the table illustrates, poor livestock keepers keep a wide variety of species and practice a number of different husbandry methods. Where the poor differ greatly from better off producers, however, is in access to inputs and resources for livestock production. Indeed, studies have demonstrated the direct relationship between land and livestock ownership patterns. For example, De Lasson and Dolberg (1985) demonstrated that changes in the intensity of land use changed livestock ownership and production patterns in Asia. Among their study set in India, the loss of a bullock related to losing more than an acre per household, while gain of bullocks related to an increase in land holdings. The poor may also be differentiated by their vulnerabilities. Each of the different production systems has a variety of factors that while negatively impacting well-off producers may be devastating to the poor. For example, drought for a poor pastoralist will obviously lead to destitution much faster than those with greater herd assets. Equally, adequate space for livestock keeping is a major problem faced by poor producers in urban areas. The legislative environment is also an issue and many of the poor are forced to pay fines and bribes to maintain production.

This diversity in livestock keeping households obviously has an impact on the outcome of livestock development projects and programmes. The following section explores the evidence for pro-poor livestock development.

The Impact of Livestock Development on the Poor

There are three potential ways of determining the impact of livestock development projects and programmes on the poor. First, at the global level, information and evidence may be gathered on a project-by-project basis for the nations involved. Second, criteria can be devised to evaluate the overall impact of specific types of projects e.g. animal health, technology transfer etc. Finally, an individual agency approach may be undertaken with specific institutions offering an assessment of their projects and programmes.

However, a variety of obstacles have been noted with all three approaches. At the global level, co-operation and partnership between the actors and agents involved are often weak and fragmented hence; deriving the impact of specific livestock projects is difficult. More success has been achieved in analysing different forms and types of livestock projects. For example, Oakley (1998) and Martin (2001) offer overviews of Community Animal Healthcare Projects and Heffernan *et al.* (2001) performed a large-scale review of restocking projects. Nevertheless, obtaining sufficient information from the actors and agents involved is often difficult with the project-level approach. At the agency level, little information is available in the public domain regarding the impact of specific livestock development projects and programmes. Few critical analyses of livestock sector activities have been performed with the notable exceptions of DFID, the World Bank and IFAD.

Indeed, in 1998, DFID undertook one of the most comprehensive reviews of livestock projects and programmes to date (LID, 1998). Over 800 livestock development projects were reviewed for their impact on the poor. Overall, the authors concluded that the majority of livestock projects and programmes had not had a significant impact on the poor for the following reasons:

1. Technologies were developed but not delivered to the poor.
2. The technologies that were delivered were inappropriate to the poor.
3. In cases where appropriate technologies were successfully delivered, wealthier farmers or herders tended to capture the benefits.

A subsequent report by the same authors, offers the following conclusion (LID, 1999):

Our review of project documentation on technical and service-related projects revealed little evidence of widespread sustainable impact on the livelihoods of the poor. Although there are some islands of success, the overall tenor of the literature, donor assessments and evaluation reports that we reviewed is that technical and service projects were not successful at benefiting the poor on a sustainable basis.

The finding was corroborated by de Haan *et al.* (2001) who offered the following in regard to World Bank projects:

The livestock portfolio analysis shows that our current World Bank operations still lack a specific policy and environmental focus...This lack of focus is shown by the low level of investment in the poorest regions of the world (central Asia, South Asia and Sub-Saharan Africa) in pastoral development and smallstock, and to some extent, in the low share of investments to improve animal health and nutrition, which are critical constraints faced by the poor.

De Haan *et al.* (2001) further note that since the 1970's there has been a decline in support for livestock projects:

Currently, six active agricultural projects are livestock only, and about 50 projects (of a total agricultural portfolio of 270) have livestock components. The decrease in lending is partially in response to the poor performance of the projects during the 1970s and 1980s.

Hence, it is increasingly recognised that livestock projects and programmes have not had their intended impacts. Nevertheless, there is little critical analysis of why these wide-spread failures have occurred. Thus,

it is apparent that in order for livestock-based livelihoods to deliver their full potential with regard to poverty alleviation, a new approach to livestock development is required.

Towards a new paradigm of livestock development

In order to advance a new paradigm of livestock development, it is clear that conceptual notions of poverty must first be revisited more explicitly. Recent notions of poverty tend to be descriptive of the many different aspects of being poor. Indeed, current notions of poverty tend to mirror the many facets of the sustainable livelihoods framework. The World Bank (2000) offers the following definition:

Poverty is pronounced deprivation of wellbeing...to be poor is to be hungry, to lack shelter and clothing, to be sick and not cared for, to be illiterate and not schooled...Poor people are particularly vulnerable to adverse events outside their control. They are often treated badly by the institutions and states and society and excluded from voice and power in those institutions.

