

A Handbook for VAIMS –  
Value Addition Information Management System

Prepared for SADC PRINT by  
UFS-SU-ILRI-NAMC Consortium

TABLE OF CONTENTS

<b>CHAPTER 1:</b>	<b>OVERVIEW OF VAIMS</b> .....	<b>1</b>
1.1	<i>PURPOSE: WHY VAIMS?</i> .....	1
1.2	<i>STRUCTURE OF VAIMS</i> .....	2
<b>CHAPTER 2:</b>	<b>TARGETING AND MAPPING VALUE CHAINS</b> .....	<b>3</b>
2.1	<i>AN INTRODUCTION TO VALUE CHAIN ANALYSIS</i> .....	3
2.2	<i>METHODOLOGICAL STEPS IN CONDUCTING VALUE CHAIN ANALYSIS</i> .....	5
2.2.1	Mapping the value chain .....	5
2.2.2	Governance in the value chain .....	11
2.2.3	Upgrading in the value chain .....	11
2.2.4	Distributional considerations: who wins and who loses from value chain participation? .....	12
2.3	<i>METHODOLOGICAL CONSIDERATIONS</i> .....	12
2.3.1	Commodity characteristics .....	12
2.3.2	Placing boundaries on the analysis .....	13
2.4	<i>QUANTIFICATION AND PERFORMANCE</i> .....	13
2.5	<i>SAMPLING</i> .....	14
<b>CHAPTER 3:</b>	<b>VAIMS' PROGRAM OF WORK</b> .....	<b>16</b>
3.1	<i>STUDY FORMULATION AND PARTICIPATION</i> .....	16
3.2	<i>QUESTIONNAIRE 1: INPUT SUPPLIER SURVEY</i> .....	19
3.2.1	Section 1: Information on input supplier .....	19
3.2.2	Section 2: Feed supplier .....	19
3.2.3	Section 3: Dips, Medicine, Vaccines .....	20
3.2.4	Section 4: Credit Providers .....	20
3.3	<i>QUESTIONNAIRE 2: LIVESTOCK PRODUCER SURVEY</i> .....	21
3.3.1	Section 1: General Household Information .....	21
3.3.2	Section 2: Household Assets and Activities .....	21
3.3.3	Section 3: Detail of Livestock Operations .....	23
3.3.4	Section 4: Livestock Purchases and Sales .....	23
3.3.5	Section 5: Costs of Production .....	24
3.3.6	Section 6: Infrastructure .....	24
3.3.7	Section 7: Miscellaneous Information .....	24
3.4	<i>QUESTIONNAIRE 3: LIVESTOCK TRADER SURVEY</i> .....	25
3.4.1	Section 1: General Household Information .....	25
3.4.2	Section 2: Basic Information and Livestock Operations .....	25
3.4.3	Section 3: Livestock Purchases .....	26
3.4.4	Section 4: Livestock Sales .....	27
3.4.5	Section 5: Costs of Production .....	27
3.4.6	Section 6: Miscellaneous Information .....	27
3.5	<i>QUESTIONNAIRE 4: LIVESTOCK/MEAT PROCESSOR/RETAILER SURVEY</i> .....	28
3.5.1	Section 1: General Household Information .....	28
3.5.2	Section 2: Operations .....	29
3.5.3	Section 3: Livestock Meat Purchases .....	29

3.5.4.1	Section 4a: Primary Processing .....	30
3.5.4.2	Section 4b: Secondary Processing.....	30
3.5.5	Section 5: Meat Sales .....	31
3.5.6	Section 6: Costs of Production.....	31
3.5.7	Section 7: Miscellaneous Information.....	32
3.6	<b>SELECTION AND TRAINING OF ENUMERATORS.....</b>	<b>32</b>
3.7	<b>DATA COLLECTION AND MANAGEMENT.....</b>	<b>36</b>
3.7.1	Data collection .....	36
3.7.2	Field data entry .....	37
3.7.3	Data cleaning and missing values.....	37
3.7.3	Data capture into VAIMS.....	38
<b>CHAPTER 4:</b>	<b>GUIDE TO THE VAIMS USER INTERFACE.....</b>	<b>39</b>
4.1	<b>SYSTEM PREREQUISITES AND INSTALLATION .....</b>	<b>39</b>
4.1.1	Normal Installation .....	39
4.1.2	Installation where automatic installation fails .....	39
4.2	<b>INITIAL SETUP.....</b>	<b>40</b>
4.2.1	Importing a questionnaire.....	40
4.2.1.1	Adding a base questionnaire name .....	40
4.2.1.2	Adding a Language to a base questionnaire .....	41
4.2.1.3	Linking a questionnaire template to a specific base questionnaire Language .....	41
4.2.2	Adding an enumerator.....	44
4.2.3	Adding a Country .....	45
4.2.4	Adding a District.....	45
4.2.5	Adding a Ward and/or Village .....	46
4.3	<b>SUBMITTING A QUESTIONNAIRE.....</b>	<b>48</b>
4.4	<b>VAIMS WORKSPACE .....</b>	<b>49</b>
4.4.1	Workspace Wizard .....	50
4.4.2	Manual Workspace Manipulation .....	50
4.4.2.1	Create a new, unlinked base Actor.....	51
4.4.2.2	Create a new Actor from an existing Actor .....	52
4.4.2.3	Create a new link between existing Actors .....	52
4.4.2.4	Remove a single Actor from the Workspace.....	53
4.4.2.5	Remove an Actor as well as its child Actors from the Workspace.....	53
4.4.2.6	Remove a link between two Actors .....	53
4.4.2.7	Strengthen or weaken the Link between two Actors .....	54
4.4.2.8	Rename an Actor.....	54
4.4.2.9	Change an Actor's font colour.....	54
4.4.2.10	Move a single Actor .....	54
4.4.2.11	Move multiple Actors.....	55
4.4.2.12	Move all Actors .....	55
4.4.2.13	Submitting a questionnaire.....	55
4.4.2.14	Displaying Performance Measures.....	55
4.5	<b>DISPLAYING PERFORMANCE MEASURES.....</b>	<b>56</b>
4.6	<b>ANALYSING THE DATA.....</b>	<b>57</b>
4.6.1	Background and analytical approach .....	57
4.6.2	Data entry, storage and compilation.....	57
4.6.2.1	File formats .....	57
4.6.2.2	Filters.....	57

<b>CHAPTER 5:</b>	<b>VALUE CHAIN PERFORMANCE MEASURES .....</b>	<b>58</b>
5.1	<i>ACTOR-LEVEL ANALYSIS .....</i>	<i>58</i>
5.1.1	Value addition .....	58
5.1.2	Revenues .....	59
5.1.3	Production cost .....	59
5.1.4	Transport cost .....	60
5.1.5	Other costs, subtracted as part of calculation of Value Addition .....	60
5.1.6	Other costs, not subtracted as part of calculation of Value Addition .....	60
5.1.7	Sub-division of costs among species .....	60
5.1.8	A final note on costs.....	61
5.2	<i>CHAIN-LEVEL ANALYSIS.....</i>	<i>61</i>
5.2.1	Price relationship.....	62
5.2.2	Seasonality .....	62
5.2.3	Information flow .....	63
5.2.4	Level of integration/coordination .....	64
5.2.5	Evidence of market power and its exercise.....	70
5.2.6	Productivity .....	70
5.2.7	Infrastructure.....	71
5.2.8	Flexibility and responsiveness .....	71
5.2.9	Governance .....	76
5.2.10	Satisfaction of objectives.....	77
5.3	<i>EFFICIENCY AND EQUITY.....</i>	<i>77</i>
5.3.1	Value added .....	77
5.3.2	Shared risks and constraints .....	78
5.3.3	Market access .....	79
5.3.4	Competitiveness.....	80
5.4	<i>DEVELOPMENT INDICATORS.....</i>	<i>81</i>
5.4.1	Employment of women and family members .....	81
5.4.2	Level of physical and human capital .....	81
<b>CHAPTER 6:</b>	<b>EXAMPLE OF ANALYSIS AVAILABLE .....</b>	<b>83</b>
6.1	<i>GENERAL COMMENTS.....</i>	<i>83</i>
6.2	<i>MISCELLANEOUS INFORMATION .....</i>	<i>84</i>
6.3	<i>REVENUE .....</i>	<i>85</i>
6.4	<i>COSTS.....</i>	<i>86</i>
6.5	<i>VALUE ADDED .....</i>	<i>87</i>
6.6	<i>INCENTIVE TRANSMISSION .....</i>	<i>88</i>

LIST OF FIGURES

REFERENCES

APPENDIX A

---

## CHAPTER 1: OVERVIEW OF VAIMS

---

### 1.1 PURPOSE: WHY VAIMS?

VAIMS (Value Added Information and Management System) is an information and data management system that is designed to generically collect, store, manage, and analyze information on livestock marketing chains in smallholder settings. The motivation for VAIMS comes from the need, across a range of stakeholders, for better information on smallholder livestock systems that predominate in many developing countries. In such settings, livestock often represent an important pathway out of poverty for smallholders. Indeed, much of the world's poor in rural and urban areas alike maintain livestock for a multiplicity of uses, including income, asset and risk diversification, and social and cultural reasons (Bailey et al., 1999; Randolph et al., 2007). Furthermore, given the numerous actors involved in the livestock marketing chain, interventions that target livestock systems can have powerful multiplier effects on the sector itself, related sectors (e.g., feed), and ancillary services and employment-generating activities.

At the same time, the complexities inherent in livestock systems make the development and implementation of appropriate, pro-poor interventions challenging. Formal and informal sectors alike are replete with long marketing chains that canvas a host of producers, traders, collectors, processors, and retailers, which are complicated further by the linkages with other sectors and steps of processing and value-adding that are unique to livestock. Because of these interactions, decision makers require information that is sensitive to the chain setting of livestock systems and the potential impacts that policies in one sector may have on others. However, such information on livestock chains themselves (particularly in the informal sector) is generally lacking in most developing countries, complicating the decision making process.

The VAIMS user set includes market actors, and government actors planning or implementing policies that affect the structure and function of the livestock value chain. VAIMS enables measurement of chain performance, so identifying the consequences of problems and opportunities and their consequences across a range of alternative responses. The focus on "chain performance" reflects the goal of improving such performance.

VAIMS seeks to redress the gap in information by providing an integrated data management and analysis platform that characterizes smallholder livestock value chains. It is suitably generic to be applied to a number of different species, agro-ecologies, and development contexts. It combines primary survey instruments with a data platform that manages this data

for qualitative and quantitative analysis. For the former, VAIMS utilizes a graphical interface that visually maps the value chains in question, highlighting important actors, flows, and relationships. For the latter, VAIMS is capable of computing simple, policy-relevant statistics and indicators that highlight the functioning, efficiency, and constraints in the value chain itself. In doing so, VAIMS bridges the information gap that currently exists and provides policymakers and development practitioners alike with greater insights on how best to target pro-poor investments.

## **1.2 STRUCTURE OF VAIMS**

VAIMS is a tool with the following components and structural features:

- Background and conceptual material on livestock value chains in developing countries, including a literature review
- Activities for the identification and targeting of a specific livestock value chain, including a participatory process with value chain actors
- Design and formulation of a set of questionnaires that targets, in a consistent manner, key quantitative information about actors in the value chain and their relationship to each other
- Surveys, leading from initiation and selection of staff, through training and establishment of protocols through to the field work and regular reviews
- Data entry and capture, and updating procedures
- A software interface that features an interactive graphic tool for representation of the chain, facilitates generation of purpose-built questionnaires, organises, captures and stores data, provides standard analysis and output tables for use in both analysis and benchmarking activities
- A set of value chain performance criteria and applications drawn and applied from the literature and practical experience
- Data and output download facilities that are available both as standard output and as data for use in applications of Microsoft Excel®

---

## CHAPTER 2: TARGETING AND MAPPING VALUE CHAINS

---

### 2.1 AN INTRODUCTION TO VALUE CHAIN ANALYSIS

The analysis of “value chain” type constructs has a long tradition, particularly in industrial production and organization, though it has only been in the last decade that it has gained wider popularity in the context of international development and agriculture. Historically, value-chain analysis is rooted in sectoral types of analysis, such as those elucidated by the French *filière* approach (Raikes *et al.*, 2000). In a *filière*, the main idea is to highlight and map out specific physical commodity flows within a sector, including key stakeholders, though usually confining the analysis to domestic markets and ignoring dynamic adjustments to sector characteristics and relationships (Raikes *et al.*, 2000; Kaplinsky and Morris, 2001). This approach is similar to that used in classical supply chain management analyses, which have traditionally focused simply on the flow of goods from production through distribution and to retail, though this has changed as management decisions, interactions between actors, and information needs have become more complex and demanding (Lambert and Cooper, 2000).

The term “value chain” was first defined by Porter (1980) in his analysis of competitive advantage. Porter (1980: 36) argued that “each firm is a collection of activities that are performed to design, produce, market, deliver, and support its product.” The “value chain” is a representation of these value activities, based on a firm’s cost structure, and highlights potential areas of competitive advantage. Different firms each have their own value chain that are embedded in value networks (or value system in the terminology of Porter) that have different functions within an industry or sector that influence (and are influenced by) other actors in the network. Porter focuses on value, defined as total revenue, rather than cost as a metric for competitive advantage because he argues that “firms often deliberately raise their cost in order to command a premium price via differentiation” (p. 38).

The application and modification of value chain ideas to development issues became formalized in the mid- to late-1990s, rising out of the global commodity chain (GCC) approach of Gereffi and Korzeniewicz (1994). The GCC and subsequent approaches focused predominantly on the value network of Porter in terms of looking at the relationships and linkages between firms rather than solely at value-creating functions within a firm. GCC analysis further highlighted issues of power relationships between actors in the value chain. A particular area of emphasis in GCC analysis concerns whether chains are “producer-driven” or “buyer-driven.” In producer-driven chains, such as those in capital- and technology-intensive industries, product specifications are set by producers. By contrast, industries that tend to be more labour-intensive or consumer-driven are characterized as “buyer-driven,” with end-specifications set by



retailers and buyers. These ideas, along with the characterization of the chain itself and key stakeholders, were incorporated and tested in a series of commodity studies in developing countries by the Institute of Development Studies (IDS) at the University of Sussex (UK), with a number of principles for analyzing such chains derived from these studies, and which culminated in a “Handbook” of research (see Kaplinsky and Morris, 2001).

The IDS approach, following Kaplinsky (2000: 121), defines the value chain as “the full range of activities which are required to bring a product or service from conception, through the intermediary phases of production, delivery to final consumers, and final disposal after use”. Kaplinsky and Morris (2001) distinguish between value chains from supply chains by emphasizing the linkages both between and within actors at each stage of production. That is, rather than looking at each stage of production as its own entity, the argument is that the value chain approach highlights the relationships between networks of producers, traders, processors, exporters, and retailers, and the means by which such networks are, or can be, accessed (UNCTAD, 2000). One could easily argue that the distinction between value chains and the analysis in modern supply chain management is a bit blurred, given that modern supply chain management has increasingly focused on the role of information flows and coordination mechanisms to link diverse components of the supply chain (Lambert and Cooper, 2000; van Roekel et al., 2000). However, it is true that value chain analyses in the development tradition tend to focus much more on the qualitative aspects of these relationships. This approach has considerable merit in highlighting the constraints in each segment of the chain and can thus be used to develop integrative policy recommendations that target chain inefficiencies and remedy distributional issues.

The IDS approach has been adapted by donors to practically implement value chain strategies in developing countries. The German aid agency GTZ recently put together a “ValueLinks Manual” that provides practitioners with a framework to implement the IDS approach in the field (GTZ, 2007). Their approach adds value to the IDS chain methodology by highlighting both the functions within the chain as well as the actors. It also provides guidance on implementation to promote value chain development, including developing business linkages, securing public-private support, financing new chains, and incorporating a host of different standards in the chain (GTZ 2007).

The IDS approach is not the only means by which value chain analysis is conducted among development scholars and practitioners. Roduner (2004), for instance, reviews different types of value chain approaches, including participatory market chains and participatory value chains. Nonetheless, while the orientation and entry-points for these alternative methodologies are slightly different, the holistic underpinnings of the IDS approach (understanding of market actors, governance relationships, strategic opportunities, and distributional aspects) are similar.

There are several reasons given as to why value chain analysis is an important analytical tool (Kaplinsky and Morris, 2001). First, it helps to understand the way in which firms and countries are globally integrated and linked. Second, by going beyond firm- or activity-specific analysis, it allows for an assessment of the linkages between productive activities across the value chain. Third, the insights from value chain analysis can help to identify opportunities for smallholders to access global markets in a manner that would provide for sustainable income growth. By doing so, the value chain approach provides a framework to analyze the nature and determinants of competitiveness in value chains in which small farmers can participate and provides the basic understanding needed for designing and implementing appropriate development programs and policies to support their market participation.

VAIMS addresses livestock systems in developing countries, which have not previously been targeted in value chain analysis for development purposes. VAIMS employs up-to-date thinking on value chain analysis, and applies it in a practical manner for the benefit of development decision-makers as well as commercial value chain actors. VAIMS' further contribution is its quantitative nature: the synthesis of spatial, organisational, management, market and financial data into a numbers-based decision-making tool for policy and development is a significant advance on the tools available. This handbook presents the results of the development and formulation of VAIMS during an initial project period, but is not the final word in its development and application, both of which continue.

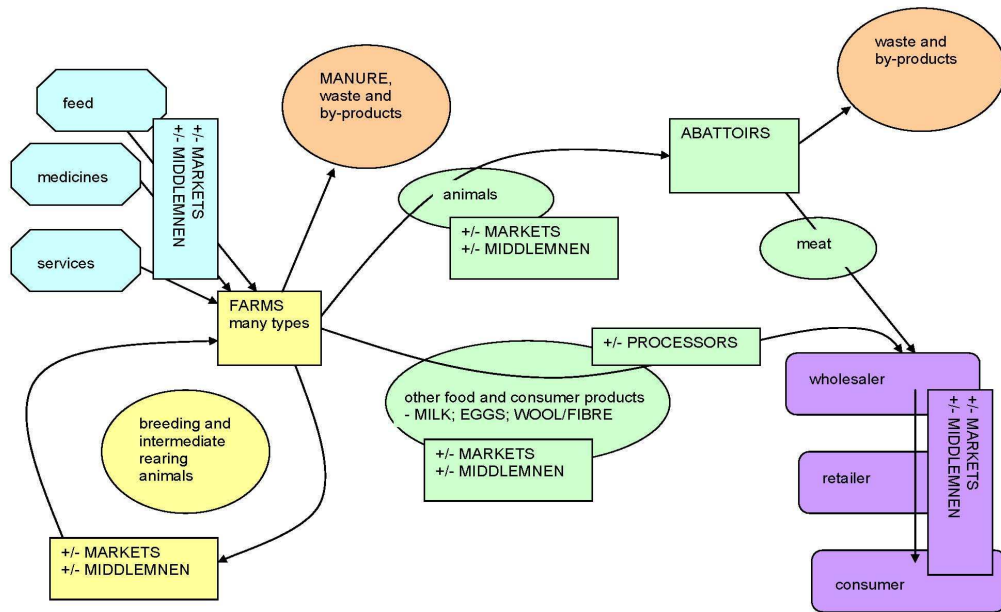
## **2.2 METHODOLOGICAL STEPS IN CONDUCTING VALUE CHAIN ANALYSIS**

### **2.2.1 MAPPING THE VALUE CHAIN**

The first step in a value chain analysis is to *map systematically the actors participating in the production, distribution, marketing, and sales* of a particular product (or products). This mapping assesses the characteristics of actors, profit and cost structures, flow of goods throughout the chain, employment characteristics, and the destination and volumes of domestic and foreign sales (Kaplinsky and Morris, 2001). Specific analytical aspects of behavior within these maps are provided in Chapter 5 of the handbook.

