A GUIDE TO INDICATORS & METHODS FOR ASSESSING THE CONTRIBUTION OF LIVESTOCK KEEPING TO LIVELIHOODS OF THE POOR

Department of Agricultural Sciences,
Imperial College London

Livestock Production
Programme (DfID)

This guide has been developed under project R7823 (Understanding small stock as livelihood assets: indicators for facilitating technology development and dissemination) funded by the UK Department for International Development's Livestock Production Programme, managed by NRInternational.

The research was conducted by a team of researchers from Imperial College London, from Centro de Investigacion en Ciencas Agropecuaris (CICA) of the Universida Autonoma del Estado de Mexico (UAEM), Mexico, and from CEVEP, Bolivia.

Imperial College London:	Andrew Dorward (Team Leader)
	Simon Anderson
	Rodrigo Paz
	James Pattison
CICA, Mexico	Ernesto Sanchez Vera
	Yolanda Nava
CEVEP, Bolivia	Jonathan Rushton

The Research Team would like to thank the UK Department for International Development and the management of the Livestock Production Programme for their support of this project. They would also like to thank members of the ??? communities in Mexico and Bolivia for their patience in developing and testing out with the research team the ideas and methods presented in this guide.

1. Introduction

This guide outlines methods and indicators for assessing the contribution of livestock keeping to livelihoods of poor people.

The indicators and methods can be used in:

- appraisal of possible developments of new technology in research projects,
- prioritisation and design of potential changes and interventions to improve the livelihoods of poor livestock keepers,
- on going participatory monitoring and evaluation of projects seeking to improve the livelihoods of poor livestock keepers
- retrospective assessment of the impact of changes in livestock keeping on livelihoods

Comparison of the results of using the methods with different socio-economic groups of livestock keepers can also allow assessment of differentiated livelihood impacts across different groups of people and the methods and indicators can also be used to assess the different livelihood contribution of different livestock types (species, breeds, sex/age categories etc.)

These indicators and methods have been designed and field tested for use with the direct participation of poor livestock keepers. The utility and effectiveness of the indicators and methods is compromised if they are not used in a participatory way.

The manual is set out in three chapters following this introduction:

- an overview of the way that indicators can be used (Chapter 2)
- an introduction to the contributions that livestock can make to the livelihoods of poor people (Chapter 3)
- a description of specific methods for developing indicators for assessing the contribution of livestock to livelihoods of poor people (Chapter 4)

A set of annexes provide more comprehensive information on the concepts and methods presented in the main body of the guide. Annex 1 provides a glossary of terms (terms included in the glossary are indicated by ***bold italic type*** on their first occurrence in the guide). Annex 2 presents a diagram summarising the asset function framework which underlies the methodology presented in this guide. Annex 3 provides examples of indicators and questions that may be used in the field, while Annex 4 sets out important general principles when using participatory methods of the kind advocated in the guide and Annex 5 introduces principles to be used in establishing rapport . Finally Annex 6 provides references and links to other sources on the role of livestock keeping in people's livelihoods and on the use of participatory methods in development.

2. Using indicators in appraising livelihoods and implementing development activities

2.1 Uses of indicators

Indicators are useful in different ways to ***appraise*** and ***monitor livelihood*** [1] development activities for and with poor people.

In *appraising* potential livelihood development activities, indicators can be used to assess and compare the contributions of household activities (including livestock keeping) to household livelihoods. Such appraisals can also be used as a baseline for monitoring and evaluating changes (see below). Indicators can also help specify and focus attention on the objectives and outputs of particular development activities, in order to examine if planned changes are likely to impact positively on poor peoples' livelihoods.

In *monitoring and evaluation* of actual development interventions, indicators can help people see if the introduction of new technologies and other interventions are actually changing their livelihoods in the ways that they want. This allows them to take corrective action if necessary, to modify activities to make them more effective and beneficial.

Appraisals may be carried out for two broad purposes:

- ***Generic appraisals*** are required by organisations wishing to set broad policies (principles and priorities) to guide livelihood interventions across a range of different communities.
- ***Specific appraisals*** are required by people in order to make decisions about livelihood development activities, to enable them to determine what livelihood development activities may be appropriate and the expected impacts of these activities on the livelihoods of different categories of people in specific communities.

These two types of appraisal use the same principles but they cannot use the same methods.

- *Specific appraisals* should involve the specific communities they are concerned with, and hence should use participatory methods in indicator selection and development. They should also link in with participatory monitoring and evaluation processes to be used if and when interventions are implemented.
- *Generic appraisals*, on the other hand, will not generally be able to link in directly with participatory appraisal processes in specific communities. However, generic appraisals should seek to maximise their relevance to people's livelihoods by drawing on specific appraisals for secondary information.

In the description of indicator development systems we therefore treat these different types of appraisal purpose separately. Methods for developing indicators for use in specific appraisals and in monitoring and evaluation are described in some detail in chapter 4. Section 4.3 of that chapter then considers briefly how the concepts and methods introduced in this guide may be used in generic appraisal.

[1] Bold italic indicates an entry in the glossary in Appendix 1

2.2 Steps in developing and using indicators

The process of indicator development requires the following steps (ways to carry out each of these steps are proposed in subsequent chapters):

1. Identify ***client*** interests and objectives and ***beneficiary group's*** priorities and options
2. Develop practical indicators[2] for appraising or evaluating achievement of client objectives and of beneficiary group's priorities where these overlap and/or complement each other.
3. Assess the extent to which planned actions or interventions lead to desired changes in indicators, recognising that other changes affecting people's livelihoods may also lead to changes in indicators

In ***appraisals***, this information is used to decide if the plans are likely to make a sufficiently positive contribution to people's livelihoods to be worthwhile, or if the plans need to be modified or even abandoned. In monitoring and evaluation, this information is used to develop a system for gathering information on these indicators during implementation, with procedures for using the information to check if activities are going to plan, and for making changes to activities if necessary. (Current and past levels of the indicators, necessary for establishing baselines, can be estimated with the direct participation of the beneficiary group.)

Client objectives and beneficiary group priorities are usually closely related, in that client objectives are generally achieved through improved welfare of beneficiaries - although the client may specify particular types of beneficiaries and particular ways (such as livestock keeping) to promote improved beneficiary welfare. Understanding of beneficiaries' livelihoods and of the interests, opportunities and constraints they face in improving their livelihoods is therefore particularly important in indicator development. Chapter 3 of this guide therefore considers in some detail specific roles that livestock keeping can play in poor peoples' livelihoods. Chapter 4 of the guide then details methods that can be used in developing indicators with poor rural people for specific appraisal and for monitoring and evaluation of livelihood development activities.

3. The role of livestock in the livelihoods of poor people

The indicators and methods described in this guide have been developed from a basic understanding of the way that different ***assets*** and activities contribute to peoples' livelihoods. This understanding itself builds upon the ***sustainable livelihoods approach*** and ***sustainable livelihoods framework*** (Carney, 1998) to consider the functions of assets (such as livestock) and activities (such as livestock keeping) within people's ***livelihood strategies***.

3.1 Assets' and activities' functions within people's livelihoods[3]

Livelihoods involve the use of assets in activities to produce outputs to enable them to meet consumption requirements[4] and aspirations and also to invest assets and activities for the future

[2] That is indicators (or observable measures related to desired changes) which are practicable in the sense that information about them can be gathered with reasonable accuracy and reliability at costs (of time, money and other resources) which are acceptable the different stakeholders involved.

[3] See Appendix 2 for a diagrammatic exposition of the 'asset function framework' underlying the concepts described in this section.

(commonly in the absence of financial services). All this takes place in the context of an uncertain environment.

For many livelihood activities, production and income are irregular and intermittent, as, for example, seasonal cycles determine times of crop harvests, of livestock sales, and of opportunities for hiring out labour. There is also often a substantial degree of uncertainty about production and income, as they are affected by weather conditions, by crop and animal pest and disease attacks, by sicknesses and accidents (affecting the ability of family members to work), by market prices, and by changing policies and political influences (affecting taxes, subsidies, technical assistance, promotion of new technologies, security and political stability).

Irregular and uncertain patterns of production and income, however, do not generally fit with people's consumption and investment requirements. People have regular consumption requirements (for food and other daily needs), and they also face irregular investment and consumption needs (for example to pay for school fees, to buy animals or equipment, to construct buildings, to participate in annual festivals, or to participate in family or community social events such as births or weddings). There are also uncertain demands for expenditure to cope with accidents, sickness, or sudden demands from family members or others in the community and to take advantage of unexpected or unpredictable investment opportunities.

People therefore often face major challenges in matching the different production and income patterns on the one hand, with consumption and investment needs on the other. These challenges are particularly acute when people cannot access financial market mechanisms for saving, borrowing and insurance: in such situations they have to use different assets and activities to balance production and income patterns with consumption and investment needs. Recognising the importance of this allows us to identify a number of different functions of assets and activities in people's livelihoods. Asset functions can be broadly classified according to contributions to production, ***savings***, ***buffering***, ***insurance***, consumption and ***social integration***. These contributions, which often overlap, are explained in more detail below by considering different functions of livestock keeping.