However, it appears that there is an increasing confusion between the consequences of poverty and the state of poverty itself. The distinction is important. For example, a recent World Bank report (World Bank, 2000) disaggregates poverty into areas such as 'health and education', 'income' and 'vulnerability' and 'voicelessness and powerlessness'. However, by focusing on the consequences rather than the condition of poverty, the risk is that interrelationships between causal factors will be lost and with it, a comprehensive understanding of the poor.

Further, the new focus, by attempting to put a more human face on poverty, often portrays the poor as the unwitting victims of a hostile political, institutional, social and economic environment. Societies, cultures, households and communities do not generally define themselves either by their levels of deprivation or by their attendant powerlessness. For the fight against global poverty to succeed, concepts that disregard the capabilities and strengths of the poor may ultimately prove counterproductive. Thus, for poverty eradication strategies to meet the needs of the poor, our viewpoint of poverty must change from one of deprivation to one of supporting the future dreams and aspirations of households, families and individuals involved.

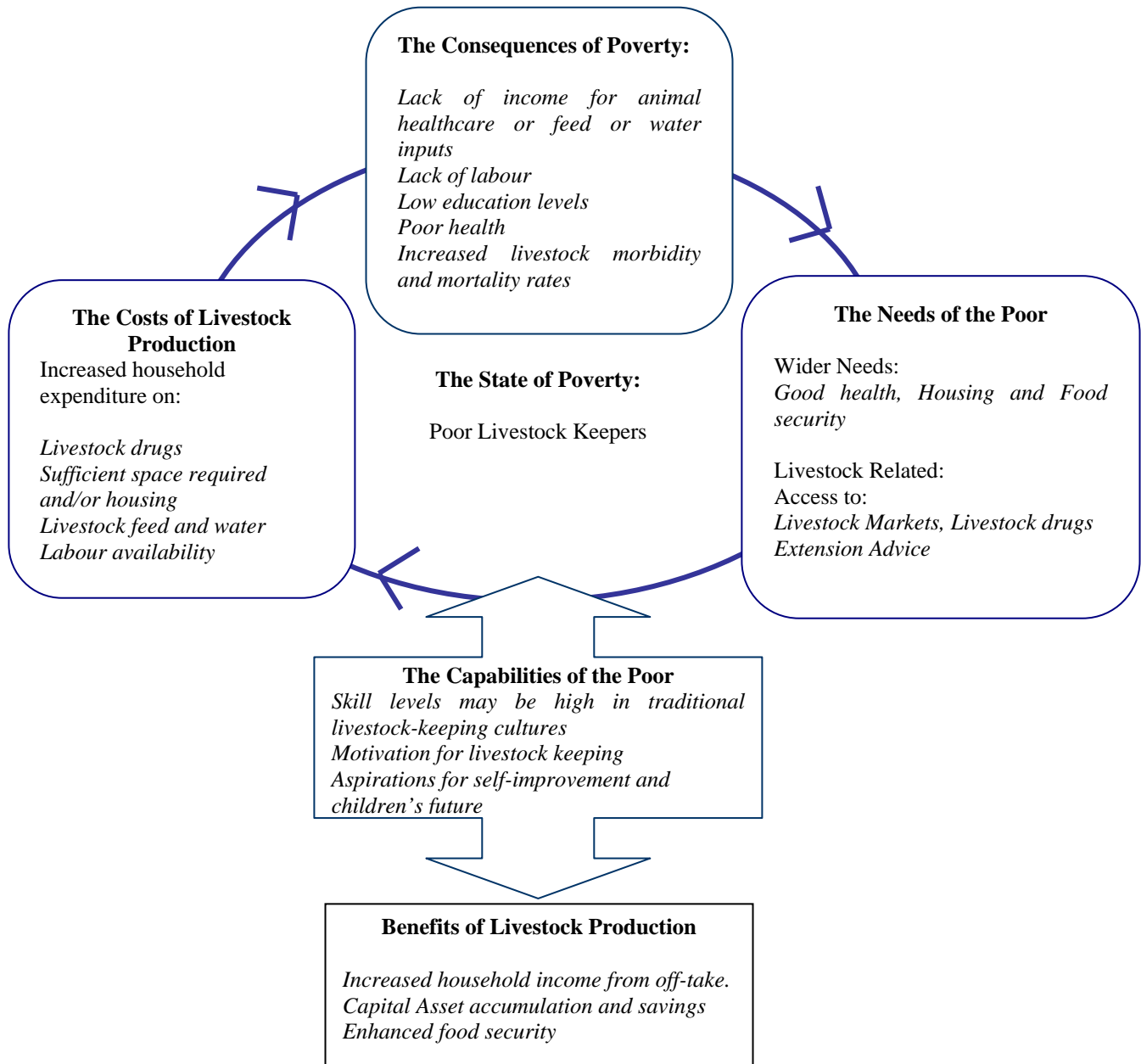
Consequently, it is important, when considering poverty that the capabilities and agency of the poor are not ignored. Inarguably, livestock are a key means to facilitate the potential of the poor. The sale and consumption of animal products decrease the vulnerability of households to normal seasonal food and income deprivations. Therefore, livestock can both fulfil wider food security needs and enhance the nutritional status of the most vulnerable: women, children and the elderly. Keeping livestock also helps to shield households from sudden shocks such as civil war and political instability. Further, animal ownership may increase the ability of households and individuals to participate in social rituals and fulfil social obligations. Among some societies, livestock ownership is also a form of cultural identity. Livestock are also a key source of collateral for the poor and enable many households to obtain access to capital and business loans. Thus, livestock are an important capital asset, which with careful tending can propel households out of abject poverty and into market economies.