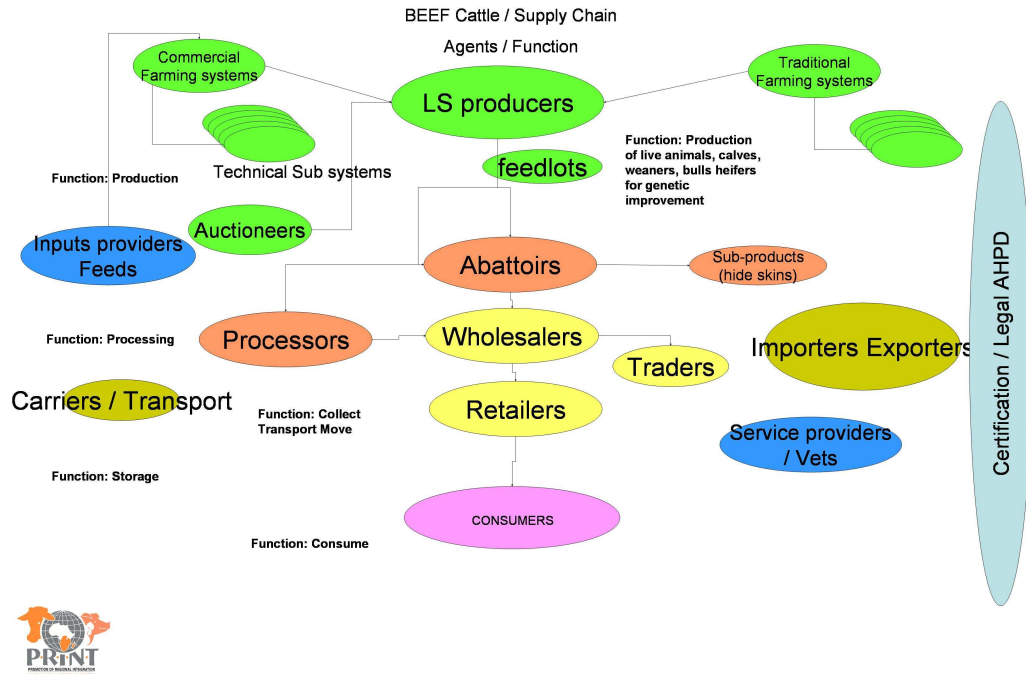
Livestock value chains are replete with a multitude of different chain actors, as illustrated in Figures 1-3. At a basic level, livestock value chains consist of producers; intermediaries including traders, processors, and wholesalers; and various types of retailers (butchers, supermarkets, restaurants, and hotels). Livestock value chains are further supported by different types of ancillary service providers, such as feed manufacturers and animal health service providers. Moreover (see figure 1 below), there is a range of products derived from the primary production of animals, including meat, hides, eggs, manure, and other by-products,

each with its own value chain. Value chain analysis is suitably flexible enough to examine the broader commodity chain or specific characteristics of particular sub-sectors, though a broader analysis will come at the expense of specific sector detail. For example, figure 4 maps the overall value chain for the poultry sector in Indonesia, highlighting the general links between key points in the chain. On the other hand, figures 5 and 6 focus on the layer chain (a sub-sector in the poultry sector) and its detailed linkages (including the volume and value of flows between actors) from production to final consumption.



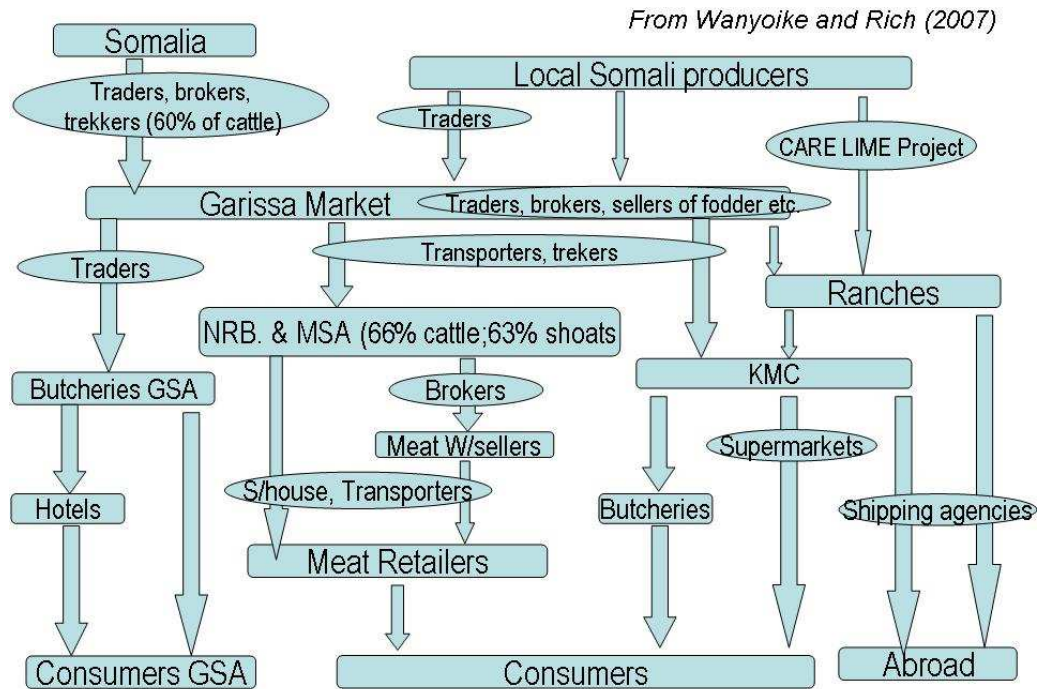
**Figure 1: A generic livestock value chain**

Source: Taylor *et al.* (2008)



**Figure 2: A more detailed generic value chain for beef**  
 Source: SADC-PRINT Public-Private Partnership Workshop Proceedings, 2-3 Nov. 2006.

### Garissa livestock marketing value chain

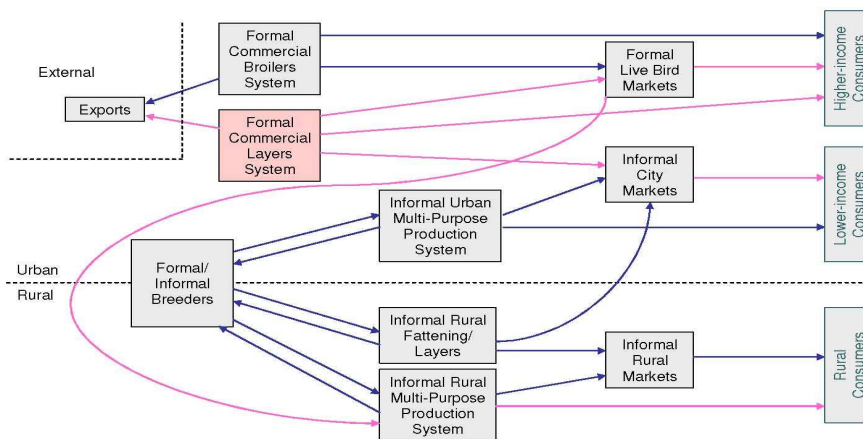


**Figure 3: A value chain mapping of livestock markets in Northeast Kenya**  
 Source: Wanyoike and Rich (2007)

The ValueLinks approach (GTZ, 2007) further distinguishes between actors and functions in the value chain. In this context, the analysis first identifies the end product produced by the chain and determines the stages of activities (functions) to produce this final product. In figure 7, these are represented by arrowed boxes at the top of the figure and in this example from Ethiopia refer to activities such as animal husbandry, slaughtering, trading, and processing. The actors that carry out these particular activities are represented below the function map and are classified into micro-level actors (those that actually are engaged in these activities directly) and meso-level actors (those in government or other private sector bodies that support micro-level actors). This distinction is an important one because it separates out the “what” from the “who” within the chain, allowing for a more nuanced analysis of chain-level issues and constraints at a process level versus those that relate to coordination and governance considerations (see Section 2.2.2).

**Annex I. Example value chain maps**

**Map 0: Entire (chicken) industry**



**Figure 4: A value chain mapping of the chicken sector in Indonesia**  
Source: Kobayashi (2006)

Map 1. Formal layer chain: Volume

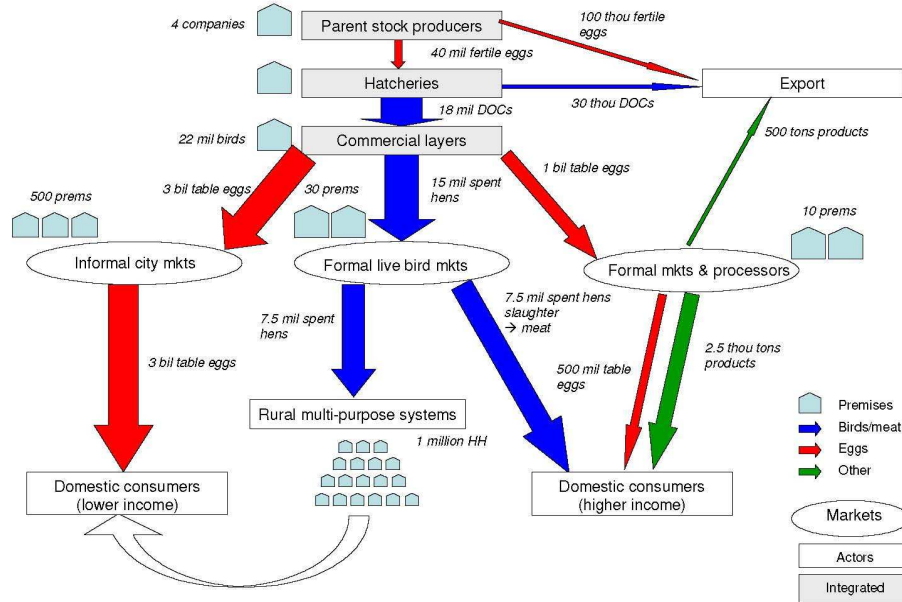


Figure 5: A value chain mapping of the layer sector in Indonesia: Volumes of flows  
Source: Kobayashi (2006)

Map 2. Formal layer chain: Value

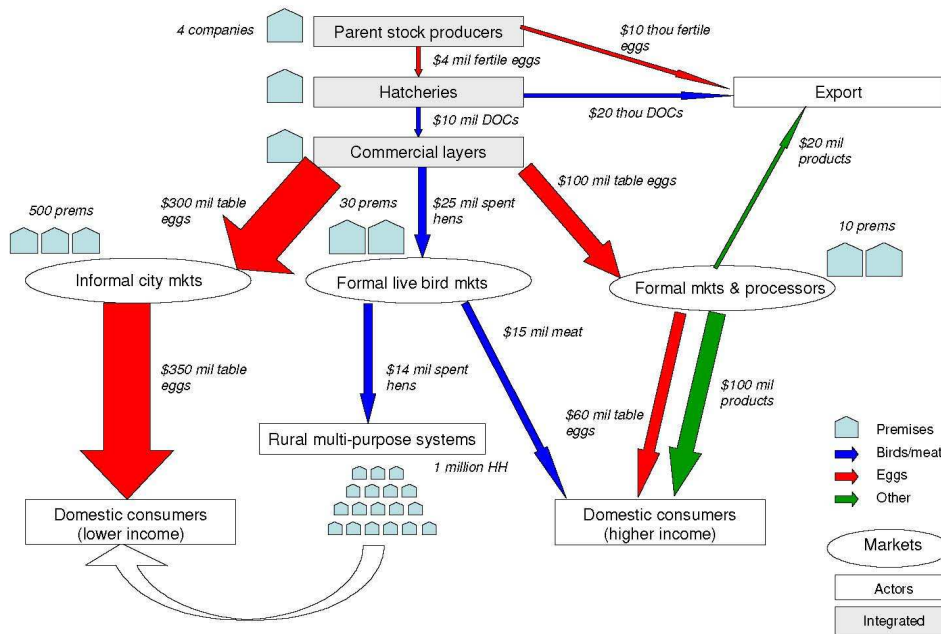
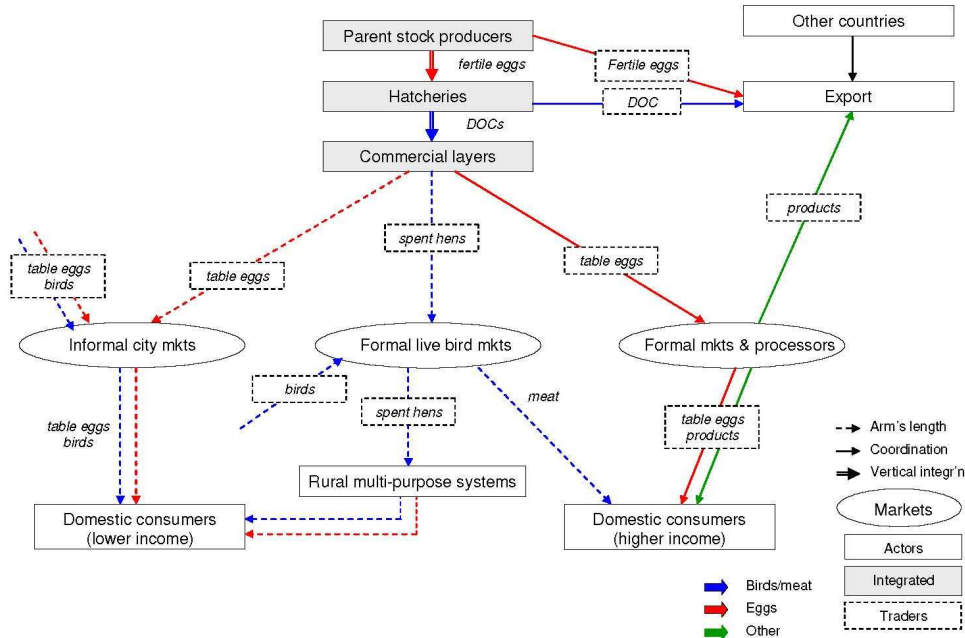


Figure 6: A value chain mapping of the layer sector in Indonesia: volumes of flows  
Source: Kobayashi (2006)

### Map 3. Formal layer chain: Relationship



**Figure 7: Mapping governance mechanisms in the value chain**

Source: Kobayashi (2006)

These approaches, however, are not strongly linked to a chain-specific information base and do not provide guidance on how to design and implement the studies necessary to collect and process the necessary data. One of the important contributions of VAIMS is to provide an integrated analytical platform for such data collection efforts as well as their graphical and quantitative representation in the final analysis. VAIMS is suitably flexible to examine relatively general or specific value chains, as its data templates correspond to relatively broad actor aggregates (producers, traders, and processor/retailers). As noted later in the handbook, VAIMS collects information on profit and cost structures and market flows (volumes/values) necessary to characterize the functioning and linkages within the chain.

Issues of barriers to entry to markets, and generation of associated profits (so-called “rents”) are particularly salient in the analysis. Value chain analysis pays close attention to barriers to entry in terms of the capacity of the chain (or external/internal actors outside/within it) to protect itself from competition. These barriers to entry can include the existence of scarce resources, processes, economies of scale, labelling, certification, and designation of origin, for example. Rents, defined as the ability to construct barriers to entry through unequal access to scarce resources or through innovation, for example, are also analyzed, including their dynamic nature (Schumpeter, 1939). These have particular relevance as to whether one’s position within the value chain is sustainable over time. Unlike its forerunners, VAIMS addresses these issues by

addressing various constraints on market access and by questioning market participants about the presence and impact of behaviour leading to barriers to entry.

### **2.2.2 GOVERNANCE IN THE VALUE CHAIN**

A further component of value chain analysis that often thwarts analysis is the role of *governance* in the value chain. This refers to the structure of relationships and coordination mechanisms that exist between actors in the value chain. Many of the issues in the governance of the value chain are related to who decides what is produced, how the rules of trade are determined, and the nature of relationships between the participants. The extent of this “chain power” may be related to the relative size of a particular firm in the chain, and to performance variables such as the share of chain sales, share of chain value added, share of chain profits. It may be related to buying or selling power (such as within a livestock trader network), control of information (such as knowledge of livestock weights), or to control over a key technology (such as the ownership of a piece of equipment). Some authors have looked at governance from the standpoint of power relationships, with the emphasis on which actors in the value chain are responsible for coordinating activity (Dolan and Humphrey, 2000). Gereffi *et al.* (2005) have recently proposed a typology of five governance structures of increasing integration, based on (i) the complexity of transactions, (ii) ability to codify transactions, and (iii) capabilities in the supply base. The analysis of chain governance is important from a policy perspective since it allows for the identification of institutional arrangements that may need to be targeted to improve capabilities in the value chain, remedy distributional distortions, and increase value addition in the sector. Such governance structures can be graphically mapped based on the level of coordination in a particular chain, as provided in figure 7 for example.

VAIMS examines governance issues by addressing issues of uses of contracts (including their proportion), types of standards required at purchase (and implicitly the type of coordination needed to meet them), and sources of information on markets and other chain functions. In doing so, VAIMS attempts to quantify the extent of coordination relationships within the chain. As with the discussion on rents, the quantitative information collected by VAIMS would necessarily need to be augmented by qualitative information on governance/power relationships that exist in the chain.

### **2.2.3 UPGRADING IN THE VALUE CHAIN**

Third, value chain analysis can be used to examine the impact of *upgrading* within the chain, or in analysis of alternative upgrading scenarios as might be described in a participatory procedure. This differentiates it from the *filière* approach, which tends to take a static view of relationships within the chain (Kaplinsky and Morris, 2001). Upgrading can involve improvements in quality and product design that enable producers to gain higher value or diversify the product lines served. In this context of animal health, upgrading has been applied



to better understand how the chain adapts to and copes with shocks (past and present), in terms of products, markets, relationships, and the cost of compliance with new regulations (Rich, 2009).

An analysis of the upgrading process includes an assessment of the profitability of actors within the chain as well as information on constraints that are currently present. As noted by UNCTAD (2000), governance issues play a key role in defining how such upgrading occurs. In addition, the structure of global regulations, entry barriers, trade restrictions, and standards can further shape and influence the environment in which upgrading can take place. Upgrading further addresses the capability of actors to innovate and ensure continuous improvement in product and process development. VAIMS examines upgrading by collecting data on new activities conducted within and outside the chain.

#### **2.2.4 DISTRIBUTIONAL CONSIDERATIONS: WHO WINS AND WHO LOSES FROM VALUE CHAIN PARTICIPATION?**

Finally, value chain analysis can play a key role in identifying the *distribution of benefits* of actors in the chain. That is, through the analysis of margins and profits within the chain, one can determine who benefits from participation in the chain and which actors could benefit from increased support or organization. This is particularly important in the context of developing countries (and agriculture in particular), given concerns that the poor are vulnerable to the process of globalization (Kaplinsky and Morris, 2001). One can supplement this analysis by determining the nature of participation within the chain to understand the characteristics of its participants. As VAIMS collects information suitable for the computation of chain-level budgets, one could characterize the different income groups participating in the chain being analyzed and highlight the margins or share of value-added accruing to different groups.

### **2.3 METHODOLOGICAL CONSIDERATIONS**

#### **2.3.1 COMMODITY CHARACTERISTICS**

An important methodological consideration in value chain analysis is sensitivity to the product characteristics of the chain being analyzed. For livestock products, a fundamental task is to ensure that the units of analysis are consistent across product lines. For instance, comparing margins and value-added between live animals and meat products is problematic unless all products within the chain are first converted to an equivalent measure (e.g., live weight equivalent, carcass equivalent). This necessitates that technical coefficients for various stages of livestock production (processing equivalents, losses, yields of by-products, etc.) are collected, with the quantitative analysis of the value chain taking such conversion rates into account.

---

A second methodological consideration concerns issues of quality and product differentiation.

Livestock and livestock products are extremely heterogeneous and thus comparing margins within a specific chain or between related chains is challenging. To the extent possible, the analysis should recognize and quantify these quality-related aspects of production. Primary data collection should include some indication of the price premiums received for different grades and standards of animal and meat, with the analysis further incorporating some measure of sensitivity analysis so as not to allow averages to obscure more salient quality-related details.

As noted earlier, livestock value chains are replete with multiple products and by-products from production that should not be overlooked. One may obtain a misleading assessment of the profitability and efficiency by focusing only on direct linkages between, for example, animals and meat. Indeed, the sale of by-products from processing often plays an important role in determining how successful or profitable particular products are.

### **2.3.2 PLACING BOUNDARIES ON THE ANALYSIS**

A final, often overlooked consideration is ensuring the value chain analysis is appropriately *bounded*. By their nature, and illustrated in figures 1-3, value chains for livestock are extremely complicated, whether looking broadly at a specific livestock sector or narrowly at a sub-sector or single production and marketing system. Consequently, given limited resources, identifying *which* value chains and why they are important take prime importance.

GTZ (2007) notes that sub-sector approaches have merit insofar as they allow for a better identification of alternatives within a sector and are pragmatic from the standpoint of value chain development. The ValueLinks approach further identifies three criteria in which to target value chains from a development standpoint: (i) the growth potential of a specific chain; (ii) the chain's potential for poverty alleviation; and (iii) other "pragmatic criteria" related to the size of the chain, scope for success, and synergies with various development partners and government policymakers (GTZ, 2007).

The procedures constituting VAIMS facilitate the bounding of the analysis, as well as allowing iteration between the placement of the boundaries and the nature of the problems and opportunities to be addressed. A contribution of VAIMS beyond that offered by its predecessors is that its data-based implementation forces the user to make early choices about the scope of the analysis and its implications for bounds on the work involved.

## **2.4 QUANTIFICATION AND PERFORMANCE**

In the development of VAIMS, much emphasis has been placed on the provision of a quantitative tool that is a genuine advance on qualitative approaches that conclude with flowchart diagrams based on anecdotal evidence or observed behaviour that is assumed to represent industry development. In particular, quantitative information is sought through

surveys and the focus of analysis, both within and beyond the VAIMS software interface, is on the generation and use of quantitative analysis based on chain performance measures.

To achieve this, several steps beyond geometric presentation of a chain are required. Identification of the chain and the definition of its functions have been discussed above. Performance must be first defined, and then measured. Detail of how this is achieved, and the interpretation of results, is presented in chapter 5. As an introduction to VAIMS two fundamental approaches are available for value chain analysis, each with its own uses:

- performance *in* a value chain; and
- performance *of* a value chain.