Productive assets and activities may make a variety of contributions to livelihoods. Regular cash income may be obtained from sales of products (milk, eggs, meat, hide & horn, wool & fibre, dung & manure), of services (work, transport, breeding sires, ceremonial purposes), or of live animals. These sales are likely to be more sporadic for poorer people with smaller numbers of animals, less intensive management, and weaker connections to markets. Sales of some livestock products and services are highly seasonal as a result of seasonal cycles in animal physiology (for example fertility, wool growth etc), or as a result of seasonal demand (for example draught power and manure for crop production). There may also be seasonal market opportunities for specific products due to special food preferences for festivals. Many products and services that are sold are also used for domestic **consumption** (eggs, milk, meat, wool, and transport for example) or (as with draught power and manure) for production of other commodities which themselves may be consumed or sold.

Livestock keepers may use livestock as a means to fulfil a variety of savings type functions. **Buffering** (or consumption smoothing) describes the process where investments are made in livestock during periods when production or income exceeds consumption needs and then these

[4] Keeping livestock may help meet people's consumption requirements not only by directly providing them with food, with fuel, with transport, or with hair or wool for clothing, but also by generating sales income that helps them to purchase these and other consumption goods and services.

investments are drawn upon later in the season when lower production and income are not sufficient to support consumption needs. Examples might be the purchase or breeding of an animal at harvest time and then feeding it with grain, to allow later sales income or meat consumption from the animal. Animals may also be kept explicitly to provide for some major expenditure (such as a major purchase or investment, or expenditure on school fees or an important social activity). This we term **saving**. In addition, animals may be kept just to provide some **insurance** against unexpected events that either reduce income or make extra expenditure demands (for example accidents or illness). A form of saving that is of particular interest is the process of **accumulation** – when the animal inventory of a household is built up over time as consumption needs and sales do not exceed the reproductive capacity of the livestock kept.

Livestock can sometimes also be used as collateral for borrowing. This is generally only possible with large animals. Borrowing may be needed to make up shortfalls in income at certain times of year (playing a buffering function), to meet unexpected consumption demands (playing an insurance function), or to make investments (supporting accumulation and production).

Finally, livestock may play important **social integration** functions in livestock keepers' society and culture. Ownership may confer status or animals may need to be exchanged or provided in certain traditional ceremonies or relationships which are important for people's position in local society.

Further discussion and examples of these different functions may be found in chapter 4, where they are discussed in more detail in the context of selecting and developing indicators.

3.2 Assets' attributes

We now build on our understanding of livestock keeping functions in poor people's livelihoods by considering what features or attributes of different assets might make them more effective in fulfilling particular functions. Benefits from keeping and/or ownership of different types of livestock needs to be considered in terms of the fit between the attributes of livestock assets and their functions within the overall asset holdings and **livelihood strategies**[5] of their owners.

Table 1 overleaf lists different attributes of assets and associated activities (these attributes being productivity, utility, security, holding costs, life, convertibility, complementarity and control), together with the asset functions to which these attributes relate, and the different components or elements of each attribute.

Table 1 should be largely self explanatory but it may be worth noting that although it might be expected that high productivity and utility, low holding cost and longer life will be almost universally desirable asset attributes[6], what is desirable in terms of convertibility is more ambiguous and contextually determined. Theoretically, high convertibility would appear to give more flexibility and lower costs, but it is widely reported that poorer people (and less poor people as well) often impose disciplines and protection on their saving for longer term investment or for future consumption by placing savings 'out of easy reach' to prevent them from being cashed and spent by themselves or by others (for example relatives or neighbours) on more immediate consumption needs.

[5] Livelihood strategies are discussed in more detail later, in section 3.3.

[6] Even low holding cost may not be desirable in itself if it tends to be associated with low productivity.

Table 1 Asset Attributes and Components

Main Attribute	*Contributing to which function(s)*	*Components*
Productivity	Production, income,	Productivity under expected, average or 'normal' conditions; variability; sensitivity to and resilience under different conditions; probability of these different conditions occurring ; appreciation of asset value
Utility	Income, consumption	'Normal' utility; variability; sensitivity to and resilience under different conditions; probability of these different conditions occurring
Security	All, especially saving	Risk of theft, loss of control or access; susceptibility to pathogens or other 'natural' event. For debts: risks to collateral or collateral substitutes
Holding costs	Detracts from all	Maintenance and input costs (including time, claims, etc) borne by different stakeholders: under normal conditions; variability under different conditions; probability of different conditions Depreciation in time and in use: under normal conditions; variability under different conditions; probability of different conditions
Life	All	Expected period over which asset will be held: under normal conditions; variability under different conditions; probability of different conditions Asset value profile (seasonal, lifecycle changes)
Convertibility	Sales income, savings, buffering, insurance	Exchange costs: under normal conditions; variability under different conditions; probability of different conditions Access: under normal conditions; variability under different conditions; probability of different conditions ***Lumpiness*** – related to unit value of sale and ease of sale
Complement-arity	Production, income	Effects on and of other assets and their functions
Ownership/ control	All	Private (individual, household); communal; public; gendered rights and responsibilities for disposal, acquisition, costs and returns

3.3 Livelihood strategies

Having considered asset and activity functions in people's livelihoods, and the attributes affecting the way that assets and activities support these functions, we now need to consider the way that asset and activity functions and attributes relate to people's reliance on particular asset and activity mixes –their livelihood strategies. Considering asset and activity functions and attributes in the context of livelihood strategies is important for two reasons: first, if we can identify particular situations where different kinds of livelihood strategy may be more or less important, this should help us understand conditions under which different kinds of asset function and attribute will be important; second livelihood strategies draw attention to the importance of dynamic change when considering asset functions and attributes. In this section of the guide we therefore describe first a simple classification of three types of livelihood strategy, and then examine the implications of this for the importance of different asset functions and attributes in different and changing situations.

We find it helpful to distinguish between three broad types of livelihood strategy, or three types of asset or activity contribution to livelihood strategies:

1. '**Hanging In**' where activities are engaged in to maintain livelihood levels, often in the face of adverse socio-economic factors
2. '**Stepping Up**' where current activities are engaged in, with investments to expand these activities, in order to increase production and income to improve livelihoods – with accumulation of productive livestock for example.
3. '**Stepping Out**' where existing activities are engaged in to accumulate assets which in time can then provide a base or 'launch pad' for moving into different activities that have initial investment requirements leading to higher and/or more stable returns – for example accumulation of livestock as savings which can then be sold to finance children's education (investing in the next generation), the purchase of vehicles or buildings (for transport or retail activities), migration, or social or political contacts and advancement.

Different people with different strategies will have different preferences as regards their asset function mix and as regards the importance of particular asset functions and of asset and activity attributes associated with these functions. We consider first which asset functions are likely to be important for livestock keeping in these different strategies, and then what determines which type of livelihood strategy is likely to be important in particular circumstances.

Under such circumstances livestock keeping will commonly contribute to four important functions (see table 2 overleaf): providing for *subsistence consumption* (through home consumption of meat, milk, eggs or fibre); supporting *complementary* (commonly cropping) activities (providing draft power and/ or manure); *buffering* against seasonality in income from other activities (for example cropping activities or seasonal labour); and providing some assets for *insurance* against unpredictable demands for cash.

Beyond these minimal maintenance functions, livestock keeping may enable advancement through accumulation either of more productive animals (the 'stepping up' strategy) or of a set of assets that hold values as savings to be used to 'buy in' to other assets needed to gain entry to other livelihood activities (the 'stepping out' strategy).

Table 2. Principle functions of livestock by livelihood strategy

Livelihood strategy	Principle livestock functions
'Hanging in'	Subsistence Complementary production Buffering Insurance
'Stepping up'	Accumulation Complementary production Market production / income
'Stepping out'	Accumulation

What then determines which livelihood strategies (or combinations of strategies) will be adopted by poor livestock keepers? Livelihood strategies will normally be determined by the technical, institutional and market opportunities and constraints people face, and these in turn depend upon (a) peoples' access to assets and (b) upon the social, economic and natural environment in which people are located. This is illustrated in Table 3, which sets out situations where different livelihood strategies are likely to be more and less important, distinguishing between poor and less poor status and different market and technical (natural resource potential) situations.

Table 3 Likely livelihood strategies of poor and less poor livestock keepers, by market and natural resource potential

		Status	Local market opportunities	
			Low/ Stagnant	High/ dynamic
Natural Resource potential	Low	Poor	Hang in (very difficult – subsistence livestock?)	Hang in (more local non-farm based)
		Less poor	Step out (migrate)	Step out (local non-farm)
	High	Poor	Hang in (farm / subsistence?)	Hang in (farm and non-farm)
		Less poor	Step out (migrate) Step up ('exports')	Step out (local non-farm) Step up (local markets)

Whatever the market and natural resource potential of an area, very poor people are likely to give priority to 'hanging in' strategies as they struggle to maintain precarious and vulnerable livelihoods[7]. However the focus of these 'hanging in' strategies is likely to vary, as regards the

[7] While the poor may in practice be forced to concentrate on 'hanging in' they will almost always aspire to some degree of 'stepping up' and/or 'stepping out' in their livelihood activities.

emphasis on different activities, with the agro-ecological (natural resource) and market opportunities in the area and with the particular assets they have (such as land, animals, skills, and social contacts). This is illustrated in table 3. Where natural resource or agro-ecological potential is low and the local economy (and hence market) is stagnant, conditions will be very difficult but livestock keeping may play a particularly important role in 'hanging in' strategies as a result of livestock's greater ability, as compared with crop based activities, to hold value as assets and to provide income at different times of year and under different seasonal conditions. Under conditions of higher natural resource potential crop farming may become more important to poor people's livelihoods (working either on their own farms or on the farms of others). However whatever the natural resource potential, under conditions of low market opportunity technological developments are unlikely to improve livelihoods by promoting increased production as without markets to dispose of incremental production, more production may have little value. Greater security, and more reliable (less risky) and faster accumulation may be more important goals, achieved through, for example, disease control, or more effective utilisation of feed resources.

