

**PART 3**

**VALUE CHAIN  
ANALYSIS TOOLS  
- QUALITATIVE  
TOOLS**

**PART 4 - VALUE CHAIN  
ANALYSIS TOOLS  
- QUANTITATIVE  
TOOLS**

**PART 1 CONCEPTS**

**PART 2 - VALUE CHAIN  
ANALYSIS TOOLS -  
GENERAL TOOLS**



## PART 3 - VALUE CHAIN ANALYSIS TOOLS

### QUALITATIVE TOOLS

## Tool 3 - Governance: Coordination, Regulation, and Control

### Contents

---

1. Introduction.....	47
2. Objectives.....	48
3. Key Questions .....	48
4. Steps .....	49
Step 1 Map actors .....	49
Step 2 Determine the demand and supply conditions of the value chain .....	49
Step 3 Determine the dominant coordination arrangement(s) in the value chain .....	51
Step 4 Analyse how target populations participate in the value chain .....	52
Step 5 Identify rules and regulations .....	53
Step 6 Analyse impact of rules on value chain participants (including enforcement, rewards, and sanctions) .....	58
Step 7 Analyse target sector knowledge and awareness of rules, norms and standards, and identify key gaps.....	58
Step 8 Analyse how information and services are provided internally through the value chain and externally .....	59
5. What Should be Known after Analysis is Complete .....	60



# Tool 3 - Governance: Coordination, Regulation, and Control

## 1. Introduction

The analysis of governance aims to investigate the rules operating in a value chain, and the system of coordination, regulation and control in which value is generated along a chain.

Governance refers to both the “official” rules that address output, and the commercial imperatives of competition that influence how production is structured. Governance implies that interactions between actors in the value chain are frequently organised in a system that allows competitive firms to meet specific requirements in terms of products, processes, and logistics in serving their markets. As such, it recognises that power is not evenly distributed, and access to market opportunities for the poor requires understanding of how production systems are organised to meet these competitive requirements.

Because “governance” looks and sounds like “government”, the term is often interpreted narrowly to include only the legal and regulatory requirements that influence business operation and market access in a value chain. In actual fact, the instruments of governance range from contracts between value chain participants to government regulatory frameworks to unwritten “norms” that determine who can participate in a market.

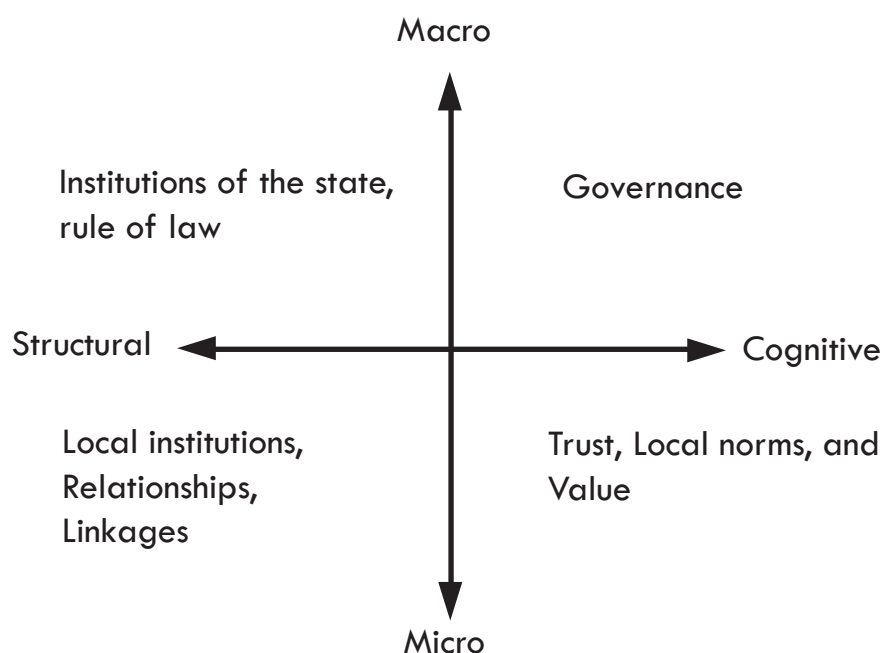
Requirements may be “official” or “unofficial” and may originate within or outside of the value chain. These may be as simple as the requirement imposed by wholesalers that agricultural products be correctly harvested to prevent damage and degradation. Conversely, they may be as complex as a foreign government’s enforcement of international standards regarding permissible levels of pesticide residues on imported products. Another example is the procedures imposed by a multinational firm as a condition of participation by a subcontractor in its global supply chain. There is a host of possible influences of governance in between these extreme examples, and value chain analysts should work to clearly understand what factors influence the organisation of production and the position of poor farmers and other producers in these arrangements.

Regardless of the level at which rules originate, poor value chain participants can find opportunities for upgrading and participation in higher-value markets where they have the resources to learn about requirements of participation in markets. Value chain actors may have limited access to services and other forms of support required for meeting value chain standards; insufficient support can hamper their possibility to actively participate in higher-value segments of the chain. Access to information about commercial requirements, standards and compliance-related services that may be delivered through government, semi-public initiatives, or through the private systems of value chain coordination, are key concerns in analysing upgrading opportunities for poor producers.

The analysis of value chain governance and services is best approached by separating three dimensions: Coordination Structures, Rules and Regulations, and Control Mechanisms (Transmission of Information and Services).

Governance is one dimension of social capital, as illustrated in the Figure 10 below.

Figure 10: Dimensions of social capital related to value chains



Source: (Grootaert and Bastelaer 2002)

## 2. Objectives

The main objectives of governance analysis are to:

- Understand how the value chain is coordinated, including key firms (actors) and mechanisms (i.e. contracts, agreements, services), and why this coordination structure has arisen and evolved
- Map the formal and informal rules, regulations, and standards that influence the value chain, how compliance to the rule is monitored, and what sanctions and incentives are used to ensure compliance
- Assess the impact of the rules on different sets of actors, particularly on disadvantaged groups
- Assess how different groups of value chain participants receive (or lack access to) adequate forms of support that can help them achieve the required standards

## 3. Key Questions

- What system of coordination is in place to meet commercial objectives related to quality, quantity, and consistency and/or to ensure compliance with standards? Which are the “lead” or “coordinating” firms in this system? Is coordination mostly based on formalised arrangements (contracts, for example), or is coordination informal?
- What are the rules and standards, both official and commercial, that actors involved in the value chain must comply with in order to participate? Where do they originate? How are they enforced?
- What are the effects of each rule on the participation (economic activities) of the poor, particularly relating to the actors that enforce these rules and the systems in place to coordinate production?

- How is information about applicable rules, standards and services to support 'compliance' transmitted through the value chain, particularly through the lead firm or its coordination system?
- Does the inability of poor producers to comply with these rules, either due to lack of information or capacity, limit participation in higher-value activities, or prevent upgrading of the value chain as a whole?

## 4. Steps

It is difficult to capture all of the governance and services issues in a fixed-format questionnaire. Most of the data needed for analysing governance is of qualitative and unquantifiable nature. For this reason, it is recommended to use open-format and intensive interviews with value chain participants and key informants; this is particularly true when approaching an unfamiliar value chain.

### Step 1 Map actors

Generate a list of all the actors (within and outside the value chain) that are potentially able to influence the governance structure. Use the mapping tool to identify all the relevant actors within the value chain. Identify other external organisations and institutions through interviews with key actors in the chain. To build a more complete list, both desk research and qualitative interviews with key actors in the chain are advised. Actors from lower levels of the chain may not have knowledge of wider rules, so interviews should primarily be held with major players, particularly with final links that interact directly with international markets.

Once the list is complete, it can be ungrouped for each level of the value chain based on different categories including wealth (poor, average, better off); business type and scale (micro, small, medium, large); ethnicity; and gender. Particularly when pro-poor analysis is involved, separating actors according to wealth and scale is very important. The categories can prove useful to analyse the impact of the governance structure on different groups, assess the level of information asymmetries along the chain etc. List all actors in a table and arrange them on a chart.