Performance *in* a value chain embraces the performance of a firm (farm, trader, processor, retailer), in the context of tightly-held vertical relationships or co-ordination. Its primary use is in comparing chains as candidates for entry by the firm in question. The performance measures used differ little from those familiar to most economists and financial analysts.

Performance *of* a value chain refers to how well a vertical array of agents performs together the tasks associated with the chain. This approach sets out to improve chain performance, generally referred to as “upgrading”. Measures can be rather more multi-dimensional than described above, and are discussed further in Chapter 5. Most importantly, measures need to reach across boundaries between firms and vertically-aligned agents, and be independent of product and asset ownership. From a development point of view, this usually addresses the efficiency and equity of the chain.

The chain itself may also be “measured” in terms of its degree of integration: how strong the vertical relationships are and how well they transmit market signals and information. In analytical work on livestock in development, the transmission of information about quality attributes is particularly important, and this is reflected in the subject matter and analysis offered in VAIMS.

## **2.5 SAMPLING**

As with other quantitative tools, VAIMS relies on robust information. Considerable effort has been spent in developing and testing the associated survey questionnaires. Some consideration is due to sampling for the use of these questionnaires. Because sampled value chain actors include only those involved in the value chain identified and isolated, no inference is possible for agents outside that chain. For that reason, VAIMS is best suited for studies involving upgrading and changes to an existing chain.

Samples at each point in the chain are determined by connections or trading relationships with agents surveyed elsewhere, which introduces further potential bias to sampling. Care must be taken to ensure that statistical inference is constrained to that applicable within the chain. This form of sampling is known as “snowballing” in that the sample size steadily grows (albeit at different points in the chain) as the researcher is passed on from one actor to another.

VAIMS’ sample size requires an indicative number of observations, subject to the variance resident within the population. For smallholder farmers in a developing country context, just 15-25 observations can be sufficient. Care is necessary where clear dichotomies occur, such as the presence of known differences in farm systems between male- and female-headed households. Where such households occur in equal numbers and then sample stratification must address this and ensure equal representation within the sample.

A similar problem occurs at retail level, where the relevant population of value chain actors might include just two supermarkets and many hundreds of market stalls or small shops. In this case, inclusion of the supermarket is not a bias influence in a sample of supermarkets (it represents 100% of the available supermarkets), but will clearly distort any average taken across all retailers and greatly influence sample estimates of variance. This may require defining two separate chains and surveying them separately.

In many cases, a small number of market actors may make up the entire population: 2-3 slaughterhouses in a region constitute such an example. In this case, the best approach is to survey all such slaughterhouses. Where a dichotomy amongst small and large slaughter premises (ranging from backyard or market stall slaughter to a large modern multiple-line facility) occurs, then the best approach may be to identify and analyse two value chains.

---

## CHAPTER 3: VAIMS' PROGRAM OF WORK

---

### 3.1 STUDY FORMULATION AND PARTICIPATION

Value chain analysis is rarely an exercise done for its own sake. Rather, it is done to identify chain problems or opportunities and examine options for response. Problems and opportunities might include low incomes, high transaction costs, lack of access to market (perhaps due to inability to reach a specified quality or informational standard), or a host of others.

It is vital that the users and implementers of the study identify clearly the tasks at hand prior to embarking on the study. Participatory exercises with stakeholders are an essential part of this process, as well as in moving the study forward once its goals have been clarified. Regular checks on the goals of the overall study and the relevance of specific parts of the VAIMS package should be made, with an eye to avoiding unnecessary work and expense, and focusing effort on those aspects of the study of the most use.

This section of the handbook addresses the formal steps in the program of work, and shares the experience of VAIMS' development in order to provide explicit instructions. Initiation of the program of work will be mobilised by user-specific needs, and involve team and partnership considerations that cannot, and should not, be second-guessed by the authors of this manual. Partners, particularly local partners, play a major role in information provision by the subjects of the research, and in paving the way for smooth and effective work with local people and organisations. In cases where permission to conduct the study is required (formally or informally), partners play a key role in securing such permission and in mobilising local people around and behind the study.

To this section has been added checklists that detail the key stages in securing and mobilising good partners, and the tasks that such partners might perform or share with the initiators of a study using the VAIMS package. The details are beyond the scope of this handbook, but every effort is made to incorporate and discuss key issues as they arise, and the checklists serve to keep the VAIMS user apprised of best practice. The "checklist" approach should not be interpreted as perfunctory: with each "tick" is carried the requirement that each issue is addressed fully with the appropriate stakeholder or partner.

Participatory processes perform the multiple purposes of:

- informing people and communities about the proposed work;
- gaining support (of various forms) for it;
- generating early versions of problem definitions and research hypotheses;
- gathering data to address issues such as sample design and targeting of stakeholders;

- identifying the geographic and organisational boundaries of candidate value chains.

Key skills in participatory work, for the purposes of implementing a study program, include communication ability, knowledge of the subject of the proposed study, local knowledge, and the ability to facilitate discussion in a room full of people. Ideally a value chain study would use a participatory process involving representatives from all the stages of the value chain. A number of these should be conducted to address regional or local variations, and to secure a broad base of support and background information. The size of the participatory exercise varies according to purpose, stakeholder mix, and numbers and skills of facilitators: 10-15 participants is a common size.

A methodological decision often must be made, that draws the boundary between the information available from participatory work and that available (at a much higher cost) from a survey. The general principle is that questions provoking resistance due to privacy, inappropriate answers due to respondent bias, and appropriate levels of variation across the sample, are better placed within the survey process than within a participatory exercise.

Collection of livestock value chain information in VAIMS is done by means of four questionnaires:

- (i) input supplier
- (ii) producer
- (iii) trader and
- (iv) processor and retailer.

Item (iv) in the above list refers to both processors and retailers. This is not to suggest that the two functions in the value chain are the same, but rather that they occur in a complex set of combinations that rarely involves their separate and discreet occurrence. For this reason, a single questionnaire is used for processors and retailers (both of which also perform wholesale and storage functions), and separate sections of the questionnaire are used where appropriate.

With VAIMS' having been designed specifically for small stock value chains in SADC member states, the questionnaires are available in official SADC languages: English and Portuguese (see Appendices A-D).

Ideally a sample should be surveyed in all the major (or potential) livestock production areas for all the value chain actors involved, so that the value chains for the different regions can be plotted, basic descriptive statistics can be summarized and that the performance in and of the value chains concerned, can be compared.

In terms of selecting the site(s) within a given region or country, similar production systems, in terms of production practices and size as well as ownership of the operation, should ideally be grouped and sampled. This approach will ensure that the variation within the sample stays regionally manageable and implies that the more homogeneous the production practises in a given region, the fewer the samples that need to be drawn.

Especially when an external (to the countries own government) institution is involved in the study, identifying the study region(s) in collaboration with the government department(s) involved in the member's country is extremely important. This is not only important in terms of assistance but also for better collaboration from interviewees. Apart from sensitizing the member state, selecting the site is typically the first step in planning a VAIMS field study (see below).

Once the survey site has been selected gathering more information on the study area is the next step in the VAIMS field study. A focus group discussion or other participatory activity, drawn from various members of the value chain, is exceptionally useful in gathering this kind of information. It is of vital importance that local experts/stakeholders are involved in selecting the survey/study area. Ideally such a focus group discussion would involve 10 to 15 people from all stages or "links" of the chain. Conducting an initial participatory exercise enables several initial tasks to be carried out, including:

- Identification of key products (those of importance to the chain actors), and issues of seasonality;
- Identification of the key processing, transport and service actions and the actors that provide them;
- Identification of the key points at which exchanges occur, the form of the products exchanged, and the type of exchange mechanism used;
- Estimation of the numbers of actors involved in each stage/process, and the relationships that might exist between them (important in determining the sample size);
- Identification of the locations at which exchanges take place and the transport logistics commonly used;
- Identification of information sources;
- Identification of key informants;
- Informing the community about the nature of the study and the uses to which the results might be put;
- Alerting people to the need and possibility of their making a contribution to the problem definition and/or its analysis.

The following section gives a basic overview of the information that each question in each questionnaire. This section should be read in conjunction with the questionnaire.

## **3.2 QUESTIONNAIRE 1: INPUT SUPPLIER SURVEY**

The aim of this questionnaire is to acquire primary data on the operations of input suppliers (with specific reference to small scale livestock, more specifically small stock) in the SADC region to:

- better understand their operating practices and to evaluate the linkages with other segments in the value chain; and
- identify constraints and ways to improve the functioning of the value chain,

The aim of this section is not to supply and analyse the whole input supply chain but rather to gain some insight into some of the main role players that are involved. This questionnaire provides a general view of three major input suppliers that are known to influence animal production and are usually associated with any livestock value chain. If more detail is required, then a more comprehensive questionnaire should be developed. The questionnaire is divided into the following four sections:

- 1: General information on the input supplier
- 2: Feed supplier
- 3: Dips, Medicine, Vaccines
- 4: Credit providers

The same questionnaire has been used except for small changes in that for Credit providers.

### **3.2.1 SECTION 1: INFORMATION ON INPUT SUPPLIER**

This section collects general demographic information about the input supplier including the number of years in business (Q1.2).

### **3.2.2 SECTION 2: FEED SUPPLIER**

Q2.1 and Q2.2 identifies the nature of the business entity and Q2.3-2.4 the size of the business.

Q2.5 identifies the main source of input material and includes factors such as local produced/processed or imported.

Q2.6 identifies the livestock species on which the business focuses.



Q2.7 enquires on the need for regulatory permits/licenses to sell feed and whether the supplier experiences difficulty in obtaining these. The answer to this query will enable statutory bodies to see whether they need to intervene to address this issue.

Q2.8-2.10 deal with transport issues such as mode of transport, distance, costs, etc.

Q2.11 and Q2.12 deal with payment methods whilst Q2.13 addresses the issue of consultancy by asking the trader whether he provides specialized advice and if so, what form and at what frequency.

Q2.14 is structured to determine the volume of feed traded whilst Q2.15 asks whether it is a branded product or not.

Q2.16 is a ranking of the major challenges that the trader experiences in the selling of animal feed.

Q2.17 is designed to monitor the business expansion plans (or not) of the trader over the next 12 months. The responses are designed in such a manner that policy makers can obtain an idea of the growth potential of the livestock industry in the region served by the trader. Some of the responses are also designed to highlight perceived impediments to this expansion.

### **3.2.3 SECTION 3: DIPS, MEDICINE, VACCINES**

This section of the questionnaire is the same as the previous section on animal/livestock feeds but focuses on animal health and asks questions around the supply chain of dips, medicine and vaccines. As it is similar to the previous set of questions, the specific questions will not be discussed further.

### **3.2.4 SECTION 4: CREDIT PROVIDERS**

The first four questions (Q4.1-4.4) are designed to describe the business of the credit providers.

Q4.5 asks for reasons why credit is sourced whilst Q4.6 asks for a ranking of a list of a number of factors that are taken into account when approving or rejecting a credit application.

Answers to Q4.7 describe a typical payback period.

Q4.8 identifies (by means of ranking) whether the applicant approaches for a loan on his own or whether he has assistance and from whom.

Q4.9 asks the credit provider to quantify the percentage of his business that is directly linked to livestock, while Q4.10 enquires whether the credit provider supplies specialized advice on financial management.

Q4.11-12 is similar to that in Sections 2 and 2 where it asks the credit supplier about future expansion strategies and reasons for this decision. This information will help policy makers develop strategies to ensure that more applications are successful.

### **3.3 QUESTIONNAIRE 2: LIVESTOCK PRODUCER SURVEY**

The aim of this questionnaire is to acquire primary data on the operations of livestock producers (with specific reference to small livestock) in the SADC region to better understand their: production practices and to evaluate the linkages with other segments in the value chain and to identify constraints and ways to improve the functioning of the value chain,

The questionnaire is divided into the following seven sections:

- 1: General household information
- 2: Household assets and activities
- 3: Detail of livestock operations
- 4: Livestock purchases and sales
- 5: Costs of production
- 6: Infrastructure
- 7: Miscellaneous information

The following section will help with the training of the interviewers by explaining what is meant by each question as well as describing the type of answer that can be expected and where applicable, the interpretation thereof.

#### **3.3.1 SECTION 1: GENERAL HOUSEHOLD INFORMATION**

The four questions asked in this section give an overview of the demographics of the respondents. The questions are standard and this information will be of value in giving a broad description of the producer. It is not meant to provide detailed demographic information of the households (composition, age, income, etc) – it is recommended that a more detailed and specific questionnaire be designed if more detailed information is required.

#### **3.3.2 SECTION 2: HOUSEHOLD ASSETS AND ACTIVITIES**

The eight questions in this section deal with general information of the household assets and activities – once more this information is only of limited value as it is drawn to present background information for the VAIMS and not to provide specific information on the household(s).

Q 2.1 provides general detail on the perceived income that can be attributed to the various agricultural practices with two sub sections pertaining to livestock (production and trading). The questions are also structured to give an indication whether there has been a shift in the major income activities, this will be of value to policy makers as an indicator whether livestock activities have been increasing or decreasing. It does not however analyse why these trends occur.

Q2.2 gives further background on the farming history of the farmer as well as an indication of the level of training he has received. This information could give a possible explanation of his/her production performance (as described in Section 3).

Q2.3 queries the reason for the farmer being in business whilst Q2.6.2 asks more specifically why the producer keeps livestock.

Q2.4 gives an indication of the size of the operation by asking for the number of employees, it also evaluates whether it is a family only activity or whether other people are also employed. The questions also touch on the type of remuneration that the employees receive.

The next set of questions deal with ownership issues. Q2.5 gives an indication of landownership as well as the major land use activity. Q2.6 deals specifically with the ownership of livestock and reasons for keeping livestock (Q2.6.2) whilst Q2.6.1 is designed to analyse the breeds present as well as the changes in breed types that have occurred over the past 5 years. The cattle breed is an open ended question with the idea of obtaining more generic information as to breed type (e.g. indigenous versus *B. Taurus* type) and the questions should be seen in context of trying to determine reasons for change in breed type as it is argued that as the producers improve their productivity they will start changing their breed/herd to meet the more stringent commercial requirements. This change is also closely correlated with Q2.6.2 which deals with the reasons why the producer keeps livestock.

Q2.7 and Q2.8 deal specifically with the satisfaction of the producer as pertaining to the marketing of livestock and is also a link to the trader survey. Q2.9 will give an indication whether an association will help the producer satisfy his marketing requirements.

### **3.3.3 SECTION 3: DETAIL OF LIVESTOCK OPERATIONS**

The set of questions in this section deals with the annual animal dynamics within the production system and is divided into a number of questions replicated for cattle, sheep and goats. The questions are designed so as to give an indication of the gender and age composition of the herd/flock as well as the number of livestock (per gender/age) traded / consumed / died during the year. This section also assigns a monetary value to the animals. What is also of value is the information gleaned from the deaths (diseases, drought, theft, predators, etc.). These answers will help policy makers in deciding which interventions they can make to help improve the production efficiency of the producers.

Q3.2 explores the producer's growth strategy and gives an indication of the future direction of the enterprise.

Q3.3 is specific about animal identification so as to place the production system relative to a commercial highly formulated value chain where traceability and farm of origin is of paramount importance.

### **3.3.4 SECTION 4: LIVESTOCK PURCHASES AND SALES**

The set of questions in this section expand the knowledge obtained from Q3.1 and asks for more detail pertaining to the livestock purchases and sales – once more this section is classed according to species (Q4.1). Within species the group is further divided into age and gender categories. These questions also make use of specific codes as well as values. Note that animal numbers purchased / sold is not included in this section as it has already been collected in Q3.1. This set of questions forms the backbone of a number of the Performance measures and it is thus critical that as much detail as possible be collected.

Each of the coded columns deals with a particular section(s) in the commodity chain which is an integral part of the VAIMS and should thus be captured. For example, the question on where the animals (according to species, age and gender) are purchased and/or sold (Farm gate, Village market, Parallel local sales pen, Local collection point, Local business centre, Local dip tank, Regional auction yard, Regional town and/or Other) will not only provide information pertaining to the producer but also on the trader (Q3.1 in the Trader questionnaire).

Another link between the two sectors (producer and trader) is Q4.2 which asks specifically where the information on livestock price is obtained from – the answer obtained here is an obvious intervention point for Government and/or policy makers.

Q4.3 evaluates the influence of the various role players in the purchasing / sales value chain and in Q4.4 changes in their importance/influence over the past five years are noted.

Q4.6-8 deals with the issue of transport (costs, whom and mode) of the animals to and from the market.

Q4.9-12 deal specifically with the use (or not) of a broker / middleman for the purchases / sales of the livestock. Where a broker /middleman is used, the questions is posed (Q4.10) on whether a formal contract is drawn up between the interested parties, and in Q4.11 more detail of the contract as pertaining to the type and condition of the animal(s) is collected.

Q4.13 evaluates the seller's perception of the attributes that buyers look for when purchasing animals. This data is linked to that in the Trader's questionnaire (Q3.7).

### **3.3.5 SECTION 5: COSTS OF PRODUCTION**

This section evaluates the costs that are linked to the production of the livestock and consists of physical units (numerical) as well as a number of codes for the place of purchase as well as who paid for the purchase. The total cost per commodity is also included as is a time related to the payment. This allows for the calculation of costs per time unit.

### **3.3.6 SECTION 6: INFRASTRUCTURE**

This section asks the producer to rate the infrastructure available and will allow the identification of various potential constraints within the production facet of the value chain. These can then be addressed by the relevant bodies such as policy makers / government.

### **3.3.7 SECTION 7: MISCELLANEOUS INFORMATION**

Q7.1 in this section deals with the producer's perception of the information that is available to him for his various production facets / practices.

While Q7.2 asks the producer whether his/her livestock business has changed over the past five years, Q7.3 asks the producer to rank potential constraints to the business and Q7.4 the risks and is similar to Q6.4 and Q6.5 in the trader's questionnaire.

### **3.4 QUESTIONNAIRE 3: LIVESTOCK TRADER SURVEY**

The aim of the Livestock Trader questionnaire is to acquire primary data on the operations of livestock traders (with specific reference to small-scale livestock, more specifically small-stock) in the SADC region to better understand their:

- trading practices and to evaluate the linkages with other segments in the value chain, and
- to identify constraints and ways to improve the functioning of the value chain.

The questionnaire is divided into the following six sections:

- 1: General household information
- 2: Basic information and livestock operations
- 3: Livestock purchases
- 4: Livestock sales
- 5: Costs of production
- 6: Miscellaneous information

It is recognized that a trader could be active in the trading of living livestock and/or in meat. If the latter, he could also be classified as a processor (questionnaire 4). None the less, this questionnaire is designed to identify the commodity that is traded.

#### **3.4.1 SECTION 1: GENERAL HOUSEHOLD INFORMATION**

The first four questions (Q1.1-1.4) is similar (with the same constraints) to that in the producer's questionnaire and gives basic demographic information on the Trader. Thereafter the questions are more specific as pertaining to the trader's business.

Q1.5 asks whether the trader is registered as a commercial company which is then followed by two questions that identify the commodity that he trades in: own livestock production (Q1.6) or meat (Q1.7).

Q1.9 and Q1.10 identify how longer the trader has been practicing and whether he has any training in this trade. This section ends with Q1.10 that is designed to give an idea on the size (number of people employed) of the operation and the costs involved with this employment.

#### **3.4.2 SECTION 2: BASIC INFORMATION AND LIVESTOCK OPERATIONS**

The first two questions measure the level of satisfaction of the trader as pertaining to the buying and selling of his livestock – these questions are species specific.

Q2.3 is designed to give an indication of what proportion of the total trade is linked to livestock (livestock and meat sales) and what the change in these proportions have been over the past year as well as five years ago. This information will give policy makers an idea of what the dynamics are within the trader community as a whole.

The next set of questions are more specific and are designed so as to give an idea of the infrastructure available for the traders – this will allow for the identification of issues that require interventions from Government and/or policy bodies. Q2.4 identifies whether there are any holding facilities for live animals and what the duration is that animals are contained. Q2.5 questions land ownership and is the same as Q2.5 in the Producer's questionnaire.

Q2.6 also asks whether the trader is a member of an organized association or group – information that will be of value to policy makers.

### **3.4.3 SECTION 3: LIVESTOCK PURCHASES**

Q3.1 is a more expanded questionnaire than Q3.1 from the Producer's questionnaire although it is also portioned into species, age and gender classes. This specific questionnaire asks detail about the time (month) when animals are purchased as well the number, body weight and value of the animals. It also includes additional information about the source of price information as well as the means (and costs) used to get the animals to the trader's premises. There are also questions that identify the reasons for the purchase of the animals. Some of the questions are open ended whilst others are coded. The results of these questions are used to develop the value chain further when combined with Q3.2. The latter questions identify the source of the trader's livestock as well as trends/changes that have occurred over the past number of years (one and five years). This information will also be of value to policy makers.