Where the local economy is more dynamic then there will be more local demand for unskilled labour and petty trading, and as these may offer income that is both less seasonally variable and less dependent on uncertain natural events than agricultural production, livestock may have less important buffering and insurance functions. On the other hand growing local markets may provide greater opportunities and higher prices in livestock sales, so productivity enhancing technological developments may have more to offer to some poor livestock keepers.

Table 3 also suggests how the predominant preferences of the less poor between 'stepping up' and 'stepping out', and the basis of these strategies, is likely to vary according to the potential for increased agricultural productivity (the Natural Resource potential) and for local markets. With stagnant local markets greater agricultural productivity will offer few livestock or crop based opportunities for 'stepping up' unless there are communications and linkages to support 'exports' to more distant markets. A more dynamic local economy, on the other hand, with more local market opportunities should allow stepping up and stepping out to focus on both farm and non-farm local opportunities rather than on migration or 'exports' to more distant markets[8].

The differing basis of the various strategies and the differences between them in more and less dynamic local economies together highlight the need to take account of the dynamics of change when analysing asset and activity functions in the livelihoods of poor people. As noted earlier, poorer people who may be forced to give priority to 'hanging in' activities will nevertheless generally aspire and work towards stepping up and stepping out strategies. These strategies will change if people grow less poor (or conversely fall deeper into poverty). Strategies will also change with new social, technical and economic demands and opportunities as a result of economic growth, new infrastructure, new technologies, new services or new social norms in an area[9]. As we will see in the next chapter, recognising and anticipating the effects of these changes is very important in practical methodologies identifying indicators of important asset and activity functions in people's livelihoods.

[8] Even where local markets are growing, however, there will still often be a 'pull' towards urban areas, particularly among the young, with perceived opportunities for a wider range of opportunities and lifestyles.

[9] Improved access to casual employment opportunities or to micro-finance services, for example, may reduce dependence on small livestock keeping for petty income, buffering and insurance – but conversely if male migration increases and these new opportunities are not open to women, this may increase the importance of small livestock keeping for women.

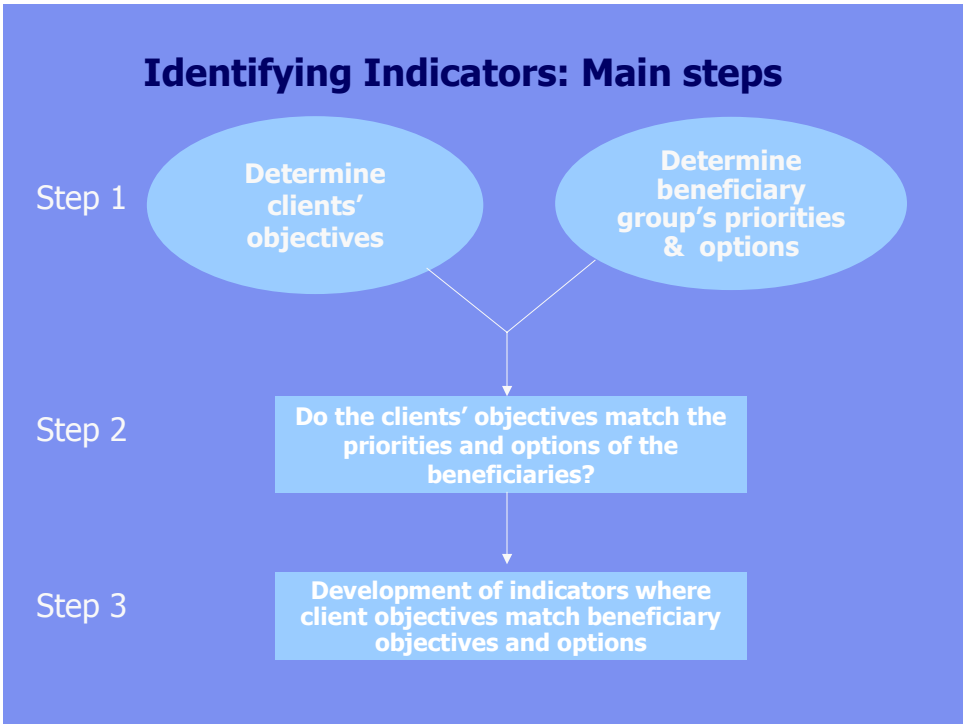
4. Methods for developing indicators for assessing the livestock keeping contributions to people's livelihoods

We now outline a broad methodology for developing indicators for assessing the contribution of assets and activities to people's livelihoods, focusing particularly on livestock keeping. The *methodology* consists of a set of steps which in broad terms are common to both generic and specific appraisals and participatory monitoring and evaluation as discussed earlier. In this chapter of the guide we first introduce these steps and then describe in some detail particular methods that can be used in specific appraisals

4.1 Steps in developing indicators for assessing livestock keeping contributions to people's livelihoods

Figure 1 sets out the principal steps involved in assessing livestock keeping contributions to people's livelihoods. This recognises that any agency undertaking such an assessment normally has responsibilities both to an external client (who may be funding both the assessment and possible livelihood development interventions) and to the beneficiaries whose livelihoods are the focus of the assessment.

Figure 1 Developing Indicators for Livelihood Contribution Assessment



Step 1 involves the determination of clients' objectives and of the beneficiaries' priorities and options. This provides a base from which complementarities between client and beneficiary objectives can be identified, and these complementary objectives are then the focus of subsequent work.

The basic and closely related questions that have to be asked to determine clients' objectives include:

- Who is/are the client(s)?
- What are their objectives and proposed means of meeting them?

  Clients are likely to be formal organisations involved in development as funding agencies, policy makers, researchers or direct development work with beneficiaries. Client's *stated* objectives will therefore generally be specified in mission statements, programme and project planning documents, and other reports. These will normally consist of statements of both *ends* (desired outcomes) and *means* (ways of achieving these ends). Desired outcomes will commonly overlap with expected objectives of beneficiaries (for example improved incomes for beneficiaries) but this will not always be the case. Similarly ways of achieving these outcomes will normally reflect both prior interests and expertise of the client (for example in livestock) and perceived opportunities for beneficiaries. In considering client objectives it is important to recognise that *stated* objectives may not always be the objectives that are pursued in practice –there may divergences between what organisations say they are trying to do and what they are actually doing, due to political concerns or to the personal interests of particular managers. In investigating client objectives these real but unstated objectives also need to be considered.

Basic and closely related questions that need to be asked to determine beneficiaries' priorities and options include:

- What are the main livelihood activities of the beneficiaries?
- How do levels of livelihood achievements differ across the beneficiaries?
- What is the relation between levels of livelihood achievement and peoples' asset holdings and activities?
- What are the common priorities and options for beneficiaries?
- How have the priorities and options changed, why have these changes occurred?
- How do priorities and options vary across socio-economic sub-groups?

We examine in the next sub section participatory methods for addressing these questions.

Step 2 uses information from step 1 (on clients' objectives and the priorities and options of the beneficiaries) to identify issues where clients and beneficiaries can work together in pursuit of their goals. This will be easiest where client objectives are basically defined in terms of meeting beneficiaries' objectives – where for example the client seeks to improve the livelihoods of beneficiaries, with criteria for livelihood improvement defined by the beneficiaries themselves. Even here, however, there may be questions about the definition of beneficiaries (clients may, for example, want to focus on the poor, women, or specific groups of people) or about means of improving livelihoods (many clients have specific interests and expertise, for example in improved livestock keeping, in cropping, in biodiversity conservation, in human health, or in water supplies and sanitation). Another difficulty may arise where clients' stated and actual objectives are not the same (as discussed earlier). In almost all situations the identification of common goals and activities will involve some negotiation and compromise by clients and beneficiaries, a process that will continue through into **Step 3**, the development of (a) indicators for asset and activity

development and (b) methods for measuring indicators, where client objectives match beneficiary objectives and options.

4.2 Methods for developing indicators for assessing livestock keeping contributions to people's livelihoods

We now examine a set of methods which have been developed to help beneficiaries and facilitators working with them to investigate beneficiaries' priorities and options and to develop indicators for assessing the contribution of assets and activities to beneficiaries' livelihoods, focusing particularly on livestock keeping. These methods involve the development of a sequence of matrices or tables which have been designed to help beneficiaries think through the contributions that their current assets and activities make to their livelihoods, how they would like these contributions to change in future (taking account of other changes which they expect in their livelihoods and environment), and what indicators they might used to see if and how these desired changes are achieved over time.