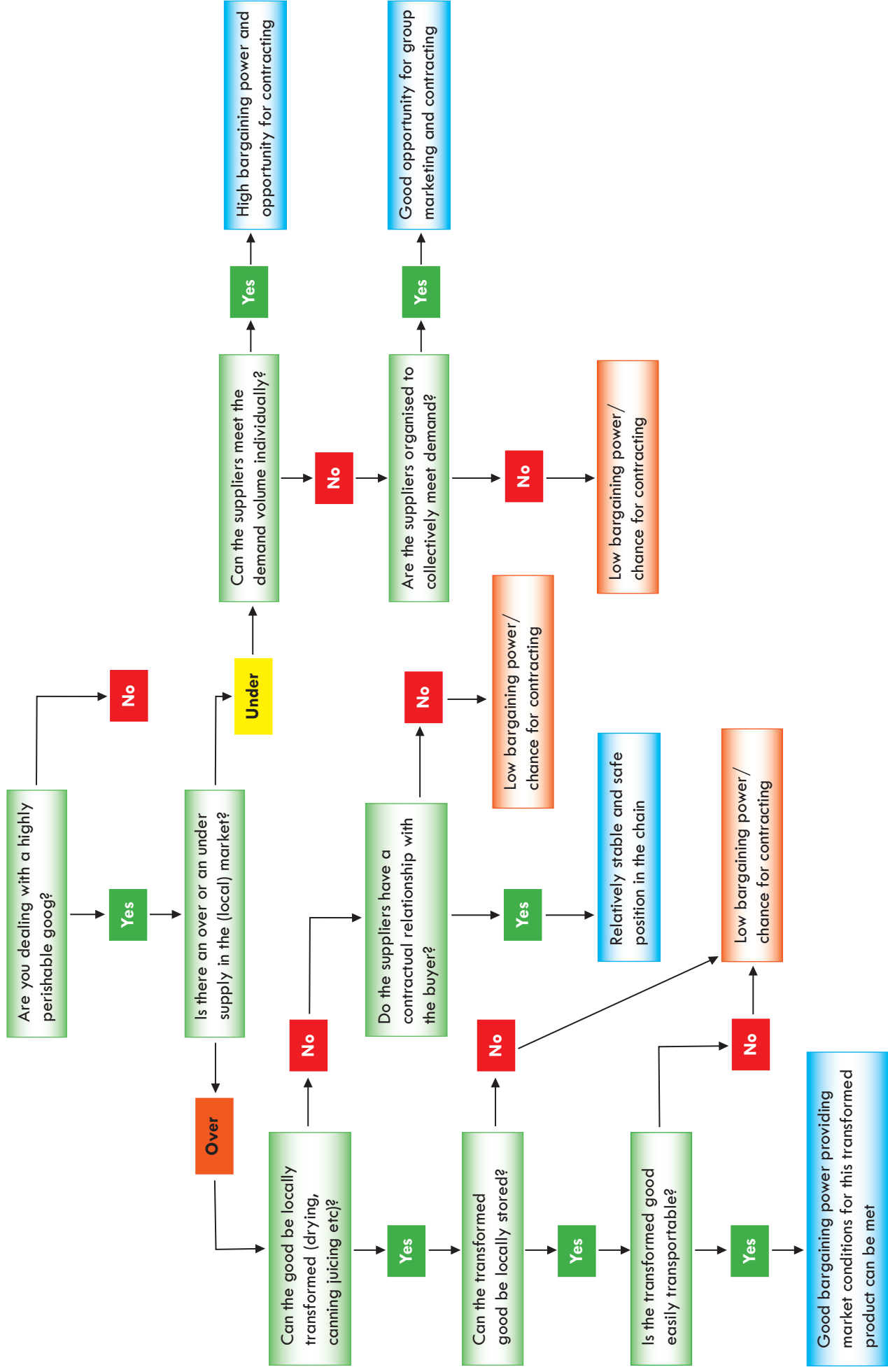
### Step 2 Determine the demand and supply conditions of the value chain

Demand and supply conditions, which may vary over years and seasons, and also vary greatly between markets, influence the governance of the chain and the power of different actors. It is important to map out the demand and supply conditions throughout the year to get a good overview of how governance evolves over time.

For example, in Svay Rieng province in Cambodia vegetable collectors are employed elsewhere, and therefore not available, in the off-season (Ypma 2005). This makes it more difficult for remote off-season farmers to market their product. In cassava production systems in Vietnam the dominance of actors is determined by the season (ADB 2005). In the peak harvest season, with oversupply of fresh roots and only one market channel active, the main starch processors set and enforce regulations and pricing of starch content. However in off-seasons, with both fresh root and dried chip market channels active, it is the collectors who determine which channels will be supplied.

3

Figure 11: Example of bargaining power, chances for contracting systems and chain governance for perishable goods



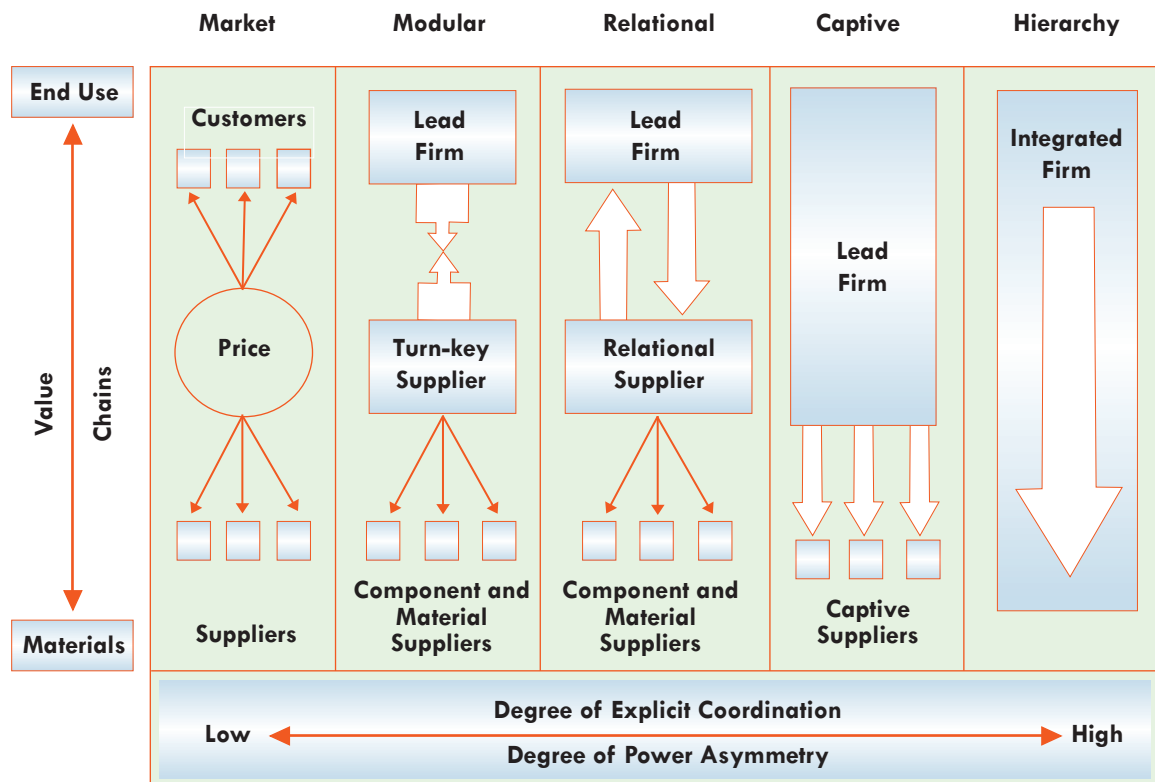
Source: (SNV 2008)

### Step 3 Determine the dominant coordination arrangement(s) in the value chain

As a system of production, every value chain has a system of coordination which includes formal and informal arrangements between participants. Coordination structures are constantly evolving to allow firms to fulfil the competitive requirements of intermediate and final markets, to ensure compliance with official or unofficial rules and standards, and to make better use of capital investments. These coordination structures may range from very loosely-coordinated, market-based trading structures, to intensely coordinated, vertically integrated, production. These are illustrated in the two graphics below.

**Figure 12: Global value chain classification.**

The different types of global value chains are ranked according to the degree of power asymmetry and explicit coordination.

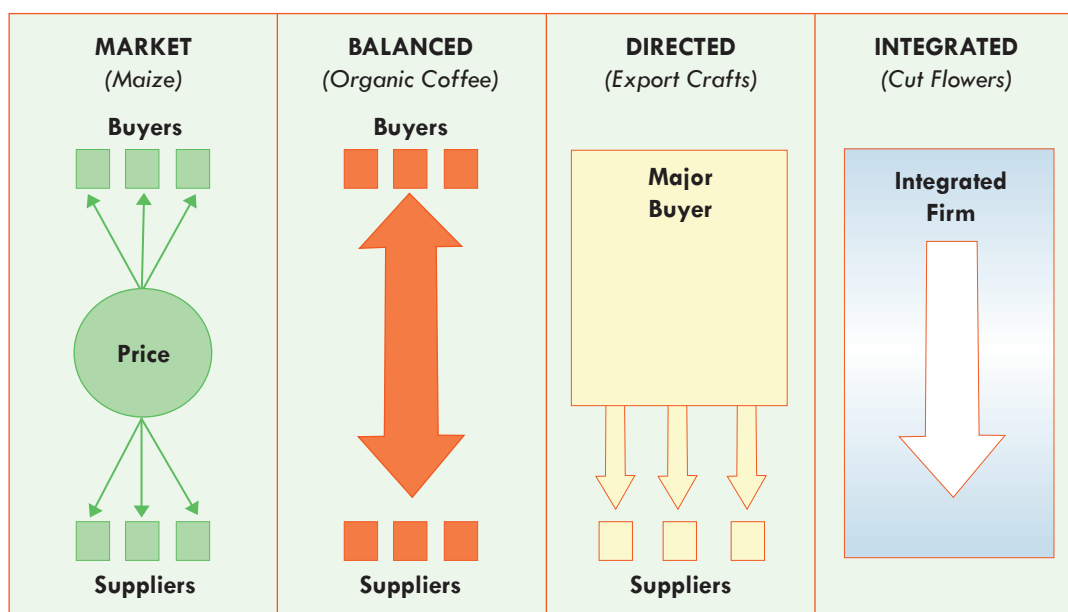


Source: (Gereffi, Humphrey et al. 2003)



**Figure 13: Value chain classification applied to pro-poor markets.**

The different types of value chains are classified according to the level of integration and coordination in the respective markets.