Q3.3 is designed to determine the level of interaction between the traders on various trading issues.

Q3.4 and Q3.5 identifies the mode of transport used for the animals as well as who covers the cost at purchase.

Q3.6 identifies whether the trader uses a broker and quantifies the costs of such.

Q3.7 quantifies the quality attributes that the trader seeks when purchasing animals and is similar to Q4.11 from the Producer's questionnaire where the specifications of the contracts are noted.

Q3.8-Q3-10 focus on whether the traders use contracts and the parameters specified in the contracts.

#### **3.4.4 SECTION 4: LIVESTOCK SALES**

This section is very similar to the section on Livestock purchases (Q3 and onwards) and also has open ended questions that require numbers and values as well as questions that require to be coded. Q4.1 is also classified into gender and age by species. Additional information such as source of price information, transport details / costs, etc. is also included. These questions all help to develop the value chain and to give critical information to policy makers. A typical output will be price per kg of liveweight.

Q4.2 identifies the key channels used for sales as well as the changes that have occurred in these over the past five years – these channels are also specified according to species.

The next two questions deal with the transport of the sold animals (Q4.3-4.4).

The last number of questions in this section is related to the use or not of a broker for the sale of the animals. Included in these questions (Q4.8) is a rating scale of the quality attributes that buyers look for.

#### **3.4.5 SECTION 5: COSTS OF PRODUCTION**

This section quantifies the costs linked to the trader's business and consists of a series of questions that quantify the units, price per unit and then where these were purchased and how they were purchased (both coded). The final column links the time of payment. All these parameters help determine the direction of the value chain.

#### **3.4.6 SECTION 6: MISCELLANEOUS INFORMATION**

Q6.1 identifies the sources and reliability of the information used by the Traders. The first column (source) consists of a series of questions with coded answers whilst the second section ranks these according to their perceived reliability.

Q6.2 identifies how the Trader's business has changed over the past 5 years whilst Q6.3 ranks potential constraints and Q6.4 risks according to perceived level of importance.



### **3.5 QUESTIONNAIRE 4: LIVESTOCK/MEAT PROCESSOR/RETAILER SURVEY**

The aim of this questionnaire is to acquire primary data on the operations of livestock processors and retailers (with specific reference to small-scale livestock) in the SADC region to better understand their:

- operating practices and to evaluate the linkages with other segments in the value chain, and
- to identify constraints and ways to improve the functioning of the value chain.

The questionnaire is divided into the following seven sections, these include:

- 1: General household information
- 2: Operations
- 3: Livestock meat purchases
- 4a: Primary processing
- 4b: Secondary processing
- 5: Meat sales
- 6: Costs of production
- 7: Miscellaneous information

This questionnaire has been designed to include both processors as well as retailers as it is recognised that most operations have some form of vertical integration. The first section thus deals with the slaughter (abattoir) activities – these are typical of a processor whilst the last sections of the questionnaire deal with buying/selling (retail) of meat and meat products.

#### **3.5.1 SECTION 1: GENERAL HOUSEHOLD INFORMATION**

Q1.1-1.2 supplies the basic background information about the respondent.

Where Q1.3 identifies whether the respondent has a registered company, Q1.4 identifies the level of vertical integration of the processor/retailer by identifying whether live animals are also traded – this information helps with the development of the value chain. The next two questions identify the experience of the respondent as well as his training in farming activities. Q1.7 is also designed to supply more information on the respondent's activities so as to help develop the value chain matrix.

Q1.8 identifies the size of the business as well as the remuneration costs linked to the employees.

Q1.9 further identifies the products sold by species – information that will help develop the flow and matrix of the value chain.

### **3.5.2 SECTION 2: OPERATIONS**

Q2.1-1.2 identifies the level of satisfaction of the processor/retailer as pertaining to the buying and selling arrangements of the livestock (if applicable) whilst Q2.3 identifies whether the respondent is part of an association or not. The later information will help policy makers to identify bodies involved in the processing and retail of animal and meat products.

### **3.5.3 SECTION 3: LIVESTOCK MEAT PURCHASES**

Q3.1 quantifies the animal and meat purchases made by the processor/retailer according to species. Note that there are some questions here that do not require an answer (eg. meat cuts cannot be counted as number of animal purchased). Information on price information, from whom and where the animals/meat products are purchased, as well as the form of payment all require coded answers. These questions all help develop the direction of flow of products and relevant information through the value chain matrix.

Q3.2 ranks the most and least important months of trade for each species. This information will allow Government and policy makers to see whether there are seasonal fluctuations that require intervention so as to ensure a constant supply of meat products to the consumer.

Q3.3 quantifies the importance of various supply channels to the processor/retailer and also identifies the direction of change in these – the information is collected separately for the different species.

Q3.4 identifies the person responsible for paying for the transport of the purchases (Q3.1) whilst Q3.4.1 quantifies the distance travelled for each species.

Similar to the previous two questionnaires, Q3.5 identifies whether a middleman is used for the purchases and the amount paid to him per kg meat by species.

Q3.6 asks the processor/retailer to class the quality attributes that are taken into account when purchasing the specific commodity (animal and/or meat). Various quality attributes that are linked to modern consumer concerns such as feed type and medication used are also included in this section as are more traditional meat quality parameters such as grading/classification, meat/fat colour, etc.

Q3.7-9 deals with the issue of whether contracts are used for this section of the value added chain. Q3.8 also identifies the level/depth of the contract as pertaining to specifications and Q3.9 quantifies the percentage of each species traded under the contract.

#### **3.5.4.1 Section 4a: Primary Processing**

This section identifies the position of the respondent in the value chain; specifically whether they are involved in the primary (slaughter) processing (Q4.1). If the respondent is not involved, then the interviewer automatically moves on to Section 4b.

There is a possibility that a primary processor could hold/fatten animals in a feedlot prior to slaughtering (Q4.2) and Q4.2.1 quantifies the duration that the animal(s), according to species, is kept in the feedlot. This information also helps develop the flow/direction of the value chain.

Q4.3 identifies the scope of animal slaughtering (Q4.5 identifies the abattoir's capacity) to see whether there is more than one species slaughtered. Q4.6 quantifies the number of animals per species slaughtered in a month whilst Q4.7 quantifies how many days per week (also hours per day) the abattoir is in use.

Frequently, abattoirs slaughter animals for a fee and this question is raised in Q4.4. The answer collected here will influence the income of the operation.

Q4.8 deals with animal health issues and asks whether the live animals are inspected and identifies by whom and also quantifies the costs of this inspection per species. Q4.9 codes for reasons of rejection of animals at slaughter point – information that can help authorities identify problems in the production phase. Q4.10 is similar to Q4.9 but deals with meat inspection whilst Q4.11 identifies reasons for rejection of carcasses.

#### **3.5.4.2 Section 4b: Secondary Processing**

This section deals with the further processing of the meat (note that processors/retailers who do not slaughter their own animals would start answering from Q4.12).

Q4.13 identifies whether meat is custom processed for a specific customer and quantifies (%) the amount processed by species.

Where Q4.14 identifies the cooler and freezer storage capacity of the business, Q4.15 quantifies the average amount (kg) of meat held in storage per day by species.

Q4.16 evaluates the level of sophistication used in the packaging of the meat whilst Q4.17 identifies whether the facility is inspected by a designated officer. The responses will provide guidance to policy makers on whether interventions (from a health perspective) are required.

### **3.5.5 SECTION 5: MEAT SALES**

This section evaluates the level of meat (whole/half/quarter/ carcasses and/or deboned primary cuts) and/or product (cooked or packaged, offal, and/or other) sales and helps develop the direction of the value added links in the VAIMS model. Q5.1 consists of a number of open ended and coded questions, collected per species.

Additional information obtained in this section includes information on pricing (where sourced) as well as to whom and where the meat/products are sold and the form of payment. The number of sales per week is also quantified. Q5.2 ranks the most and least important month (s) for sales – this helps determine whether there is a seasonal effect on this section of the value added chain.

Q5.3 quantifies the importance of the various channels of sales and also identifies any changes that may have occurred over the past five years. Q5.4-5.8 addresses the issue of whether brokers/middlemen are used in the selling chain and whether there is a formal contract (Q5.5). Q 5.6 identifies whether various quality attributes are specified in the contact.

Q5.7 asks the processors/retailers to rate the importance that they perceive their meat buyers place on various meat quality parameters. This information helps identify marketing strategies that would be applicable throughout the value added chain (eg. farm of origin).

The results from these questions under Section 5 are used to determine the performance indicators as well as the product flow in the value chain model.

### **3.5.6 SECTION 6: COSTS OF PRODUCTION**

This section quantifies the different production/processing units purchased as well as their unit costs – results that are used in the calculation of the performance indicators. There are also three coded questions in this section that deal with the place of purchase, who paid for the costs as well as the time linked to the later.

### **3.5.7 SECTION 7: MISCELLANEOUS INFORMATION**

The first question (Q7.1) in this section deals with sources and reliability of the information received by the processor/retailer – these responses are all coded. Q7.2 deals with the change over the past five years in the business and addresses issues such as expansion, improved technology, etc. – this information is valuable for policy makers as it allows them to analyse the state of affairs and identify areas where interventions may be made.

Q7.3 and Q7.4 rank the constraints and risks that may be experienced by the processors/retailers.

### **3.6 SELECTION AND TRAINING OF ENUMERATORS**

Selection and training of enumerators, and subsequent monitoring and management of enumerators, is a specialist task that might be contracted to a specialist firm, or alternatively retained by a research institution if doubts arise about local capacity. Key training topics include familiarization with protocols for identifying respondents, posing questions, personal conduct within respondents' homes, care over data entry, etc.

Training must feature test runs of interviews in addition to testing of the questionnaires, and address enumerators' skills in detecting problems with the questionnaire or overall method and reporting them to survey managers for solution. A common practice is to hold regular workshops during the field work. At these workshops, problems being encountered are addressed. This requires that data are being entered at the end of each day, and the data cleaning is in process.

The checklist presented in figure 8 (see part 3) serves as a guide to necessary steps in training of enumerators alongside other planning procedures.

**Checklists and protocols**

**Initial contacts**

Local partners supplying enumerators	Purpose and nature of survey	<input type="checkbox"/>	Timing, size and geographic coverage of survey	<input type="checkbox"/>	Languages required	<input type="checkbox"/>	
Local partners supplying logistics	Purpose and nature of survey	<input type="checkbox"/>	Timing, size and geographic coverage of survey	<input type="checkbox"/>	Transport and accommodation requirements	<input type="checkbox"/>	
Local or national government authorising research	Purpose and nature of survey	<input type="checkbox"/>	Timing, size and geographic coverage of survey	<input type="checkbox"/>	Identity of local partners and delegated tasks	<input type="checkbox"/>	
Community leaders	Purpose and nature of survey	<input type="checkbox"/>	Timing, size and geographic coverage of survey	<input type="checkbox"/>	Identity of local partners and delegated tasks	<input type="checkbox"/>	Description of participatory process and examples of survey questions <input type="checkbox"/>

**Participatory process**

Design of process	Identified locations and makeup of participants	<input type="checkbox"/>	Liaison with community leaders	<input type="checkbox"/>	Liaison with partners on topics	<input type="checkbox"/>	Liaison with partners on scale and scope of exercise	<input type="checkbox"/>	Test participatory sessions and lessons learned before full implementation	<input type="checkbox"/>	List of target participants in each location	<input type="checkbox"/>
Identification of basic chain characteristics	Key products and by-products at consumer stage	<input type="checkbox"/>	Key technical and processing transformations	<input type="checkbox"/>	Actors in the chain	<input type="checkbox"/>	Locations of actors and transformation activities	<input type="checkbox"/>	Numbers of each actor, by location	<input type="checkbox"/>	Recent developments	<input type="checkbox"/>
Identification of transaction arrangements	Seasonality of production	<input type="checkbox"/>	Seasonality of consumption	<input type="checkbox"/>	Payment timing and methods	<input type="checkbox"/>	Quality standards used and reward system for quality	<input type="checkbox"/>	Methods of price formation at each stage	<input type="checkbox"/>	Recent developments	<input type="checkbox"/>
Identifying problems and opportunities	Suppliers or processors with products with unusual characteristics	<input type="checkbox"/>	Consumers with demand for product with unusual characteristics	<input type="checkbox"/>	Transport arrangements	<input type="checkbox"/>	Fees and charges (legal)	<input type="checkbox"/>	Fees and charges (illegal or informal)	<input type="checkbox"/>	Recent developments	<input type="checkbox"/>
Setting geographic boundaries	Geographic supply area	<input type="checkbox"/>	Geographic area traders purchase in	<input type="checkbox"/>	Geographic area traders sell in	<input type="checkbox"/>	Geographic area processors purchase in	<input type="checkbox"/>	Geographic area processors sell in	<input type="checkbox"/>	Geographic area retailers purchase in	<input type="checkbox"/>

**Figure 8: Checklists and protocols - 1**

**Testing of questionnaire**

Tasks Identification of test respondents  Test interviews as per protocols  Submission of responses  Discussions

**Testing of questionnaire**

Finalisation Protocols  Questionnaire

**Sampling**

Design of sampling process Total population at each stage known  Total, mean and variance of population's animal numbers known  Proportion of product INSIDE target chain in each locality  Proportion of actors INSIDE target chain in each locality  Observed or reported variation in size and marketing behaviour of agents at each stage  Issues of seasonality and sample

Sample Sampling frame available  Stratification and randomisation procedure established  Exhaustive sampling to be used  Purposive sampling to be used  Strategy for isolation  Strategy for no-shows

**Survey procedures and protocols**

Respondent relations Protocol for initial contact  Protocol for interviews  Protocol for anonymity assurance  Interview privacy arrangements  Arrangements for queries from respondents

Data protocols Protocol for data carriage  Protocol for data entry  Protocol for data storage  Chain of custody for data  Confidentiality protocol

**Data cleaning and preparation**

Procedures One question, all observations  One observation, all questions  Totals to 100%  Bounds on variables  Logic checks  Random checks

Configurations File types agreed  Variable formats agreed  Loading for use by interface

**Overall responsibilities**

Assignments Initial contacts  Participatory process  Testing  Finalisation  Sampling  Data cleaning and entry

Assignments Training of enumerators  Contracting of partners

**Figure 8 (cont'd): Checklists and protocols – 2**

**Selection, training and management of enumerators**

**Selection**

Task description	Task description written <input type="checkbox"/>	Task description advertised <input type="checkbox"/>		
Screening and testing	Basic screening procedure <input type="checkbox"/>	Testing procedures <input type="checkbox"/>	Selections <input type="checkbox"/>	Review and re-selections <input type="checkbox"/>

**Training**

Initial procedures	Familiarisation with purpose and scope of study <input type="checkbox"/>	Familiarisation with questionnaires <input type="checkbox"/>	Familiarisation with issues of data quality <input type="checkbox"/>	Instruction in ethics, protocols, behaviour <input type="checkbox"/>	Demonstrations <input type="checkbox"/>
Training activities	Detailed passage through questionnaires <input type="checkbox"/>	Test interviews <input type="checkbox"/>	Evaluation of test interviews <input type="checkbox"/>	Address to key areas <input type="checkbox"/>	Review and re-selections <input type="checkbox"/>
Implementation of protocols	Detailed passage through protocols <input type="checkbox"/>	Testing on protocols <input type="checkbox"/>	Evaluation of tests <input type="checkbox"/>	Address to key areas <input type="checkbox"/>	Review and re-selections <input type="checkbox"/>

**Field supervision**

Tasks	Adherence to protocols <input type="checkbox"/>	Quality of data <input type="checkbox"/>	Workshops <input type="checkbox"/>	Reviews <input type="checkbox"/>	Time recording <input type="checkbox"/>
-------	---	--	------------------------------------	----------------------------------	---

**Overall responsibility**

Tasks	Selection <input type="checkbox"/>	Training <input type="checkbox"/>	Field supervision <input type="checkbox"/>	Field workshops <input type="checkbox"/>	Contracting and payment <input type="checkbox"/>	Dispute resolution <input type="checkbox"/>
-------	------------------------------------	-----------------------------------	--	--	--	---

**Figure 8 (cont'd): Checklists and protocols - 3**

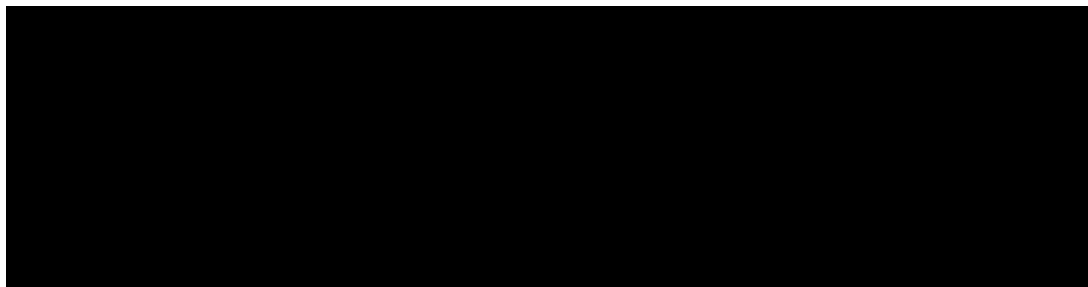


### 3.7 DATA COLLECTION AND MANAGEMENT

In this section the data collection and management in terms of entry, cleaning, management of missing values as well as the data quality issues are addressed. In addition, updating data as well as reporting from the VAIMS system is explained. A more practical application, in the form of an example, is provided at the end of the handbook.

#### 3.7.1 DATA COLLECTION

Depending on the extent of the study, i.e. the area and diversity of the regions, it is foreseen that such a VAIMS field study may last at least 13 weeks from inception to the finalization of the report. For a more intensive study, such as for a countrywide analysis, the time required may increase significantly to conduct surveys and analyzing it, obviously depending on the size of the team. VAIMS' study planning chart (figure 9 below) shows a planning chart with the typical activities required for a typical study provided the study area is relatively homogeneous.



**Figure 9: VAIMS study planning chart**

Logistic arrangements in terms of lodging and transportation should start as soon as the study area has been selected, specifically in the case of the producer surveys, where significant distances often need to be travelled to remote areas with often limited commercial housing infrastructure available for bigger teams of enumerators. Organizing logistics, can easily take up to four weeks, highlighting again the importance of an early start.

The actual surveys (data collection) should ideally be conducted over a relatively short time period, in order to minimize the effect of external factors in the survey results. Provided that an efficient group of enumerators was selected and trained properly, the research team should strive to complete the actual field work (completing the surveys) over a period of no more than 2 weeks (see figure 9 above).

### **3.7.2 FIELD DATA ENTRY**

The process of data entry usually follows protocols that are established with research partners and in which enumerators and field managers are trained. Several key preparatory actions are required to ensure smooth operation of systems based on protocols:

- Supervisor checks that software is set up to match the observation number with the number assigned to the paper sheet, and that the appearance of the data entry form is a sufficient match to the paper version
- Each enumerator enters the data, performs selected quality tests
- Supervisor does some preliminary checking during and after each observation is entered.
- At the end of each day, the supervisor loads up all the data and does a formulated series of tests of data cleanliness and quality. Problems can then be assigned to particular observations – meaning an individual enumerator causing problems, or particular questions - meaning a problem with the method). These issues are then taken forward to the field workshops.

Ideally the enumerators can each enter their own surveys into VAIMS as soon as possible after the actual interview take place. In addition to training the enumerators on the actual questionnaire and survey process, time should also be allocated during the training for entering the survey data into VAIMS. If circumstances allow, VAIMS can be loaded onto mobile computers, enabling enumerators to enter the data relatively soon after interview. It is however, not recommended that the data is entered straight into VAIMS electronically during the interview process, mainly due to risks associated with data losses and well as technical difficulties that might occur in remote areas. Completing the surveys on hard copy therefore also provides a “back-up” for the fieldwork conducted.

### **3.7.3 DATA CLEANING AND MISSING VALUES**

Data cleaning should ideally entail a set of procedures:

- List min, max, median, mode, mean and standard deviation. Check for impossible values (e.g. negative numbers of animals) or oddities like shifted decimal points or 5 values expressed as decimal points. Check that the maximum and minimum observations are in line with correct data (e.g. dressing out % should be between 30% and 60%)
- Check for numbers entered as text and vice-a-versa. This is done by using the excel “count” command (numbers only) alongside “COUNTA” (numbers and text) and checking for anomalies.
- Check that zeros have not been entered instead of missing values. Choose a standard number (e.g. -99) and substitute all blanks representing missing values into that number
- Check lists of components to make sure the total makes sense (e.g. add up “%” values to reach 100%, or add up animal numbers in each class to make sure they sum to the total entered for the total number of animals.

- Check some logical continuities (e.g. if a respondent says he/she has no cattle, then make sure no cattle are bought/sold/born/lost etc). Similarly if he/she does not use contracts, then make sure the content of contracts is not recorded.