Table 4 lists these methods with a brief description of the purpose of each method, of its contribution to the indicator development process, and of the way it is implemented. Subsequent text provides a more detailed description of each method, together with an example from its use in Bolivia[10].

In starting to work with these methods, however, it is important that some time and thought is given to consideration, discussion and categorisation of the 'context' in which beneficiaries operate, using the concepts introduced in section 3.3 and table 3. As noted there, different contexts and livelihood strategies require indicators which focus on different livelihood components. The context, and changes in that context, provide an important reference with which to understand livelihood strategies and livestock keeping decisions in the community. It is also important to establish a good rapport and relationship with people, and an understanding of their concerns and interests. Appendix 5 provides some guidance on this.

[10] This guide focuses on the development of matrices or tables with rural people, but other methods may also be used to stimulate and record discussion of these issues. These methods need to be carefully selected and implemented. Matrices or tables will be appropriate if the livestock keepers concerned are comfortable with written language and if they understand and share the facilitators' interest in these issues. However where these conditions are not met (as will frequently be the case) then more visual and less abstract ways of expressing information may be appropriate. It may also be necessary to compare relative values and estimates rather than absolute values. Appendix 4 outlines some of the principles that should be followed in using more visual and participatory methods for sharing information, while appendix 5 contains references to sources of more detailed information on alternative methods and their use in a range of different situations.

Table 4 Methods for developing indicators for assessing livestock keeping contributions to people's livelihoods

Method name	Purpose	Contribution to indicator development & application	Description
1. Current species by function matrix	Identify the current livestock species & livestock keeping activities of beneficiaries, & the functions of livestock keeping for each species	Determination of beneficiaries' current activities, assets, priorities & options	Matrix for ranking species according to the current importance of their contribution to different functions
2. Function priority and preliminary indicator matrix	Identify high priority functions, the reasons for their importance, processes of change affecting them, & indicators for measuring functional achievements	Determination of beneficiaries' broader livelihood priorities & options. Development of broader indicators	Matrix identifying high priority functions, reasons for their importance, current changes in their achievement or importance, reasons for changes, & indicators of achievement
3. Household animal inventory	Identify in more detail the herd or flock structure & composition for each livestock species & significant changes over the year, to gain greater understanding of livestock keeping activities	Determination of beneficiaries' current assets, activities, priorities & options in livestock keeping	Matrix showing the flock/ herd composition for each species kept. Ranges of numbers kept can be related to parts of the year to show seasonal variation
4. Species, function and alternatives matrix	Identify potential livestock species & livestock keeping activities of beneficiaries, the functions of such livestock keeping for each species, & alternative (non-livestock based) ways of achieving these functions	Determination of beneficiaries' priorities & options in livestock keeping	Matrix for ranking species according to the potential future importance of their contribution to different functions
5. Species indicator matrix	Identify for each species its major functional contributions, constraints limiting those contributions, means of addressing those constraints, & indicators for assessing progress in activities addressing those constraints	Determination of beneficiaries' priorities & options in livestock keeping Design of livestock development indicators.	Matrix showing each species' major functional contributions, constraints, interventions, & intervention indicators

Method 1: Current species by function matrix

Purpose: To identify the current livestock species and livestock keeping activities of beneficiaries, and the functions of livestock keeping for each species

Contribution: Determination of beneficiaries' current activities, assets, priorities and options. Construction of this matrix

Activity: Construct a matrix for ranking species according to the current importance of their contribution to different functions. The layout of the matrix is shown below (Matrix 1):

Matrix 1. Current species x function

	Species 1	Species 2	Species 3	Species ...
Function 1				
Function 2				
Function 3				
Function …				

Method: With the beneficiaries draw up a list of species kept by beneficiaries and then ask them to discuss the livelihood functions of keeping each type of livestock. This will allow a list of livelihood functions to be drawn up. Some of the functions may be difficult to separate out, but the process of discussing these livelihood functions or contributions can be very useful for both beneficiaries and facilitators. A matrix is then drawn up, with different livestock types in columns and the functions in rows. Livestock are then ranked against each function, with a zero where there is no contribution, and higher numbers indicating more important contributions. (See section 3.1 on assets and functions for a list of possible livestock functions).

Example: Current species x function for crop-livestock farmers, Yapacani, Bolivia. (Numbers indicate ranking, 1 being the most important)

Functions	**Chickens**	**Cows**	**Pigs**	**Ducks**
Consumption	2	0	3	2
Income	2	3	3	3
Buffering	1	3	2	3
Accumulation	3	2	1	0
Insurance	0	1	2	0
Social	0	1	3	0

In the example, chickens perform important buffering and income functions probably due to ease of sale, owing to a constant demand in the community or local markets and low unit cost.

Chickens also serve consumption functions as egg producers and by providing meat to the family (this is generally too expensive for the poor to purchase). Cows, as large valuable assets, principally perform insurance and social functions. Cows are not suitable for buffering functions due to their high value, but they can, however, generate a large amount of cash in emergencies (insurance function) and are seen as a status symbol in the community (social function). Cows are never eaten by the family as beef is too valuable and the quantity of meat from a cow is too large for a family. Pigs are used to accumulate assets and generally if there is spare maize it will be fed to the pigs as a form of saving. Ducks are kept in small numbers as the eggs and meat is highly prized by the family for consumption on special occasions.

Method 2: Function priority and preliminary indicator matrix

Purpose: to identify high priority functions, the reasons for their importance, processes of change affecting them, and indicators for measuring functional achievements

Contribution: Determination of beneficiaries' broader livelihood priorities and options and likely changes. Development of broader indicators

Activity: Using the functions identified in Method 1 (the species by function matrix), construct a matrix which identifies high priority functions and then for these identifies the reasons for their importance, current changes in achievement or in the importance of these functions (and the reasons for these changes), and then indicators of achievement (with base and target measures of achievement). The layout of the matrix is shown below (Matrix 2):

Matrix 2: Functions, priorities & preliminary indicators

Functions	Priority group	Reasons for importance	Current changes?	Reasons for change?	Indicators (+ baseline & target)
F1	1				
F2	1				
F3	1				
F4	2				
F5	2				
F6	3				
F7	3				
….	3				

Method: With the beneficiaries discuss the different functions listed in the species by function matrix (Method 1) and classify them into groups according to the relative importance of improvements in achievement. Now begin to construct a table with high priority functions in the left hand column. Work on each **column** of the matrix in turn, only considering the higher priority functions. First indicate against each function its priority ranking. Then discuss for each function the reasons for its importance. Following this, consider ways in which the achievement or importance

of achievement is changing or is likely to change for each high priority function (it is important here to check that the matrix includes any functions not currently important but likely to become more important in the near future) and the reasons for these changes. Finally, in the last column the group of respondents need to agree on indicators that can be used to measure changes in achievement of each function. These indicators must be specific to the kinds of activities that the clients and beneficiaries are going to work on together, and they must also focus on the way that these activities are going to improve achievement on high priority functions. It may be difficult to identify relevant indicators that are relatively easy and cheap to measure. It may also be the case that this column cannot be completed until later, when some progress has been made with Method 5(see below).

Example: Functions, priorities & preliminary indicators for crop-livestock farmers, Yapacani, Bolivia.

Functions	Priority group	Reasons for importance	Current changes?	Reasons for change?	Indicators (+ baseline & target)
Buffering	1	Covering unexpected costs, normally for children	Price for chickens has fallen	Medium scale egg producer near by	Costs covered without family support?
Income	1	For buying maize, cooking oil, household items.	A more constant demand	The village has electricity now	Do productive assets have to be sold to cover expected cost?
Consumption	1	We cannot afford to buy meat	No change	N/A	Sufficient protein/ meat for healthy diet?
Accumulation	2	To increase income and production	Grazing has become more scarce	Fencing off & sale of communal land by Government	Nutrition status of animals, requirement for cut and carry?
Insurance	3	In case family needs money fast	Less extended family to rely on	Migration to cities	Ability to get loans/ credit or cover emergency cost?
Social	3	To have respect of the Community	Motorbikes are seen as preferable by the young	Young people want different things	The proportion of children that want to be farmers?

Again this matrix reveals very interesting information, for example about the importance of current needs (consumption, buffering and income functions are all concerned with meeting more immediate needs, as compared with accumulation, insurance and social functions). It is also interesting to note the different types of change that are affecting people's livelihoods.

Identifying suitable indicators (and baseline conditions and targets) can be very challenging, as these have to relate to people's high priority aspirations, but also be measurable with reasonable accuracy at reasonable cost. Annex 3 presents some examples of the sorts of indicators and

questions that might be used when developing measurable indicators for the achievement of different functions. These questions and indicators are intended to be illustrative, and will always need to be adapted and modified to suit particular situations. It may be that some form of survey will be needed to measure actual conditions, or that information can be obtained from the knowledge of the group, from key informants, or from some organisation that keeps records. Whatever the case, this information will need to be gathered at least twice, first to establish initial (baseline) conditions and then later to allow monitoring of changes over time. It is normally helpful to establish a target for improvement over baseline conditions.