Nevertheless, it is increasingly recognised that in the application of livestock as a means of poverty alleviation, for every benefit, there is a direct cost for the poor households involved. Livestock owners face increased household expenditures for animal healthcare and often fodder and water. Poor marketing infrastructure in many countries also limits the profit margins for farmers and hence disposable income. The need to compete with more developed markets often increases processing costs. In addition, poor households often lack the labour needed for sustainable livestock production (Heffernan and Misturelli, 2000).

Therefore, any attempt to better understand poverty both within the livestock sector and externally, must address the apparent contradictions and conflicts between the causes and consequences of poverty, the needs and capabilities of the poor and the benefits and costs of livestock production. Consequently, in order to develop effective poverty alleviation mechanisms and strategies, the association between the three

elements must be derived. Figure 1 describes a proposed relationship between the needs, consequences and increased costs for poor livestock-keeping households.

Figure 1: The cycle of poverty for poor livestock keepers



As the figure illustrates, the poor have both wider needs with regard to food security, health and housing and more specific needs related to livestock-related livelihoods such as access to markets, livestock drugs and extension advice. Obviously, first order needs must be secured prior to the livestock-related requirements being addressed. In addition, households must balance subsistence needs against the costs of livestock production such as expenses for feed/medicine/housing and both the direct and indirect costs of labour. With any of these elements missing, households with livestock are more vulnerable rather than less, to the consequences of poverty such as increased livestock morbidity and mortality and loss of the

productive assets of the herd. Conversely, the cycle may be broken by projects and programmes, which support the capabilities and agency of the poor with regard to livestock thereby enhancing the benefits of livestock production for the households involved. Nevertheless, livestock production does not occur in isolation. While the poor are largely marginalised from commercial trends, projects and programmes must account for the global factors predicted to impact the livestock sector.

The wider policy environment

De Haan *et al.* (2001) argue that at the global level, the following 'driving forces' will influence the livestock sector for the foreseeable future:

1. Increased consumer demand for livestock products with subsequent shifts in livestock production.
2. Altering macro-economic and institutional structures and environments.
3. Changing roles and functions of livestock for producers.

Indeed, consumer demand for livestock products is predicted to rise by 50% from current levels by the year 2020 (Delgado *et al.*, 1999). The majority of this demand will be from developing countries. Reasons for the predicted increase in livestock products are threefold. First, there is a global human population trend toward urbanisation. Equally, it is predicted that as developing country consumers become more affluent the demand for meat and milk will increase. Finally, the high income elasticity of demand for meat and milk in developing countries will further fuel increased consumption levels (Delgado *et al.*, 1999). Equally important as the increased global demand for livestock products is the shifts in ecological areas of livestock production. According to De Haan *et al.* (2001), livestock production is currently shifting from temperate to sub-humid zones. The implications of such large-scale changes in production are currently unknown. One obvious potential area of concern may be the differing epidemiological implications of disease constraints in humid areas. All of the above features are currently referred to as the 'livestock revolution.'