### **3.7.3 DATA CAPTURE INTO VAIMS**

The detail of how to set up and capture the data into VAIMS is discussed in the next chapter. Following the completion of the data capture into VAIMS, the system generates a Performance Indicator matrix that is automatically written to an Excel spreadsheet file. **This file must be saved with a unique name using the SAVE AS command.** The interpretation of the Performance Indicators will be discussed in chapter 5.

---

## **CHAPTER 4: GUIDE TO THE VAIMS USER INTERFACE**

---

### **4.1 SYSTEM PREREQUISITES AND INSTALLATION**

The VAIMS system will run on any desktop or notebook computer running Windows XP Service Pack 2 or Windows Vista.

#### **4.1.1 NORMAL INSTALLATION**

The installation procedure for VAIMS is as follows:

1. Insert the VAIMS CD in your computer's CD-ROM or DVD-ROM drive.
2. The VAIMS Setup should Autorun; if it does not, go to My Computer and open up the file system of the VAIMS CD. Double-click on the Setup program Icon.
3. Follow the prompts of the Setup program.
4. Once Setup has completed, run VAIMS either via the Desktop Shortcut or via the link in the Windows Start Menu.

#### **4.1.2 INSTALLATION WHERE AUTOMATIC INSTALLATION FAILS**

If, for any reason, the VAIMS system cannot complete the automatic installation from the CD then follow these instructions:

5. Run the msmxl6\_x86.msi file.
6. Then open the SqlExpress folder and run the sqlexpr32.exe file.
7. Run the SQLServer2005\_SSMSEE.msi File and follow the on-screen prompts.
8. If the system asks which type of authentication to use, select both Windows and SQL Server Authentication
9. If the system asks for a password for user sa (or VAIMS), enter the password 123!@#.
10. Run the VAIMS Create Empty DB.sql file.
11. Click Connect on the Login Screen
12. Click on the Execute Button with the Red Exclamation mark.
13. Close the Program.
14. Run the setup.exe file and follow the on-screen prompts.

Although VAIMS requires minimal computing power, it is demanding of staff time and organisational capacity. It requires clear thinking in terms of the nature of problems and opportunities to be addressed, which in turn requires participatory exercises with chain stakeholders that are time-consuming to conduct. Lastly, VAIMS requires a clear focus on the

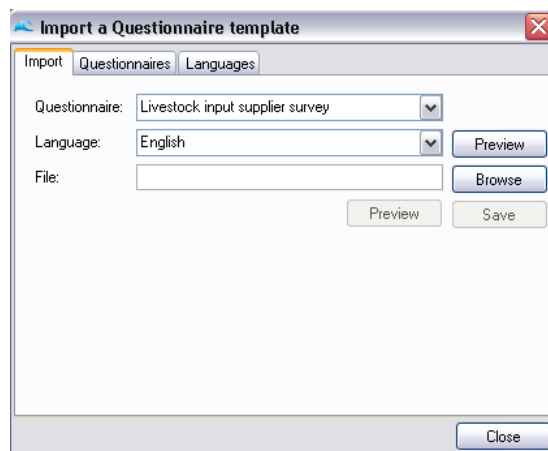
chain (or chains) to be addressed and analysed, and on the decisions and decision-makers being targeted.

## 4.2 INITIAL SETUP

Before attempting to use the system to complete any questionnaires, it is necessary to complete the steps mentioned in this section.

### 4.2.1 IMPORTING A QUESTIONNAIRE

Before any questionnaires can be entered into the system; the questionnaire template must first be added to the system. This is done by using the Import questionnaire screen, which is accessed by selecting File->Import questionnaire. This action should display the dialogue shown in figure 10.



**Figure 10: Importing a questionnaire**

The Import questionnaire screen consists of three sections:

- Import: Used to link a new questionnaire template to a specific base questionnaire Language.
- questionnaires: Used to add a new base questionnaire to the system.
- Languages: Used to add a new Language to one of the system's base questionnaires.

It is recommended that any action on this screen be confirmed or handled by a Riptide Technology team member.

#### 4.2.1.1 Adding a base questionnaire name

This tab allows the base questionnaire names to be added to the system. Only a person with Administrative Access to the VAIMS system will be allowed to add a new questionnaire name.

New base questionnaires are added by typing the questionnaire's name into the provided text box and clicking the Add button (see figure 11).

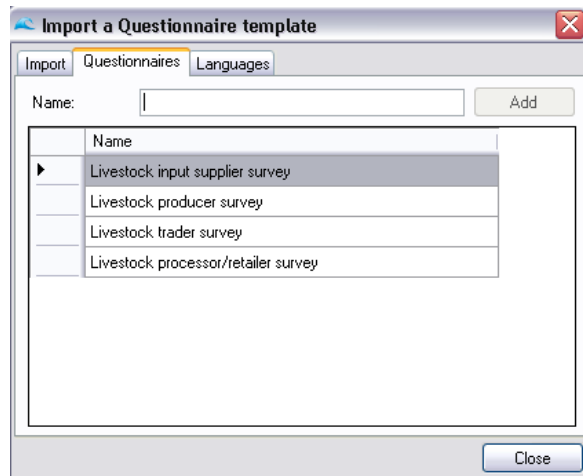


Figure 11: Adding a base questionnaire name

#### 4.2.1.2 Adding a Language to a base questionnaire

This tab allows extra Languages to be added to base questionnaires. First select the relevant base questionnaire name from the provided drop-down list. Then fill in the name of the new Language in the provided text box and press the Add button (see figure 12).

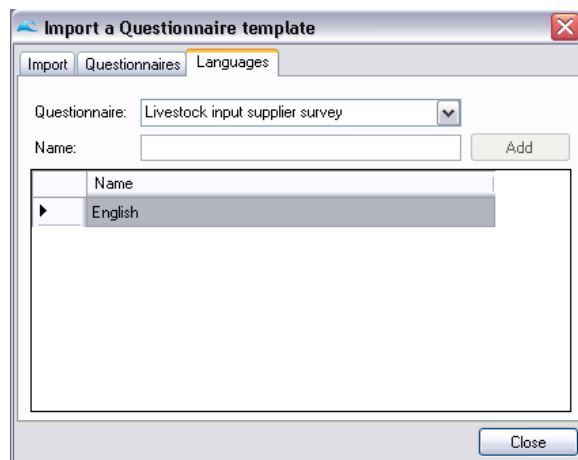
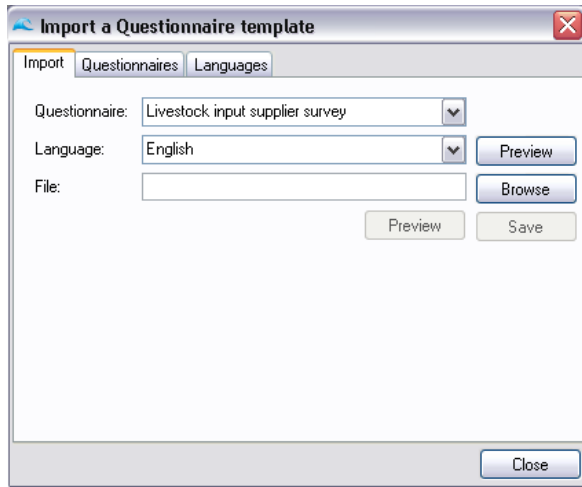


Figure 12: Adding a Language to a base questionnaire

#### 4.2.1.3 Linking a questionnaire template to a specific base questionnaire Language

This tab allows for the linking of .csv files to a specific base questionnaire Language (see figure 13).



**Figure 13: Import Tab**

Firstly select the relevant base questionnaire from the first drop-down list; then select the relevant Language from the second drop-down list. If there is already a questionnaire loaded into the system, for the relevant Language, the Preview button next to the Language will become active. Clicking on this Preview button will allow the user to see what the questionnaire, currently loaded into the system, looks like. Next, click on the Browse button and search through the file system for the relevant .csv file which will act as a template for the questionnaire Language (see figure 14 and table 1 for items regarding the .csv template).

	A	B	C	D	E
1	Question Type	Question Number	Question Text	Column Names	Row Names
2		1			
3		1	VAIMS: Livestock input supplier survey		
4		1			
5		2	DATE		
6		2	TIME STARTED		
7		2	TIME ENDED		
8		1			
9		2	Name of Enumerator		
10		2	Enumerator code		
11		1			
12		2	District (code):		
13		1			
14		2	Ward (code):		
15		1			
16		2	Village (code):		
17		1			
18		1	SECTION 1: GENERAL INFORMATION		
19		1			
20		2	1.1 Respondent's Name		
21		4	1.2 Respondent's information		
22		2	Gender		
23		2	Marital status		
24		2	Age (years)		
25		2	Years of schooling		
26		2	1.3 Number of years in business		
27		2	1.4 Position of respondent in business		

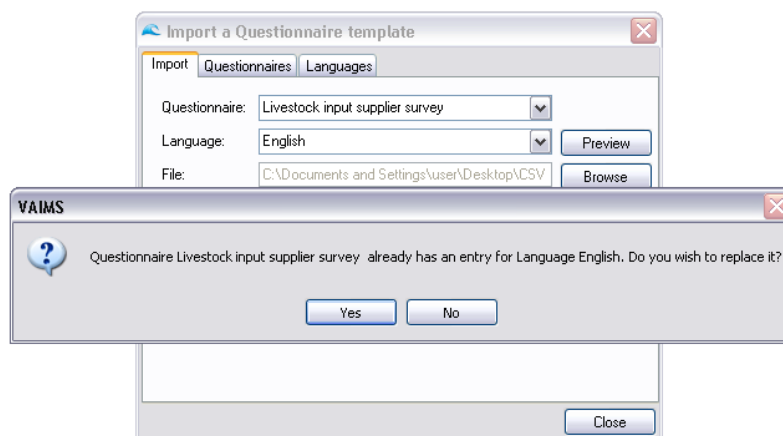
**Figure 14: .csv File**

**Table 1: .csv Format**

Question Type	Question Number	Question Text	Column Names	Row Names
1 (Used to create headings or blank lines.)	Leave Blank	The heading text or leave blank	Leave blank	Leave blank
2 (Used to create a question with a single answer.)	The number to be displayed next to the question text.	Contains the question text.	Leave blank	Leave blank
3 (Used to create a question with a table.)	The number to be displayed next to the question text.	Contains the question text.	Contains the table column names. Enter them in the following format: !#Column Name!#Column Name!#Column Name	Contains the table row names. Enter them in the following format: !#Row Name!#Row Name!#Row Name
4 (Used to create a subheading.)	The number to be displayed next to the question text.	Contains the question text.	Leave blank	Leave blank
5 (Used to create a question with a single answer which is a Date.)	The number to be displayed next to the question text.	Contains the question text.	Leave blank	Leave blank
6 (Used to create a question with a single answer which is a Time.)	The number to be displayed next to the question text.	Contains the question text.	Leave blank	Leave blank

If the .csv file is in the correct format (as shown above), the Preview button beneath the Languages drop-down list will become active. Pressing the button will allow the user to see a preview of what the questionnaire will look like once imported. Once the user is satisfied with the look of the questionnaire; clicking the Save button will link the template to the chosen questionnaire Language. If a template is already associated with the chosen questionnaire Language, the user will be given the option of replacing the existing template with the new one (see figure 15).

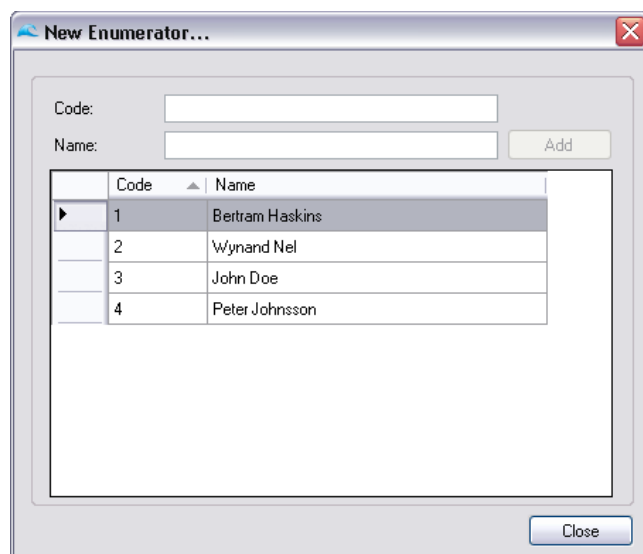




**Figure 15: Saving a questionnaire template**

#### 4.2.2 **ADDING AN ENUMERATOR**

In order for a questionnaire to be completed the person entering the questionnaire must select an Enumerator for the questionnaire. This list needs to be populated with valid Enumerators beforehand. The New Enumerator... screen allows for these entries to be made. The New Enumerator... screen may be accessed by selecting File->New Enumerator.... This will display the dialogue as shown in figure 16.



**Figure 16: New Enumerator... dialogue**

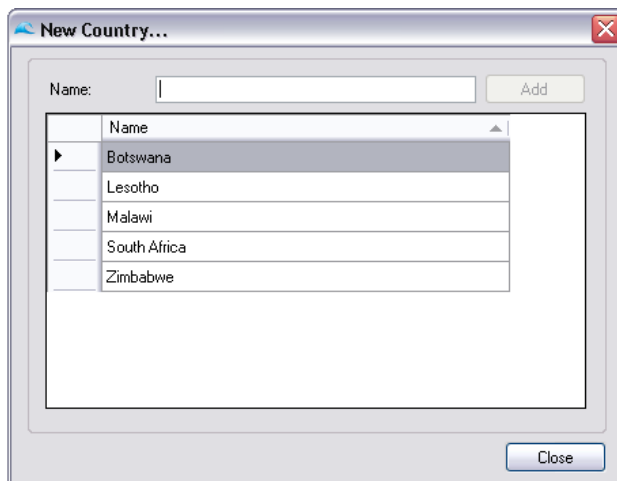
The list which dominates the dialogue contains the Codes and associated Names for all of the currently registered Enumerators. The dialogue has 2 fields which need to be completed before the Add button will become active:

- A unique (Enumerator) Code must be entered.
- A unique (Enumerator) Name must be entered.

Once the Add button has been clicked, or the user has pressed the Enter key in any of the text fields, the new Enumerator will be added to the list displayed on screen.

### 4.2.3 **ADDING A COUNTRY**

In order for a questionnaire to be completed the person entering the questionnaire must select the Country in which the questionnaire was completed. This list needs to be populated with valid Countries beforehand. The New Country... screen allows for these entries to be made. The New Country... screen may be accessed by selecting File->New Country.... This will display the dialogue as shown in figure 17.



**Figure 17: New Country... dialogue**

The list which dominates the dialogue contains the Names for all of the currently registered Countries. The dialogue has a (Country) Name field which needs to be completed uniquely before the Add button will become active.

Once the Add button has been clicked, or the user has pressed the Enter key in the text field, the new Country will be added to the list displayed on screen.

### 4.2.4 **ADDING A DISTRICT**

In order for a questionnaire to be completed the person entering the questionnaire must select the District in which the questionnaire was completed. This list needs to be populated with valid Districts beforehand. The New District... screen allows for these entries to be made. The New

District... screen may be accessed by selecting File->New District... This will display the dialogue as shown in figure 18.



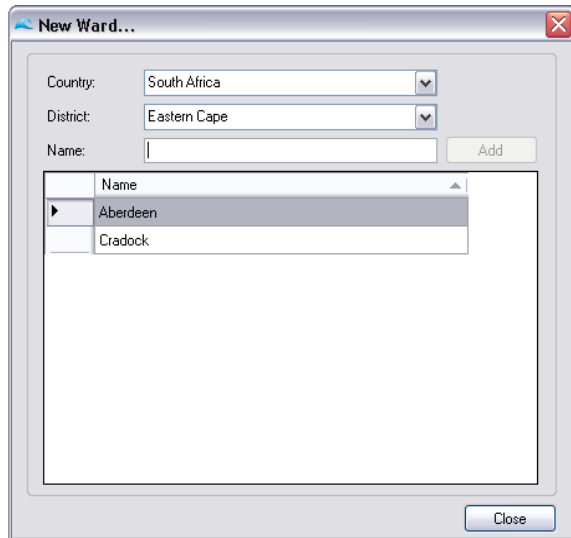
**Figure 18: New District... dialogue**

The list which dominates the dialogue contains the Names for all of the currently registered Districts in a specified Country. The list of registered Districts will be updated once the required Country has been selected from the drop-down list. The dialogue has a (District) Name field which needs to be completed uniquely before the Add button will become active.

Once the Add button has been clicked, or the user has pressed the Enter key in the text field, the new District will be linked to the selected Country and added to the list displayed on screen.

#### **4.2.5 ADDING A WARD AND/OR VILLAGE**

In order for a questionnaire to be completed the person entering the questionnaire must select the Ward in which the questionnaire was completed. This list needs to be populated with valid Wards beforehand. The New Ward... screen allows for these entries to be made. The New Ward... screen may be accessed by selecting File->New Ward.... This will display the dialogue as shown in figure 19.



**Figure 19: New Ward... dialogue**

The list which dominates the dialogue contains the Names for all of the currently registered Wards in a specified District. The list of registered Wards will be updated once the required Country and District have been selected from the drop-down list. The dialogue has a (Ward) Name field which needs to be completed uniquely before the Add button will become active.

Once the Add button has been clicked, or the user has pressed the Enter key in the text field, the new Ward will be linked to the selected Country and District and added to the list displayed on screen.

In order for a questionnaire to be completed the person entering the questionnaire must select the Village in which the questionnaire was completed. This list needs to be populated with valid Villages beforehand. The New Village... screen allows for these entries to be made. The New Village... screen may be accessed by selecting File->New Village.... This will display the dialogue in analogous fashion to figure 19.

The list which dominates the dialogue contains the Names for all of the currently registered Villages in a specified Ward. The list of registered Villages will be updated once the required Country, District and Ward have been selected from the drop-down list. The dialogue has a (Village) Name field which needs to be completed uniquely before the Add button will become active.

Once the Add button has been clicked, or the user has pressed the Enter key in the text field, the new Village will be linked to the selected Country, District and Ward; before being added to the list displayed on screen.

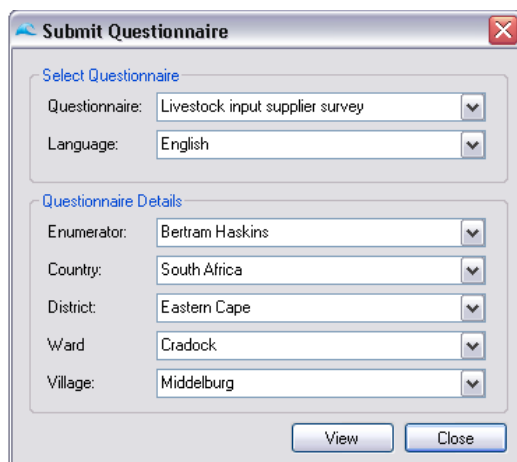
### 4.3 SUBMITTING A QUESTIONNAIRE

This part of the program is used to manually enter a completed questionnaire into the system.

The user may elect to enter a questionnaire by one of the followings means:

- Following the link File->Submit questionnaire.
- Clicking on the Submit questionnaire toolbar icon.
- Using the keyboard shortcut Ctrl+Q.

The Submit Questionnaire dialogue (as shown in figure 20) has options for selecting which specific questionnaire type should be completed and in which language it should be displayed. The user also has to select which Enumerator has supervised completion of the form as well as in which Country, District, Ward and Village the questionnaire was completed. The user may then click the View button to display the specific questionnaire or click the Close button to close the Dialogue.



**Figure 20: Submit questionnaire dialogue**

Once the View button has been clicked, the specific questionnaire will be displayed with the chosen values for Enumerator, District, Ward and Village already filled in. An example of a generated questionnaire is shown in figure 21. At the top right-hand corner of the form the current questionnaire number (as generated by the system) will be displayed in red. The user should enter this number onto the cover page of the specific questionnaire about to be captured. The user may then fill in (“capture”) the required fields of the questionnaire; leaving empty any fields deemed irrelevant for the specific questionnaire. At the bottom right-hand corner of the questionnaire a Submit button and a Cancel button is displayed. Clicking the Submit Button will save the details of the questionnaire. Clicking the Cancel button will close the questionnaire without saving any of the details.