The 'Functions, priorities & preliminary indicators' matrix is very important for identifying beneficiaries' overall priority functions and possible indicators of improved fulfilment of these functions. However if improved fulfilment of these functions is to be achieved by specific changes to people's livelihood assets and activities (for example in livestock keeping) then more specific indicators are needed to appraise and monitor *how* these specific changes will be implemented and how they will contribute to improved fulfilment of priority functions. The following methods therefore explore in more detail the livestock keeping activities that people are engaged in, and how these may be modified to improve their achievement of priority functions.

Method 3: Household animal inventory

Purpose: to identify in more detail the herd or flock structure and composition for each livestock species and significant changes over the year, to gain greater understanding of livestock keeping activities

Contribution: Determination of beneficiaries' current assets, activities, priorities & options in livestock keeping

Activity: Construct a matrix showing the flock/ herd composition for each species kept. Ranges of numbers kept can be related to parts of the year to show seasonal variation (Matrix 3).

Matrix 3. Household inventory x season

	Species 1				Species 2				Species 3				Species …			
Season	a	b	c	d	a	b	c	d	a	b	c	d	a	b	c	d
Adult males																
Adult females,																
Young males																
Young females																
etc…																

Method: Building on the species by function matrix (Method 1), list the species kept by the household in columns and major classes in rows. In each cell note down the number of animals kept. To capture seasonal variation it may be necessary to draw up a separate table for different seasons, to note down in each cell particular seasonal events or changes, or to draw different sub-columns for each species to represent inventory changes between different times of year. The matrix layout on the previous page uses this approach, allowing for four different seasonal

periods in the year. The example below, from Bolivia, also uses this approach, but distinguishes between only two different seasons in the year, the wet and dry seasons.

Example: Household inventory x season matrix for crop-livestock farmers, Yapacani,Bolivia.

	Chickens		Cows		Pigs		Ducks	
Season	Dry	Wet	Dry	Wet	Dry	Wet	Dry	Wet
Adult males (Reproductive)	2	2	0	0	1	1	1	1
Adult females,	30	20	2	2	4	3	8	5
Young males	3	3	0	0	2	2	2	2
Young females	15	15	2	2	6	6	4	4
Castrated Males	-	-	-	-	4	2	-	-

Seasonal inventory changes here are limited, and are linked to priority functions examined in matrix 2. For pigs, chickens and ducks the matrix provides information on the ratio of reproducing males to females which provides initial insight into breeding practices and the genetic health of the flock/ herd. Generally animals appear to be sold or slaughtered at the start of the wet season as numbers drop at this time of year for all species except cows. It would be expected that animal inventory would correlate closely with any information about wealth/ wellbeing and provide a useful secondary data source for comparison and analysis.

Method 4: Species, function and alternatives matrix

Purpose: to identify potential livestock species and livestock keeping activities of beneficiaries, the functions of such livestock keeping for each species, and alternative (non-livestock based) ways of achieving these functions

Contribution: Determination of beneficiaries' priorities & options in livestock keeping

Activity: Construct a matrix for ranking species according to the potential future importance of their contribution to different functions (Matrix 4).

Matrix 4. Species, future functions and non-livestock alternatives

	Potential future importance in contribution to functional achievements				
Functions	Species 1	Species 2	Species 3	Species …	Alternatives (non-livestock)
F1	Rank or score	Rank or score	Rank or score	Rank or score	Specify & Rank or score
F2	Rank or score	Rank or score	Rank or score	Rank or score	Specify & Rank or score
F3	Rank or score	Rank or score	Rank or score	Rank or score	Specify & Rank or score

Method: This activity builds on activity 1 and takes it further by looking at the potential importance of livestock (and other activities) in achieving important functions in the future. The prioritisation of functions can be taken from matrix 2 (Functions, priorities & preliminary indicators) with appropriate discussion of the ways that functions' importance may change in the future. Then for each function the potential contribution of different species *and of alternative non-livestock keeping activities* should be ranked (or scored) with regard to their relative importance in fulfilling livelihood functions in the future.

Example: Species, future functions and non-livestock alternatives matrix for crop-livestock farmers, Yapacani, Bolivia.

	Potential future importance in contribution to functional achievements				
Functions	**Chickens**	**Cows**	**Pigs**	**Ducks**	**Alternatives (non-livestock)**
Consumption	1	0	3	2	Buying meat
Income	2	3	2	3	Selling labour
Buffering	1	3	2	1	Loans/ Credit/ Family
Accumulation	3	2	1	3	Investing in skills, Renting-in land
Insurance	0	1	2	0	Loans/ Credit/ Family
Social	0	1	2	3	Owning a car or motorbike

The process of discussion in order to complete this matrix should stimulate thought on the nature of change for both researchers and beneficiaries which can be very useful. It is essential that that

reference is made to the functions identified in Matrix 1 and the processes of change discussed for Matrix 2 when discussing the changes in the relative importance of functions fulfilled by keeping various species. In our example chicken is becoming more important in consumption, probably due to its diminishing value due to the supply of cheap chickens nearby from a large chicken farm. Ducks' importance as providers of buffering is perceived as increasing, probably due to their higher relative value compared to chickens.

Method 5: Species indicator matrix

Purpose: to identify for each species its major functional contributions, constraints limiting those contributions, means of addressing those constraints, and indicators for assessing progress in activities addressing those constraints

Contribution: Determination of beneficiaries' priorities & options in livestock keeping Design of livestock development indicators.

Activity: Construct a matrix showing each species' major functional contributions, constraints, interventions, and intervention indicators (Matrix 5).

Matrix 5. Species, functions & indicators

Species	Function	Contribution	Limiting factors/ issues	Planned actions	Indicators, baseline & targets
Species1	F?	Detail…	Detail…	Detail…	Detail…
	F?	Detail…	Detail…	Detail…	Detail…
Species2	F?	Detail…	Detail…	Detail…	Detail…
	F?	Detail…	Detail…	Detail…	Detail…
Species3	F?	Detail…	Detail…	Detail…	Detail…
	F?	Detail…	Detail…	Detail…	Detail…
Species…	F?	Detail…	Detail…	Detail…	Detail…
	F?	Detail…	Detail…	Detail…	Detail…

Method: This last activity shifts the focus of analysis away from improved achievement of functions over to the specific livestock species related actions and indicators which contribute towards achievement of those functions. Major species are listed in the first column, and against each a row is allocated for each high priority function to which it currently or potentially makes a significant contribution. These functions are listed in the second column, and the contribution of that livestock keeping activity to that function is summarised in the third column. For the next column the group should discuss the limiting factors that currently or potentially constrain that activity's contribution to functional achievement. This will be related to discussion about planned actions (by the client(s) and/or beneficiaries) to address these constraints (to be entered in the next column). The final column is used to specify

indicators for measuring progress with these actions[11]. Examples might be the proportion of households adopting particular feeding or disease control practices, or changes in growth rates or mortality rates across beneficiary households. Methods of gathering, analysing and presenting and using information need to be determined, together with baseline conditions and targets.

Example: Species, functions & indicators matrix for crop-livestock farmers, Yapacani, Bolivia.

Species	Function	Contribution	Limiting factors/ issues	Planned actions	Indicators, baseline & targets
Chickens	Consumption	Eggs and meat are eaten	Meat or eggs eaten are lost income	Monitoring if consumption ever falls below critical level.	Is the family eating meat & eggs at least once per week?
	Buffering	Chickens/ eggs can be easily sold in the village	Price for meat and eggs is falling. Insufficient feed to keep more birds	Alternative local feeds? Price differentiation?	Can expected costs be covered without compromising consumption?
	Income	Chickens/ eggs are sold regularly	Demand and price falling due to medium scale producer.	Alternative local feeds? Price differentiation?	Is there any regular short fall in covering daily/ weekly expenses?
Cows	Insurance/ Saving	I can sell a cow if I need a lot of money	Cows are expensive and not so productive	Explore alternative means of raising money	Do you have a viable alternative to generate cash/ save?
	Social	If you own cows then you are proud	They are not so productive	Are there alternative assets within reach that glean respect?	Is social standing improving?
	Accumulation	I cannot afford more cows now	They are expensive	Raising young if cows become pregnant in communal grazing	Is the herd getting larger?
Pigs	Accumulation	I have twice as many as I did last year	I have to feed them maize. Survival of young	Exchange information on animal health and alternative feeds	Increase of survival rate and accumulation rate?
	Buffering	Meat and skin fetch a good price	I like to keep a minimum number so they are happy	Look at the frequency that expected costs cannot be covered	Are expected costs routinely covered without sale of animals?
	Insurance	Meat and skin fetch a good price	Often I must wait for a buyer to come to the village	Alternative options with faster convertability?	What would you do if you needed money and couldn't wait?
Ducks	Consumption	Occasionally eaten by family- our favourite	We don't have many	Preferred to chickens?	Why don't you keep more ducks if you like them?

