Livestock Services and the Poor

Part I

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PART I: BACKGROUND

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 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, 2001). 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 problems that poor livestock keepers face.

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.

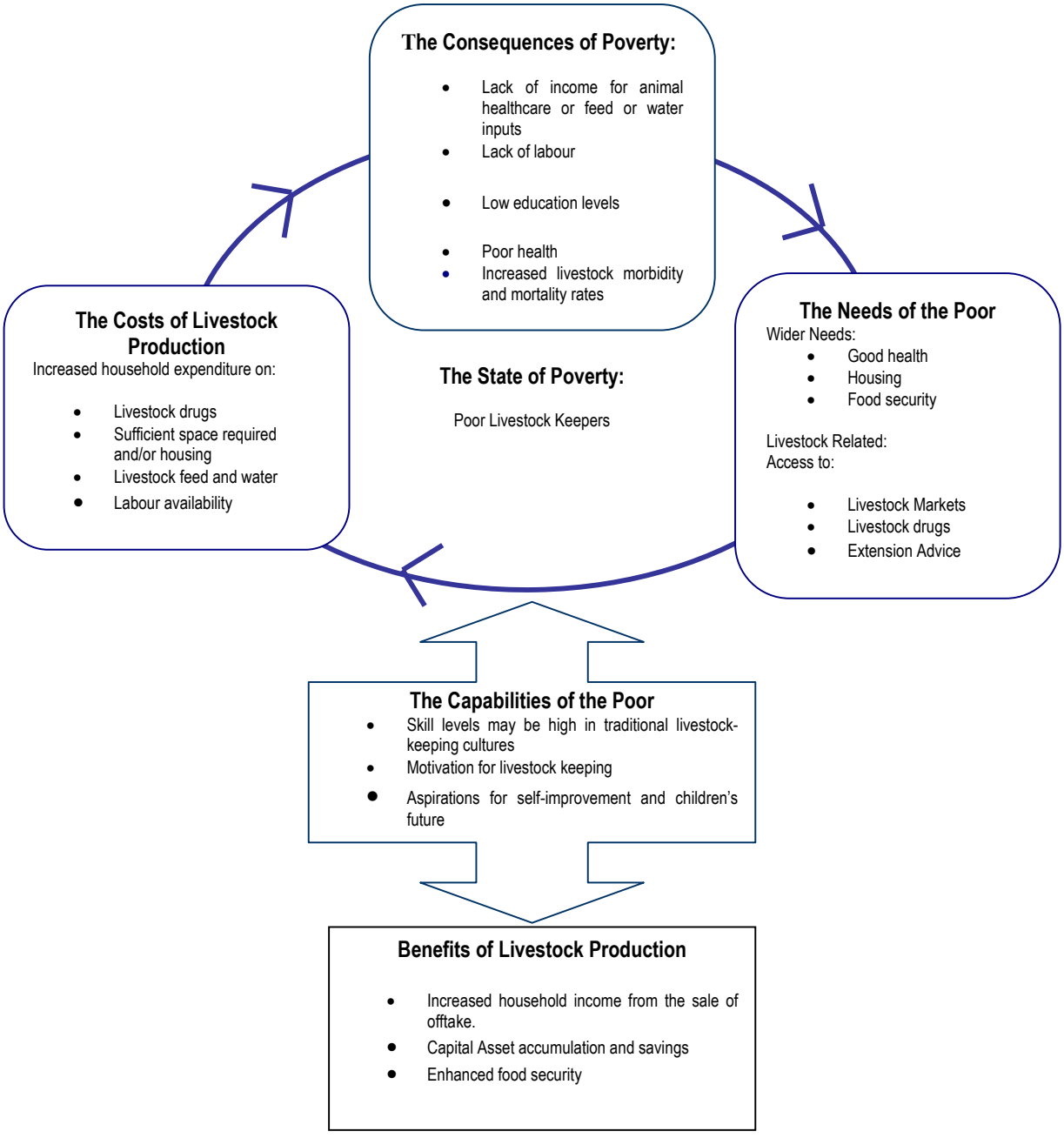
Consequently, it is important, when considering poverty that the capabilities and agency of the poor are not ignored. Inarguably, livestock are a key means to facilitate the potential of the poor. The sale and consumption of animal products decrease the vulnerability of households to normal seasonal 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.

Therefore, the objective of Part I of the review is to examine the impact of livestock keeping on the lives of the poor. The role of livestock in enhancing the ability of poor households to obtain secure livelihoods will be explored in addition to issues in the delivery of livestock services. Therefore, the following document is divided into five sections. The first section offers a profile of poor livestock keepers and a definition of poor livestock keeping households. In the second section evidence to support livestock as a form of financial and social capital for the poor is offered, whereas, in the third section, the role of gender in livestock keeping is examined. In the fourth section, a brief overview of the actors and agents involved in livestock development is presented in addition to a discussion on the role and influence of livestock development on the poor. Finally, in the closing section, the wider forces driving practice and policy within the livestock sector are explored.

SECTION I: PROFILES OF 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).

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. 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; Pagot, 1992; 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: SERÈ 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. As Perevolotsky (1990) notes, agricultural production systems 'are strongly intertwined not only with environmental factors but also with social, cultural and political aspects forming one complex production process.' Equally problematic is the landless category. 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 (Heffernan *et al*. 2002). 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 (*ibid.*). 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 (*ibid.*). 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 offered by Heffernan *et al*. (2002) 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 (HEFFERNAN ET AL, 2002)

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.

Urban Scavenging Pigs in the Twin-city of Hubli-Dharwad, Karnataka, India.

'Hubli-Dharwad has a significant number of scavenging pigs, owned by quite distinct communities within the city. These communities include the Hindi "Gollar" communities and the Bhils community from the Punjab, whose main occupation is hammering scraps of metal into utensils. As with buffalo keeping, pig owning is a tradition, handed down from generation to generation… The pigs represent a source of cheap protein, for certain social groups which consume pork, as they rely on low cost sources of feed - street rubbish, waste from hotels and restaurants, soil and vegetation. The pigs, or pork, are transported to the consuming markets in Goa and at Hassan, Mangalore and Bangalore, in Karnataka.

…The perception dominates that pigs are a nuisance and pose a threat to health, despite the role they play in consuming night soil and other organic wastes. The degree to which they constitute a health hazard, however, varies considerably and is unclear. For instance, Japanese encephalopathy - a disease carried by pigs but transmitted by a mosquito, which lives in irrigated rice paddies - is not a problem in the city, as there are no paddy fields. Public safety is at times at risk due to pigs dashing out into traffic on the roads, though this is obviously a danger for the pigs as well.' (Nunan, F., 2002. http://www.ruaf.org)

Nevertheless, while the above typology offers a preliminary description of where poor livestock keepers reside, information regarding the relative numbers and proportion of poor livestock keepers living in each of the different systems is absent. Therefore, the next question of importance is how many poor livestock keepers are there?

ESTIMATIONS OF POOR LIVESTOCK KEEPERS

At present, there is very little information regarding the numbers of poor livestock keepers. Indeed, only a few pioneers have attempted to provide an approximation of the numbers of poor livestock keepers, with varying levels of specificity. Therefore, the following discussion is primarily based upon the work of LID (1999) and Thornton as described in Perry *et al.* (2002).

However, prior to delving into current estimates, a brief overview of the potential

approaches to the problem may help clarify the forthcoming discussion. At first inspection, it would appear that there are two primary ways of estimating the global number of poor livestock keepers. The first approach is to utilise existing poverty statistics to determine the number of the poor and then calculate the population owning or keeping livestock. The second means of deriving an estimate would be to focus on the livestock production systems, calculate their human inhabitants and then refine the number utilising poverty criteria to identify the poor. Although seemingly straightforward, the fundamental problem with both approaches is the lack of data. At present, there is a large amount of global poverty statistics on who the poor are and where they live. Equally, Sere and Steinfeld's (1996) work, as mentioned above, identifies global livestock production systems and further offers an estimate of the human population residing within each system. Nevertheless, at the second level of the analysis little further information exists as to either of the numbers of the poor who own livestock or the proportion of livestock keepers, who are poor. Hence, to surmount the issue, current efforts focus on poverty mapping i.e. overlaying the global statistics of the poor with the geographic distribution of the livestock production systems. Obviously, without primary data, the approach can only depict trends and identify general geographic foci of livestock and poverty. Nonetheless, work in this area is important as it enables a wider understanding of both the magnitude of the problem and the importance of livestock to the poor. Consequently, the following section explores first, efforts to calculate the number of poor livestock keepers offered by LID (1999) and more recent attempts at 'poverty mapping' by Thornton *et al*. (2001).

As the following table demonstrates, LID (1999) estimates the number of poor livestock-keepers as approximately 1 billion with a further breakdown offered by agro-ecological zone. According to the authors, the figures were derived by cross-referencing Sere and Steinfeld's (1996) total for the human population residing in each livestock production system with poverty data from UNDP (1997) and 'studies of livestock ownership patterns'. As such, it appears that LID chose the second approach as described above.

TABLE 3: NUMBERS OF POOR LIVESTOCK KEEPERS (IN MILLIONS)

Agro-ecological Zone	Pastoralists	Subsistence farmers	Landless	Total
Arid and Semi-Arid	87	336		423
Temperate	107	158	107	372
Humid, Sub-Humid and Tropical		192		192
Total	194	686	107	987

Although specific details of the calculation are not offered, numbers very close to those given by LID (1999) may be obtained as follows. First, the percentage of households living in poverty appears to have been derived from a 1997 UNDP report from 10 Sahelian countries which found that in the arid zones the Human Poverty Index (HPI) was 61%, whereas, in the humid zone the HPI was 26%. Next, the total human population appears to have been estimated by subtracting OECD, other developed countries, CIS and Eastern Europe populations from the world totals as

offered by Sere and Steinfeld (1996). The two figures are then multiplied for each of the agro-ecological zones.

While offering a rough approximation of the numbers of poor livestock keepers, a variety of problems may be noted with the calculation. First, it is unclear how widely applicable the poverty percentages for the Sahelian countries are to the rest of the globe. Second, the system is prone to double counting. For example, it is possible in the above estimation that landless livestock keepers in rain-fed mixed areas have been tallied twice. Finally, Seré & Steinfeld's (1996) human population figures offer estimates of the total number of individuals living within the geographical areas represented by the production systems. Therefore, it is unknown if the above figures distinguish livestock from non-livestock keepers.

The Human Poverty Index (HPI) vs. Participatory Poverty Assessments.

The UNDP created the Human Poverty Index in order to poverty broaden poverty assessments away from their traditional focus on income. As such, the HPI concentrates on deprivation in three areas: longevity, knowledge and the standard of living. Longevity is represented by the adult mortality rate below the age of 40, while access to knowledge is calculated by the percentage of adults who are illiterate. To assess living standards, the levels of access to health services and safe water is calculated in addition to the percentage of malnourished children under five (UNDP, Human Development Report, 1997).

Conversely, The World Bank's Participatory Poverty Assessments (PPAs) offer a means to understand poverty from the perspective of the individuals involved. PPAs are comprised of a collection of participatory methods to measure perceptions of poverty, the sustainability of different livelihood strategies and the levels of social exclusion and marginalisation. Therefore, PPAs do not provide a strict set of indicators or 'blueprint' for practitioners but rather offer a method for the 'voices of the poor' to be heard.