Source: (SNV 2008)

The companies most directly accountable for the configuration of production systems, and for enforcement of rules throughout the value chain as a condition of selling their products in intermediate or final markets, are referred to as “lead firms”. In general, more restrictive or complex rules determining access to customers generate more sophisticated systems of vertical coordination by lead firms, even within a single industry. More stringent rules and requirements stimulate lead firms to exert more direct control over production and transportation of goods, since they are ultimately accountable to governments and consumers for the compliance of their goods with official or unofficial requirements. Their choices (and the choices of their agents) about which producers can participate in their supply systems have enormous, direct impact on the participation of the poor in value chains.

There may be more than one system of coordination operating in a single value chain in any given area, for example, where independent and contracted producers exist side-by-side; see Example 2: Three Coordination Systems in the Zambia Cotton Value Chain.

#### Step 4 Analyse how target populations participate in the value chain

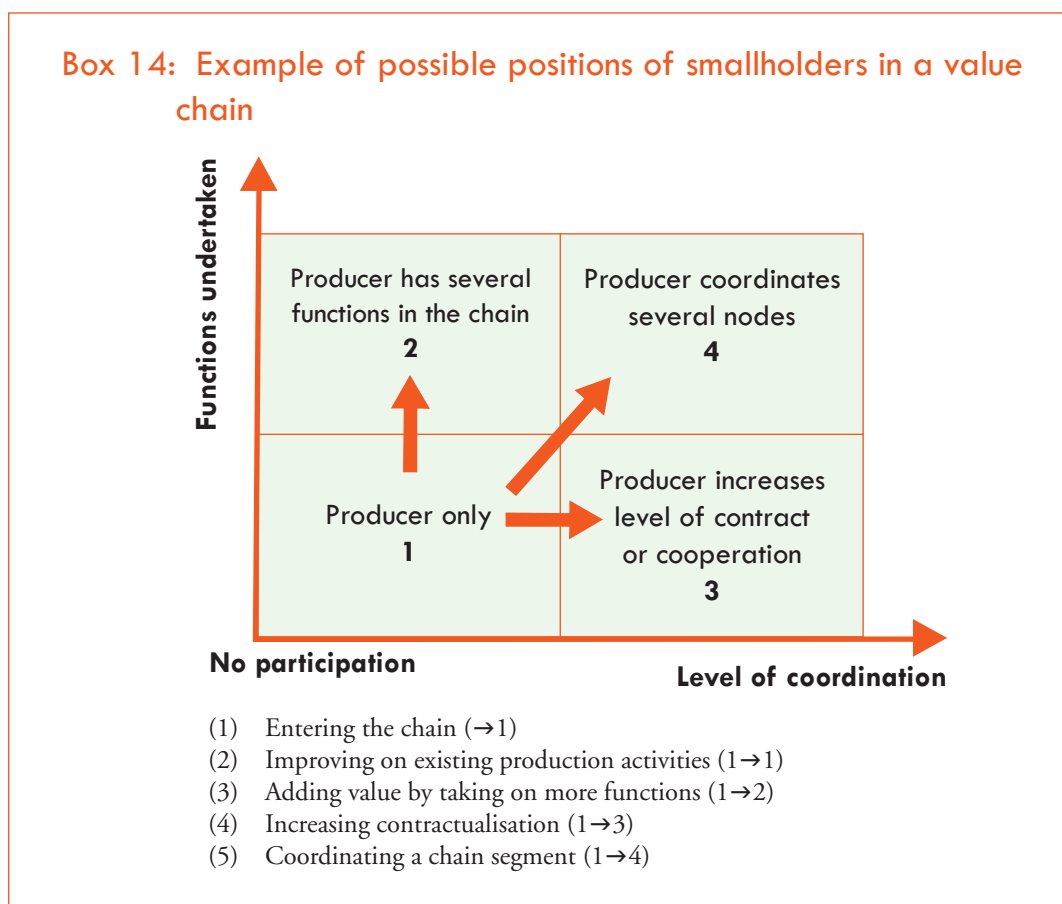
The conditions under which producers participate in a value chain can be understood and mapped using a number of dimensions, though two are particularly useful:

1. Functions undertaken in the value chain: Inquire as to the range of activities that poor participants undertake in a given value chain

2. **Formal Coordination:** This includes formality of contracts under which participants operate in the coordination system, including contracted input provision, marketing, certification, contract farming or outgrowing, or final product sales to buyers. It also may include producer-driven formalisation of collective activities (associations, groups, or other vehicles of collective action) to reduce costs, increase revenues or reduce individual risks.

Understanding target populations' functional range and formality of participation can be useful in understanding opportunities for upgrading.

The accompanying figure shows the possible positions of small producers within a chain, with the functions undertaken placed along the vertical axis and the type and level of contractualisation and coordination with other chain actors or among themselves on the horizontal axis.



## Step 5 Identify rules and regulations

There are generally rules, regulations, and standards that value chain actors must abide by in order to participate in the chain. Rules and regulations can be either **formal** (with official legislative backing) or **informal** (determined by commercial norms). Voluntary standards that provide products with specific designations, such as organic or **fair trade** exist somewhere in-between. At the same time, rules can be set by actors within and outside the value chain. In the past, rules were largely concerned with meeting basic cost parameters and guaranteeing supply; they usually involved agreement between buyers and suppliers

within the chain. At present, developing country agricultural producers face significant barriers to accessing developed markets due to well-developed product standards. These standards motivate development of new production systems and organisational forms.

Conversely, the dominant rules in local markets, particularly where official standards are weak or poorly enforced, tend to be commercial standards related to product quality, grading, and business practices. In these very loosely coordinated systems, wholesalers or traders may serve as de facto lead firms, enforcing rules upon producers through differential pricing and providing limited information or assistance with compliance. Monopolistic local trading structures may also disadvantage producers. Rules may not be communicated or may vary between localities within a national market. Poor producers also may not understand rules related to product quality or other commercial requirements and therefore may engage in antagonistic relations with buyers, which can aggravate other value chain dysfunctions.

In general, the standards faced by producers participating in export markets are vastly more complex than those governing local and national markets. While official and commercial standards usually apply in both cases, the need to comply with multiple and overlapping international standards related to production conditions constitute an important barrier to entry for poor value chain actors who wish to participate in export-oriented value chains. Nonetheless, better understanding of, and compliance with, local commercial rules is generally a pre-condition for value chain upgrading. It might also be considered a stepping-stone to export strategies, since producers are unlikely to be able to comply with complicated standards if they are unable to understand, accept, and comply with the basic requirements of local markets.

### Box 15: Example of power imbalance - The shrimp export industry in Bangladesh

In 1997, the fourth leading export item in Bangladesh was frozen shrimp and fish, with a 7.3% share of the total export market. The major importers were the European Union (EU; 34–50% of Bangladesh's exports), the United States (23–38%), and Japan (15–26%), depending on the year. At that time, the value per kg of Bangladesh's frozen shrimp was lower than average for the Asian region. Bangladesh had a reputation for producing seafood that did not always meet minimum international standards as specified by the Codex Alimentarius Commission. With a low percentage of the world market, a lower-valued product, and a negative reputation in quality, Bangladesh was a price-taker rather than a price-setter.

#### THE EU BAN

On July 30, 1997, the EU banned imports of fishery products from Bangladesh, as a result of inspections of Bangladesh's seafood processing plants. Inspections found serious deficiencies in the infrastructure and hygiene in processing establishments and insufficient guarantees of quality control by Bangladeshi government inspectors. The ban was estimated to cost the Bangladesh shrimp-processing sector nearly USD 15 million in lost revenues from August to December 1997. The impact on both the industry and the economy of Bangladesh was substantial. The only way Bangladesh could strengthen its export position in the shrimp market was to improve the safety and quality of its exports. Over the last decade, with a major effort in the late 1990s,

safety improvements have been made by the industry and government, with the technical assistance of bilateral and multilateral agencies. While the short-term loss in foreign currency from the EU ban was high for a developing country, the ban did increase the commitment by industry and government to raise product quality to meet international standards. Both exporters and government made major investments in plant infrastructure and personnel training in order to achieve international technical and sanitary standards. This included new employee acquisition and training, sanitation audits, plant repair and modification, new equipment, new laboratories and other costs.

### INVESTING IN SAFETY

Some upgrades were in progress at the time of the EU ban. By 1997, the Bangladesh shrimp processing industry had invested USD 17.6 million in plant upgrades, the government had invested USD 382,000 in laboratory and personnel upgrades, and outside partners had invested USD 72,000 in training programs in Bangladesh. Unfortunately, these improvements were not enough to prevent the ban. The total fixed investment cost of USD 18 million was only slightly higher than the nearly USD 15 million in lost revenue from the ban over a period of five months. These improvements would have almost been paid for, had they been implemented in time to make the ban unnecessary. Research has also determined that the annual recurring costs to maintain HACCP (Hazard Analysis and Critical Control Point) programs and meet international standards would be USD 2.2 million for industry and USD 225,000 for government. Subsequent inspections by the EU determined that some plant improvements met EU standards. Subject to certain provisions, the EU ban was lifted for six approved establishments for products prepared and processed after December 31, 1997. By July 1998, a total of 11 plants had been approved for export to the EU. Collective efforts by the industry, the Bangladesh Department of Fisheries, and the Bangladesh Frozen Food Exporters Association have continued to strengthen the export-processing sector. By 2002, of the 65 plants licensed for export by the government, 48 plants had EU approval.