[11] These might concern activity and output indicators (in logical framework terms)

This matrix contributes the first stages in formulating indicators and targets. In the example above some of the limiting factors are perennial problems faced by livestock keepers in Bolivia. Thus families are often unable to consume their own animals because they cannot afford to forfeit the cash from selling them. Similarly pigs compete with the family for limited stock of maize, and young animal mortality rates are high . Some of the limiting factors faced by livestock keepers appear to be caused by poor access to markets and by competition from intensive producers who are subsidised by the government. The design of indicators should address all types of constraint identified here: focusing on only those constraints related to animal health or production can distort the overall picture of the situation and ignore important processes of change affecting livestock keepers. Note that in this example there are no baseline indicators or targets – only questions to be used in establishing such indicators and targets.

4.3 Generic appraisal of livestock contributions to poor livestock keepers' livelihoods

The detailed methods described in this guide for developing understanding and indicators of livestock contributions poor livestock keepers' livelihoods have focussed on participatory methods to be applied in what we termed earlier in section 2.1 *specific appraisals* and *monitoring and evaluation*. This focus is deliberate, as this better meets the needs of most poor livestock keepers and of development workers working with them, and in the long run more work of this kind should be the best source of information for more generic appraisals. Nevertheless it is important to provide some guidance on how more generic appraisals should or could be conducted, as development funders and field agencies have to make generic decisions about programme investments, and it is in the interests of all stakeholders that these decisions should be based on better understanding of the contributions that livestock make or can make to poor livestock keepers' livelihoods.

The conceptual framework set out in chapter 3 provides a basic set of issues that need to be addressed in generic appraisals of livestock contributions poor livestock keepers' livelihoods: broad understanding is needed of the different functions that different livestock can fulfil in the livelihoods of poor people and of the attributes that are important for livestock to fulfil these roles. Livestock keeping functions and attributes then need to be understood in the context of the particular sets of assets, opportunities and constraints of beneficiaries, and this requires some characterisation of beneficiaries' themselves and of the social, market and natural resource context in which they live.

If the task of generic appraisal is addressed in this way, then it can also learn much from, and indeed adapt, the specific appraisal and monitoring and evaluation methods described in some detail in chapter 4. Not only can it grow through a similar sequence of issues in its investigation, it can also use similar matrices and tables to summarise information gained from a variety of sources (which are likely to include key informants, and a wide range of reports on livelihoods and livestock keeping). The result of this is not likely to be a set of 'generic indicators', although there may be some value in developing such indicators for some programmes, but more general conclusions about the potential for different types of livestock development intervention to benefit different categories of poor livestock keepers (or people who may want to keep livestock) on different areas. Such conclusions may then direct investments in particular areas towards or away from livestock development interventions that focus, for example, on increasing output, reducing labour or other inputs, or increasing disease resistance and resilience.

5. Summary and conclusions

This guide has set out a systematic way of thinking about and investigating the many contributions of livestock keeping to poor people's livelihoods. It is intended to provide a resource for development workers seeking to work with poor livestock keepers to improve their livelihoods. The basic elements of the guide's approach are set out in chapter 3, with recognition of:

- diverse 'functions' of assets and activities in people's livelihoods,
- attributes that contribute to effective fulfilment of these functions, and
- the changing importance of functions and the changing effectiveness of assets and activities in fulfilling these functions over time and in situations where people face different market, technical and social opportunities and constraints.

Acceptance of these elements leads to an approach described in chapter 4, which emphasises working with 'beneficiaries' to identify with them the contributions that livestock keeping makes to their livelihoods, and the potential for increasing those contributions in their changing situations. A detailed set of methods are described, not to provide a blueprint to be followed by field workers and beneficiary groups wishing to develop better mutual understanding and working out of the opportunities and constraints that livestock keeping offers, but to provide ideas from which other and better methods and modifications can be developed to match the particular issues and situations they face. In developing and offering these methods for use by others it is recognised that it is not possible for outsiders to accurately identify the needs of the rural poor; these can be identified only with active involvement of the 'beneficiaries' themselves. Only in this way can development activities address the interests of local people with local institutions and commitment that is not dependent on external support. Annex 4 therefore sets out key concepts in participatory appraisal, and annex 5 provides references and links to sources of further information on participatory appraisal methods and on the roles of livestock in the livelihoods of poor people.

The authors of this guide would welcome feedback and information from individuals and groups who have tried to put into practice the ideas and methods contained in the guide. We would particularly value reports of adaptations of the methods proposed and of experience in their implementation, with recommendations and ideas on how they might be improved.

Annex 1 *Glossary*

Appraisal: An appraisal is the process of estimating in advance the likely outcomes of a proposed investment or set of actions in order to inform decisions about the desirability of undertaking the investment of set of actions.

Appraise: To estimate in advance the likely outcomes of a proposed investment or set of actions (such as a development or research project) in order to inform decisions about the desirability of undertaking the investment of set of actions.

Assets: Assets are capabilities or property that people can access and use in their livelihoods. In the *sustainable livelihoods framework* assets are categorised in terms of social relations, human capital (skills and labour), physical (such as buildings and machinery), natural (such as land, plants and animals), and financial (such as cash and financial savings) (Caney, 1988).

Beneficiary: In the context of this guide beneficiary is a person who is intended to benefit from an intervention or services – such as research or development activities – provided by an external 'client' organisation.

Beneficiary group: A group or class of people who are thought or intended to be the beneficiaries of an intervention or services – such as research or development activities – provided by an external 'client' organisation.

Buffering: Buffering (or consumption smoothing) is the process in which savings are made during periods when production or income exceeds consumption needs and then these investments are drawn upon later in the season when lower production and income are not sufficient to support consumption needs. Examples might be the purchase or breeding of an animal at harvest time and then feeding it with grain, to allow later sales income or meat consumption from the animal.

Client: In the context of this guide the client is an external organisation which is considering or planning some intervention with or for rural people. Examples might be NGOs, government agencies, donors, or other research or development organisations planning a development project, the promotion of new technologies, practices or institutions.

Generic appraisal: An appraisal of the likely outcomes of a proposed general set of actions or type of intervention across a range of possible communities or situations – for example the an appraisal of the likely benefits and costs of adoption of a new technology across a region of a country. This may be contrasted with a *specific appraisal* which is the appraisal of the likely outcomes of a proposed intervention or set of actions in a specific community.

Indicator: An indicator is some measure of a variable related to desired conditions or changes. Thus an indicator may, for example, provide information about changes in livestock productivity or security, or in people's welfare. An indicator is practicable if information can be gathered with reasonable accuracy and reliability at costs (of time, money and other resources) which are acceptable the different stakeholders involved.

Insurance: Insurance is the use of an asset to lessen or absorb the shock of an unexpected event. It can be seen as a form of saving to provide protection against the effects of harmful shocks. For example animals may be kept so that they can be sold to provide cash in the event of, for example, an accident or illness which requires cash expenditure for medical costs,

Livelihood: The term 'livelihood' describes the set of assets and activities that people use and undertake to survive and to generate income, food, social relations and other necessities required

to sustain a pattern of life. Improved livelihoods generally involve an expanded set of assets and activities that provide people with greater and/or more secure achievement of personal goals,

Livelihood strategy: A 'livelihood strategy' describes a person's or people's decisions (through choice or circumstances) to rely for their current livelihood on a particular set or mix of assets and activities, and their intention to use that mix of assets and activities to maintain and enhance their livelihood (or their childrens' livelihoods) in the future.

Lumpiness: Lumpiness describes the ease with which an asset may be sold to generate small sums of cash. Large or valuable assets are 'lumpy' if they cannot be divided up – thus a cow is a very lumpy asset as compared with a flock of chickens of the same value. Lumpiness is also related to the ease and costs of selling something – if it is costly and difficult to sell something this effectively makes it more 'lumpy' as it is more difficult to sell it to get small sums of money.

Monitor: To collect and analyse information regarding the implementation and immediate effects of a set of investments and actions, comparing actual achievements against those planned and expected.

Productive assets and activities: Assets and activities which are used for and contribute directly to production – for livestock for example these include production of milk, meat, fibre, manure or draught power.

Savings: Savings are a store of assets which instead of being used immediately are set aside for use in the future. Investments in livestock are sometimes used as a way of setting aside resources for the future and in this sense can be considered as 'savings' – when animals are kept explicitly to provide for some major expenditure (such as a major purchase or investment, or expenditure on school fees or an important social activity).

Social integration: Social integration involves establishing personal relationships and contributing to society. This is essential for people to gain respect and to be able to work with other people or call on them for assistance.

Specific appraisal: The appraisal of the likely outcomes of a proposed intervention or set of actions in a specific community – for example the an appraisal of the likely benefits and costs of adoption of a new technology by specific people in a particular community. This may be contrasted with a *generic appraisal* which is an appraisal of the likely outcomes of a proposed general set of actions or type of intervention across a range of possible communities or situations.

Sustainable Livelihoods Approach: The sustainable livelihoods approach is an approach adopted by a number of development agencies involving a set of principles: that development interventions should be people centred, responsive and participatory, multi-level, sustainable, dynamic, and involving partnership (Carney, 1998).

Sustainable Livelihoods Framework: The sustainable livelihoods framework is a conceptual scheme for thinking about people's livelihoods in terms of the way that they access and use *assets* to generate *livelihood* outcomes in the context of *vulnerability* to different elements in their economic, social and natural environment (Carney, 1998).