More recent attempts at poverty mapping also utilise Seré & Steinfeld's (1996) production system classification and human population figures. However, the rural poverty figures, as detailed by the World Bank (2000) were chosen as the most appropriate set of poverty statistics, as it was argued that the majority of livestock keepers are rural dwellers.

Again, a number of methodological issues may be flagged. First, it is not clear from Robinson's (2001) review how Thornton *et al.* (2001) obtained national level population figures from Seré & Steinfeld's (1996) regional totals. Further, the application of the same national level statistics to all the production systems in the country is less than ideal. It is presumably not the case that poverty is evenly distributed between production systems. Equally, the figures represent the numbers of poor people in each production

system rather than livestock keepers in particular.

To address the issue, Thornton *et al.* (2001), as described by Robinson (2001), attempted to further refine the method by overlaying the global estimates for poor livestock keepers as offered by LID (1999). Nevertheless, some discrepancies may arise from the approach. For example, the LID (1999) figures lump together several production systems and do not break down the figures by region e.g. poor livestock keepers living within the humid/sub-humid grazing system are not accounted for. Conversely, Thornton *et al.* (2001) assumed that 76% of the poor people within this system are livestock keepers, based on the combined figures for all grazing systems.

Table 4 offers the numbers of poor people by production system as calculated by Thornton *et al.* (2001), utilising India and Kenya as examples.

TABLE 4: NUMBERS OF RURAL POOR AND POOR LIVESTOCK KEEPERS BY PRODUCTION SYSTEM IN INDIA AND KENYA

	LGA	LGH	LGT	MIA	MIH	MIT	MRA	MRH	MRT	LL	Total Rural	Total
Poor people -India	1,046,363	89,050	56,962	152,886,387	54,279,823	160,541	95,816,959	42,506,386	2,942,999	2,073,242	351,858,711	370,345,889
Poor livestock keepers - India	795,236	67,678	43,291	39,750,461	14,112,754	41,741	65,155,532	28,904,343	2,001,239	539,043	151,411,316	
Poor people - Kenya	426,955	87,186	102,736				2,215,033	2,633,668	5,243,540	114,665	10,823,783	13,895,566
Poor livestock keepers - Kenya	324,486	66,262	78,080				1,506,222	1,790,894	3,565,607	29,813	7,361,363	

Source Robinson (2001), adapted from Thornton *et al.* (2001). LGA=grazing arid; LGH = grazing humid; LGT =grazing temperate/highland; MIA =mixed irrigated arid; MIH = mixed irrigated humid, MIT = mixed irrigated temperate/highland; MRA = mixed rain-fed arid, MRT = mixed rain-fed temperate/highland; LL = landless (peri-urban)

By focusing on specific livestock production systems, the table offers a greater geographic specificity than earlier attempts to estimate the number of the poor. Nevertheless, it is clear that a number of problems remain. First, as was demonstrated in the previous section, poor livestock keepers reside at the margins of traditional livestock production systems. Therefore, by overlaying the total number of the poor (who may or may not own livestock) upon production systems, in which it is unlikely that poor livestock keepers wholly reside, may be prone to error. Indeed, it is also apparent that a number of poor livestock keeping populations have been missed out by the approach. For example, urban livestock keepers are potentially one of the fastest growing populations of the poor. Increases in urban livestock production are currently mirroring large-scale rises in urban poverty. Furthermore, the calculation does not account for an equally important population of the poor: households who are dependent upon livestock-related industries. For example, many poor pastoralists in Kenya are involved in livestock marketing either driving animals to market or loading livestock on trucks. These households are one group of a much larger global population about which, very little is known. Equally, the method does not account for the depth of poverty. Livestock play different roles in the livelihoods of the poor in each of the production systems. Robinson (2001) notes the possibility of developing a weighting system in order to give higher priority to those livestock keepers, who are the most dependent on livestock. However, the availability of data remains a problem for making adjustments of this kind.

It is clear that Sere and Steinfeld's Production system classification was never intended to describe the poor. Consequently, it is unlikely that the system will have sufficient flexibility to account for present or future shifts in either the location or depth of poverty. To enhance the accuracy of current methods, additional data may be obtained from the qualitative assessments of poverty, such as those derived from PPAs. On a country by country basis, this qualitative data may help refine and further inform efforts to determine both the nature and location of poor livestock keepers.

The above discussion illustrates some of the pitfalls and problems currently faced by researchers in determining the numbers of poor livestock keepers. As such, it is apparent that work is only beginning is this area and further research is required. Nevertheless, both of the aforementioned studies have been sentinel in illustrating the large and hitherto unrecognised proportion of the global population of the poor who are livestock keepers. However, less nebulous is the role of livestock in the livelihoods of the poor. The following section further explores livestock as a form of food and livelihood security.

SECTION II: LIVESTOCK AND LIVELIHOODS

With the advent of the Sustainable Livelihoods approach, there has been an increased interest in the role and impact of livestock in the livelihoods of the poor. In the terminology of the approach, livestock are most frequently viewed as a form of financial, social and natural capital (McLeod and Wilsmore, 2001). At the household level, livestock historically have been considered a means of increasing income and obtaining food products. Thus, livestock have been traditionally conceptualised as a form of financial capital. Recent research, however, has illustrated the hitherto unexplored role of

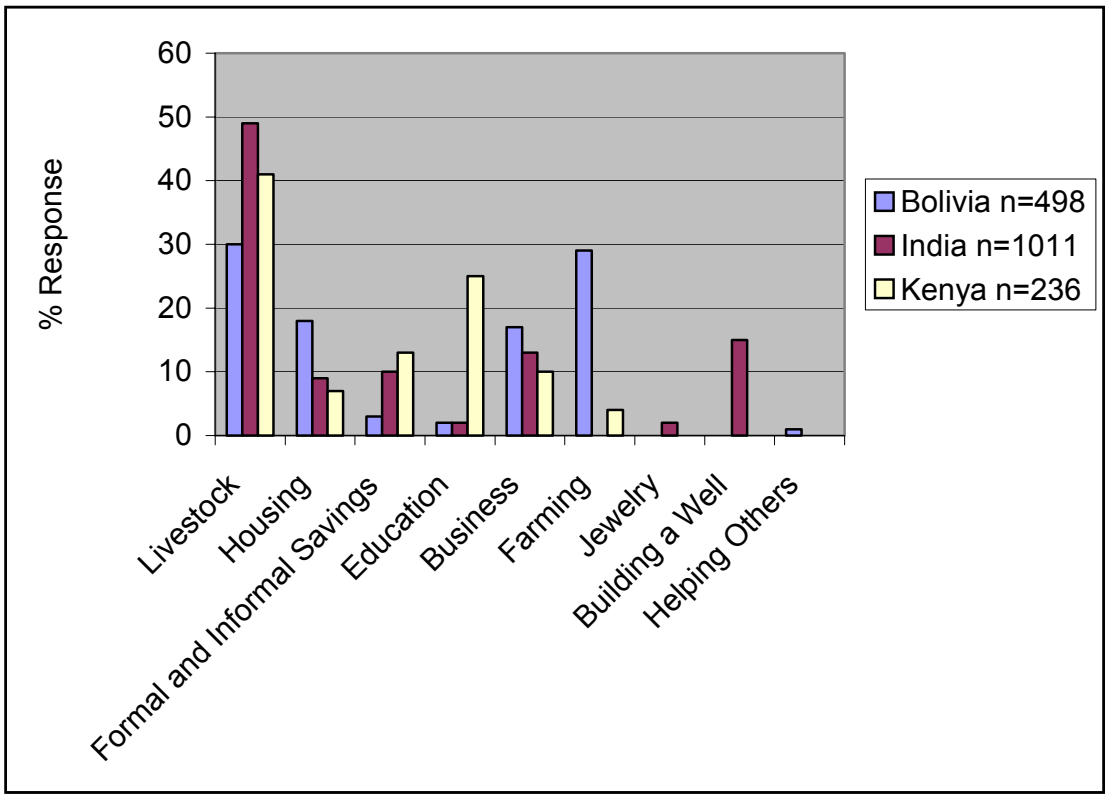
livestock in gaining social approbation and cementing social networks (Heffernan and Misturelli, 2000; Devendra, 2000; World Bank, 2001). Hence, notions of livestock as a form of social capital are somewhat new. Although the existing anthropological literature does acknowledge the social role of livestock, studies of livestock transactions as a form of social exchange are rare. Overall, the literature has given less attention to the role of livestock in supplying traction and fertiliser for agricultural production. Therefore, the following section examines the available evidence for livestock as a form of financial and social capital.

LIVESTOCK AS A FORM OF FINANCIAL CAPITAL

Financial capital is defined as the 'financial resources which are available to people (whether savings, supplies of credit, or regular remittances or pensions) and which provide them with different livelihood options' (Carney, 1998). For many poor households, livestock are the primary form of savings (World Bank, 2001; DFID, 2000, Mazzucato and David Niemeijer, 2001). As an investment, few other sources can match livestock as a means of capital growth. Equally, animal sales may allow poor households to quickly generate cash during times of need. Livestock off-take, including manure, is often a key source of income (Conroy and Rangnekar, 1999; McLeod and Wilsmore, 2001).

Nevertheless, there is very little evidence detailing the perspective of the poor on these issues. In other words, do the poor rate the importance of livestock in a similar manner? To assess the issue, Heffernan *et al.* (2001), in a comparative study of poor livestock keepers in Kenya, Bolivia and India asked households to rank the best form of investment (Figure 2). Although it was anticipated that livestock would most probably be a key investment strategy, the dominance of livestock in the results were surprising. As the figure demonstrates, livestock outranked business and housing as the best investment.

FIGURE 2: RANK OF BEST INVESTMENT



(Heffernan *et al*., 2002)

Thus, in all three countries, livestock keeping was considered the best form of investment by the poor. Livestock aside, however, there were differences in investment behaviour across the continents. For example, in Kenya, supporting children's education was viewed as a key means of securing financial stability in the future, whereas in Bolivia, education ranked lowly. Equally, in Kenya cropping activities were not considered a form of investment whereas in Bolivia the opposite was found. Finally, in India, education was not a large factor in future financial health, whereas building a household well was rated highly by individuals. Hence, the study demonstrated that the poor viewed investment strategies in a much wider sense than strictly monetary gain.