*Source: (Cato and Subasinge 2003)*

3

Step 5 is mainly concerned with generating a clear understanding of the rules that influence actors in the value chain; identifying the actors that set the rules; understanding the reasons behind the rules; assessing how the rules affect different categories of actors within the value chain; understanding how much different actors know about the rules; and assessing the rate of change of the rules.

**Table 9: Types of rules and standards affecting value chains**

Type	Example	Enforcement and Sanction
Official "legal" standards	Prohibition of pesticide residues on imported vegetable products	Ban of non-compliant products from destination market
Voluntary Standards	Production requirements for organic certification and labelling	Ineligibility for certification or value-added labelling
Commercial Requirements or Norms ("Rules of Trade")	Tangible product requirement such as volume, size, colour, composition, or freshness, which may be codified or not	Spot rejection of product by buyer at delivery or collection, or reduced price acquired by seller (downgrading)

Identifying rules and regulation should begin by interviewing key actors in the chain (e.g. lead or coordinating firms, major processors, exporters), as they should be more aware of these issues. In locally-focused value chains, wholesalers or other key intermediaries may be the most important sources of information on de facto standards and rules, as informal commercial norms are more common in these situations.

After the initial interviews, other actors can be interviewed following backward linkages in the chain. Initial information could be gathered using semi-structured interviews. During the first round of semi-structured interviews with key actors, a questionnaire could be developed based on the following guidelines. Different sections can be chosen depending on the desired focus of the research:

- Ask the informant to list all the rules and regulations (formal and informal) that they must follow in order to operate in their market segment, and the consequences of failing to comply. Ask the informant to clearly explain how the rules are translated in detailed sets of instructions related to cost, quality, processes, delivery times etc. Also, take note of additional sources of information you might later consult if you need to know more about the requirements of each regulation (e.g. websites, statutes, legal documents).
- Ask the informant to list all the rules and regulations that they require their suppliers to follow. Ask them to list all the actors (or categories of actors) with whom they directly stipulate arrangements (contracts, informal agreements) according to each rule. Ask them to explain how the rules are communicated in the form of instructions on, for example quality specifications, costs, delivery time, inputs, equipment and processes to be used for production.
- For each rule or regulation (both upstream and downstream), ask the informant to explain the main advantages and disadvantages of compliance. Examples of advantages might be: expanded market access; possibility to implement a reliable quality management system; efficient production plans. Disadvantages might include: high costs and decreased profit margins; demanding requirements in terms of processes, technology, scale; difficulties in finding local suppliers or skilled workers that can match the requirements.
- For each rule or regulation, ask the informant to explain why it is necessary, and how it helps maximise the efficiency and the level of coordination within the value chain.
- For each rule or regulation, ask the informant to explain how the rules have been set, who set them, and when the rule was set. Also, try to understand if there have been major changes in the rules over time, and how the changes have affected business.
- For poor participants in the value chain, pay particular attention to whether they understand the rules, particularly when formalised. For example, if there is a written contract, can the poor understand the terms?

Following interviews, there should be enough information to generate a matrix of key regulations, voluntary standards, and commercial rules that impact each value chain segment, and the enforcement and sanctions associated with each rule for value chain participants.

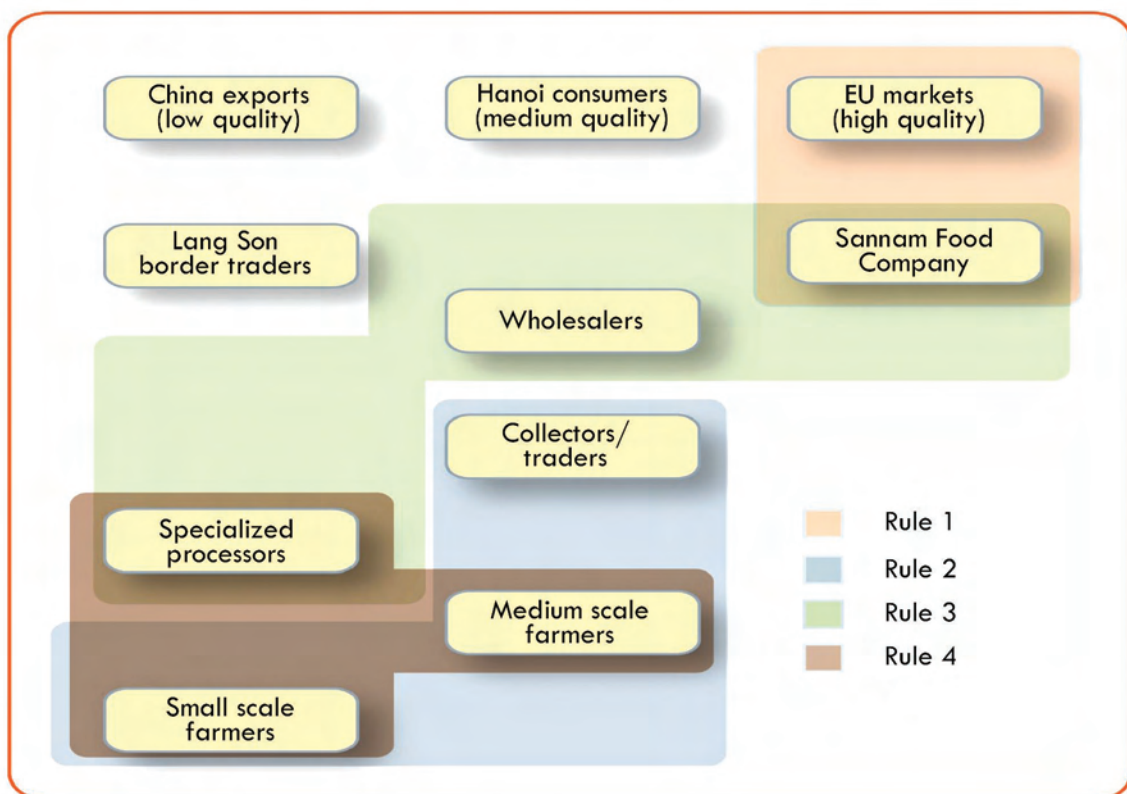
A matrix can be used to summarise the findings, and also offers a tool for structuring some sections of the questionnaire, which can supplement the qualitative analysis during the next rounds of interviews.

**Table 10: Example of matrix for actors and regulations.**

A matrix such as this provides an overview of the governance of the value chain; the green boxes indicate that the compliance with the rule is required by the relevant authority or actor.

	Rule 1	Rule 2	Rule 3	Rule 4	Rule 5	Rule 6	.....
European Union							
Government							
Industry Association							
Exporters							
Assemblers							
Buying agents							
Pre-processors							
Local traders							
Producers							
.....							

**Figure 14: A graphic example of the different levels in the value chain that individual rules might apply to**



Source: Adapted from information in (ITTPC and SNV 2006)

**Try this idea: Comparing results across different categories of actors**

Important information can emerge from the comparison of tables, maps and indicators grouped for different categories of actors (e.g. poor farmers, small-scale processors).

For example, try to compare the rules map that emerges from each group of actors, as these will give you an idea of how different groups perceive the overall structure of the value chain. It is likely that strong information asymmetries will emerge from the comparison.

## Step 6 Analyse the impact of rules on value chain participants (including enforcement, rewards, and sanctions).

---

Step 6 is mainly concerned with the following issues: identification of who monitors compliance to the rules; identification of the system of sanctions available to punish defectors, and the system of incentives used to promote the application of the rules; and assessment of the effectiveness of the sanction / incentives system.

Enforcement includes the methods and tools used to check compliance with the rules, and the system of sanctions used to promote observance of the rules. Without effective enforcement, rules may be set - but not kept. The first aspect of enforcement is monitoring at different stages of the chain and the second aspect is the sanctioning system; it can include both sanctions (aimed at punishing defectors) and incentives or rewards (to encourage observance of the rules). Though government regulatory capacity may be important to enforcement, it is not exclusively, or even principally, a government function. Depending on the coordination structure, lead firms may have significant enforcement power, for example, to exclude non-performing producers from chains by revoking contracts or reducing prices.

It helps to produce a list of the actors involved in the enforcement system. Two separate sets of matrices can be generated, one of monitoring actors / monitoring tools, another of sanctioning actors / sanctioning tools. In the case of enforcement, it is particularly important to collect data regarding the frequency of inspections received by each actor from the different monitoring agents. Also, it is important to record the frequency with which each actor has been subject to specific forms of sanctions. It can also be important to compare maps and tables across different categories of actors (poor / non-poor).