Annex 2 *The Asset Function Framework*

The figure overleaf presents the conceptual framework which underlies much of the thinking in this guide relating asset ownership and function to wellbeing. The central vertical axis in the figure describes production/ income activities and processes employing productive assets (in the top left corner of the diagram) to generate resources for consumption and social reproduction. People craft livelihood strategies, however, to try to match often intermittent resource availability with more continuous consumption demands, while also allowing for unexpected falls in their resource supply or increases in their demand. They do this by making savings in assets for later conversion to liquid or consumption assets, by borrowing to gain current resources at the expense of later debt repayments, and by adjusting consumption patterns (both levels of daily consumption and timing of investments in consumption assets). They also select and diversify productive activities and time investments in productive assets to even out and buffer resource availabilities.

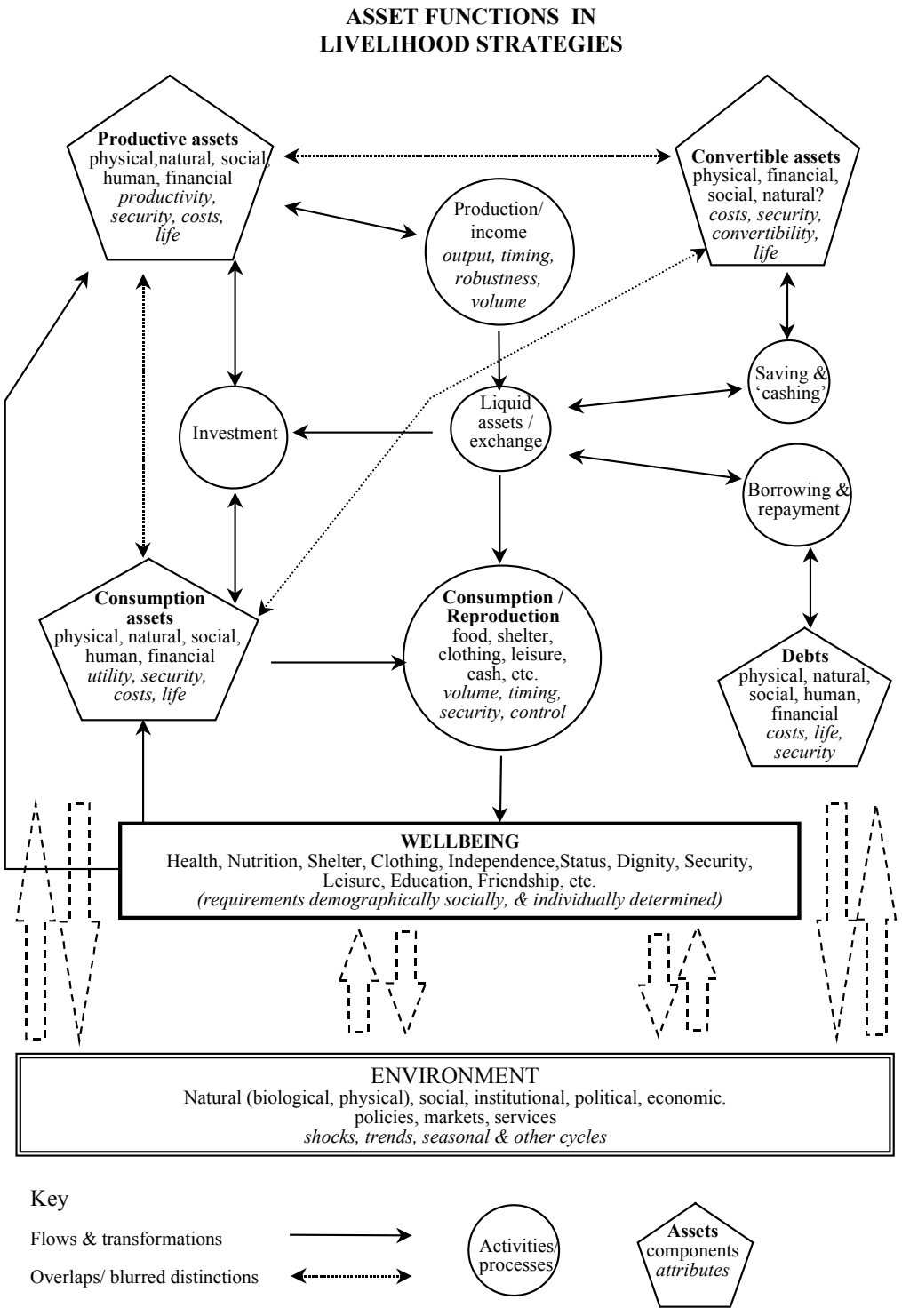
The figure stresses the dynamic relationship between assets with different functions (in the corners of the diagram) and various livelihood activities and processes (in the centre of the diagram) in the pursuit of wellbeing. This is not intended to imply that there is always a clear distinction between consumption, productive and convertible assets [12]. On the contrary, the same asset may fulfil all three functions to some extent, but assets will differ in relative effectiveness with regard to each function. Savings in a highly convertible asset like cash give no direct production or consumption benefits. Insurance investments may take many forms, and may or may not be associated with production or consumption benefits. Savings in an interest bearing deposit account do yield an income (provided that the real interest rate is positive). The productivity of savings in livestock will vary with markets, management, the type of livestock, etc.

This analysis of asset functions in people's livelihood strategies may facilitate understanding of their small stock keeping strategies. The approach brings together, in a fairly simple and readily assimilated framework, a number of complex components and attributes of livelihoods which match the often complex roles of small stock within livelihoods. Thus traditional 'outsider' views of small stock keeping have tended to emphasise the productive roles of small stock, whereas more recently the importance of their role as 'convertible assets' has been given more recognition. They are also, of course, often 'consumption assets' and may also be important resources in patterns of lending and borrowing.

The potential value of the analysis of asset functions goes beyond mere recognition that assets play different roles in peoples' livelihoods in three important ways.

- Most obviously the framework stresses the almost universal need for and integration between four different types of process (production/income, investment, saving/cashing, and borrowing/repaying) and four associated functions of assets in effective livelihood strategies.
- Second, we expect people with different livelihood systems (with different asset portfolios, activities, and vulnerability) to have different preferences as regards their *asset function mix* or holding of assets with different functions.
- Third, the extent and way that assets fulfil the different functions depends upon the *attributes* of those assets, and these attributes in turn depend upon the environment (natural, physical, social and economic), asset mix, and technologies of asset conversion activities/ processes.

[12] Debts, as a negative asset, are more distinct.



From Dorward et al (2001)

Annex 3 *Illustrative indicators and questions for method 2 (page 16)*

Income	Average annual income per person from livestock and product sales How would you rate your income from livestock? (*very satisfactory, satisfactory, unsatisfactory, very inadequate*) What proportion of your income comes from livestock? *(less than a quarter, quarter, half, three quarters, more than three quarters)*
Consumption	How often do you eat chicken? (w*eekly or more than once/week; monthly; occasionally)* How would you rate your home consumption from livestock? *(very satisfactory, satisfactory, unsatisfactory, very inadequate)*
Buffering (expected events, consumption smoothing)	How many months of the year do you have problems financing basic expenditures? How many times are livestock sold to cover such expenses (Ethiopian comment)?
Insurance (unexpected events)	What is your ability to face a crisis demanding 500Bs? *(could pay without long term livestock system damage; could pay with long term livestock system damage; could not pay)* If you had a crisis demanding a certain amount of cash, what kind of animals would you sell? *(species, sex, age, sufficiency)*
Guarantee or collateral	What is the largest loan that you could raise using your animals as a guarantee or collateral? For each animal, can it be used as a guarantee, for how much?
Animal traction	% of households owning draft animals? How would you rate your ability to cultivate in good time all the land you could cultivate? *(very rarely a problem, occasionally some difficulty, frequently some difficulty, always a major difficulty)* Number of draft animals and tractors in the community and ploughing capacity versus land to be cultivated for critical operation
Transport	How would you rate your ability to transport goods when you need to? *(very rarely a problem; occasionally some difficulty; frequently some difficulty; always a major difficulty)* How would you rate your ability to travel in the locality when you need to? *(very rarely a problem; occasionally some difficulty; frequently some difficulty; always a major difficulty)*.
Accumulation	For the species for which accumulation is important: % households increased herd/flock size last year? For the species for which accumulation is important: is there a minimum viable herd/flock size? What is it? % of households with a viable herd/flock size
Social	How would you rate your ability to meet social obligations which require livestock? *(almost always, usually, occasionally, hardly ever)* (gifts, sharing animals, fiestas, …)
Manure	How would you rate your ability to obtain sufficient manure for your crops? *(very rarely a problem, occasionally some difficulty, frequently some difficulty, always a major difficulty)* Number of animals in the community versus land to be fertilised Market & price of manure by species

Note: These are all illustrative questions or examples, but they will often not be appropriate in particular situations. Thus it may be difficult to make estimates of annual income, many questions (for example about the different functions) will need to be specific to particular kinds of livestock. Similarly it will often be important to ask questions about specific seasons. It is important that not too many questions are asked here, but an attempt is made to identify critical questions to ask – addressing only the livestock, functions and times of year which are most important in livestock keepers' livelihoods. Similarly some questions will be specific to particular family members, and it may also be helpful to phrase questions in terms of change (eg increasing, stable or decreasing; getting better, staying the same, getting worse).