Nevertheless, the overall dominance of livestock is contrary to a recent report (World Bank, 2001) that details the changing functions of livestock in the livelihoods of the poor. Indeed, the report concludes the following:

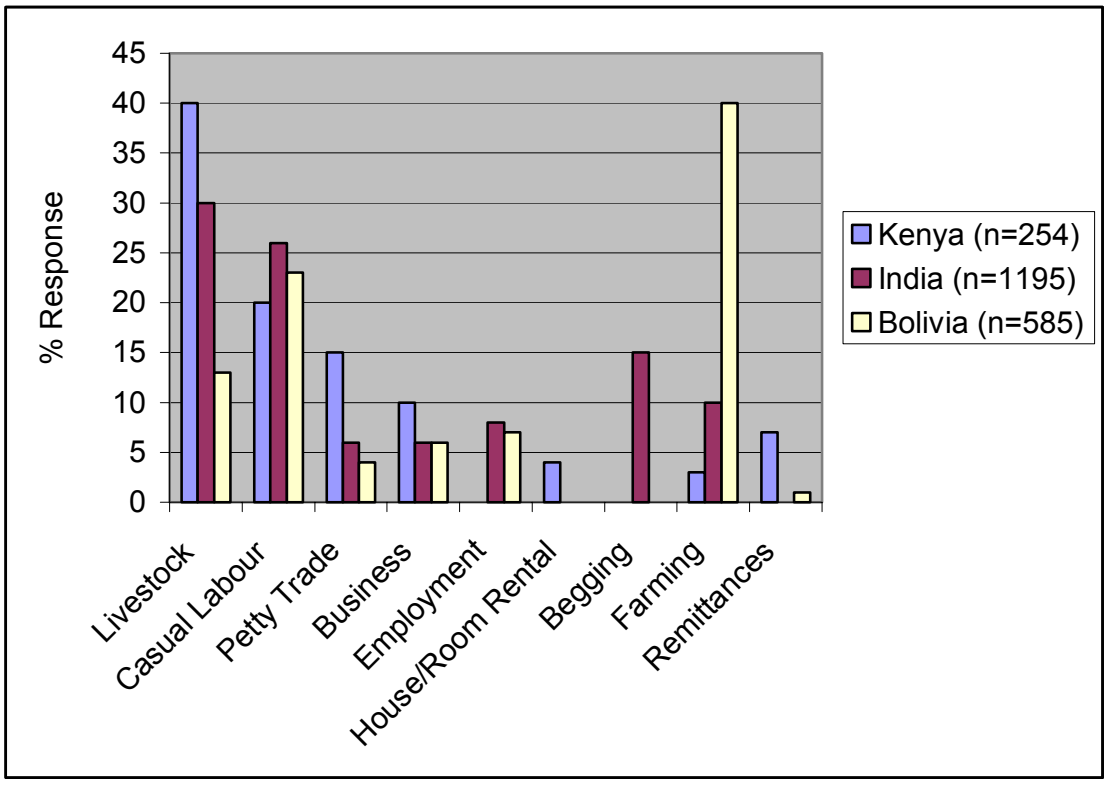
> The 'banking' function of livestock is probably declining in most parts of the world, although it is increasing in others. Following the increasingly successful establishment of informal and formal rural finance institutions, such as the Grameen Bank in Bangladesh and the decline in inflation rates in many countries, the attractiveness of livestock as a source of investment is

decreasing somewhat in parts of Asia and sub-Saharan Africa.

However, evidence is not offered to detail the claim. Equally, the statement ignores the fact that many small savings and credit facilities enhance rather than diminish the acquisition of livestock by the poor.

Nevertheless, research has demonstrated that the results of ranking exercises may be influenced by a number of different biases (Misturelli and Thomson, 2000; Mosse, 1999). Therefore, to verify the above results, the study investigated whether the perceptions of livestock as a form of investment matched the realities faced by households (Heffernan *et al*., 2002). Hence, herders and farmers were then asked to rank the sources of income most important to household well-being. As the following figure demonstrates, livestock again featured highly (Figure 3).

FIGURE 3: RANK OF INCOME SOURCES



(Heffernan et al., 2002)

Despite the large number of different livelihood activities that households were involved in, livestock were ranked first in importance to household income for the majority of households in Kenya and India. Again, not surprisingly there were differences at the country level. For example, in the mixed farming systems of Bolivia, crop sales figured highly. Interestingly, in India begging activities were noted by a number of households to be the most important to household income.

However, in addition to benefits, livestock-rearing also holds risks for the poor. Given low levels of disposable income to purchase inputs, the production risks are perhaps greater for poor producers than for those who are better off. Furthermore, livestock-related income frequently has seasonal peaks, which may negatively impact the poor. Less well-off households may not benefit from seasonal price increases due to the year round need to generate off-take for foodstuffs and other basic requirements (Heffernan and Misturelli, 2000).

Furthermore, it appears that the importance of livestock as a form of financial capital also varies depending on the socio-economic standing of the households involved (*ibid.*). For example, studies in India have demonstrated that livestock-related income is inversely related to the size of land owned (Singh and Tiwari, 1994; Conroy and Rangnekar, 1999). A number of other authors have also found that livestock, as a form of income, takes on increasing importance the greater the poverty of the households (Heffernan and Misturelli, 2000; McLeod and Wilsmore, 2001; World Bank, 2001). Hence, factors that negatively impact livestock production will have a larger effect on the poor. However, few authors have explored the negative impact of livestock production on the poor and potential adverse effects are rarely mentioned in the literature. Hence, further work is needed in this area.

Livestock, however, do not only play a role in the economic wellbeing of the households involved but, as the following section illustrates, also have a role cementing social relationships and gaining social approbation for the households involved.

LIVESTOCK AS A FORM OF SOCIAL CAPITAL

Social capital is defined as the '…features of social organization, such as trust, norms and networks that can improve the efficiency of society by coordinated actions (Putnam, 1993).' A study by Woodcock and Narayan (2000) classifies social capital into three different types: bonding, bridging and linking. Where bonding social capital are those ties between immediate family members and bridging social capital refers to weaker relations between persons of differing geographic, ethnic or occupations. Linking social capital in this grouping describes the relationships between poor people and formal institutions such as NGOs, governments, etc. As the following section will demonstrate, livestock loans and gifts meet all of the aforementioned criteria for bonding, bridging and linking social capital relationships.

However, social capital, as a concept, is recognised as being one of the most difficult to measure and assess (Attanasio and Szekely, 1999, Rakodi, 1999). As Rakodi (1999) notes:

> [Social capital] As a relational concept can not be measured in its own right and assessment relies on proxy indicators.

Nevertheless, livestock are one means in which a family's or household's social capital

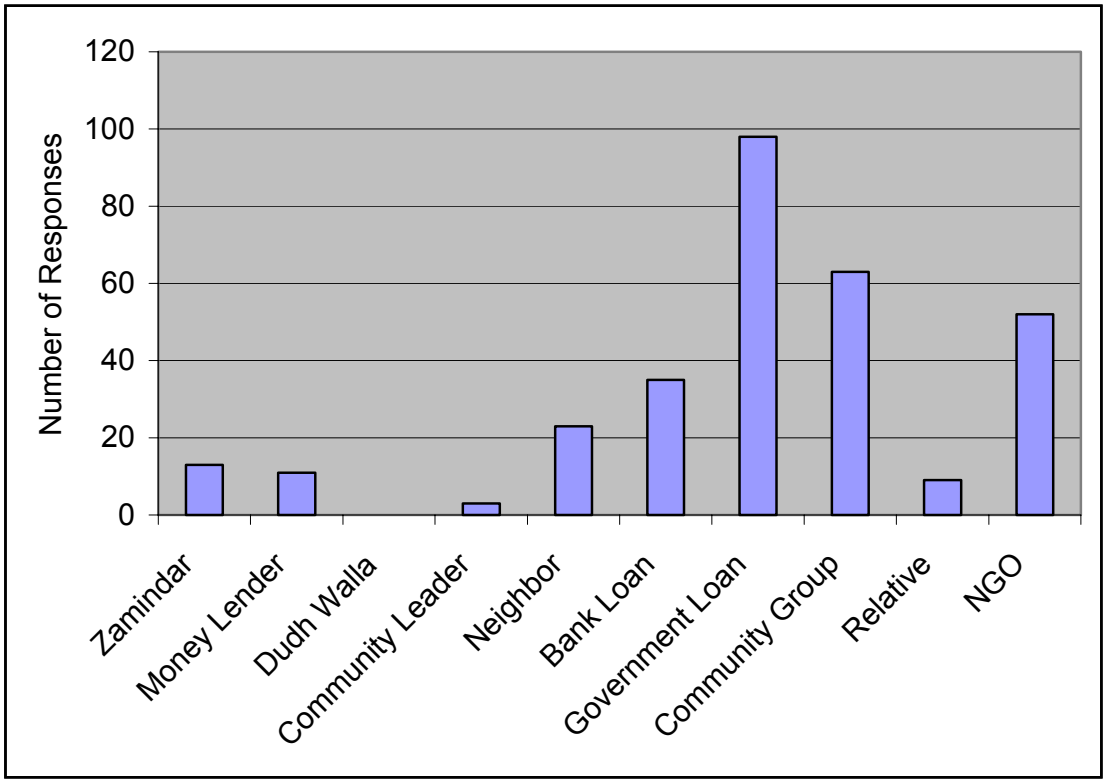
may be measured. For example, for many poor households, livestock may be shared or loaned between friends and neighbours or reared for absentee owners (Beck, 1994, Heffernan and Misturelli, 2000). Share-rearing arrangements can vary widely from straightforward rental agreements to more complex loan arrangements whose duration of payback may be inter-generational. Animals may also be given as gifts and in this manner; livestock can help cement social networks and community-level obligations for the households involved (Lesorogol, 2002, Spencer, 1965).

However, not all livestock loan and gift giving is based purely on social networks. For example, poor farmers in Bolivia, often participate in *Al-Partido*, a commercially based livestock share-rearing arrangement. As Heffernan *et al*. (2002) notes:

> *Al Partido* arrangements worked as follows. The herd owner lent the herd to a contractor for a specified period of time (usually 2 years) after which the core herd was returned and ½ the calf crop and any milk produced during this time was kept by the contractor. The arrangement occurred between both known and unknown parties and indeed, herd owners who were unable or unwilling to care for their livestock often advertised for *Al Partido* partners. Interestingly, however, many poor farmers expressed reluctance to take on such arrangements, as if animals died, they had to be repaid. Therefore, the risk was often perceived to be too high.

Equally, in India, livestock loans were made by and large on a commercial basis (Figure 4).

FIGURE 4: THE SOURCE OF LIVESTOCK LOANS IN INDIA (HEFFERNAN ET AL., 2002)



Although the majority of livestock loans were provided by government schemes, access to credit varied depending upon both credit worthiness and the knowledge of existing schemes offered by the governments and banks. Indeed, the study found that the poorest households were forced to utilise more traditional means of securing loans from moneylenders and the landed classes. Again, however, there was great discrimination for the poor regarding money from these sources. Poor households were often not able to get credit for livestock loans from moneylenders without offering their houses as collateral.