## Step 7 Analyse target sector knowledge and awareness of rules, norms and standards, and identify key gaps.

---

While producers and other poorer value chain participants may be subject to numerous sets of rules and standards, they may not understand the rules or be empowered to respond.

On the other hand, rules, quality standards, and norms may not be written down or may vary within and across market areas. These may also change in response to market offerings.

It is important to assess the level of transparency in monitoring and enforcing the rules. For example: are quality requirements clearly set in contracts, and translated in an explicit set of parameters that cannot be subject to discretionary interpretations? Are independent parties involved in the monitoring process, or is it totally managed by powerful actors? Discretionary quality controls coupled with power asymmetries can result in a monitoring system that disadvantages the poor. Furthermore, discretionary rules can result in corruption.

### Take Note



In the Farmer Marketing School (FMS) approach used by the CIDA funded Cambodia Agricultural Market Information Project (CAMIP), value chain actors (producers and traders) formalise the local grading standards by discussing the objectively verifiable criteria of quality and subsequently the parameters per grade for each criterion. The objective is to come to a commonly agreed upon standard for grading.

**Table 11: Example of farmer marketing school grading table (yard long bean in Kampot, Cambodia)**

Criterion	Grade 1	Grade 2	Grade 3
Length	> 45 cm	> 30 cm < 45 cm	< 30 cm
Colour	Dark green	Dark green	Any colour
Blemishes	No blemishes	< 5 spots/bean	> 5 spots/bean

## Step 8 Analyse how information and services are provided internally through the value chain and externally.

# 3

Services define the ways in which actors within and outside the chain provide assistance to other value chain participants, to help them meeting the requirements of rules and regulations. Services can be provided by actors within the chain, as in the case of leading buyers (or their buying agents) that directly help their suppliers achieve quality standards. Alternatively, services can be provided by actors outside the chain.

The main focus of service analysis is to understand by whom (and through which means) value chain participants are supported in achieving competency as suppliers within the coordination system and compliance with rules and standards that are in place. This analysis also can help assess whether the level of support is adequate to the requirements of value chain upgrading.

The main questions to be addressed are the following: who provides assistance to value chain participants; which forms of assistance are available for different categories of value chain actors; what is the degree of satisfaction of different categories of actors with the services and assistance provided; and which linkages or services should be improved?

It is important to assess the level of services and support the poor receive from other actors within the value chain (for example, lead or coordinating firms, contract farmers, key wholesalers or other buyers) and from external organisations.



Particular attention should be given to understanding the ways in which actors within or outside the value chain are providing assistance to less advantaged participants in understanding and complying with commercial and regulatory requirements.

**Table 1 2: External actors assisting firms to meet value chain rules**

	Change agents	Sources of data
External to the chain	<ul style="list-style-type: none"> <li>■ Consulting firms</li> <li>■ Learning networks</li> <li>■ Government agents</li> </ul>	<ul style="list-style-type: none"> <li>■ Interviews with consultants;</li> <li>■ CEO or production control in firms;</li> <li>■ Business Associations CEO or production control in firms;</li> <li>■ Interviews with government officers (local and national) responsible for industrial policy</li> </ul>
Internal to the chain	<ul style="list-style-type: none"> <li>■ Rule-setting firm</li> <li>■ Buying agent of rule setting firm</li> <li>■ First-tier suppliers, or other leading suppliers to rule-setting firm</li> </ul>	<ul style="list-style-type: none"> <li>■ Supply chain management or purchasing function in purchasing firms; CEO or production control in supplying firms Interviews with agent and CEO of recipient firms; supply chain management operations</li> </ul>

Source: (Kaplinsky and Morris 2001)

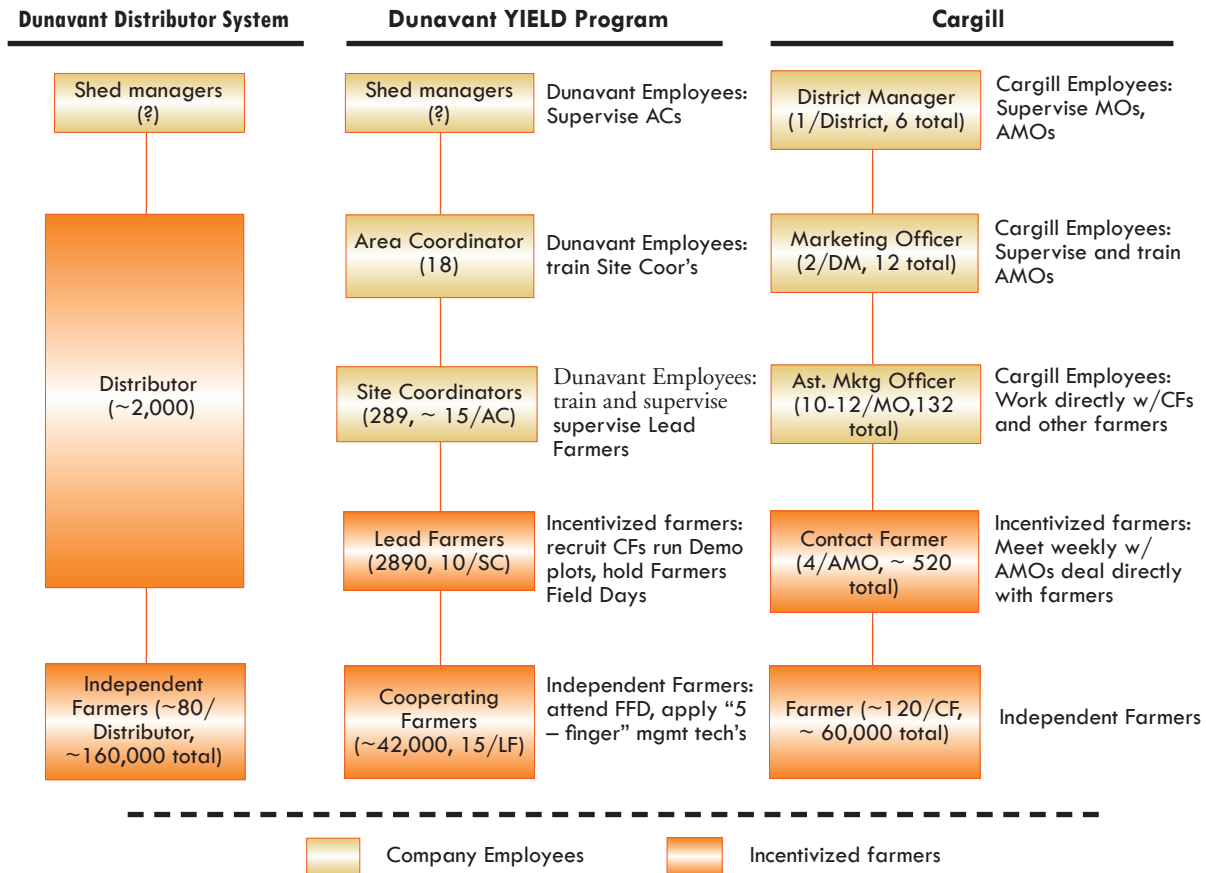
## 5. What Should be Known after Analysis is Complete

After having followed all the steps, the key questions outlined below should be able to be answered:

- What are the value chain’s coordination structures?
- What is the role of lead firms in coordination?
- Where do targeted populations fit into the value chain in its various coordination structures?
- What are the formal and informal rules that regulate the actions of value chain participants?
- How are rules monitored and enforced? Which are the sanctions and incentives used to make the rules effective?
- Do disadvantaged value chain actors have access to information about the formal and informal rules that shape their participation in the chains?
- What services are delivered to producers through the coordination structure?
- Are there effective systems to support participants in meeting the rules and requirements of the value chain?

## Useful Examples

### Example 2: Three value chain coordination systems in the Zambian cotton value chain



Source: (ABD 2005)

#### Box 16: Coordination structures in the cotton value chain in Zambia - the Distributor Model

Dunavant employs four Operations Managers, based in each of the Provinces in which Dunavant operates. They manage the production, loan systems and credit recoveries in their respective areas. They interact with the Distributors (village-based agents who work on a commission basis) through their field staff and are responsible for all production activities within their region.

The Operations Managers are assisted by eight Area Managers to oversee the activities of the Shed Area Managers and distributors in their area. The Area Managers ensure that company protocol is followed and activities are undertaken correctly. Their role is to manage and monitor the Distributor system, oversee field activities and to report back to the company through the Operations Managers.

Dunavant employs 65 Shed Area Managers, and (in 2004/2005) contracted some 2,400 Distributors. Their respective role and responsibilities are:

#### **Shed Area Managers**

- Manage and monitor the distributors, including distributor record keeping;
- Coordinate and facilitate between the company and the distributors;
- Receive inputs from the company and disburse these to the distributors;
- Assist with technical support and advice to the distributors;
- Disseminate information from the company to the distributors;
- Monitor product deliveries; and
- Oversee loan recovery.