Annex 4 *Principles in Participatory Investigation*

It is now recognised that it is not possible for outsiders to accurately identify the needs of rural poor; these can be identified only with active involvement of the "beneficiaries" themselves. The primary responsibility for implementing solutions to rural people's problems has to lie with these people. Only in this way can a sense of "ownership" be created and can local institutions be developed which can continue activities after external support has ceased. Below are the main concepts behind participatory appraisal (Rushton 2003).

Know how to listen- The basis of any participatory process is the ability to listen. It is important to give people time to explain their problems and this can be facilitated if the environment of the contact is a relaxed one. It may be necessary in interviews, meetings or workshops to tolerate silences and to make sure that people are not interrupted when making their views known. If a person or people do not have time to talk freely it is recommended that an appointment is made when time is available (Rushton 2003)

Visual Sharing- if diagrams, maps etc are prepared by rural people, these are readily understood by them and others in their community. Information is thus made visible and can be checked and corrected on the spot, whereas notes made by an interviewer cannot. Visualisation also permits participation in discussion of information by people who cannot read and write. (Rushton 2003)

Relative Values- relative ranking and scoring: this type of data is easier to obtain than absolute values of, e.g. number of animals in herd or cash income; relative values and approximations are usually precise enough for planning purposes. (Rushton 2003)

Facilitation- Facilitation of an investigation, workshop or an analysis should allow people to develop their own ideas and search out important points. In participatory workshops the facilitator should provide a framework for the workshop, but should give sufficient leeway for people to express themselves in ways they feel comfortable. In the end, a good facilitator will make people feel the process of analysis is their own. (Rushton 2003)

Better Rapport and Understanding- by bringing researchers, development agents and, in some cases, also government officials into direct contact and discussion with local people in their own setting.

Flexibility- Books and manuals on participation are only guides, where certain methods are not applicable or need to be adapted to suit the specific situation, there should be no fear in making modifications. The way in which questions are asked is the basis for encouraging discussion and analysis. If time allows do not be too rigid with set questions, allow subjects that are important to be fully discussed. It is at these points where judgement on the value of information and analysis need to be made. Discussions and other interactions between a Participatory Rural Appraisal(PRA) team and the local people can raise unexpected issues (e.g. in the case of livestock-keepers in arid areas, support to gain easier access to grain may be more important than animal-related issues). (Waters-Bayer 1994)

Triangulation- This is the corroboration of data or information and is an important aspect of participatory methods. It is useful to aim to cross-check collected information with two other sources. There are many sources of information on livestock; producers, secondary information, local institutions and authorities. All participatory methods are also combined with direct observation of objects, events, processes, relationships, husbandry practices etc, which are recorded by the PRA team in notes or diagrams. These observations provide starting points for

dialogue and indicate where further probing is necessary (e.g. the team is told that women do not herd, but women can be seen herding). (Waters-Bayer 1994)

Expression of Information- In some regions there is a high percentage of people who cannot read or write. Also in some countries there are regions where people speak a local language and have difficulty with the official national language. In these situations it is important to recognise the problems of communication and determine how to address these issues in terms of presentation and how to store information. Some languages are basically oral languages and the use of pencil and paper makes little sense in terms of recording information to local people, but is important to the outsiders from the region. In other communities, even though many may not be able to read and write, they may be comfortable using pictures to express their ideas. Finally, there are areas where the majority are comfortable reading and writing, but here it is important to check that the minority who cannot read and write well are not isolated. (Rushton 2003)

Marginalised Groups- PRA teams often seek small groups who are marginalised in larger public meetings (women, poor, ethnic minorities, immigrants etc), to allow them to express and analyse their knowledge, perceptions, problems and needs. Like the groups, the individuals involved as partners in PRA may be met by chance or purposively selected because they belong to a specific gender, age, ethnic or other group or because they are "key informants". This term refers here to local experts: people in the project area with a profound knowledge of a particular issue or technology. (Waters-Bayer 1994)

Meetings to Return Information- The information generated using participatory techniques does not have any value if it remains in reports and there is no feedback at field level. It is necessary and important to present the results to producers and institutions in the study area.(Rushton 2003)

Overview- The participatory process is effective when it has the confidence of the livestock owners and producers. In this way the exchanged information can be relied upon because the producers will participate in the process, freely sharing information about their livestock. The question is how to achieve this confidence and participation in order that the process has credibility. In answer to this it is necessary to create an environment that allows exchange of ideas and to have an attitude of respect for the producers, so that they feel comfortable to express their opinions. (Rushton 2003)

Rural people are capable of adapting their farming systems to changing conditions, and have been doing so without or even in spite of externally planned projects. Participation is now starting to be understood as the participation of outsiders (external development agents) in this process of generating or adapting innovations in agriculture and natural resource management by giving support to the local development actors: the rural people. (Waters-Bayer 1994)

Annex 5 *Investigating the Context and Options of Beneficiaries*

An important component of the approach used in this guide is the development of a close understanding with beneficiaries in the development of indicators for assessing the contribution of livestock keeping to the livelihoods of poor people. This annex briefly outlines some principles and tools which can be used to help develop this understanding.

Establishing rapport:

Informal discussion with local people about issues of relevance to their lives can be helpful in establishing rapport and understanding the context and options of the beneficiaries. It should become obvious quickly what time of day is best to talk to men women and children depending on their routine.

Subjects and methods for informal discussion can include:

- History of area/ Timelines
- Oral history (past trends, accomplishments)
- Local knowledge of livestock diseases
- Seasonal trends in:
    - disease & parasite load
    - mortality of livestock
    - livestock sales and prices
    - prices of inputs products, items needed
    - birth events in livestock
    - milk yield
- Transect walks, Mapping

Building Understanding:

More specific issues can be discussed when key informants have been identified through the process of informal discussion. Willing participants may be happy to discuss some of the specific issues of interest to the researcher and may highlight issues having a significant bearing on the focus of the project, such as livestock, providing all discussions are two-way and the researcher is willing to listen with an open mind. Examples of some more specific topics and methods for such discussions are listed below:

- Aims of the research/project team
- Seasonal resource mapping
- Stock loaning
- Sharing relationships
- Social organisation (Venn diagram)
- Social mapping
- Institutional links (Venn diagram)

- Wealth differences/ Wealth ranking
- Marketing structure (Flow diagram)
- Conflict analysis
- Services (financial, veterinary etc)
- Opportunities (alternative employment etc) map
- Problem analysis/ Problem tree

It is worth noting that certain issues (such as wealth ranking) may be sensitive depending on the cultural norms of the community in question. In such cases techniques methods should be used which are sensitive to local cultural norms. In wealth ranking, for example, it may be more acceptable to sort cards with names of heads of households into three piles (High, Medium and Low wealth). It is also important to have a common understanding of terms used in discussion if the information is to be interpreted correctly. This requires a clear discussion and definition of terms such as 'wealth' or 'wellbeing'.

Further information on the methods mentioned above can be found in sources listed in annex 6.

Annex 6 *References and Sources of Further Information*

Carney (1998) The Sustainable Livelihoods Approach. DfID, UK.

De Boer AJ, Yazman JA and Raun NS (1994). Animal agriculture in developing countries. Winrock International: Morrilton, USA.

Dorward A, Kydd J, Morrison J, Poulton C and Urey I (2003) Markets, institutions and technology: missing links in livelihoods analysis. Development Policy Review 21 (3) 319-332

Dorward A, Anderson S and Clark S. (2001) Asset functions and livelihood strategies: a framework for pro-poor analysis, policy and practice Proc. 74th EAAE Seminar, Livelihoods and Rural Poverty, Imperial College at Wye, September 2001

Ehui S, Li-Pun H, Mares V and Shapiro B (1998). The role of livestock in food security and environmental protection. Outlook on Agriculture Vol 27, No 2, 1998, pp 81–87

Drinkwater M. and Rusinow T. (1999) Application of CARE's LivelihoodApproach. Presentation for NRAC'99.

Fresco LO, Steinfeld H (Date?) A Food Security Perspective To Livestock and the Environment.

Kulkarni GN, Bhatta R and Kumar NK (1989). Integrated rural development programme in Bijapur: an evaluation of dairy scheme. Social Change (India) 5: 72-79.

MacMillan S (Date?) Accumulating Assets through Animal Agriculture. International Livestock Research Institute, Addis Ababa, Ethiopia

Rushton J. and Viscarra R (2003). The use of participatory methodologies in veterinary epidemiology. C.E.V.E.P., La Paz, Bolivia.

Saini AS, Singh RV and Patel RK (1989). Credit management through dairying. Financing Agric. 21: 6-10.

Sansoucy R, Jabbar M A, Ehui S and Fitzhugh H (Date?) - Keynote paper: The contribution of livestock to food security and sustainable development. Food and Agriculture Organization, via delle Terme di Caracalla, 00100 Rome, Italy

Waters-Bayer A and Bayer W (1994). Planning with pastoralists:PRA and more. A review of methods focused on Africa by Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) GmbH German Agency for Technical Cooperation.

Winrock (1992). An assessment of animal agriculture in sub-Saharan Africa. Winrock International: Morrilton, USA.