Livestock input supplier survey - English

**VAIMS: Livestock input supplier survey**

DATE  
TIME STARTED  
TIME ENDED

Name of Enumerator  
Enumerator code

District (code)  
Ward (code)  
Village (code)

**SECTION 1: GENERAL INFORMATION**

1.1 Respondent's Name  
1.2 Respondent's information  
Gender  
Marital status  
Age (years)  
Years of schooling  
1.3 Number of years in business  
1.4 Position of respondent in business

**This questionnaire is divided into different sections for different**

**Section 2: Feed suppliers**  
**Section 3: Dips, Medicine, Vaccines**  
**Section 4: Credit providers**

**SECTION 2: FEED SUPPLIER**

2.1 Indicate the nature of your business entity  
2.2 Indicate the nature of your business

5

Livestock input supplier survey - English

4.11 What do you regard as the major challenges to provide credit? Rank (1=most)

- Lack of literacy and numeracy of farmers
- Risk status of farmer
- High variability of farming output
- Lack of proper administrative capabilities
- Lack of technology
- Lack of security being offered
- Lack of proper business plans
- Scale of farming operations
- Lack of other support services to farmers
- Other (specify)

4.12 Do you plan to expand your credit exposure during the next 12 months?

4.12.1 If yes, indicate the reasons why Rank (1=most)

- Expanding livestock operations in region
- Better access to livestock farmers
- Changing risk profile of farmers
- Increased ability to provide security
- Increased involvement by 3rd parties to assist farmers
- Changing credit extension models
- Changing government regulations
- Improved financial management capacity of farmers
- Other (specify)

4.12.2 If no, indicate the reasons why Rank (1=most)

- No expansion in livestock activities
- Market capacity already reached
- Technology restrictions
- Low demand for credit
- Risk profiles of farmers still to high
- More restrictive credit regulations
- Restrictive credit extension procedures
- Other (specify)

Submit Close

Figure 21: questionnaire Example

#### 4.4 VAIMS WORKSPACE

The Workspace is the screen on which the value chains will be drawn (see figure 22)

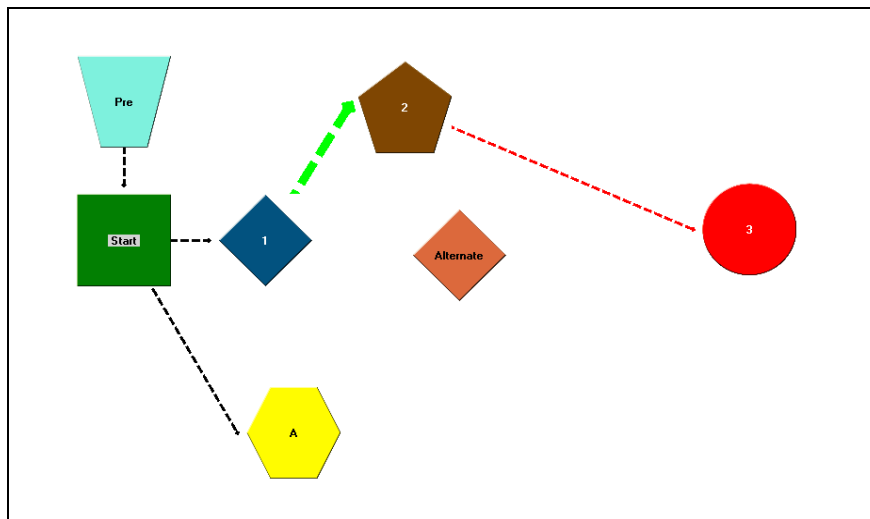
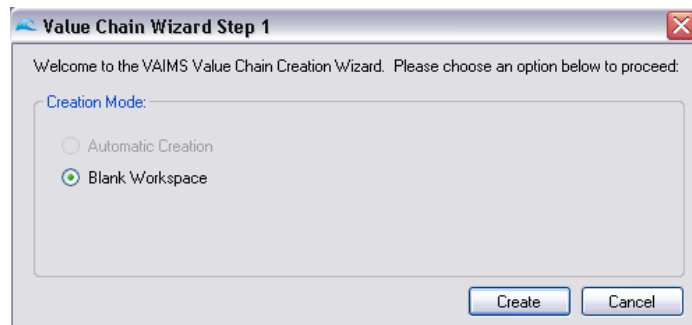


Figure 22: VAIMS Workspace

Multiple Workspaces may be active on screen at any given time. The user may create a new Workspace by one of the following means, all of which will display the Workspace Wizard dialogue (see figure 23).

- Following the link File->New Workspace...
- Clicking on the New Workspace... toolbar icon.
- Using the keyboard shortcut Ctrl+N.



**Figure 23: Workspace Wizard**

The Workspace can be manipulated in 2 ways:

- **Workspace Wizard:** Used to initially generate a value chain via a series of on-screen prompts. If the user chooses to; the Workspace Wizard may be skipped.
- **Manual Workspace Manipulation:** Manipulate the value chain by means of the mouse and keyboard shortcuts.

#### **4.4.1 WORKSPACE WIZARD**

This part of the VAIMS system may be used to generate a Value Chain by selecting certain options such as Country, District, Ward, etc.

#### **4.4.2 MANUAL WORKSPACE MANIPULATION**

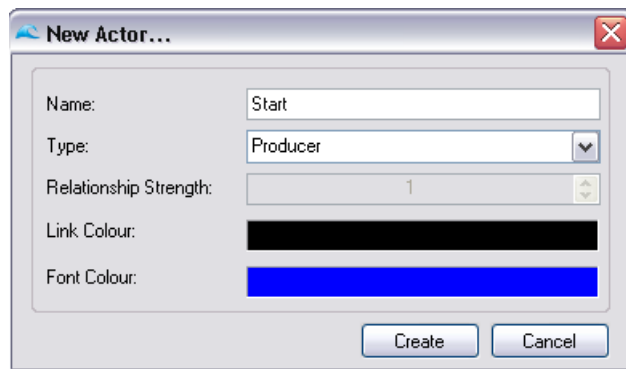
Manual Workspace manipulation allows the user to manipulate an existing value chain in order to better make use of the available on-screen space, add extra items to an existing value chain or create a new value chain from scratch. The following options are available:

- Create a new, unlinked base Actor
- Create a new Actor from an existing Actor
- Create a new link between existing Actors
- Remove a single Actor from the Workspace
- Remove an Actor as well as its child Actors from the Workspace
- Remove a link between two Actors
- Strengthen or weaken the link between two Actors

- Rename an Actor
- Change an Actor's font colour
- Move a single Actor
- Move multiple Actors
- Move all Actors

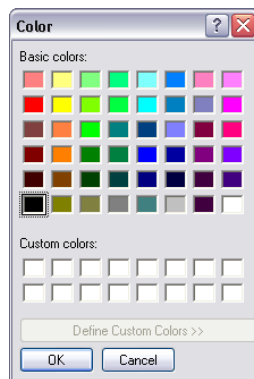
#### 4.4.2.1 Create a new, unlinked base Actor

This option is used whenever the user wants to add a new Actor to the Workspace which is not linked to any of the other Actors in the Workspace. This is accomplished by right-clicking on an empty area of the Workspace and selecting the New Base Actor option from the pop-up Menu. The system will then display the New Actor... dialogue (figure 24).



**Figure 24: New Actor... dialogue**

The New Actor... dialogue requires the user to complete the Name field with a unique Actor name, select the type of Actor to be created as well as (optionally) select the colour in which the Actor name should be displayed on the Actor. The font colour may be changed by clicking on the coloured bar next to the Font Colour label and choosing the required colour from the Colour Dialogue (figure 25). Clicking the Create button on the New Actor... dialogue will place the new Actor on the Workspace at the spot where the user clicked. Clicking the Cancel button will close the New Actor... dialogue without creating a new Actor.



**Figure 25: Colour dialogue**



#### 4.4.2.2 Create a new Actor from an existing Actor

The user might want to create a new branch for an existing value chain by creating a new Actor. This is done by right-clicking on an existing actor and selecting the New... option from the pop-up menu. The user then needs to select whether a new Forward or Backward actor should be created:

- Forward Actor: The link will be created from the current Actor, pointing towards the newly created actor.
- Backward Actor: The link will be created from the newly created actor, pointing towards the current actor.

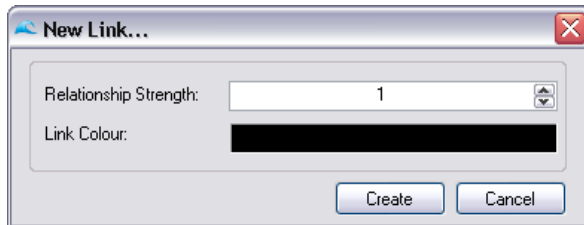
Selecting either Forward or Backward will display the New Actor... dialogue, as shown in Figure 4.2.1a New Actor... dialogue. The user now has the added option of choosing the Strength of the Relationship between the current and the newly created Actor – 1 being the weakest (thinnest line) and 5 being the strongest. The user is also able to choose the colour of the link by clicking on the coloured bar next to the Link Colour label and selecting the desired colour from the Color Dialogue. Clicking the Create button will create the new Actor next to the current Actor on its right-hand side; if there is already another Actor at this position, the new Actor will be placed behind it. Clicking the Cancel button will close the New Actor... dialogue without creating a new Actor.

#### 4.4.2.3 Create a new link between existing Actors

The user might want to create a new relationship between two existing Actors. This is done by right-clicking on an existing actor and selecting the New... option from the pop-up menu. The user then needs to select whether a link should be created to a Forward or a Backward Actor:

- Forward Actor: The link will be created from the current Actor, pointing towards the newly created actor.
- Backward Actor: The link will be created from the newly created actor, pointing towards the current actor.

When the user hovers with the mouse cursor over the Forward Link or Backward Link option, a further menu will pop out, displaying a list of available Actors to which the current Actor may link. Clicking on any one of these Actor names will display the New Link... dialogue as shown in figure 26.



**Figure 26: New Link... dialogue**

On the New Link... dialogue the user has the option of choosing the Strength of the Relationship between the two Actors – 1 being the weakest (thinnest line) and 5 being the strongest. The user is also able to choose the colour of the link by clicking on the coloured bar next to the Link Colour label and selecting the desired colour from the Color Dialogue. Clicking the Create button will create the new Link between the Actors. Clicking the Cancel button will close the New Link... dialogue without creating a new Link.

#### **4.4.2.4 Remove a single Actor from the Workspace**

Whenever the user wants to remove an Actor from the value chain, this can be accomplished by right-clicking on the Actor, which needs to be removed, selecting the Remove option from the pop-up menu and then selecting the Current Actor option. A dialogue box will be displayed which will ask the user to confirm whether or not the Current Actor should be removed from the Workspace. If the user clicks the Yes button, the Actor, along with all of its Links to other Actors will be removed. If the user clicks the No button, the removal operation will be aborted.

#### **4.4.2.5 Remove an Actor as well as its child Actors from the Workspace**

Whenever the user wants to remove an Actor from the value chain along with all of the Child Actors linked to it, this can be accomplished by right-clicking on the Actor, which needs to be removed, selecting the Remove option from the pop-up menu and then selecting the Current Actor with Children option. A dialogue box will be displayed which will ask the user to confirm whether or not the Current Actor and its Child Actors should be removed from the Workspace. If the user clicks the Yes button, the Actor and its Child Actors, along with all of their Links to other Actors will be removed. If the user clicks the No button, the removal operation will be aborted.

#### **4.4.2.6 Remove a link between two Actors**

Whenever the user wants to remove a Link between two actors, this can be accomplished by right-clicking on one of the Actors sharing the Link, selecting the Remove option from the pop-up menu and then hovering the mouse cursor over the Forward Link or Backward Link option. As soon as the mouse hovers over either of the two options; all relevant Actors to which this type of link is active from the current Actor, will be displayed. When the user clicks on one of

these Actor names, a dialogue box will be displayed. This will ask the user to confirm whether or not the Link should be removed from the Workspace. If the user clicks the Yes button, the Link will be removed. If the user clicks the No button, the removal operation will be aborted.

#### 4.4.2.7 Strengthen or weaken the Link between two Actors

Whenever the user wants to change the strengthen or weaken a Link between two actors, this can be accomplished by right-clicking on one of the Actors sharing the Link, selecting the Relationships option from the pop-up menu and then hovering the mouse cursor over the Strengthen To... or Weaken To... option. As soon as the mouse hovers over either of the two options; all relevant Actors to which this Actor has links, will be displayed. When the user clicks on one of these Actor names, the Link to that Actor will either be strengthened or weakened. Links cannot be made weaker than a level of 1 or stronger than a level of 5.

#### 4.4.2.8 Rename an Actor

If the user wants to rename any Actor on the Workspace, this can be accomplished by right-clicking on the Actor and selecting the Maintenance option from the pop-up menu and then selecting Rename. This will open up the Rename Actor dialogue (see figure 27). The user may then enter a new unique Actor name and click on the Rename button in order to rename the current Actor. Clicking on the Cancel button will close the Rename Actor dialogue without renaming the Actor.



Figure 27: Rename Actor dialogue

#### 4.4.2.9 Change an Actor's font colour

If the user wants to change the font colour of any Actor on the Workspace, this can be accomplished by right-clicking on the Actor and selecting the Maintenance option from the pop-up menu and then selecting Change Font Colour. This will open up the Color dialogue (as shown in figure 25 for the colour dialogue). The user may then select a new font colour or close the dialogue without changing the font colour.

#### 4.4.2.10 Move a single Actor

The user may at any time left-click on any of the Actors on the Workspace, hold down the left mouse button and drag the Actor to a new position on the Workspace.

#### **4.4.2.11 Move multiple Actors**

The user may want to move more than one Actor at a time, this can be accomplished by left-clicking on a blank area of the Workspace, holding down the left mouse button and dragging a selection rectangle around all of the Actors which need to be moved. The user must then left-click on one of the selected Actors (they will all be highlighted), hold down the left mouse button and drag the selected Actors to a new position on the Workspace. Once the user has moved the Actors to their new position, the Actors must be de-selected, by pressing Ctrl+D, before continuing with any tasks on the Workspace.

#### **4.4.2.12 Move all Actors**

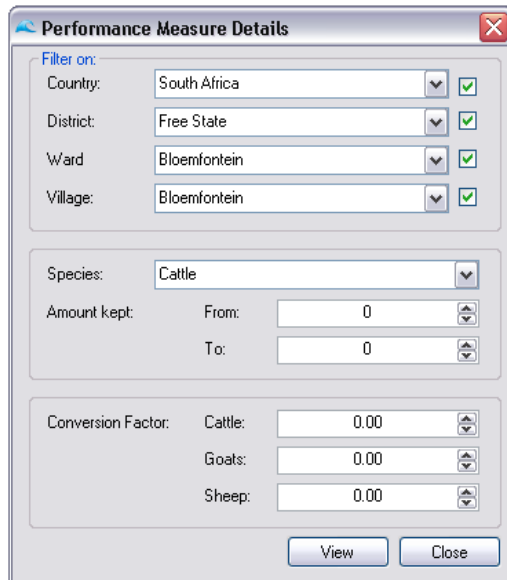
The user may want to move all Actors at the same time, this can be accomplished by pressing Ctrl+A. The user must then left-click on one of the selected Actors (they will all be highlighted), hold down the left mouse button and drag the selected Actors to a new position on the Workspace. Once the user has moved the Actors to their new position, the Actors must be de-selected, by pressing Ctrl+D, before continuing with any tasks on the Workspace.

#### **4.4.2.13 Submitting a questionnaire**

The user may want to submit a questionnaire from the workspace. This is done by right-clicking on the Actor for which the questionnaire needs to be submitted and then left-clicking on Submit questionnaire in the pop-up menu. The procedure for submitting a questionnaire is the same as described in Section 3. Submitting a Questionnaire.

#### **4.4.2.14 Displaying Performance Measures**

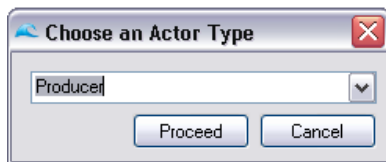
The user may want so display any one of the performance measures for a specific Actor. This is done by right-clicking on the Actor for which the questionnaire needs to be submitted and then hovering over Performance Measures in the pop-up menu. The user may then select the Performance Measure which needs to be displayed. Depending on which Performance Measure was chosen, a screen may be displayed which will allow the user to set certain variables for the specific Performance Measure. An example of this screen is shown in figure 28).



**Figure 28: Performance Measure Details dialogue**

## 4.5 DISPLAYING PERFORMANCE MEASURES

Performance Measures may be displayed from the Main Menu screen by selecting the Performance Measures menu item and then selecting a specific Performance Measure from the drop-down list. Once a Performance Measure has been selected, a Choose Actor dialogue (see figure 29).



**Figure 29: Choose Actor dialogue**

The user can then choose for which type of Actor the Performance Measure must be displayed. After which, depending on which Performance Measure has been selected, a screen may be displayed which will allow the user to set certain variables for the specific Performance Measure (see figure 28 for Performance Measure Details dialogue).

## **4.6 ANALYSING THE DATA**

### **4.6.1 BACKGROUND AND ANALYTICAL APPROACH**

In the VAIMS system data relevant to value chain structure and function is collected and tabulated in Microsoft Excel.<sup>®</sup> Access to the data is enabled by a software interface, but the analytical aspects of VAIMS remain embedded in Excel. This approach allows flexibility on the part of the user in that data are readily available for a wide range of analysis. The software interface has the primary functions of (i) organising and capturing the data, and generating selected key performance measures of universal interest (ii) linking data entry, retrieval and analysis to a diagrammatic representation of the value chain (enabled by a drawing wizard). The data compilation and analysis, and generation of output, use Excel.

As pointed out in VAIMS' literature review, value chain analysis is a new and rapidly-developing field, with few fixed references or standards for performance measures, indicators of structure, or even unambiguous categories of actors or enterprise types. For this reason the analysis embedded within VAIMS' software interface has been kept to a minimum at this stage of development, in favour of making available the data for use in Excel applications.

### **4.6.2 DATA ENTRY, STORAGE AND COMPILATION**

#### **4.6.2.1 File formats**

Survey data are saved onto observation-specific Excel spreadsheet files. For the majority of analytical tasks, these are then accessed to generate analysis. New questionnaires, and their new elements, developed within the software interface are stored as blank templates in comma-separated variable (.csv) format. For the most part, analysis makes direct use of the stored questionnaires (in .xls format).

#### **4.6.2.2 Filters**

Access to the data is mediated by filters allowing the user to select subsets of the available data based on geographic location and subdivision, species, stage of the chain, and size of operation (see figure 28 above). This facility may be disabled in order to view the entire data set.

## CHAPTER 5: VALUE CHAIN PERFORMANCE MEASURES

Performance measurement in VAIMS embraces the idea that the Value Chain is a mechanism for both provision of net benefits to actors in the chain and an allocation mechanism for those benefits. The measures used fall into four categories, addressed separately below.

### 5.1 ACTOR-LEVEL ANALYSIS

Actor-level analysis treats data at each level of the value chain as self-contained estimates of performance. Emphasis is given to value addition, the component parts of which are described below.

#### 5.1.1 VALUE ADDITION

Value addition is the return to the basic resources owned by the chain actor: that is to say the net return to the chain actor after paying for all inputs and services provided by other chain actors. In the chain context at a single stage, this is illustrated in figure 30.

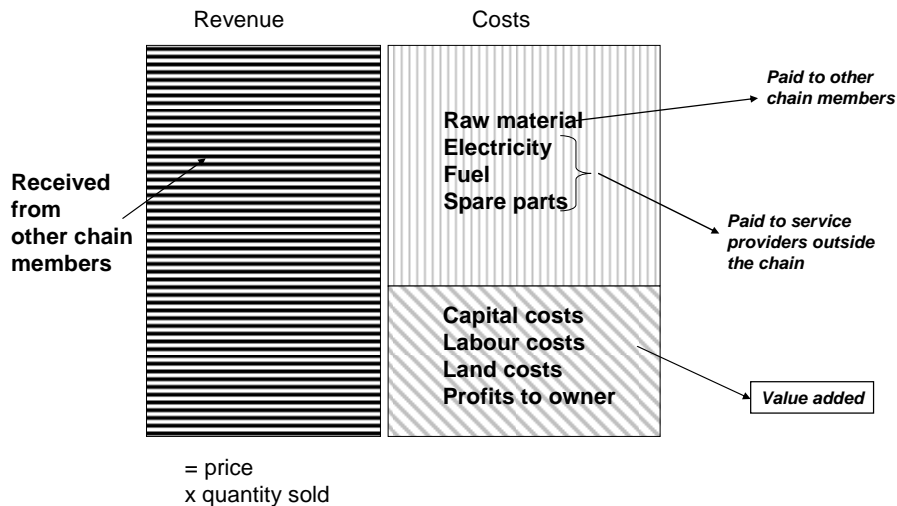


Figure 30: Value added at a single chain stage

### **5.1.2 REVENUES**

Revenues in VAIMS refer to all proceeds of sales of livestock and products. In general, this is calculated by multiplying sales numbers/volume by the price received.

The data-poor environment in which VAIMS is used requires that adjustments be made to revenue calculations. Most importantly, this refers to the predisposition of poor smallholders to sell assets to pay expenses for the farm business or for household expenses<sup>1</sup>. It is common that livestock assets are sold for these purposes. VAIMS' questionnaires are not detailed enough to capture the expenditure information, but they do detect fluctuations in livestock numbers. Changes in aggregate livestock values (changes in numbers, valued at sales prices) are interpreted by VAIMS as revenues and losses.

Non-business income (e.g. wages from off-farm employment, remittances sent by family members, rents earned on premises) is not counted as revenue.

Revenues earned in non-livestock activities are ignored by VAIMS in calculation of Value Added.

The method of revenue calculation allows distinctions between species to be maintained.