#### **Distributors**

- Collect and pay the company a fee of ZMK 1,500 per bag of cotton planting seed, which should be collected from all farmers to whom inputs are being distributed;
- Submit stock reports in line with Dunavant requirements;
- Keep detailed accounts for inspection;
- Obtain credit from the company for inputs;
- Store inputs prior to disbursement, usually in small self-built sheds or homes;
- Mobilise the farmers for planting based on history, membership and loan recovery performance;
- Distribute the loan in the form of inputs; seed, chemicals, sprayers and for some designated trial farmers, fertiliser;
- Report any problems that may occur that s/he cannot advise upon;
- Coordinate harvesting schedules;
- Coordinate the delivery of the produce to village grading and storage sheds;
- If the Distributor also acts as a Buyer (for which he has to be numerically literate), he is also responsible for:
  - Weighing the produce
  - Grading the produce;
  - Recording produce weight and grade against the smallholder farmers name and ID number from his/her national registration card; and formatting
  - Coordinating trans-shipment with Dunavant to regional storage depots.

Whereas initially Distributors were also responsible for providing extension services, training and technical support to the farmers, this is now the responsibility of the extension staff employed under the Dunavant Yield Programme.

*Source: (ABD 2005)*

## Tool 4 - Relationships, Linkages and Trust

### Contents

---

1. Introduction.....	65
2. Objectives .....	66
3. Key Questions.....	66
4. Steps .....	66
Step 1 Map respondents and create categories .....	66
Step 2 Identify dimensions .....	67
Step 3 Survey actors.....	67
Step 4 Analyse the results of the survey.....	67
Step 5 Identification of power distribution .....	69
Step 6 Analyse trust.....	71
5. What Should be Known after Analysis is Complete .....	72



# Tool 4 - Relationships, Linkages and Trust

## 1. Introduction

Trust and linkages are inextricably intertwined within a value chain. Organisations without linkages have little reason to “trust” each other, even if they do not “distrust” the other party. Conversely, trust might not be important if enforcement mechanisms exist to ensure compliance with a given set of rules governing their relationship (for example, contracts and other legal regulations). However, in the absence of an effective mechanism of enforcement, linkages without trust are invariably weak.

### Terminology



for the purpose of this tool

1. Relationship is defined as a social connection between two parties
2. Linkages are defined as a business relationship between two parties of the value chain/network
3. Trust is social capital formed between two parties enabling a more efficient linkage through the reduction of transaction costs.

Whereas relationships, defined as a social connection between two parties may play a role in certain value chains, e.g. a family business with different individual family members or family groups each having specific tasks or specialisations within the value chain (usually with a high level of trust), linkages are the more common norm in most value chains (with varying degrees of trust between actors). From here onwards this tool will therefore focus on linkages and trust.

Analysis of linkages involves not only identifying which organisations and actors are linked with one another, but also identifying the reasons for those linkages and whether the linkages are beneficial or not. Actors in the value chain link with one another because they purportedly obtain benefit from those linkages. An identification of the benefits (or lack of them) goes a long way to identifying the constraints in increasing linkages and trust amongst value chain participants.

Linkages within a value chain are mostly business linkages, and could be formal but are often informal. The informal linkage refers to the domain of social capital (see also Figure 10 in Tool 3), in which trust can play a central role. Many studies have shown that in a dynamic traditional community the degree of social capital in business activities is high with numerous linkages based on trust.

The linkages in value chain can be classified into vertical linkages and horizontal linkages. The vertical linkages are the relationship between actors along the chain. Examples of interactions of farmers with other actors in the chain can take diverse forms:

- Sales contract directly with state agro-processing enterprises
- Production contract with foreign companies

- Sale to private merchants by oral engagement
- Sale through service co-operatives
- Handicraft and industrial villages cluster

Horizontal linkages on the other hand are linkages between actors at the same level of the value chain, e.g. farmers working together with other farmers, or companies in the same sector liaising with each other on a regular basis. For example, in the cotton industry in Zambia horizontal linkages exist between the different ginning companies operating in the country, while each of these companies have their vertically integrated production and supply value chains.

Strengthening the linkages between the different actors in the marketing system will lay the groundwork for improvements to other constraints; establishment of a contract regime, improvements in post-harvest and transportation systems, improvements in quality, and the effective use of market information.

## 2. Objectives

1. To identify linkages geographically and socially
2. To describe the linkages between different actors in the value chain and their linkages with other actors ancillary to the value chain
3. To describe the linkages between actors by poor and non-poor actors
4. To assess the impact of the linkages on the poor actors in the value chain

## 3. Key Questions

Dimensions of analysis:

1. Do linkages exist?
2. How important are linkages?
3. How many different actors are involved?
4. What is the frequency of contact?
5. What is the level of formality?
6. What are the reasons for having or not having linkages?
7. What are the relative benefits/costs of linkage? What is the level of trust?
8. How long have these linkages existed?
9. How has the formality of the linkages changed or evolved?
10. What is the rate of expansion of linkages over time?

## 4. Steps

### Step 1 Map respondents and create categories

---

When interviewing, separate out into different categories of respondents for both horizontal and vertical linkages in order to analyse later the differences in linkages between the different categories

Possible classification of respondents:

Wealth – poor, average, better-off

Skills	– unskilled, low-skilled, high-skilled
Gender	– male, female
Ethnicity	– different ethnic types
Business type	– micro, small, medium, large
Period	– day labour, temporary labour, permanent labour
Status	– family, hired
Origin	– temporary migrant, permanent migrant, locally hired

## Step 2 Identify dimensions

Identify the horizontal linkages between producers and traders varying from individual to group, association and/or cooperatives. The dimensions of analysis of horizontal linkages could include the following:

- The objective of the group
- The size and scale of the group
- Benefits for individuals to participate in the group, both short- and long-term
- Relationship to the selected value chain
- Formal and informal governance of the group (trust and by-laws)
- Effectiveness of the group on meeting their objectives
- Potential opportunities for the group in the value chain

Identify relevant dimensions of vertical linkages to investigate. Dimensions of analysis could include the following:

- Existence of linkages (Yes/No)
- Number of different actors (number of different people in each organisation grouping)
- Frequency of contact (number of times per year met)
- Level of formality (informal/ verbal agreement / written contract)
- Reason for linkages / Reason for no linkages
- Relative benefits/costs of linkage (benefits>costs / benefits=costs / benefits < costs)
- Level of trust (distrust / no trust / little trust / some trust / full trust)

## Step 3 Survey actors

Conduct survey interviews with relevant value chain actors to identify their linkages with other actors in the chain. For example, interview farmers, traders, processors. First a list of relevant value chain actors is created. Secondly a set of questions on trust are developed and used in a survey instrument; see example in Table 13.

## Step 4 Analyse the results of the survey

The results of the survey can then be analysed in table format or graphically, for example using “Radar Charts” in Excel. Qualitative indicators can be transformed into quantitative indicators by assigning numerical levels – e.g. Levels of Trust (distrust, no trust, little trust, some trust, full trust = -1, 0, 1, 2, 3). Averages can be calculated to aggregate across individual respondents. An example is shown in Figure 15.



Table 13: Extract from a survey questionnaire on value chain linkages in the Bangladesh shrimp industry

Business Linkages with Other Organizations

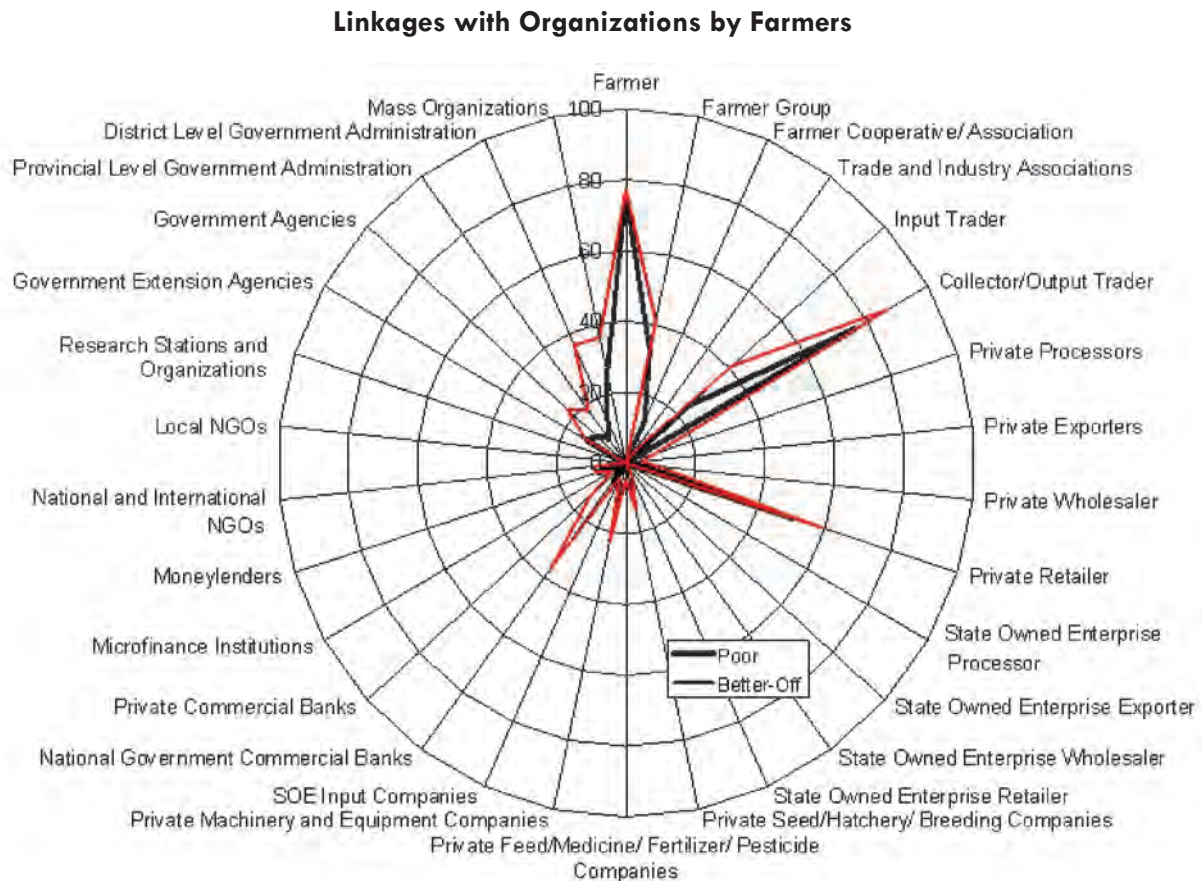
Linkage Organization	Linkage		How Many Different Individuals/Groups/Organizations Did Your Business Meet With During Year										Average Frequency of Meeting (times per year)									
	Yes	No	0	1	2	3	4	5	6-10	11-20	21-50	51-100	101-200	200-500	> 500	≤ 1	2-3	4-6	7-12	> 12		
Farmer																						
Farmer Group																						
Farmer Cooperative/ Association																						
.....																						