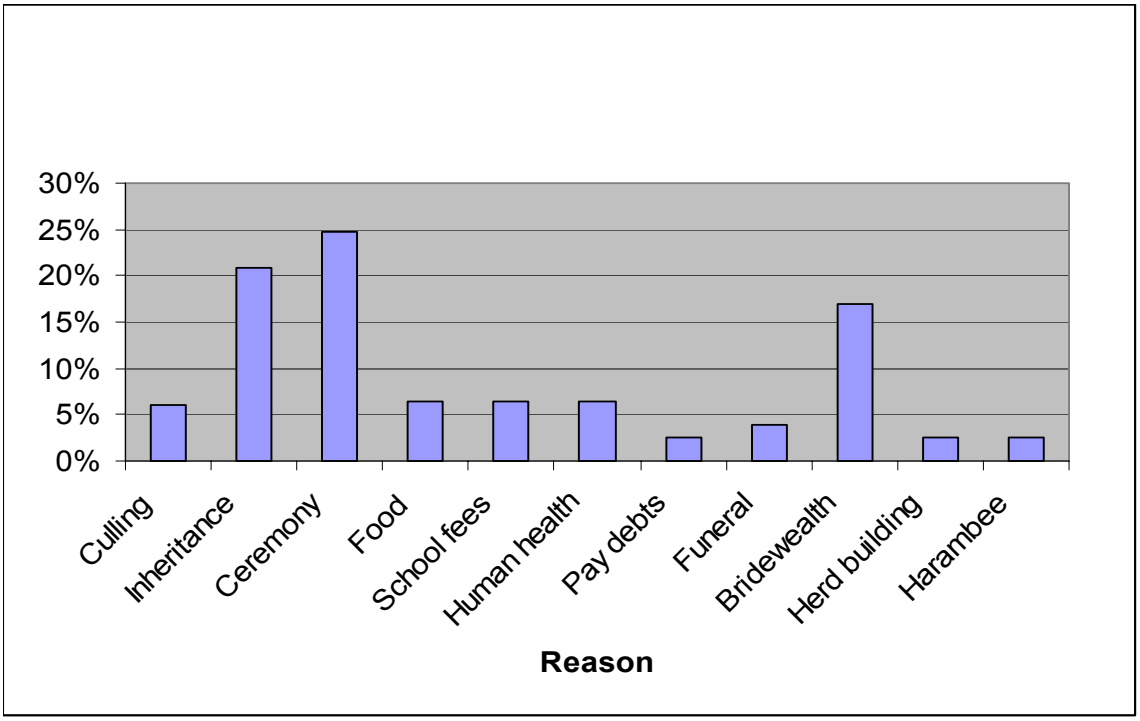
However, even though the majority of livestock loans were made on a commercial basis, long-standing share-rearing traditions, which were both inter-generational and inter-caste were found. For example, high caste urban households would often loan heifers to lower caste households residing in their natal villages to raise until maturity, at which time they were returned. In some areas, bullocks were the source of the exchange with high caste families giving young animals to lower caste households to train. Customary sources for loans included the landed classes (Zamindars), money-lenders, relatives, neighbours and the local milk men (Dudh Walla).

Among pastoralist societies, livestock loans are generally less common than livestock gifts (Heffernan and Misturelli, 2001). Furthermore, both loans and gifts tend to be less commercially oriented and more dependent upon access to social capital. As such, gifts

and loans are made under both formal and informal arrangements (Heffernan and Misturelli, 2000). For example, dowry and bridewealth in many societies are paid in cattle and smallstock. Informally, livestock are often given in direct response to the emergency needs of friends and neighbours. For pastoralists in Kenya, traditional restocking mechanisms occurred both at the community and individual level (*ibid.*). For instance, among the Boran wealthier individuals are expected to donate livestock to the less wealth-off on a yearly basis determined by sitting groups of elders. Conversely, in the Turkana region, after drought households participate in 'Esile' or the small fence where small amounts of livestock are given to herders from less impacted families. Equally, among the Samburu, notions of 'Paran' or sharing between friends, neighbours and clan-mates dominate livestock sharing arrangements.

The following figure explores the reasons offered for giving livestock gifts in Kenya.

FIGURE 5: REASONS FOR LIVESTOCK GIFTS (HEFFERNAN AND MISTURELLI, 2000)



As the figure demonstrates, a wide variety of reasons were offered for giving gifts of livestock. Equally, it is also apparent that livestock have a larger role in formal social institutions and occasions i.e. inheritance, bridewealth than in informal or need-based giving such as for food, school fees etc. Hence, the majority of livestock gifts were given to fulfil formal rather than informal social obligations.

Nevertheless, livestock loan and gift arrangements are not static and may becoming less frequent than in the past, particularly among pastoralists. For example, Heffernan and Misturelli found in a recent study in Kenya:

> …livestock gifts fulfil a wide variety of functions such as culling undesirable animals from the herd or as a mechanism for aiding relatives, friends and neighbours with school fees, hospital bills, funerals etc. However, it is also apparent that livestock have a larger role in formal institutions e.g. inheritance, bridewealth and other ceremonies than informal or need-based giving such as for food, school fees etc. Hence, the majority of livestock gifts were given to fulfil formal rather than informal social obligations.

Thus, it appears that livestock loans and gifts may be broadly divided into two categories, those that are commercially based and those dependent upon social networks (Heffernan et al., 2002). Given the complexities of different arrangements, further work is needed in this area.

Nonetheless, it is impossible to fully understand the role of livestock as a form of social capital without further understanding the role that gender plays in livestock production and husbandry systems around the globe. Consequently, the following section further explores current work and present issues involving gender and livestock.

SECTION III: GENDER AND LIVESTOCK

Historically, gender and livestock issues have been touched upon only within the wider field of agriculture (Poats *et al.*1988; Asian Development Bank, 2000). In recent decades, however, with the attendant interest in the livelihoods of the poor, the relationship between gender and livestock production has been investigated more thoroughly. Mirroring the wider literature on gender, a variety of authors have attempted to adapt existing frameworks to help systematise the study of gender and livestock (Tangka *et al.*, 2000; ADB, 2000). Not surprisingly, the majority of analyses focus on issues of division of labour, ownership and control and access to resources (Bravo-Baumann, 2000, Tangka *et al.*, 2000; ADB, 2000).

However, according to Curry (1996), frameworks that centre purely on male-female differences in labour allocation and dominion over livestock resources are limiting, as they do not account for the role of other members of the household. Moreover, by narrowing the focus, insights into the negotiation and decision-making of women and men at key stages in the livestock production cycle may be lost. As such, Curry (1996) offers the following key questions to facilitate a more complete framework on gender and livestock:

- How are important labour tasks for herd management and husbandry allocated to household members belonging to socially constructed gender (age–sex)

categories?

- What is the relative contribution of individuals from these categories to livestock production?
- In terms of property rights, which age-sex groups in the household and the community have control over the allocation and disposition of livestock and livestock products, and who benefits from this control?
- How are these gender–mediated relations of production, exchange, and resource use likely to be transformed as a result of agricultural (especially livestock) intensification and other socio-economic processes of change?

Thus, the questions attempt to highlight the dynamics of gender relations in livestock production by focusing on the process and outcome of task allocation. In this manner, labour patterns, which take into account all the members of the household, may be mapped. Issues of control are also explored and changes in gender relations resulting from the introduction of different species/breeds, new technologies, and the commercialisation of products elucidated. Nevertheless, the above questions do not account for the power dynamics around decision-making. Equally, it is not clear how the framework can illustrate the struggle for control or the specific role and meaning of livestock for the men and women involved.

Research has demonstrated that decision-making regarding household income is determined by the personal goals of men and women, and that these goals are often not shared (Cleves Mosse, 1993; Kabeer, 1995; Agarwal, 1998). For example, the traditional representation of livestock ownership suggests that men have control of large animals, whereas women tend to own only smallstock and poultry (Bravo-Baumann, 2000). However, in locales where the rearing of small stock, poultry and pigs is an important income source for the family, the management of herds/flocks is often turned over to the male household head (*ibid.*). Therefore, control over livestock and their products, is often determined by the economic function that specific animals have within the household. As such, any framework exploring gender and livestock needs to take into account the role of livestock at both the production system and household level. Despite the great influence that livestock have on the household economy, however, relatively little attention has been given to the differing perceptions of men and women regarding the function and role of livestock within their care.

Therefore, the following section explores gender opinions regarding livestock keeping. Specific attitudes towards ownership and control are examined in addition to the allocation of household labour.

PERCEPTIONS REGARDING LIVESTOCK

Attitudes and values regarding livestock are often highly polarised between the genders. For example, Thomas-Slayter and Bhatt (1994) noted that in a Nepalese village, men regarded the acquisition of buffaloes as an investment, whereas women were more troubled about management issues such as the increased workload. Heffernan *et al*. (2002) also found sharp differences between the genders in the perception and role of

livestock for poor households in Kenya, Bolivia and India (Table 5).

TABLE 5: REASONS FOR KEEPING LIVESTOCK IN KENYA

Role of Livestock	Kenya		Bolivia		India	
	Men (n=125)	*Women (n=120)*	*Men (n=348)*	*Women (n=209)*	*Men (n=606)*	*Women (n=410)*
Food Security	36%	60%	30%	30%	19%	17%
Income	8%	15%	45%	39%	59%	63%
Purchasing Food	12%					
School Fees	16%	5%				
Investments	12%	10%	11%	19%		
Traditional Life Style		10%	4%	3%	6%	6%
Dowry	4%					
Credit	4%					
Ceremonies			2%	1%		
Social Status				1%	2%	
Draught			4%	2%	4%	2%
Fuel/manure					2%	1%
Hobby			1%	2%		
Other	4%		3%	4%	8%	11%
Total	100%	100%	100%	100%	100%	100%

As the table illustrates, the majority of women in Kenya viewed livestock primarily as a means to ensure food security for the family. Whereas, men perceived livestock as a means of meeting both present needs i.e. food purchases and school fees and as form of investment. Conversely, in Bolivia the responses appeared to be somewhat more homogeneous. Both men and women consider livestock to be a source of income and a guarantee for future food security. However, more women than men perceived livestock to be an important form of investment. Not surprisingly, men valued livestock more highly for performing agricultural activities such as ploughing fields. The finding may be due to the traditional division of labour, which excludes women from activities such as field preparation and ploughing (Deere and de Leal, 1982).

In India, both men and women highlighted the role of livestock in both food and livelihood security. However, overwhelmingly, for both sexes, livestock were perceived as the most dependable source of household income. The finding may be due to the large proportion of the study group that resided in milk shed areas. As such, for most households, maintaining a high level of milk production was a priority. Interestingly, a few men noted that livestock ownership confirmed the household's social status.

Children's Welfare and Gender Spending Patterns

'The idea that enhancing women's earning power will improve welfare within the family far more than that of men is based on a number of studies showing that income in the hands of women tends to be associated with an enhancement in family, particularly children's, welfare... [It was found that] children from female-headed households had consistently better nutritional status than the rest and there was evidence that income controlled by women correlated with the improved status…' (Kennedy and Cogill, 1987)

Thus, with the exception of Bolivia, overall most women perceived livestock primarily as means of obtaining food security. Conversely, men appeared to be more conscious of the immediate benefits of keeping livestock, such as to the ability to pay for school fees, foodstuffs and human and livestock medicines. Men also tended to underline the role of livestock in the wider farming system. The differing perceptions have the potential for introducing work-related conflicts within the household. For example, in India, women often voiced resentment over the additional workload that livestock ownership demanded. It may be the case that under circumstances where livestock are merely viewed as a productive asset with little long-term food security implications, these views are more prevalent. Further research is required.

OWNERSHIP AND CONTROL

Closely related to the role of livestock, are issues of ownership and control. The two concepts are often confused in the literature. Part of the problem is the often blurred lines between the actual and de facto ownership of livestock. As Agarwal (1998) points out, '…gender equality in legal rights to own property does not guarantee gender equality in actual ownership, nor does ownership guarantee control.' Consequently, the study defines *true* ownership as when the livestock keeper has a direct say over both the animal and its products via sales and management decisions. Nevertheless, strict conceptions of ownership may be misplaced among many livestock keepers. As Smith-Oboler (1996) notes regarding cattle ownership among the Nandi people in Kenya:

> It is arguable that the concept of ownership is misplaced in speaking of indigenous African property systems. There is no single individual who has the kinds of rights in most cattle that are implied when an English speaker talks about "owning" something. In the case of most cattle, the rights of control by any individual are constrained by the rights in the same animal held by other individuals.