### **5.1.3 PRODUCTION COST**

Production cost is defined here as the sum of all costs used in the livestock production process. This includes fuel, purchased feeds, animal health expenses, all at the farm level. It includes electricity, spare parts and maintenance, and storage at processing and retail level. For traders, it includes certain fees paid and the cost of feeding animals.

---

<sup>1</sup> Such expenses may either be regular (e.g. vaccination costs, school fees), irregular (repairs to equipment or vehicles, family medical expenses) or occasional (purchase of a breeding bull, a family wedding).



#### **5.1.4 TRANSPORT COST**

Transport cost is treated separately in VAIMS due the variety and complexity of transport arrangements observed in the field. Payments for transport are subtracted as part of the calculation of value added.

#### **5.1.5 OTHER COSTS, SUBTRACTED AS PART OF CALCULATION OF VALUE ADDITION**

A significant cost faced by all agents in the chain is transactions cost. This includes the “cost of doing business”, and includes such items as time spent searching for buyers and negotiating prices, time spent seeking out market information, etc. Transport costs (see above) are usually treated as a transaction cost, but in VAIMS are kept separate.

In general, VAIMS ignores the measurement of transaction costs through survey questionnaires, but addresses behaviour associated with them in other ways.

#### **5.1.6 OTHER COSTS, NOT SUBTRACTED AS PART OF CALCULATION OF VALUE ADDITION**

These costs refer generally to land, labour and capital. These are the basic resources owned or rented by a chain actor. Each is discussed below. Taxes paid to government are also considered to be payments to basic resources.

Costs of capital (interest payments, depreciation) are part of value added. This is because these payments serve to keep each capital asset in its current use, rather than switching to an alternative use. Capital is, in general, not purchased from another firm.

Costs of labour (wages, payments to family members) are part of value added. This is because these payments serve to keep each worker in his/her current employment, rather than switching to an alternative. Labour is not purchased from another firm, except in the case where it is a service (e.g. transport, time spent by a mechanic or an electrician).

Costs of land (rent, local taxes) are part of value added. This is because these payments serve to keep each piece of land in its current use, rather than switching to an alternative.

#### **5.1.7 SUB-DIVISION OF COSTS AMONG SPECIES**

In order to calculate value added for each species, costs must be subdivided amongst species. In most cases this cannot be based on survey questions because respondents do not know the appropriate subdivision to make (e.g. storage costs in a slaughterhouse, repairs and

maintenance in a retail shop). The approach taken in VAIMS is to employ an arbitrary factor (numbers of livestock units in each species at the midpoint of the year) to allocate cost items amongst the species.

### 5.1.8 A FINAL NOTE ON COSTS

At best, VAIMS allows the collection of cost information in a standard format and its use in specific calculations. VAIMS is not intended to provide an exhaustive description or analysis of costs. This is because, particularly at farm level, VAIMS is used in an environment where cost information is difficult to collect (either because chain actors treat it as a secret, or do not know or remember it), and costs are in any case very low (e.g. goats may well graze on public lands and receive no animal health treatments or other production inputs).

It should be noted that the focus on value addition allows the analysis to avoid the collection of data on costs of land, labour and capital. These are often the most difficult of cost items to cope with in, for example, analysis of profitability.

## 5.2 CHAIN-LEVEL ANALYSIS

The focus of VAIMS is at chain level, for which very few performance measures are readily available. Presentation of key numbers in the value chain is a simple form of analysis, and is available in various forms from VAIMS. An example is the presentation of simple (often aggregated) cost and price data, usually based on averages, as illustrated in figure 31.

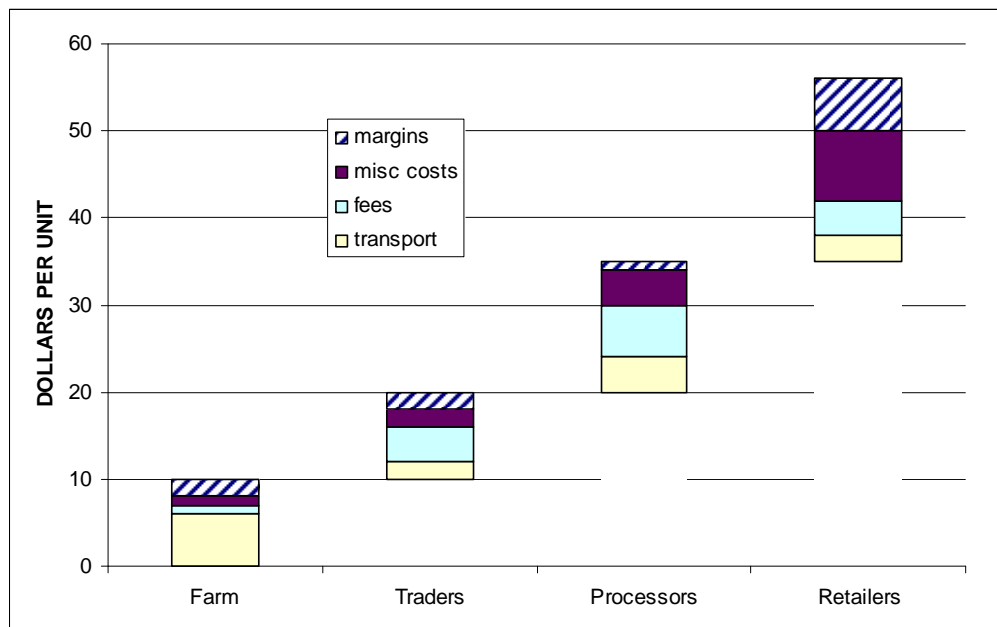


Figure 31: Presentation of prices and costs

Note that production of such diagrams requires use of standard measures of product transformation and conversion (e.g. carcass dressing out %, wastage), and a common classification of costs (fees” and “miscellaneous costs” in this example). Beyond such simple presentations, VAIMS takes two analytical approaches to chain performance.

- A “summation” approach that aggregates actor-level performance measures.
- A “comparison” approach that contrasts actions, statements or evaluations between or amongst stages. An example is the analysis of the extent to which the chain transmits consumer preferences for product attributes (see figure 36 below).

VAIMS employs statistical measures of association to derive several measures related to the efficiency of the chain in transmitting consumer preferences. Note that a rating (or scoring) system is used. Chi-squared tests of association within and between stages, and correlation between stages, are used to test a hypothesis of perfect transmission represented by identical scores assigned by all chain actors. Analysis of variance is used to determine the extent to which variation in ratings is due to variation within a stage as opposed to between stages. A number of analyses are available in Excel using the performance indicators delivered by VAIMS.

### **5.2.1 PRICE RELATIONSHIP**

Relationships between the prices reported at each stage in the chain provide some indication of margins, while being easier to interpret and not requiring adjustment for dressing-out % and other technical factors.

Examples available include ratios of live animal sales prices at trader and farm level ( $P^T/P^F$ ), or retail to farm level ( $P^R/P^F$ ). These can also be expressed as a percentage, for example, the farm price as a % of retail price ( $100 * P^F/P^R$ ). Other examples relate sales prices to specific cost items, such as the price of a litre of diesel: ( $P^D/P^F$ ) is interpreted as “the number of litres of diesel that can be bought by selling one animal”.

Such ratios are of interest primarily in relative terms: comparisons amongst producers or amongst traders. These ratios can also be used for comparisons over time

### **5.2.2 SEASONALITY**

In light of the environments in which poor smallholders raise livestock, VAIMS treats seasonal sales distribution as a chain performance measure. Figure 32 below presents Q3.2 (on

purchases) and Q5.2 (on sales) from the VAIMS questionnaire for processors and retailers. Such questions are also posed to producers and traders.

3.2 Rank the months in which animal/meat purchases were the highest and lowest		
	Most important month for purchases (1=Jan, 2=Feb, ... 12=Dec. 13=All)	Least important month (1=Jan, 2=Feb, ... 12=Dec. 13=All)
Cattle		
Sheep		
Goats		

5.2 Rank the months in which meat/animal sales were the highest and lowest		
	Most important month for sales (1=Jan, 2=Feb,... 12=Dec.)	Least important month (1=Jan, 2=Feb, ... 12=Dec.)
Cattle		
Sheep		
Goats		

**Figure 32: Seasonality in sales and purchases**

For a specific chain actor, apparent delays between peaks and troughs in purchases and sales indicate a need for storage of inventory. For traders, this means access to feed and secure containment for live animals; for processors it means a requirement for freezing or chilling, or holding the animals on feed.

For comparisons between stages, dissonance between peak purchasing times by buyers and peak sales times by sellers indicates poor chain performance.

### **5.2.3 INFORMATION FLOW**

The example provided in figure 32 examines the efficiency with which product quality information is transmitted between stages of the chain, as well as the extent of agreement within a stage as to what buyers seek in terms of quality. Figure 33 is taken from question 6.1 in the traders' questionnaire and identifies the sources of information agents use, and seeks their rating of the reliability of that source. This provides information on the extent to which agents use specific sources, and allows comparison within and between stages of the chain about the reliability of each source.

6.1 Sources and reliability of information		
Type	Main sources (code)	Reliability of source (code)
Production practices		
Input use		
Animal health issues		
Markets (physical)		
Price		
Product standards		
Traceability		
Risk management		
Code 1=Extension officer/government, 2=Newspaper, 3=Third party, 4=word of mouth, 5=None 9= Other		
Code (rank 1=not reliable. 9=very reliable)		

**Figure 33: Source of information**

#### **5.2.4 LEVEL OF INTEGRATION/COORDINATION**

VAIMS places heavy emphasis on generation of information about the extent of vertical co-ordination in the chain. In all livestock dynamics sections for each agent (Q4.1 for producers, Q3.1 for traders and Q3.1 for processors and retailers), coded responses are required for sources and destinations of marketing activities.

Preliminary testing of the VAIMS survey tools encountered difficulty in distinguishing between retailers, wholesalers and processors. For this reason the “processors and retailers” questionnaire is used for all three functions. Actual activities carried out, and associated degrees of integration, co-ordination, and more general shared tasks, is available from Q1.7 and 1.9 (see figure 34 parts 1 and 2 below). Note that VAIMS’ approach is to classify the actor *ex poste* the survey.

1.9 What types of products do you sell?			
	Beef	Sheep meat	Goat meat
Code: 1=Yes, 2=No			
Carcasses			
Quarters			
Fresh, deboned meat			
Fresh, bone-in meat			
Frozen, deboned meat			
Frozen, bone-in meat			
Raw Sausages			
Cooked sausages			
Cured or dried products			
Canned meat products			
Ready-to-eat products			
Others			

**Figure 34 (cont'd): Establishing the function and extent of integration of an agent - 1**

1.7 Do you own, or are you financially involved in:		
Farming activities		Code: 1=Yes, 2=No
A slaughter facility		Code: 1=Yes, 2=No
Cutting facilities		Code: 1=Yes, 2=No
Processing facilities		Code: 1=Yes, 2=No
Curing/drying/smoking facilities		Code: 1=Yes, 2=No
Cold storage facilities		Code: 1=Yes, 2=No
Freezing facilities		Code: 1=Yes, 2=No
Trucks for meat product transport		Code: 1=Yes, 2=No
Sales of skins		Code: 1=Yes, 2=No

1.9 What types of products do you sell?			
	Beef	Sheep meat	Goat meat
	Code: 1=Yes, 2=No		
Carcasses			
Quarters			
Fresh, deboned meat			
Fresh, bone-in meat			
Frozen, deboned meat			
Frozen, bone-in meat			
Raw Sausages			
Cooked sausages			
Cured or dried products			
Canned meat products			
Ready-to-eat products			
Others			

**Figure 34 (cont'd): Establishing the function and extent of integration of an agent - 2**

Surveys at all chain stages pose questions about the agents' ownership and activity in production, trading, slaughter and retail regardless of whether the actor is in fact classified according to that function. Figure 35 below presents Q2.1 from the producers' survey, which tracks involvement non-production stages over time. This table also allows estimation of diversification for the purposes of risk management.

2.1 Please detail the percentage of income received from following activities:			
	% today	% 1 years ago	% 5 years ago
Livestock production			
Crop production			
Livestock trading			
Crop trading			
Off-farm employment			
Own business (non-farm)			
Remittances			
Other			
TOTAL			

**Figure 35: Evidence of integration/co-ordination (producer)**

Figure 36 below directly asks traders (Q1.6 and Q1.7) about non-trading operations.

1.6 Do you have your own livestock production operation?		Code: 1=Yes, 2=No
1.7 Do you slaughter any animals, or have them slaughtered, before sale?		Code: 1=Yes, 2=No

**Figure 36: Evidence of integration/co-ordination (trader)**



Figure 37 below asks retailers, processors and wholesalers about vertical integration (Q1.4-1.7).

1.3 Are you registered as a commercial company?		Code: 1=Yes, 2=No
1.3.1 What is your company's name?		

1.4 Do you also buy and sell animals as a trading operation?		Code: 1=Yes, 2=No
--	--	----------------------

1.5 How long have you been engaged in processing/retailing activities?		Years
1.6 Do you have any training in farming activities		Code: 1=Yes, 2=No
1.6.1 If yes, specify		

1.7 Do you own, or are you financially involved in:	Code: 1=Yes, 2=No
Farming activities	
A slaughter facility	
Cutting facilities	
Processing facilities	
Curing/drying/smoking facilities	
Cold storage facilities	
Freezing facilities	
Trucks for meat product transport	
Sales of skins	

**Figure 37: Evidence of integration/co-ordination (processor and retailer)**

Although ownership is measured to assess “integration” of vertical functions or stages of the chain, the use of contracts is interpreted by VAIMS as indicative of “co-ordination”: essentially tight vertical linkages without ownership. questions for all chain actors examine the use of contracts in sales and purchases and the content of such contracts. Figure 38 below is the question posed at retail/processing/wholesale level (Q3.7) and it is very similar to those used for producers (Q3.8) and traders (Q4.10).

Use of contracts indicates co-ordination between stages. Agreement between stages in the content of contracts is interpreted, within VAIMS, as evidence of successful co-ordination in the whole chain (i.e. beyond just two neighbouring stages).

3.7 Do you use contracts to purchase meat? (IF NO, GO TO SECTION 4)		Code: 1=Yes, 2=No
--	--	----------------------

3.8 If contracts are used, do they specify:	
	1=Yes, 2=No
Age	
Sex	
Breed	
Weight (measured)	
Weight (apparent)	
Condition of animal	
Free of disease	
Specified use of feed or medicine	
Pelt condition	
Pelt colour	
Time of delivery	
Place of delivery	
Advance payment	
Date of delivery	
Quantity to be delivered	
Frequency of deliveries	
Quality requirements	

**Figure 38: Use and content of contracts (retailer)**

Use of 3<sup>rd</sup>-parties (VAIMS examines the use of brokers) in vertical trade co-ordination arrangements is explored in Q3.6 (see figure 39 below on use of brokers). This also allows collection of data on costs of co-ordination by a broker, which are one form of transactions costs.

3.6 Do you use a broker or middleman for purchase?		Code: 1=Yes, 2=No
3.6.1 If yes, how much do you pay him/her per animal?		
Cattle		
Sheep		
Goats		

**Figure 39: Use of Brokers**

### 5.2.5 EVIDENCE OF MARKET POWER AND ITS EXERCISE

Several measures indicative of market power and its exercise are available within VAIMS.

Distributions of margins and value added at each stage, and between stages, at each stage, provide indications of market power imbalances amongst actors and between stages, respectively. As seen above (section 5.2.4) VAIMS identifies brokers and the costs of their services, so identifying actors for whom brokers' costs are above a (perceived or imposed) minimum level.

Sources and destinations of flows of animals and products are recorded from the VAIMS questionnaires (Q4.1 for producers, Q3.1 for traders and Q3.1 for processors and retailers), and can be used to assess the relative importance of stages of the chain.

A more direct address to the exercise of market power by traders is featured in Q3.3 (see figure 40 below) on collaboration amongst traders.

3.3 Do you co-operate with other traders on...	
	1=never, 2= sometimes, 3=always
Transport	
Information about market prices	
Information about animals available for sale	
Information about sellers	
Areas in which you buy	
Disease control	
Food safety issues	
Setting buying prices	
Setting selling prices	
Other	

**Figure 40: Co-operation amongst traders**

### 5.2.6 PRODUCTIVITY

VAIMS offers a number of measures of productivity, based on use of basic resources (e.g. value added per unit of labour).

### 5.2.7 **INFRASTRUCTURE**

VAIMS provides scope for survey enumerators to observe and assess infrastructure. Figure 41 below is taken from the producers' questionnaire (Q6.1).

6.1 Rate quality/availability of the following (1=poor, 9=very good)	
Fences	
Animal handling facilities	
Water sources	
Buildings/sheds	
Vehicles	
Machinery and other equipment	
Animal feeding facilities and equipment	

**Figure 41: Quality of infrastructure**

### 5.2.8 **FLEXIBILITY AND RESPONSIVENESS**

The capacity for changing marketing arrangements is an important value chain performance measure, indicating the chain's ability to meet actors' needs under changing opportunities and constraints. Figure 42 is taken from the producer survey (Q4.3 and Q4.4) and similar questions appear for traders (Q3.2) and processors/retailers (Q3.3).

4.3 On average, what percentage of your purchases/sales are made through the following channels?						
	Purchases			Sales		
	Cattle	Sheep	Goats	Cattle	Sheep	Goats
Smallholder farms						
Commercial farms						
Government farm						
Auction yard (uses auction sale)						
Village market (less than 20 animals/day)						
Town/city market						
Broker						
Informal slaughter facility						
Abattoir						
Butchery						
Retailer						
Final consumer/live animal						
Final consumer (slaughtered animal/meat)						
Other						
4.4 How has your use of the channels in Q4.3 changed in the last 5 years?						
	Purchases			Sales		
	Cattle	Sheep	Goats	Cattle	Sheep	Goats
Smallholder farms						
Commercial farms						
Government farm						
Auction yard (uses auction sale)						
Village market (less than 20 animals/day)						
Town/city market						
Broker						
Informal slaughter facility						
Abattoir						
Butchery						
Retailer						
Final consumer/live animal						
Final consumer (slaughtered animal/meat)						
Other						
Code: 1=Increased, 2=Stayed the same, 3=Decreased						

**Figure 44: Choice of channel and changes in channel choice**

Flexibility is also measured by way of changes in the origin of income (Q2.1 for producers, Q4.3 for traders (see below) and figure 43 below (Q5.1 for retailers and processors).

4.3 On average, what percentage of your purchases/sales are made through the following channels?						
	Purchases			Sales		
	Cattle	Sheep	Goats	Cattle	Sheep	Goats
Smallholder farms						
Commercial farms						
Government farm						
Auction yard (uses auction sale)						
Village market (less than 20 animals/day)						
Town/city market						
Broker						
Informal slaughter facility						
Abattoir						
Butchery						
Retailer						
Final consumer/live animal						
Final consumer (slaughtered animal/meat)						
Other						
4.4 How has your use of the channels in Q4.3 changed in the last 5 years?						
	Purchases			Sales		
	Cattle	Sheep	Goats	Cattle	Sheep	Goats
Smallholder farms						
Commercial farms						
Government farm						
Auction yard (uses auction sale)						
Village market (less than 20 animals/day)						
Town/city market						
Broker						
Informal slaughter facility						
Abattoir						
Butchery						
Retailer						
Final consumer/live animal						
Final consumer (slaughtered animal/meat)						
Other						
Code: 1=Increased, 2=Stayed the same, 3=Decreased						

**Figure 44: Choice of channel and changes in channel choice**

2.3 Please detail the percentage of income received from following activities:			
	% today	% 1 years ago	% 5 years ago
Livestock sales			
Meat sales			
Crop sales			
Off-farm employment			
Own business (non-farm)			
Other			

**Figure 43 Choice of channel and source of income**

4.3 On average, what percentage of your purchases/sales are made through the following channels?						
	Purchases			Sales		
	Cattle	Sheep	Goats	Cattle	Sheep	Goats
Smallholder farms						
Commercial farms						
Government farm						
Auction yard (uses auction sale)						
Village market (less than 20 animals/day)						
Town/city market						
Broker						
Informal slaughter facility						
Abattoir						
Butchery						
Retailer						
Final consumer/live animal						
Final consumer (slaughtered animal/meat)						
Other						
4.4 How has your use of the channels in Q4.3 changed in the last 5 years?						
	Purchases			Sales		
	Cattle	Sheep	Goats	Cattle	Sheep	Goats
Smallholder farms						
Commercial farms						
Government farm						
Auction yard (uses auction sale)						
Village market (less than 20 animals/day)						
Town/city market						
Broker						
Informal slaughter facility						
Abattoir						
Butchery						
Retailer						
Final consumer/live animal						
Final consumer (slaughtered animal/meat)						
Other						
Code: 1=Increased, 2=Stayed the same, 3=Decreased						

**Figure 44: Choice of channel and changes in channel choice**



VAIMS also interprets the availability of livestock holding capacity as an important indicator of management flexibility (see figure 45 on availability of livestock holding) which is Q2.4 from the traders' questionnaire). Chain performance is indicated not only by the availability of such livestock holding capacity at a single stage, but also by its availability throughout the system.