Linkage Organization	If Linkage = YES, then Typical Nature of Linkage (From Informal to Formal Written Contract)			If Linkage = YES, then How Much Do You Trust These Individuals/ Groups/Organizations?				
	Informal	Verbal Arrangement	Formal Written Contract	Distrust	No Trust	A Little Trust	Some Trust	Full Trust
Farmer								
Farmer Group								
Farmer Cooperative/ Association								
.....								

Source: (Agrico, ANZDEC et al. 2004)

**Figure 15: Linkages with different organisations by farm family respondents.**

In the diagram the percentage of farmers with linkages to each organization/institution is shown, differentiated between poor and better-off households. The diagram shows that poorer farmers have fewer linkages than better-off households



Source: (UNDP and NERI 2005)

### Step 5 Identification of power distribution

The issue of power is complex and still highly debated in the value chain literature. For the practical purposes of this toolkit, power will be defined as directly related to the level of concentration and access to key assets in the hands of a limited number of actors. Key assets can be both physical resources (e.g. capital, land, credit) and intangible resources (market information, knowledge, personal relationships, reputation). Actors who have exclusive access to key assets and resources are more powerful and have the capacity to influence others in the chain.

There are a number of indicators which can be taken into consideration in order to measure the power of actors operating in the chain; these are presented in Table 14 below. Most of the indicators are indexes of concentration (share) and can be combined together in order to understand the overall control exerted on the key resources by specific actors in the chain.

**Table 14: Identifying the key governors in the chain.**

Different actors in a value chain have different levels of power or influence. The below indicators can be used to identify which actors are key governors.

Indicators	Strengths and weaknesses	Source of data
Share of chain sales	Not a strong indicator as may only be a reseller of bought-in materials and may lack influence	Balance sheets
Share of chain value added	A better indicator for measuring size since it reflects the share of the chain's activities	Firm-level interviews
Share of chain profits	May be a good reflection of chain power, but may also arise from monopoly control over scarce raw materials (e.g. platinum) and may have little influence over downstream processing	Balance sheets, but it is likely that this data will only be available for publicly owned companies
Rate of profit	A poor indicator since minor players in the chain may be relatively profitable but have little influence	Balance sheets, but it is likely that this data will only be available for publicly owned companies
Share of chain buying power	A good indicator of power, particularly if there are asymmetries; i.e. its dependence on its suppliers is less than their dependence on the lead firm	Firm-level interviews
Control over a key technology (e.g. drive- train in autos) and holder of distinctive competence	A good indicator in producer-driven chains (autos, for example), since this defines the distinctive competence of a chain (BMW's image as a quality, refined car) while the smaller firms 'fill in the gaps' in the chain	Firm-level interviews
Holder of chain "market identity" (e.g. brand name)	May be critical in markets where brand image is very important	Firm-level interviews; studies of market share of brands in final markets

Source: (Kaplinsky and Morris 2001)

Indicators have to be selected according to the focus of the analysis and the availability of data. The number of market partners available to each party and the stability of the exchange relationship (captured in the analysis of contracts) can represent, for instance, easy indicators to understand the vulnerability and the dependence of one actor from the other. As is often the case, small producers may only have access to a limited number of stable channels through which to sell their production; therefore their ability to bargain the price can be limited.

Once all the relevant indicators have been chosen, it is possible to calculate a concentration index for each of them. The concentration index can give an idea of how a particular indicator is allocated among the top five or ten actors in the chain. If the second indicator from the table above (the share of the value added in the chain) is used as an example, the following steps can be followed to calculate a concentration index:

1. Rank all the actors in decreasing order according to the indicator. Start from the one that presents the highest share of value added to the chain, to the one that has the lowest share. Put all the actors in a spreadsheet.
2. Define the cutting point for calculating the concentration level: for example, among the top five actors or among the top 5%. This is a sensitive step, as choosing one cutting point instead of another can drastically change the results. It is therefore advised to choose more than one cutting point and compare the results in the subsequent analysis.

3. Divide the total value added by the top actors (as defined in step 2) by the total value added produced by the entire chain. By using this simple methodology, it is possible to understand how key resources or assets are concentrated among actors.
4. Repeat steps 1-3 for all the indicators useful for the analysis and check how often the same actors are among the top actors. For example, the same five actors in a chain can turn to be not only the ones to have the highest percentage of value added and profit, but also the ones who control key technologies and information in the chain.

## Step 6 Analyse trust

Table 15 lists some key features that characterise exchange relationships based on low or high levels of trust.

**Table 15: Differences between chains characterised by low and high levels of trust**

	Low Trust Chain	High Trust Chain
Length of trading relationship	Short term	Long term
Ordering procedure	Open bidding for orders Prices negotiated and agreed before order commissioned	Bidding may not take place Price settled after the contract is awarded
Contractual relationship	Supplier only starts production on receipt of written order	Supplier more flexible about instruction Would start production without written order
Inspection	Inspection on delivery	Little or no inspection
Degree of dependence	Supplier has many customers Customer has multiple procurement sources	Few customers for supplier Single or dual sourcing by customer
Technical assistance	Expertise rarely pooled Assistance given only when paid for	Extensive unilateral or bilateral technology transfer over time
Communication	Infrequent and through formal channels	Frequent and often informal
Price determination	Adversarial, with hiding of information	Non-adversarial
Credit extended	Punitive or no-credit extended	Easy access, longer payback period, easy terms
Outsourcing payment terms	Long delays in paying agents and informal economy producers	Payment on receipt of finished goods

Source: (Kaplinsky and Morris 2001)

The analysis of trust can be based on key questions derived from the above table, such as:

1. How long has the trading relationship lasted?
2. When and how are prices set?
3. Are there control and inspection procedures?
4. Is there a contract or an oral arrangement?
5. Is there a high degree of dependency and high level of information sharing?

An index of trust can be easily built by scoring and weighting all these characteristics.

To save time it sometimes can be useful to directly ask the respondent about their level of trust with regard to a list of other actors in the value chain. The level of trust should be ranked according to a scale (for example: (-1) distrust; (0) no trust; (1) little trust; (2) some trust; (3) complete trust). The data on trust from various value chain actors can then be inserted in a matrix as shown in Table 16.

**Table 16: Example of matrix of trust levels between actors**

	Farmers	Traders	Processors	Moneylenders
Farmers	3	2	1	-1
Traders	3	0	2	0
Processors	1	2	2	2
Moneylenders	2	0	0	2

From Table 16 it is possible to see the level of trust actors have for others in the chain, and to check if trust is reciprocal. If it is true that informal arrangements are the results of trust, it has also to be considered that informality makes it more difficult to understand the terms of the arrangement. Whether or not trust is reciprocal can be particularly important to understanding the position of the poor, as it gives a rough idea of the extent to which an agreement is based on trust or simply the result of dependency (no other alternative partners available). In the example above, farmers have some trust in traders while traders have complete trust in farmers; the exchange is therefore almost reciprocated.

## 5. What Should be Known after Analysis is Complete

After having followed all the steps, the key questions outlined below should be able to be answered:

- Do linkages exist?
- How important are linkages?
- How many different actors are involved?
- What is the frequency of contact?
- What is the level of formality?
- What are the reasons for linkages, reasons for no linkages?
- What are the relative benefits/costs of linkage?
- What is the level of trust?
- How long have these linkages existed?
- How has the formality of the linkages changed or evolved?
- What is the rate of expansion of linkages over time?