Few studies have accounted for these wider notions of ownership. Indeed, the majority of the literature has focused upon the degree of freedom in which women have selling individual animals or their products.

The traditional view is that women may own, but have little control over the livestock in their care. For example, among pastoralist and agro-pastoralist societies, women generally obtain livestock through culturally sanctioned, ceremonial occasions and rarely via the marketplace. Livestock are given to woman in marriage, either through bridewealth or via allocation by the husband or male family members (Joekes and Pointing, 1991; Watson, 1994; Smith Oboler, 1996). Women also inherit livestock; however their share is usually less than their male relatives (Joekes and Pointing, 1991; Talle, 1988). Indeed, as Talle (1988) notes among the Maasai, women ostensibly own animals by 'name', but don't exercise any real control over offtake. The limitations are present for both cattle and small stock herds (*ibid.*). Even in exceptional circumstances, i.e. an emergency with the husband not present, women need to consult a male relative prior to selling stock. It is this male relative, who will then be responsible for defending the decision upon the husbands return (*ibid*.).

Furthermore, little attention has been given to the informal mechanisms by which women may access livestock. A recent study in Kenya, Bolivia and India (Heffernan *et al.*, 2002) found that when the data was disaggregated by production system and agro-ecological zones, in Kenya, only 14% of pastoralist, female-headed households purchased their animals, versus 63% of men. Conversely, in the Bolivian Alto Plano, 83% of female-headed households acquired livestock in the market place vs. 96% of their male-headed counterparts. Thus, it appears that women are more able than men in accessing informal networks to obtain livestock. Nevertheless, India proved to be the exception and overall, women did not appear to benefit from either informal or formal mechanisms for livestock acquisition nearly as much men.

Control is an even more complicated issue. Overall, control over livestock resources is neither one-sided (where male heads of household dominate) nor clear-cut. Kabeer (2000) highlights how decision-making patterns in any society are usually more complex than may first appear, and take place on both informal and formal levels. Indeed, Smith-Oboler (1996) found that Nandi women exerted a strong influence on decisions regarding cattle, even when the animals formally belonged to men. As such, the author contends that much of the analysis of women's ownership and control over cattle has been over-simplified. The study also suggests that the degree of control over livestock may vary according to the importance that the different livestock products have to household income.

For example, in most pastoralist societies, women traditionally milk the animals and dispose of their products (Talle, 1988; Joekes and Pointing, 1991; Watson, 1994). Indeed, it is the female members of the household who decide on the quantity of milk for sale or home consumption by the family/calf. When viewed from this perspective, pastoral

women ultimately have a large amount of power over the viability of the herd (Bruggeman, 1994). However, it is clear that the trend away from subsistence-oriented to more commercial production has altered women's control over livestock-related resources (Talle, 1988). Studies conducted among the Fulani in Nigeria (Waters-Bayers, 1985) demonstrated how the marketisation of milk eroded the traditional control of women over milk products, thereby decreasing their power within the household. In a related finding, Smith-Oboler (1996) highlights how customary herd ownership among the Nandi in Kenya is affected by the introduction of dairy cattle.[3]

Nevertheless, it may be too simplistic to conclude that commercialisation only erodes women's power. For example, Sikana and Kerven (1991) found that when the shift was towards the marketisation of meat, women generally lost direct control over livestock products. Although women may provide the majority of labour, their work was considered replaceable; as such their power was diminished. On the contrary, when the market value for milk or dairy products was strong, women were perceived as having a reproductive role, and therefore, the value of their work was better recognised. Indeed, studies in India suggest that the participation of women in dairy production has proved to be a source of empowerment with women contributing a large proportion of the household income (UN, 1982; Roberts, 1996). However, research in India and Bolivia (Heffernan *et al*., 2002) found that if milk markets were not sufficiently viable, the introduction of dairy animals was generally unpopular among women. Indeed, rather than a means of empowerment, the animals were viewed as a source of concern. Many women complained about the increased workload and the perceived lack of benefits. Nevertheless, women's labour has been one of the better studied subjects in relation to gendered livestock development.

LIVESTOCK-RELATED LABOUR

Overall, women's contribution to livestock care-taking has been recognised in most production systems, although there is some variability in the scope and level of specific gender-related responsibilities (Niamir-Fuller, 1994). In general, women have the greatest role in mixed farming production systems and carry out the majority of tasks related to livestock. Indeed, women are believed to contribute between 70-80% of the livestock-related labour in these systems (Rangnekar, 1998; Tulachan and Karchi, 2000).

On the contrary, in traditional pastoral societies, women are attributed with spending less time on livestock related duties than on other activities. For example, Bekure (1991) estimated that women spend on average 2.5 hours per day caring for livestock, compared

[3] According to Smith-Oboler (1996), the Nandi distinguish four means of acquiring cattle: 1. Animals inherited from the male head of household which are passed directly to male heirs 2. Cattle acquired through raids or otherwise through personal efforts. 3. Cattle acquired as bride wealth (however, these animals belong to the household of the bride's family). 4. Cattle given to the bride at the time of marriage.

to 6 hours performing domestic chores. However, in most pastoralist households, tasks and workloads are strongly divided down gender lines. Women are traditionally relegated to the domestic or private sphere, whereas men are actors in the public arena (Talle, 1988).[4] Among most pastoralist societies, women are responsible for milking and caring for the young stock and any sick animals. On the contrary, men are primarily managers and supervisors. They are responsible for gathering information on range conditions, water availability, and the market, and then making the subsequent herding decisions (Bekure *et al.,* 1991). Men often oversee watering and supervise the herding. Equally, male household members make the majority of decisions regarding the sale and slaughter of animals (*ibid.*). Equally, from a very young age, children are involved in herding i.e. girls tend to herd small stock with boys and young men responsible for cattle (Bekure *et al.,* 1991; Laswai *et al.,* 1999).

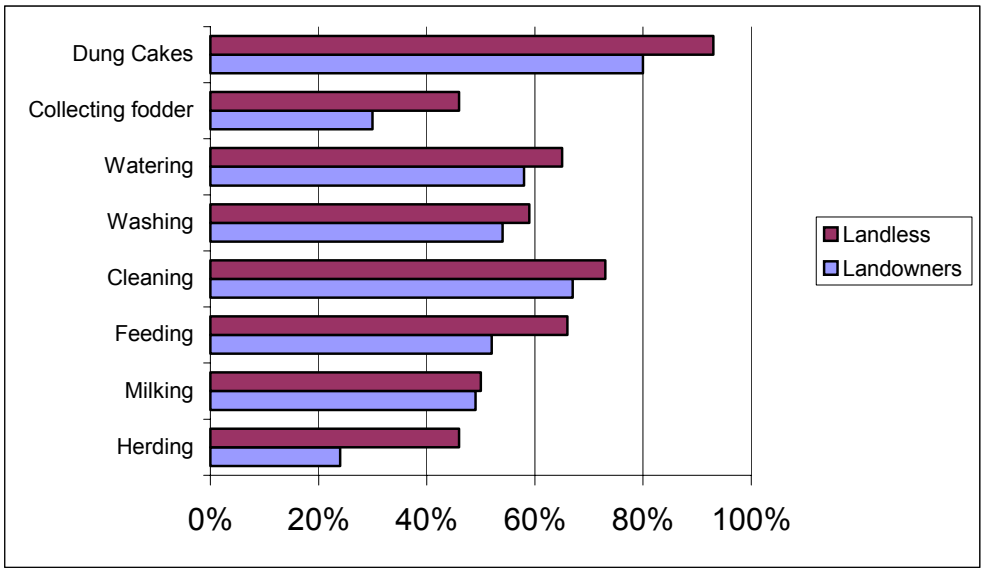
Nevertheless, there is little evidence in the literature that the socio-economic status of the household has been accounted for when exploring allocation of labour. Only a few studies have explored the relation between livestock ownership and poverty (Todd, 1998; Saleque, and Mustafa, S., 1996; ARDAF, 1999). Greater attention has been paid to the impact of economic change on poor households and the subsequent effect on gender (UN, 1982; Thomas-Slayter and Bhatt, 1994; Fratkin and Smith, 1995).

Heffernan *et al.* (2002) demonstrated the relevance that socio-economic status has on the household with regard to the division of labour. In particular, the differences in workload between landless households and landowners were explored. [5]

[4] The division suggested is simplistic and does not suggests any hierarchy of importance; it only to distinguishes spheres of influence. Talle confirms that among the Maasai, domestic work is as important as the work that men carry out in public domains (1988:9-10).

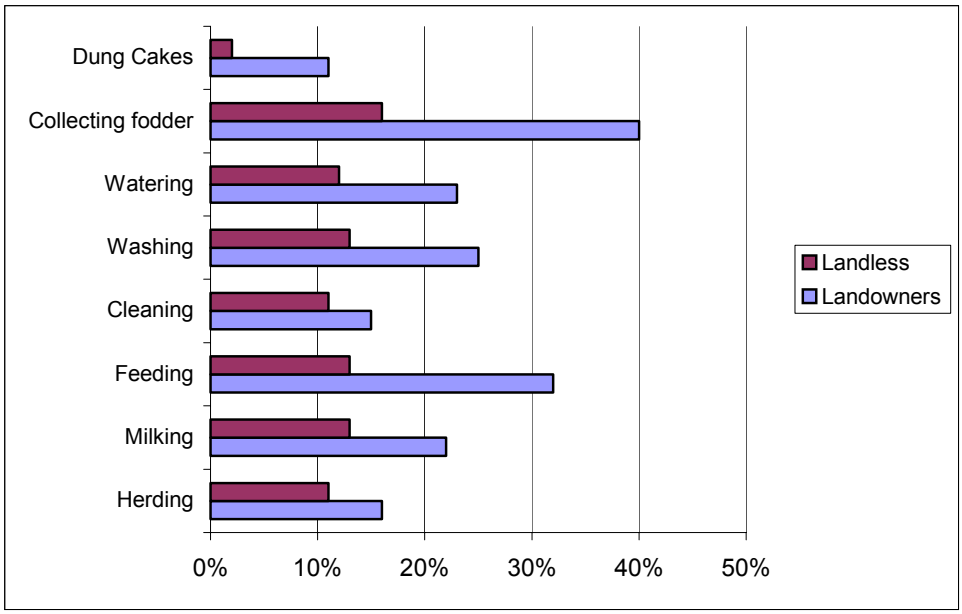
[5] The sample of landless households was chosen among households, which did not own or rent land. Conversely, the sample for landowners was comprised of households owning $\geq$ 5 acres.

FIGURE 6: WOMEN AND LIVESTOCK MANAGEMENT IN INDIA



The figure demonstrates that the percentage of women involved in all aspects of animal husbandry was greater for the landless than for those households owning land. When the data was further disaggregated, it was discovered that among households with land, there was a higher involvement of both the husband and wife in livestock care taking. Conversely, as the following figure demonstrates, in landless households, male involvement in livestock related labour was much less than for those with land (Figure 7).