The second area of present and predicted change in the livestock sector is via the rapidly fluctuating global economic trends and institutional policies and practices (*ibid.*). Indeed, the livestock sector in many Southern countries has been deeply impacted by structural adjustment, decentralisation and rationalisation of livestock services. Equally, the development community itself has also been subject to change. Indeed, most policies and programmes now must at least acknowledge the New Poverty Agenda with its attendant focus on rural livelihoods and participatory development. Consequently, decision-making at all levels will be influenced by these policy shifts. Nevertheless, the resulting inter-linkages and relationships between these macro-economic trends and the institutional policy environment remain unknown. Finally, De Haan *et al.* (2001) argue that the function of livestock in many farming systems is changing. Indeed, increased mechanisation will further negatively impact livestock production in the coming decades.

Nevertheless, the impact of all of these global trends in the livestock sector on the poor requires further research. Indeed, it is unclear how the 'livestock revolution' will actually, rather than theoretically, impact poor livestock keepers. For example, with the increase in demand, obviously poor producers could potentially benefit from supplying products to an expanded market. The poor, however, are not the only producers who will be seeking to increase sales and market share. Large-scale industrial systems have expanded at a faster rate than other livestock production systems in recent years (Delgado, *et al.*, 1999). Additionally, the removal of barriers to trade means that local producers may have to compete with imported products.

However, the means available to producers to meet the increased demand for livestock products are limited. As Pilling (2002) noted:

In the past, rises in livestock productivity in developing countries have largely been the result of increased livestock numbers. However, continued growth of national herds is constrained by limits to the availability of land. In many countries, human population expansion is eroding large areas of rangeland, which were traditionally reserved for livestock keeping. As such, production rises will increasingly depend on a greater productivity per animal. Therefore, the extent, to which livestock producers are able to adopt practices to enhance productivity, will become more and more important.

Indeed, a comparison of the productivity achieved under intensive practices with those found among small holders in similar locales, demonstrated that existing technologies can greatly enhance productivity (Delgado *et al.*, 1999). Feeding, animal health, breeding, and management practices all offer potential for areas for improvement (Pilling, 2002). While well-known techniques such as improving feed quality can have a marked effect on production levels (FAO, 1999), it is believed that the demands of the 'livestock revolution' will require feed resources beyond the capacity of many mixed farming systems. Hence, farmers will be more reliant on grains, which are likely to be imported (Delgado *et al.*, 1999). Consequently, many of the potential benefits of the expanded market will fall to those producers who are able to adopt production practices considerably different from those found among poor livestock keepers (Pilling, 2002).

Thus, without policies which facilitate the participation of the poor, the danger is that the potential benefits of the 'livestock revolution' will not accrue to the least well-off. It is argued that the removal policies that distort the market in favour of large-scale production would eliminate much of the competitive disadvantage faced by small producers (*ibid.*). Nevertheless, the intensification of animal production, generally places greater demands on livestock services. Research has demonstrated that access to livestock services is a major problem for the poor (Heffernan and Misturelli, 2000; Heffernan *et al.* 2002). Thus, prior to making conclusions regarding the impact of the 'livestock revolution' on the poor, it is necessary to further examine the opportunities and constraints faced by poor livestock keepers in the face of these global trends.

Conclusions

Livestock keepers are a growing subset of the global community of the poor with unique capabilities and needs. However, poor livestock keepers are not a generic and homogeneous group, in which the application of a single solution is sufficient. Rather, to be effective, projects and programmes must account for the rich diversity of producers at the community, national and international levels. Therefore, a better understanding of the unique needs of the differing groups of poor livestock keepers is required. As such, further research is needed to develop a more detailed typology of poor livestock keepers. To effectively inform policy and practice, such a typology while documenting basic characteristics, should also include the values, aspirations and attitudes toward livestock keeping.

However, it has been increasingly recognised that while livestock keeping and poverty alleviation are closely linked, livestock development projects have rarely fulfilled their promise with regard to the poor. Therefore, given the lack of positive poverty outcomes, it is clear that a new approach to livestock development is required. To be successful, such an approach must closely account for, and address, the realities faced by the poor. Livestock keeping, unlike other livelihood activities, produces an appreciating asset, but also incurs costs for the households involved. At the household level, understanding the factors that inform decision-making will greatly improve the uptake and impact of projects and programmes, particularly those delivering new technologies.

Finally, it is clear that in the coming decades, poor livestock keepers will be subject to a number of forces predicted to sweep the global livestock sector. Additional research is required to illuminate precisely how these trends will impact the poor and the ways and means that these forces can enhance, rather than further limit, the sustainability of livestock-based livelihoods. Thus, with the appropriate support, livestock can, and should be, a key mechanism in the fight for global poverty alleviation.

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