For retailers and processors, the VAIMS questionnaires also examine availability of chilling and freezing space.

2.4 Do you have capacity for holding animals between purchase and sale?		
		Code: 1=Yes, 2=No
2.4.1 if YES, for how many animals for 1 week?		
Cattle		Animals
Sheep		Animals
Goats		Animals

**Figure 45: Availability of livestock holding capacity**

### 5.2.9 GOVERNANCE

The assessment of 3<sup>rd</sup>-party tasks and costs (in the form of brokers) is discussed above.

With reference to management of risks of livestock theft, the producers' survey seeks information on animal ownership identification (question 3.3). This measure allows assessment of the efficacy of chains, and indeed of individual actors, in preserving ownership identities (as seen in figure 46, on animal identification). Some identification modes are preserved after ownership change and slaughter, while others persist only at farm level, and some of those are somewhat weak. Most significantly for advanced marketing functions, traceability systems are identified.

3.3 How do you identify your animals?	Cattle	Sheep	Goats
	Code: 1=Yes, 2=No		
Know them by name, looks or patterns			
Brand mark or tattoo			
Individual animal identification system			
Formal animal identification system (traceability system)			

**Figure 46: Animal identification**

Further information about governance can be derived from VAIMS' questionnaires addressing membership of industry associations, orientation and magnitude of payments for transport and

brokerage services, use of contracts, meat and animal inspection arrangements, and a variety of others.

Governance at each stage is identifiable from this survey content, as is chain governance by the extent to which these facilities and mechanisms are shared or similar between stages.

### 5.2.10 SATISFACTION OF OBJECTIVES

The most fundamental measurement of chain performance is its capacity to satisfy objectives.

Satisfaction with buying and selling arrangements is assessed at each stage (Q2.7 for producers, Q2.1 for traders and Q2.1 for processors and retailers), and chain performance is inferred from the extent to which (i) agents at each stage are satisfied and (ii) the extent of agreement between stages in the degree of satisfaction.

Figure 47 below addresses producers' stated expansion plans below details producers' stated expansion plans, against which actual performance can be measured to assess satisfaction of objectives.

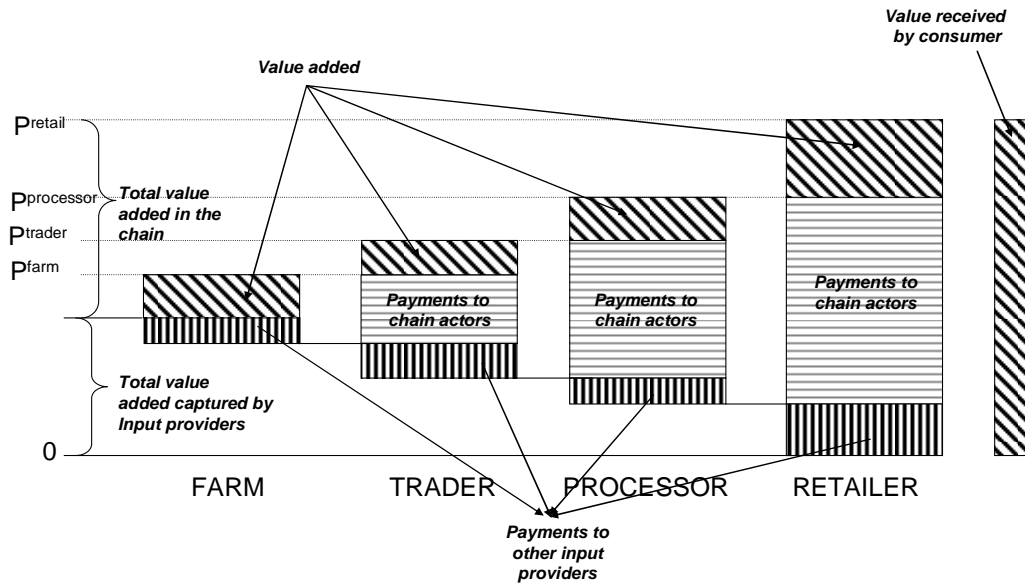
3.2 What is your current breeding (growth/expansion) strategy?					
Increasing breeding herd		Code: 1=Yes, 2=No	Increasing surplus (offtake)		Code: 1=Yes, 2=No
Decreasing breeding herd		Code: 1=Yes, 2=No	Decreasing surplus (offtake)		Code: 1=Yes, 2=No
Keeping breeding herd stable		Code: 1=Yes, 2=No	Keeping surplus (offtake) stable		Code: 1=Yes, 2=No

Figure 47: Producers' stated expansion plans

## 5.3 EFFICIENCY AND EQUITY

### 5.3.1 VALUE ADDED

For Value Added, efficiency and equity are illustrated in figure 48, based on averages.



Source: ValueLinks manual (GTZ, 2008)

**Figure 48: Value Addition throughout the chain**

The share of Value Added accruing to each stage can be calculated and compared to costs incurred, risks taken, and prices received.

### 5.3.2 SHARED RISKS AND CONSTRAINTS

The final questions in each VAIMS questionnaire address risks and constraints faced. First, these allow identification of actors' stated views on constraints and risks. Second, they allow comparison of actors' views across stages of the chain. Figure 49 presents the results available from figure 49 (Q6.3 and Q6.4 from traders' questionnaire)

6.3 Constraints	
Rank the following constraints in order of importance (1=most important, 5=least important)	
Variability in prices	
Low productivity levels	
Access to markets	
Access to credit	
Access to inputs	
Access to information	

6.4 Risk	
Rank the following risk factors in order of importance (1=most important, 5=least important)	
Climate	
Disease	
Availability of inputs	
Non-payment	
Theft/corruption	
Predation	

**Figure 49: Assessment of constraints and risks**

A number of interpretations or applications are available. If a variety of risks are recognized at each stage, then distinction between shared risks and individual risks is unlikely and action by government is unlikely. Second, shared risk within or between chain stages provides incentives for group action with regard to specific risks (e.g. corruption by officials). Lastly, differential risks at each stage identify marketing challenges and opportunities.

### **5.3.3 MARKET ACCESS**

In addition to direct questions about market access (see 5.3.2 above) VAIMS addresses actual use of channels, and patterns of change in that use. Figure 50 on retail purchasing dynamics presents the processor and retailer's Q5.3. VAIMS presents market access as an equity issue in the sense that variety in market access within a stage indicates some imbalance in opportunity and upgrading possibilities. Differential market access between stages is indicative of a systemic equity problem, possibly routed in imperfect competition.

VAIMS also examines some management changes at each stage (e.g. breed preferences, changes in breeds, and reasons for the change), to address some simple changes associated with market access.

5.3 On average, what percentages of your sales are made from the following channels and changes compared to 5 years ago?						
	Cattle		Sheep		Goats	
	Sales (%)	Change (code)	Sales (%)	Change (code)	Sales (%)	Change (code)
Village market (less than 20 animals/day)						
Town/city market						
Butchery						
Retailer						
Final consumer (slaughtered animal/meat)						
Traders						
Exporter						
Supermarket						
Government contract						
Other						
Code: 1=Increased, 2=Stayed the same, 3=Decreased						

**Figure 50: Purchasing channel dynamics for processors and retailers**

#### 5.3.4 COMPETITIVENESS

VAIMS offers some basic indicators of competitiveness in that it identifies average and indicative levels of prices and costs throughout several chain stages. This allows comparison of specific actors' prices and cost structures to a benchmark indicator of marketing possibilities.

Capacity of actors to differentiate products is assessed by questions about ownership and use of brands (see figure 51 on brand usage taken from Q1.10 from the retailers' and processors' questionnaires).

1.10 Does your firm have a brand?		Code: 1=Yes, 2=No
1.10.1 if yes, what % of sales use that brand?		Code: 1=Yes, 2=No

**Figure 51: Brand usage**

## 5.4 DEVELOPMENT INDICATORS

### 5.4.1 EMPLOYMENT OF WOMEN AND FAMILY MEMBERS

All VAIMS questionnaires access household heads' gender and basic demographic data (see traders' Q1.4 below as figure 52, as well as extensive information on employees (see traders' Q1.10 below as figure 53).

1.4 Household head information	
Gender	
Marital status	
Age (years)	
Years of schooling	
Primary activity	
Years in village	

**Figure 52: Household head information**

1.10 How many employees do you have?				
		Number of employees	Daily wage rate	In Kind
Full-time employees	Male			
	Female			
Part-time employees	Male			
	Female			
Family Labour	Male			
	Female			

**Figure 53: Employment details**

These data allow comparison of different chain stages in terms of the configuration and remuneration of labour, particularly female labour and the use of family labour. VAIMS' instruments are not detailed enough to access information on child labour, but uses family labour as a proxy.

### 5.4.2 LEVEL OF PHYSICAL AND HUMAN CAPITAL

VAIMS addresses access to land, both as a physical capital item and as an indicator of empowerment, access to risk management options and alternative income sources. In addition

to being a development indicator, this also measures equity within the chain in terms of flexibility and risk management: a situation in which traders and processors have access to land, but producers do not, indicates a substantial advantage to higher stages of the value chain. Figure 54 below details land access information collected with VAIMS, from producers.

2.5 Please provide information on access to land and land use			
Plot ID	Size of each plot (ha)	Land ownership (code)	Current land use (for land used by household) (code)
1			
2			
3			
4			
5			

**Figure 54: Land use indicators**

In addition to information on schooling (see above), VAIMS questionnaires address specialist training in trading and processing (Q1.9 and Q1.6 respectively in those questionnaires), with specifications for the qualification attained.

---

## **CHAPTER 6: EXAMPLE OF ANALYSIS AVAILABLE**

---

### **6.1 GENERAL COMMENTS**

Pursuant to VAIMS' purpose, value chain performance measures available within the software interface feature primarily the components of value addition, its summation and distribution amongst chain actors. In addition, the capacity of the value chain to transmit quality incentives is included. These two analyses constitute the universally-recognised value chain performance measures. The VAIMS interface also produces a number of summary statistics from the stored Excel sheets.

Other analysis entails use of Excel functions on the stored (Excel) files. This extends to performance measures beyond those displayed above – particularly those of an experimental or exploratory nature, characterisation of the sample according to its distribution, and average and other indicative measures of variables from within the sample.



## 6.2 MISCELLANEOUS INFORMATION

Figure 55 shown below represent these outputs from the software interface. Summary data (below) provided by the interface calibrates the sample in terms of size and relevance to candidate problems and opportunities.

The screenshot shows an Excel spreadsheet with the following data:

	A	B	C	D	E	F	G	H	I
1		<b>Miscellaneous Calculations</b>			<b>Conversion factor (large stock units)</b>	<b>Producer</b>	<b>Trader</b>	<b>Processor/retailer</b>	
2		Livestock units	Cattle	1	61				
3			Sheep	0.2	4				
4			Goats	0.2	21				
5		Average livestock units			<b>86</b>	<b>0</b>	<b>0</b>		
6									
7		Carcass conversion rates (dressing percentage)	Cattle		0.50				
8			Sheep		0.45				
9			Goats		0.45				
10									
11		Average volume of meat sold (kg)	Cattle		230	7467	1093		
12			Sheep		56	583	867		
13			Goats		198	1833	1200		
14									
15		Average monthly production cost				<b>279</b>	<b>3188</b>	<b>6738</b>	
16									
17		Average monthly labour cost				<b>3050</b>	<b>5433</b>	<b>24067</b>	
18									
19		Number of questionnaires completed				5	3	3	
20									
21		<b>Performance measure</b>	<b>Formula</b>	<b>Species</b>	<b>Agent</b>				

Figure 55: Summary data

### 6.3 REVENUE

Revenue calculations (Figure 56 below) provide further detail of the structure of the sample. Elements of revenue (cash sales and value of increases in animal numbers (a proxy measure relevant to systems where sales are minimal)) are also presented.

Performance measure	Definition	Formula	Species	Producer	Trader	Processor/retailer (monthly)
Revenue at each stage	Annual income received from sales of value-	= Sales price x Quantity sold	Cattle	9900	175000	70840
			Sheep	1000	144000	42500
			Goats	4220	35000	90000
			TOTAL	15120	354000	203340
		PLUS				
	Sum of Value of livestock consumed at	Sales price * (Number consumed + number given away)	Cattle	900		
			Sheep	1010		
			Goats	250		
		PLUS				
	Sum of change in value of livestock on hand	Sales price * (Net increase in number of animals on hand)	Cattle	5700		
			Sheep	1140		
			Goats	5800		
			<b>Cattle</b>	<b>1375</b>	<b>14583</b>	<b>70840</b>
			<b>Sheep</b>	<b>263</b>	<b>12000</b>	<b>42500</b>
			<b>Goats</b>	<b>856</b>	<b>2917</b>	<b>90000</b>
<b>TOTAL MONTHLY REVENUE</b>						

Figure 56: Revenue

## 6.4 COSTS

Central to measures or value added is the delineation between costs of traded inputs and costs of raw materials. The cost output table (Figure 57 below) presents these data. This enables further analysis in Excel, for example the calculation of average production costs, expressed per kg liveweight sold.

Average production cost / kg live weight sold	At every level of the chain per/live animal/kg sold		Producer	Trader	Processor /retailer
		Cattle	1.21	0.43	3.08
		Sheep	4.98	5.46	3.50
		Goats	1.41	1.74	2.53

The screenshot shows an Excel spreadsheet titled 'VAIMS performance measures.xls'. The visible data is as follows:

39	Performance measure	Definition	Formula	Species	Producer	Trader	Processor/retailer (monthly)	
40	Cost of raw materials purchased at each stage of the value chain	Annual costs of purchase of animals, meat or processed meat for resale (with or without further processing)	Sum across livestock classes of purchase price of animals purchased * number purchased in each	Cattle	9200	82250	0	
41				Sheep	1940	50167	0	
42				Goats	1800	25500	0	
43					PLUS			
44					Sum across meat and processed product types of			
45					Cattle			21733
46					Sheep			23200
47					Goats			32133
48								
49						Cattle	767	6854
50	<b>TOTAL MONTHLY COST OF RAW MATERIALS</b>			Sheep	162	4181	23200	
51				Goats	150	2125	32133	
52	Performance measure	Definition	Formula	Species	Producer	Trader	Processor/retailer	
53	Cost of traded inputs at each stage	Monthly costs paid to other economic agents for manufactured products or	Per Annual income from sales	Cattle	182	1576	2347	
54				Sheep	18	1297	1408	
55				Goats	78	315	2982	
56								

Figure 57: Costs of raw materials and traded inputs

## 6.5 VALUE ADDED

Value added is presented (Figure 58 below) subdivided by species and stage of chain. It should be noted that this can be further decomposed by use of the filters to enhance the focus. Although the software interface's output focuses on value addition *per se*, its decomposition and allocation to stages is motivated by the available numbers. Using simple Excel features, for example, enables a calculation of shares of value added as follows (it should be noted that these figures are examples only):

### Shares of Value Added

	Producer	Trader	Processor /retailer
Cattle	1%	12%	88%
Sheep	0%	27%	73%
Goats	1%	1%	98%

### Value added per kg carcass weight

Cattle	0.03	0.82	21.38
Sheep	0.33	11.18	9.29
Goats	0.15	0.26	20.58

	Performance measure	Definition	Formula	Species	Producer	Trader	Processor/retailer
52							
53	Cost of traded inputs at each stage	Monthly costs paid to other economic agents for manufactured products or	Per Annual income from sales	Cattle	182	1576	2347
54				Sheep	18	1297	1408
55				Goats	78	315	2982
56							
57		These need to be first divided by the numbers of	Per LSU	Cattle	196		
58				Sheep	14		
59				Goats	69		
60							
61	Value Added	Calculated for each species for each stage	= Revenue – costs of livestock or meat product purchases -	Cattle	426	6153	46759
62				Sheep	82	6523	17892
63				Goats	628	477	54885
64							
65							
66	Value added	Value Added per unit of non-traded input	Value added/Total labour cost	Cattle	0.14	1.13	1.94
67				Sheep	0.03	1.20	0.74
68				Goats	0.21	0.09	2.28
102						NEVER	
103	Attributes preferred by buyers				Producer	Trader	Processor/retailer

Figure 58: Value added



## 6.6 INCENTIVE TRANSMISSION

Further chain performance measures available from the VAIMS software interface includes the ability of the chain to transmit quality incentives. The example below (figure 59) presents the three stages' perceptions of buyers' needs, in the context of attributes that buyers "always" seek when purchasing animals. The presented extent of agreement is then available for presentation in graphs (done by the software), as regression analysis and analysis of variance using excel or in terms of frequencies.

	Other	Always			Always		
		Producer	Trader	Processor/retailer	Producer	Trader	Processor/retailer
Questionnaires		5	3	3			
Age		4	2	0	80	67	0
Sex		3	1	0	60	33	0
Breed		2	1	0	40	33	0
Weight (measured)		5	3	2	100	100	67
Weight (apparent)		0	0	0	0	0	0
Grade			0			0	
Condition of animal		5	3	0	100	100	0
Free of disease		2	2	2	40	67	67
Specified use of feed or medicine		0	0	0	0	0	0
Pelt condition		0	0		0	0	
Pelt colour		0	0		0	0	
Time of delivery		0	0	1	0	0	33
Place of delivery		0	0	0	0	0	0
Advance payment		0	0	0	0	0	0
Colour of product				2			67
Packaging				3			100
Brand							0
Time since slaughter				0			0
Origin of animal (place it came from)				0			0
Perceived healthiness of the product				1			33
Organic or low-input production				0			0
Other							0
Questionnaires		5	3	3			

Figure 59: Value chain transmission of buyers' preferences for quality attributes

## REFERENCES

Bailey, D., C.B. Barrett, P.D. Little and F. Chabari (1999) "Livestock markets and risk management among East African pastoralists: a review and research agenda". GL-CRSP Pastoral Risk Management Project Technical Report No. 03/99. Utah State University

Deutsche Gesellschaft für Technische Zusammenarbeit GmbH (GTZ) (2007). ValueLinks Manual: The Methodology of Value Chain Promotion, First Edition. Found at Internet address <http://www.value-links.de/manual.html>, retrieved 10 March 2008.

Dolan, C. and Humphrey, J. (2000) Governance and trade in fresh vegetables: The impact of UK supermarkets on the african horticulture industry, *Journal of Development Studies* 37(2), pp. 147-176.

Gereffi, G., Humphrey, J., Sturgeon, T. (2005), "The governance of global value chains," *Review of International Political Economy*, 12 (1): 78-104. United Kingdom: Routledge.

**Gereffi, G. and Korzeniewicz, M., eds. (1994) *Commodity Chains and Global Capitalism* (London: Praeger).**

Kaplinsky, R. (2000) Globalisation and Unequalization: What Can Be Learned from Value Chain Analysis. *Journal of Development Studies* 37 (2): 117-146.

**Kaplinsky, R. and Morris, M. (2001) *A Handbook for Value Chain Research*. Working Paper Prepared for the IDRC, Brighton, UK, Institute for Development Studies.**

**Kobayashi (2006) on VC mapping in chicken/Indonesia**

Lambert, D.M. and Cooper, M.C. (2000) Issues in supply chain management, *Industrial Marketing Management* 29(1): 65-83.

Porter, M. E. (1980) *Competitive Strategy: Techniques for Analyzing Industries and Competitors* (New York, The Free Press).

Raikes, P., Jensen, M.F., and Ponte, S. (2000) Global Commodity Chain Analysis and the French Filière Approach: Comparison and Critique, *Economy and Society*, 29 (3): 390-417.

Randolph, T.F., E. Schelling, D. Grace, C. F. Nicholson, J. L. Leroy, D. C. Cole, M. W. Demment, A. Omere, J. Zinsstag and M. Ruel (2000) “Role of livestock in human nutrition and health for poverty reduction in developing countries” *Journal of Animal Science* 85: 2788-2800

Roduner, D. (2004) Value chain report: Analysis of existing theories, methodologies, and discussions of value chain approaches within the development cooperation sector. Unpublished paper prepared for the Swiss Agency for Development and Cooperation, found at Internet address [http://www.sdc-valuechains.ch/resources/resource\\_en\\_32.pdf](http://www.sdc-valuechains.ch/resources/resource_en_32.pdf), retrieved 9 February 2007.

**Rich (2009) on compliance**

Source: SADC-PRINT Public-Private Partnership Workshop Proceedings, 2-3 Nov. 2006.

Taylor et al. (2008)

UNCTAD (2000). *Strategies for Diversification and Adding Value to Food Exports: A Value Chain Perspective*. UNCTAD/DITC/COM/TM/1.14 November 2000. Geneva, United Nations Conference on Trade and Development.

van Roekel, J., Kopicki, R., Broekmans, C.J.E. and Boselie, D.M. (2000) Building agri supply chains: Issues and guidelines. In: *A Guide to Developing Agricultural Markets and Agro-enterprises.*, D. Giovannucci (ed.), (Washington D.C.: The World Bank).

**Wanyoike, F. and K. Rich (2007) on VC mapping (Northeast Kenya)**

APPENDIX A