FIGURE 7: INVOLVEMENT OF HUSBAND AND WIFE IN LIVESTOCK MANAGEMENT AMONG LANDED AND LANDLESS HOUSEHOLDS



The difference in the allocation of labour may be attributed to a number of factors. First, it is likely that land-owning households had greater numbers of livestock thereby creating the need for a larger livestock-related labour force. Second, it may be that households with a greater socio-economic standing are able to support more on-farm labour. Indeed, as Rangnekar (1988) notes, the involvement of women in both agriculture and livestock is inversely related to socio-economic conditions of the household. Consequently, better-off households are better able to take care of both their land and livestock assets.

Although knowledge of the role and influence of gender is vital for effective and sustainable livestock development, understanding gender issues comprises only one area of importance for livestock development practitioners. The following section offers a brief overview of livestock development trends and describes the projects and programmes commonly implemented for poverty alleviation.

Gender Sensitive Project Planning: FAO Technical Cooperation Project in, Sikkim, India (1994-1996).

The aim of the project was to improve livestock management practices by small farmers, and to improve the skills and outreach of extension staff in the East and South Districts of Sikkim, India. A strong participatory and gender focus was adopted early in the project cycle, as preliminary PRA exercises indicated that gender responsibilities and natural resource constraints were the primary issues raised by farmers.

Consequently, the project introduced new methods for training agricultural and forestry extension staff and community development workers, which included participatory assessment, planning, and monitoring; gender analysis; and rapid appraisal of tenure. The training emphasised the differences in access to various resources by gender and age, and offered practical tools to explore variations between the genders in activities, constraints, and priorities.

Use of the methods yielded considerable new knowledge about the problems of the rural poor, especially women and girls. Awareness was also raised among the Government of Sikkim (GOS) staff about the benefits of gender-sensitive, participatory monitoring to measure project impacts. Furthermore, the project increased the knowledge, abilities, and self-confidence of both women and girls who are traditionally withheld from school for agricultural tasks, and are often functionally illiterate.
(http://www.fao.org/Gender/en/Lesson-e)

SECTION IV: LIVESTOCK DEVELOPMENT AND THE POOR

As the previous sections demonstrate, livestock are vital to the lives and livelihoods of some of the most marginalised and vulnerable populations in the world. Therefore, the next question to be addressed is how livestock development can enhance the sustainability of livestock-based livelihoods. Over the past thirty years, livestock development, as the development industry in general, has undergone a great transformation. Furthermore, in the coming years, with the prevailing global economic and environmental trends, further changes in the livestock sub-sector are predicted.

Indeed, the World Bank (2001) identified the following broad 'driving forces' that will further influence changes within the livestock sector in future decades:

1. Increased demand and the consequent changes in global livestock production
2. Altering macro-economic forces and institutional environments
3. Changes in the role of livestock within Southern countries

Therefore, any discussion on livestock development must account for these changes at the macro-level. However, in order to fully understand the implications of these forces upon the poor, it is first vital that the issues and constraints faced by poor livestock keepers are adequately understood. Equally, the role of the different actors and agents must be illuminated. Therefore, the following sector is divided into three parts.

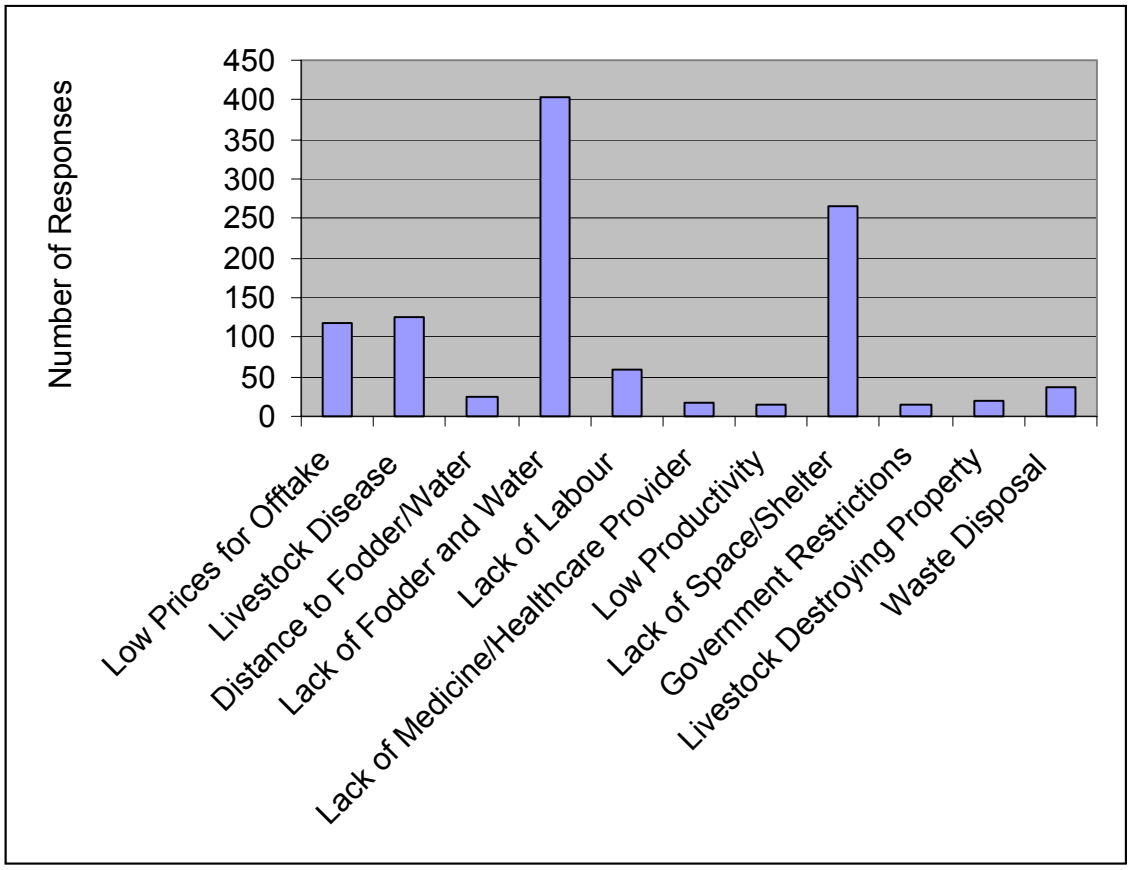
The first section explores the problems of the poor with regard to their livestock. The second section examines the role of the different actors and agents involved in livestock development and the impact of projects and programmes. The final section explores the wider policy environment and global forces impacting livestock production.

THE PROBLEMS OF THE POOR

As mentioned in the introduction, the poor face a variety of constraints with regard to sustainable livestock production. Indeed, LID (1999) divides the problems of the poor into three basic types: herd acquisition, maintenance and the marketing of livestock products. Herd acquisition refers to the ability of households to access capital and credit facilities to purchase livestock. Conversely, maintenance denotes the ability of households to obtain animal health and production services. The final categorisation refers to the frequent inability of the poor to access reliable markets for off-take.

Nevertheless, the above description may be too simplistic and ignores some of the more nuanced issues regarding livestock keeping and the poor. For example, for many poor livestock-keepers, particularly in urban areas, welfare and hygiene constraints are paramount. The lack of sufficient space and adequate housing in addition to waste disposal are key issues for the urban poor. For example, Heffernan *et al*. (2002) in an open-ended ranking exercise with over 1,300 households in India found the following results (Figure 8).

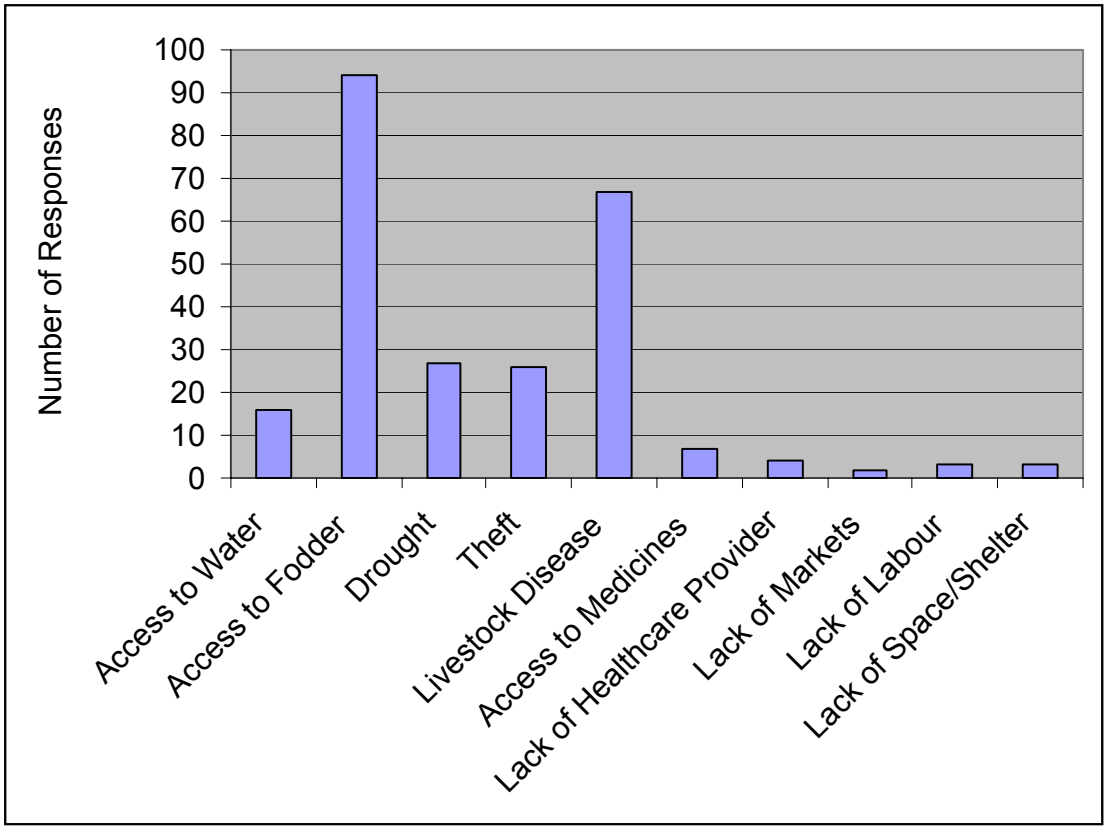
FIGURE 8: RANK OF PRIMARY PROBLEMS WITH LIVESTOCK (INDIA)



As the figure illustrates, the top four problems for the poor included the lack of fodder and water, space and/or shelter to keep livestock, animal health followed by low prices for off-take. Overwhelmingly, obtaining sufficient feed resources proved to be the biggest worry for producers. Hence, access to capital for inputs is one of the largest constraints faced by poor farmers in India. Further, there were a variety of additional problems, which while localised to specific communities, were nonetheless, overriding for the households involved. For example, urban pig producers in Delhi and Chennai encountered problems with low farrowing rates and high piglet mortality due to worry from street dogs.

In Kenya, the study also found that access to inputs, particularly fodder ranked first with regard to farmers and pastoralists perceptions regarding their livestock (Figure 9).

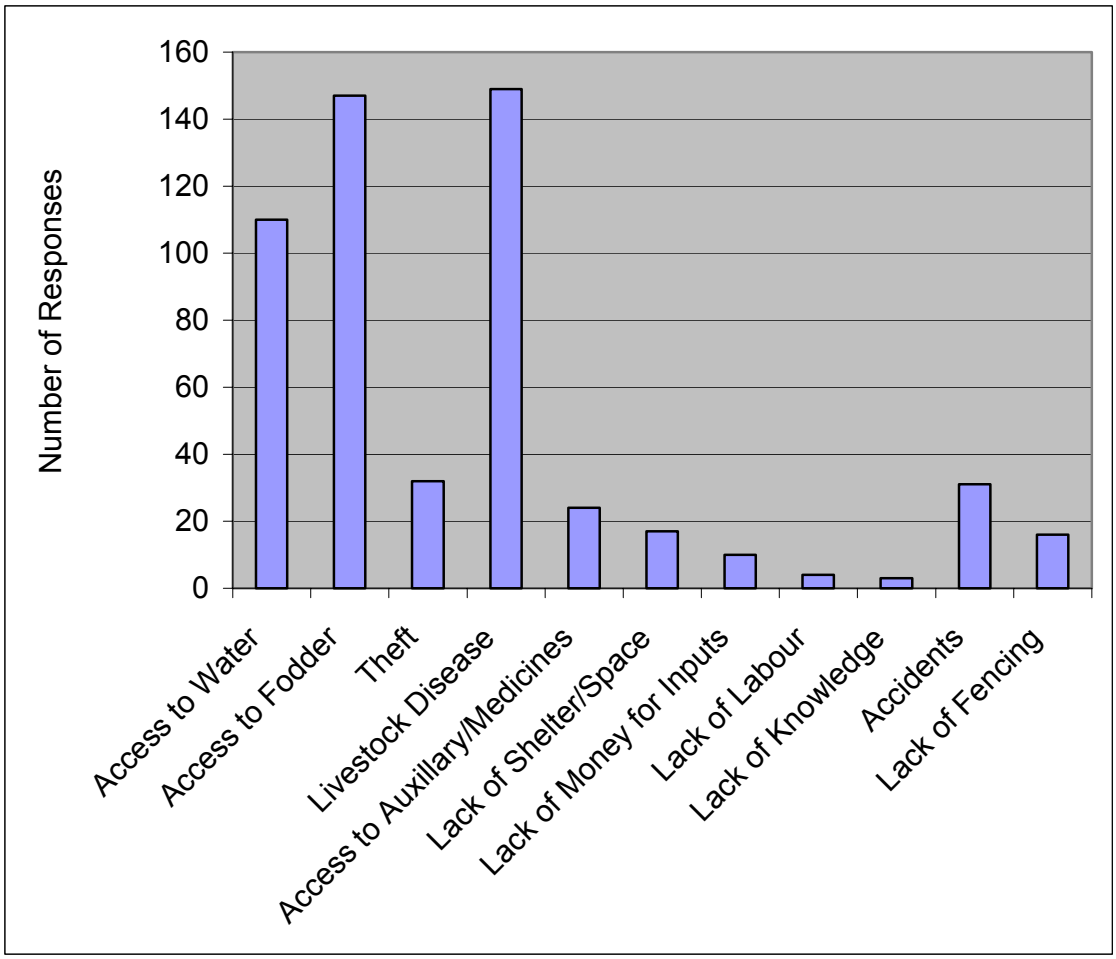
FIGURE 9: RANK OF PRIMARY PROBLEMS WITH LIVESTOCK (KENYA)



As the figure demonstrates, access to fodder was perceived as the largest problem by farmers and pastoralists with livestock disease ranking second. Not surprisingly the lack of space/shelter for livestock was not deemed as large a problem with the exception of urban livestock keepers in Nairobi. Theft was also considered to be problematic, particularly amongst pastoralists.

Again, the study found in Bolivia that although a number of different problems arose, livestock disease and the lack of access to fodder and water were the primary concern of farmers (Figure 10).

FIGURE 10: RANK OF PRIMARY PROBLEMS (BOLIVIA)



Thus, as in India and Kenya, Bolivian farmers perceived access to inputs as the primary problem. Interestingly, livestock accidents (mainly cattle ensnaring themselves in barbed wire) ranked quite highly. Additionally, a few participants believed that their knowledge regarding animal husbandry and health was insufficient.

The above analysis of the problems of the poor demonstrates the following. First, although there were regional and country variations, the problems faced by the poor regarding their livestock were surprisingly consistent. Across the three countries, the lack of basic inputs and poor animal health were considered the primary constraints to livestock based livelihoods. Second, the finding demonstrates that even our most fundamental notions of the poor must be driven by actual evidence rather than informed perceptions. In contrast to the above described study (LID, 1999), problems with livestock acquisition did not feature. Equally, the lack of markets for off-take was not considered an insurmountable problem.

Thus, perceptions regarding the problems of the poor and their livestock are at variance from the problems as described by the poor themselves. Utilising the finding as a backdrop, the following section examines general trends in livestock development and role of the actors and agents.

THE ACTORS, AGENTS AND PROJECTS

Understanding the problems of the poor is vital to delivering effective and sustainable livestock development. Today, there are five broad areas in which most livestock interventions fall: direct livestock aid, service delivery, technical responses to specific production or disease problems, institutional and capacity building projects, product value-added or storage/processing and marketing. Like other sectors, the formal stakeholders may be divided into three general groups: those that fund, those that operationalise projects and programmes and those involved in research. As such formal actors include: the government, private sector, donors, NGOs, CBOs, ARIs and universities. However, there are a variety of stakeholders involved in service delivery that fall outside of the above categorisation and as such form part of the informal sector e.g. traditional healers and community groups. Increasingly, the role of informal service providers in the provision of livestock services to the poor is being recognised. As such, many recent projects have attempted to incorporate support for alternate providers.

The following discussion explores first, the service providers and their traditional roles. Second, a more detailed examination of the relationship between the actors and agents and the different types of livestock development projects and programmes is provided. Finally, an overview of current evidence regarding the impact of livestock development on the poor is offered.

THE PROVIDERS

The following section briefly explores the role of the livestock service providers as described by Heffernan and Sidahmed (1998).

Governments

Typically, governments supported by funds by the donor community, handled the totality of livestock services from disease control to clinical and diagnostic services. As such, governments generally ran vaccination campaigns, operationalised disease surveillance systems, supported clinical services and AI, funded veterinary laboratories and extension services and have often controlled livestock markets and marketing. However, in recent decades, government veterinary services have been forced to respond to a variety of changes. Indeed, at the farm level, production has shifted away from subsistence to a more commercial orientation. Consequently, services have had to change the focus away from the herd to the individual animal.

Equally, and perhaps more fundamentally, over the past two decades, there has been an increasing trend towards the privatisation of veterinary services. Consequently, most

governments now favour the delivery of livestock services on a cost recovery basis. Equally, with the increasing levels of debate over the role of governments in the provision of public goods, many governments are limiting their roles to the following priority areas:

- Regulatory measures and quality control
- Trade, marketing and price policies
- National disease eradication/vaccination campaigns
- Production/importation of livestock drugs and vaccines
- Public Health
- Extension and training
- Research

Nevertheless, in many countries, the growth of the private sector is further limiting the role of governments.

The Private Sector: Veterinarians, Para-Vets, Auxiliaries, Community Animal Healthcare Workers

Within the private sector, operates a diverse group of actors ranging from professionals to paraprofessionals to laymen and trained members of the public. The private sector has now taken over many aspects of clinical service delivery. Equally, in many countries, the private sector has a much wider mandate and is involved in extension services, vaccine production, and with increasing frequency, animal health and production research. The majority of private sector activities have been biased towards peri-urban and accessible, rural areas, although this has been changing in recent years. As such, private practitioners primarily operate in mixed farming systems and dairying zones. Reasons include the lack of incentives for travel and poor access to the herds of the more remote populations e.g. pastoralists and agro-pastoralists. Although, NGOs have been involved in the training of Community Animal Healthcare Workers to both provide basic clinical services as well as improve the supply chain of veterinary drugs to remote areas, many pastoralist areas are still under-served.

As such, the full privatisation of clinical veterinary services faces a variety of hurdles. First, rural financial systems to support private practice in remote areas are still under-developed. Consequently, private practitioners often face difficulty in accessing capital to start-up businesses. Second, the regulatory and policy environment of many nations is still hostile to the formation of private veterinary professionals and paraprofessionals. Quality issues and safety standards in clinical services and the distribution of veterinary pharmaceuticals remain key concerns for many national regulatory bodies.

NGO-Private Sector Co-operation: Farm Africa's Dairy Goat and Animal Healthcare Project in Meru, Kenya

The project supported the privatisation of both veterinary surgeons and Animal Health Assistants (AHAs) and further trained 44 community animal health workers. Thus, while the CAHW delivered basic curative and preventive services to the farmers, the Animal health assistants (AHA) operated the rural drug shops and offered technical backstopping and assistance. Local veterinary surgeons were aided in developing private practices, which both supported the livestock drugs chain and provided a further layer of technical expertise and management to both the AHAs and CAHWs. Thus, the project aided a new and integrated form of privatisation of livestock services ranging from farmer to intermediate technical staff to veterinarian. A further strength of the project was the close relationship between the project and the government veterinary services.

Community Organisations and Co-operatives

At present, community organisations and co-operatives only play a minor role in the delivery of livestock services at both the community and household level. Part of the problem is the lack of a suitable legislative framework in which to support the localised delivery of services by non-professionals. Equally problematic is the lack of knowledge of implementing agencies of community priorities, interests and leadership capabilities. However, some successes have been noted when there is an incentive for the community to work together due to common goals and interests (e.g. ownership of livestock watering facilities, communal management of grazing areas, tsetse fly eradication campaigns etc.).

The benefits of such an approach are as follows. First, farmers have greater ownership and control and hence, stake in the outcomes of services provided in this manner. Secondly, the demand-driven nature of the formation of such groups assures that even in remote areas the client base will be sufficient to support service delivery. Therefore, as the delivery landscape continues to evolve, community based organisations may potentially play a much greater role in the future.

Traditional Animal Health Care Providers

Although the wide-scale adoption of Western veterinary medicine has, in many areas pushed traditional healers to the peripheries of animal healthcare, pockets of activity remain. Indeed, often the poorest households make the greatest use of traditional healers, although evidence has demonstrated that this is now changing (Heffernan and Misturelli, 2000). However, with the deterioration of public services in many countries, increasing attention is being paid to alternative healers and therapies. For example, the Pan African Rinderpest Campaign involves traditional healers in its training programme for Animal Health Auxiliaries (FAO-PARC, 1993). Furthermore, it has recently been acknowledged that the creation of community-based and farmer-led delivery systems demands an

understanding of local notions and perceptions of livestock disease and healing to enhance sustainability.

The Donors

As outlined in the introduction, donor driven livestock aid has undergone a wide variety of changes since the 1960s. In general, the donors have been involved in all aspects of the delivery of livestock services. Traditionally, however, donor support has been targeted at the delivery of both clinical and diagnostic services and epidemiological surveillance. The majority of donor programmes have been implemented in co-operation and partnership with national governments. Indeed, it has been the donors that have instigated large policy shifts in the delivery of livestock services and have generally changed the delivery landscape in a variety of countries. For example, donors initiated the trend towards the privatisation of livestock services within the wider context of support for structural adjustment and decentralisation. In recent years, however, donors have recognised that large-scale national-level programmes may not be that appropriate for poverty alleviation objectives. Therefore, funding has been increasingly channelled toward NGO partners.

The NGOs

Not surprisingly, NGO activity within the livestock sector has mainly been focused at the community level. Indeed, NGOs have supported a wide variety of projects and programmes. For example, NGOs have been involved in direct livestock aid and animal health delivery, community outreach, training and technology transfer. Traditionally, however, projects and programmes have focused upon capacity building and support for alternate delivery systems such as CAHW programmes. International and national level NGOs have also supported the start-up of Community Based Organisations involved in animal health, particularly in remote areas. Nevertheless, NGO activities are currently evolving with many NGOs taking a more active role in setting the animal health policy frameworks at the national level and many agencies are becoming increasingly involved in the legislative environment and regulatory frameworks (Catley, 1997). Equally, there has been greater involvement of NGOs, at the institutional level, with support for reform of animal health institutions a priority activity.

Holistic Livestock Development: Oxfam Wajir Pastoral Development Project.

The aim of the project was to support pastoral livelihoods. As such, the project was comprised of several components: livestock and human health; water development; alternate income generating activities and the establishment of Pastoralist Associations, which planned and managed community-led interventions. The project also strengthened the capacity of local NGO's and community groups to implement poverty reduction activities on a sustainable basis. The project also implemented a restocking scheme as well as a loan disbursement programme for collective enterprises targeted at women's groups (Odiahmbo et al.., 1996).

The following section further explores the differing roles of the aforementioned actors in livestock development projects and programmes.

THE RELATIONSHIP BETWEEN THE PROVIDERS AND INTERVENTIONS

Over the years, the aforementioned actors have developed varying interests and levels of expertise in specific areas of livestock development. The following table offers a rough approximation of the level of involvement of the different actors in the livestock projects listed (Table 6). Although exceptions naturally exist, the aim is not to strictly categorise the implementing agencies but rather to offer a general overview of both the level of involvement and the different interests of the wide number of players involved in livestock development.

TABLE 6: THE LEVEL OF INVOLVEMENT OF ACTORS IN PROJECTS

Type of Project	NGO-Sponsored	Donor-Sponsored	Government - Sponsored
Direct Livestock Aid			
Restocking	xx	xx	x
Micro-credit	xxx	xx	x
Support for Improved Production/Animal Health			
Animal Healthcare		xx	xx
Service Delivery	xx	xx	xx
Disease Surveillance	x	xxx	xxx
Public Health		x	x
Feed Development		xxx	xx
Extension Services	x	xx	xx
Community-Based training	xxx	x	
Institutional Development			
Advocacy	xx		
Capacity Building and Institutional Development	xx	xx	
Policy Development	x	xxx	xx
Product Development			
Processing/Cooling/ Storage	x	xxx	xx
Marketing	xx	xxx	xx

As the table illustrates, direct forms of livestock aid such as restocking and micro-credit initiatives have been primarily the domain of NGOs and donors. Indeed, historically NGOs have dominated the livestock micro-credit sector with the exception of multi-

laterals such as IFAD and the World Bank. Donor interest in restocking and micro-credit is by and large a more recent phenomenon.

Direct Livestock Aid

Traditionally, direct livestock aid has taken two forms, first as direct gifts of livestock to needy households (restocking) and second, in the form of loans to purchase animals (micro-credit). The type of project implemented has generally followed the livestock production system i.e. restocking among pastoralists and livestock loans among subsistence farmers.

Restocking activities may be divided into two general types those instituted as a means of relief or rehabilitation after disaster and those with longer-term development objectives. Initially, most restocking projects among pastoralists were implemented in response to disaster. Thus, restocking was seen as a method of 'rehabilitating' the impoverished into the social and economic fabric of pastoralism. In the ensuing decades, the focus of programmes has subtly shifted. At present, restocking is being implemented as relief, as rehabilitation and as a means of development. Projects are viewed as a way of supporting a household's immediate nutritional needs and resource base in the long term.

Micro-credit schemes for livestock are more common among subsistence farming communities. A wide variety of actors have created livestock loan schemes ranging from donors to NGOs and CBOs. In general, donors tend to provide larger amounts of capital with many projects offering loans for cattle and large-stock. Not surprisingly, NGO projects are generally smaller-scale and offer lower capital levels in line with the Grameen bank model. The results of livestock as a form of micro-credit have been mixed. Targeting, as in more traditional forms of restocking, is a large problem. The benefits of such projects are often captured by wealthier members of the community, especially when larger amounts of money are made available.

Conversely, donors and governments have primarily supported projects intended to increase livestock production via improved animal healthcare. As the table demonstrates, livestock extension, disease surveillance and public health activities have almost exclusively been the domain of the donors and governments. The NGO sector in this area has concentrated mainly on alternate delivery systems such as community based animal healthcare worker projects and programmes.

NGOs have also been active in training programmes at both the community and household level. Advocacy in such diverse areas as land tenure and conflict resolution is also the traditional domain of NGOs with donor-driven projects and programmes in this area only recently being implemented. Conversely, capacity and institutional development, at the national level, has been funded primarily by the donors with community-level programmes the domain of NGOs. Policy development, as mentioned above has generally been driven by the multi and bi-lateral donors in co-operation with national governments. Finally, a wide variety of actors have been involved in the processing of livestock products and the size and scope of projects are generally directly correlated to the implementing agency. For example, donors have generally supplied

large-scale milk cooling and processing inputs with smaller and more local initiatives funded by NGOs.

Thus, similar to other sectors, donors and governments have responded to public goods issues with NGOs programmes more focused upon addressing local needs and realities. Nevertheless, the roles are changing and the remit of NGOs and donors appears to be broadening as government service provision declines. However, even with the predicted rise of the private sector and the further decline of government inputs, it is anticipated that influence of donors and NGOs in the delivery sector will increase rather than decrease in the coming decades. The following section explores the evidence for impact of livestock development on poverty alleviation.

Community Animal Healthcare Worker Programmes

Community-based animal health care interventions are a relatively contemporary innovation in livestock development. Projects are generally designed to respond to the needs of livestock keepers in remote areas that are not served by the government sector. As such, many projects have been implemented among pastoralist communities. Indeed, de Haan et al. (1991) notes that CAHW's among these communities may have greater advantages due to the high skill levels and the lower income aspirations of potential trainees than in more commercialised systems.

However, projects have had rather a mixed track record. For example, Sidahmed (1997) notes that the lack of clear goals and objectives hampered the sustainability of CAHW programmes among pastoralist communities in Cameroon. As such, Oakley (1998) concludes 'that problems tend to be associated with project implementation rather than with the concept and objectives underlying community-based service provision'.

Nevertheless, many pastoralist communities pride themselves on their traditional emic regarding animal health. Equally, cultural prohibitions often prevent non-owners from treating livestock. Hence, problems have arisen with community animal healthcare workers being trained but unable to work effectively. Indeed, Heffernan and Misturelli (2000) found in Kenya that CAHWs programmes did not figure prominently as service providers among poor pastoralists for both of the aforementioned reasons. As such, it is clear that the underlying objectives of CAHW programmes among pastoralists need to be revisited.

Conversely, among subsistence farming communities, where the cultural traditions regarding livestock keeping are less encumbered, it is possible that CAHWs may be more active. Although it may be argued that given their greater accessibility, that sedentary systems are better served by the government and private sector, thereby obviating the need for community-based interventions (Sidahmed, 1997), CAHW may be a useful adjuvant to the private sector in more remote farming areas (Leornard, 1997).

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.

Thus, it is apparent that at the donor level, there is the perception that livestock projects and programmes have not had their intended impacts.

Nevertheless, part of the problem is that the poverty impacts of many livestock projects are difficult to divine. Lessons learned are generally confined to the agencies involved and are often lost with the closure of projects and programmes. Thus, there are few formal communication pathways for disseminating project-related information between institutions. Indeed, no consistent framework exists to aid practitioners in project design and delivery across the livestock sector and best practice recommendations are few and far between. For example, Heffernan *et al.* (2001) found that the low sustainability of restocking projects was often due to confusion over the project purpose: as a means of relief, rehabilitation and development. Poor targeting has also been noted to be a problem by practitioners involved in both restocking and Community Animal Healthcare Worker programmes. Thus, with sufficient attention, many of the problems impacting sustainability may be easily resolved.

Consequently, the authors of this report urge a best practice review of the livestock sector that cuts across the nations, agencies, projects involved. In this manner, livestock development stakeholders from policy makers to field staff may access information regarding the potential poverty impacts and best practice issues at the project design stage. The following section further explores the wider policy context which is currently influencing and informing the livestock sector.

THE WIDER POLICY ENVIRONMENT

Any attempt to understand the livelihoods of poor people, must take into account the wider economic, socio-political and environmental influences in which they seek to make a living. As previously mentioned, de Haan *et al.* (2001) argue that at the global level, the following 'driving forces' are influencing 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.'

Key Features of the 'Livestock Revolution'

- *Increase in demand for livestock products in developing countries*
- *A shift in livestock production from temperate to humid areas*
- *An increase in large-scale intensive production units close to cities*
- *A consequent rise in demand for cereal-based feed*
- *Rise in the importance of mono-gastric species with a consequent decline in ruminant production.*
- *Decline in traditional livestock management and husbandry practices in favour of vertically integrated, commercial production.*

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.

Policy, Poverty and Livestock Linkages

'...Improvement in the livestock sub-sector provides a strategic linkage between poverty reduction and ...the rural poor. When local currencies become unstable and weakened by rising inflation, the strategy of herders and crop/livestock mixed farmers is to transfer capital to livestock. Under such circumstances, livestock assures stability of assets and is a means of savings at low transaction cost. As governments start to adopt structural adjustment programmes and follow liberal exchange rates, inflation rates decline and an opportunity emerges to rationalise investment in livestock under market economy…Under such situations and in the absence of policies favouring the poor, wealth shifts in favour of the rich while exposing most of the smallholders to the risk of absolute poverty.' Sidahmed and Kessaba (1998)

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.

Equally, the options available to producers to meet the increased demand for livestock products are somewhat limited. 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. As such, the extent, to which livestock producers are able to adopt practices to enhance productivity, will become more and more important. A comparison of the rates of production achieved under intensive production practices with those generally found among small producers in similar locations indicates that technologies exist which can greatly enhance productivity (Delgado *et al.,* 1999; Upton 2000). Feeding, animal health, breeding, and management practices all offer potential for areas for improvement. While relatively minor innovations such as supplementation with higher quality feeds can have a marked effect on production levels (FAO, 1999), it is argued that meeting the demands of the 'livestock revolution' in many areas will require feed resources beyond the capacity of mixed farming systems. Hence, farmers will be more reliant on grains, which most likely will 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

that differ considerably from those traditionally found among poor livestock keepers.

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. As will be further discussed in Part II, 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 examine the opportunities and constraints faced by poor livestock keepers in the face of these global trends in greater depth.

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