## Tool 5 - Analysing Options for Demand-Driven Upgrading: Knowledge, Skills, Technology and Support Services

### Contents

---

1. Introduction.....	75
2. Objectives .....	76
3. Key Questions .....	76
4. Steps .....	77
Step 1 Analyse (mapping and diagnosis) the variation/differences in knowledge, skills and technology in the separate processes in the value chain.....	77
Step 2 Determine and describe standards along the chain (both in terms of market demand and supply).....	79
Step 3 Identify distinct market chains based on applied knowledge, skills and technology and product grade levels achieved.....	82
Step 4 Identify opportunities for upgrading in knowledge, skills and technology for improving market chains.....	83
Step 5 Analyse which options are within reach of the poor (in terms of knowledge level, investment, use etc).....	85
Step 6 Analyse which services should be provided to assist the upgrading and who are the potential available service providers .....	87
5. What Should be Known after Analysis is Complete .....	88



# Tool 5 - Analysing Options for Demand-Driven Upgrading: Knowledge, Skills, Technology and Support Services

## 1. Introduction

With this tool the gap between the quality demanded by the market (as expressed in formal or informal standards and grades), perception of quality by different actors along the chain and the current quality provided to the market by different segments of producers will be analysed. Following the analysis of the gaps, opportunities for upgrading knowledge and skills as well as technology will be identified and potential providers of services to make the necessary upgrading available and possible will be mapped.

Important pro-poor aspects in the analysis of upgrading opportunities will be:

- Who are the local innovators in the community that can serve as showcase to others within the community?
- What are the mechanisms present within the community to share, maintain and collectively develop skills and knowledge? Is the social capital present and are people willing to share it?
- Can the poor do it? Do they have the required knowledge and skills to understand the technology and to implement or operate it?
- Can the poor afford it? Is the investment requirement for the upgrading within reach of the poor?
- Can the poor copy it? When the technology is introduced to a select audience is it easy to copy? For example, do local construction workers have the capacity to build it or are seeds available?
- Can the poor access it? Are the necessary services in place and accessible to the poor?
- Is there enough level of organisation/collective action to disseminate experiences and guarantee quick absorption of upgrading?

### Take Note



The term 'skills and technology' includes all types of skills and technology ranging from so called traditional (indigenous / local) skills and technology (often self-developed by the users based on experiences) to high-tech skills and technology (developed through extensive R&D) without making a judgement on its value. In a pro-poor skills and technology analysis special attention should be paid to the existing levels of traditional technology and its effectiveness and previously tried upgrading interventions and its impact (both acceptance and failure).



## 2. Objectives

The objectives of this tool are:

1. To analyse the efficiency & effectiveness of technology in use within the value chain
2. To categorise current and required technology in the value chain
3. To analyse the appropriateness of technology (affordability, suitability, accessibility, replicability and exchangeability) matched with skills of technology at different levels of the value chain
4. To analyse upgrading options within the value chain that provide the required quality of output
5. To analyse the impact of external investments in knowledge and technology (innovation and R&D)
6. To understand what the causes of the existing gaps / constraints are through the analysis of:
  - Existing and applied skills, knowledge and technologies; and
  - Past attempts to improve skills, knowledge and technologies and its impact
7. To identify the needs and opportunities for upgrading of skills, knowledge and technologies
8. To analyse the possibilities to make upgrading opportunities available through embedded services, external services and/or collective action and learning

## 3. Key Questions

Key questions to answer in the analysis will be:

- What are the standards and grades existing in the market (both formal and informal)?
- Which technologies are in use and which grades are currently produced by different groups of producers at different stages along the value chain (poor versus non-poor, ethnic division)? What is the efficiency and effectiveness of the technologies in use? Where are problems located?
- What are the current levels of understanding, skills, and knowledge about quality standards and grades along the chain actors? Is there a unified definition of quality?
- Who determines orientation and investment in knowledge and technology in the value chain?
- Who organises, provides and pays for quality control?
- Does the current level of skills, knowledge and technology produce the required output?
- What indigenous and other knowledge is being used in the value chain?
- What upgrading interventions have been tried in the past and what has been their impact?
- What are the upgrading options already available in the market?
- Where are good examples of upgrading inside or outside the geographic analysis area?
- Who are the change leaders and do they have the willingness to share?
- What are the costs/margins of technology (refer also to Tool 6 – Analysing Costs and Margins)?
- Is investment in upgrading worthwhile? Does it bring enough added value to the poor?
- Are there social mechanisms to make investments in services or technology affordable?

- Who can provide and produce the upgrading solutions? For example, advisory services, R&D, extension, local producers of technologies.

An important pro-poor aspect in the upgrading of technology and knowledge will be the impact on the poor in terms of:

- Producers: Will the recommended upgraded technology and knowledge be in reach of poor producers? Will they be asked to take unnecessary high risks?
- Labourers: Will the upgraded technology be labour saving (and thus less poor will have access) or will the upgraded technology be labour intensive, meaning more poor can be absorbed?
- Consumers: Will the upgrading of technology and knowledge in the value chain lead to an increased access for the poor to products at a more affordable price? Will production inputs needed for the upgrading (often seeds and breeds) be available to the poor so they can also benefit from the technology upgrading?

## 4. Steps

### Step 1 Analyse (mapping and diagnosis) the variation/ differences in knowledge, skills and technology in the separate processes in the value chain

In this first step the different uses and users of the current technologies in the value chain will be mapped. For each process in the value chain the levels of knowledge and technology being used is mapped for the different users, focusing especially on poor and non-poor users.

For each process that is identified in the mapping exercise, a matrix should be made that shows the position of the process in terms of poor and non-poor users. Table 17 gives an example of the type of matrix that could be constructed.

**Table 17: Example of knowledge and technology matrix - cassava production and processing**

Production			Processing		
	Knowledge	Technology		Knowledge	Technology
Poor	Indigenous knowledge on upland growing conditions	Local varieties	Poor	Indigenous knowledge on chip making and drying	Open air drying and home storage in bags
Non-poor	Upgraded knowledge from extension training	Hybrid varieties from China	Non-poor	Knowledge from formal studies	High tech starch processing

Source: (ADB 2005)

To determine the types of knowledge, technologies and skills used by actors at different levels of the value chain, it is important to both observe the types of technology, and to ask questions that are designed to gather useful information about knowledge levels and the appropriateness of technology being used. Table 18 gives examples of questions that could

be asked to value chain actors, and the types of information that could be determined from asking those questions. The questionnaire will have to be adapted to the local context and/or research question. The (non-) homogeneous application of knowledge, skills and technology should be taken into account especially when dealing with smallholder producers and systems of collective action.

**Table 18: Examples of questions that can be asked to the different actors in the value chain**

Question	Details to look for
What is the technology you are using to produce your output?	<p>Get a clear description of the technology used.</p> <p>Primary production:</p> <ul style="list-style-type: none"> <li>- Varieties in use</li> <li>- Inputs</li> <li>- Tools / machinery</li> <li>- Post harvest treatment / storage</li> </ul> <p>Processing:</p> <ul style="list-style-type: none"> <li>- Home based drying</li> <li>- Small scale factory</li> <li>- Large enterprises</li> </ul> <p>Transport:</p> <ul style="list-style-type: none"> <li>- Foot / horseback</li> <li>- Motorbikes / bicycles</li> <li>- Cars / trucks</li> </ul> <p>Packaging / labelling:</p> <ul style="list-style-type: none"> <li>- Bulk (more than 10 kg)</li> <li>- Bags</li> <li>- Packs</li> <li>- Other</li> </ul>
Where did you learn about this technology?	<p>Is the knowledge on the technology passed</p> <ul style="list-style-type: none"> <li>- From generation to generation</li> <li>- From other people in the neighbourhood</li> <li>- By extension (or other) services</li> <li>- Through the media (radio / TV)</li> <li>- Through formal education (yourself or family members)</li> </ul>
When did you start using this technology?	Date that the technology was first introduced and the modifications that have taken place
Who paid for the initial cost of the technology?	<ul style="list-style-type: none"> <li>- Paid by the user</li> <li>- Introduced with outside subsidy (for instance an extension model)</li> <li>- Introduced as part of a business deal (free training with a seed purchase)</li> </ul>
What investments (capital, labour, land) have you made in the technology and knowledge?	<p>Capital Investments:</p> <ul style="list-style-type: none"> <li>- Initial amounts</li> <li>- Maintenance / modifications</li> <li>- Cost to operate the technology</li> </ul> <p>Labour</p> <ul style="list-style-type: none"> <li>- Amount of time needed to operate the technology</li> </ul> <p>Land</p> <ul style="list-style-type: none"> <li>- Amount of space required for the technology</li> </ul>
For what purpose can the technology be used?	<p>Can the technology be used for other purposes?</p> <p><b>Examples:</b> Cassava can be used to feed the own animals or sell to the starch factory. A longan drying oven can also be used in other seasons to dry mushrooms.</p>

## Step 2 Determine and describe standards along the chain (both in terms of market demand and supply)

In this step the different commercial standards (qualities and grades), as mentioned and used by actors along the chain, will be identified and described. The example provided in Table 19 can be adapted for number of grades, as well as key features, according to the official description of standards (official standards as described in laws and regulations, or in commercial standards as an accepted standard among chain actors); see Box 17 to Box 20.

**Table 19: Product standards table with specified visible key features and grades**

Key Features	Grade A	Grade B	Grade C	Grade .....
Shape				
Colour				
Smell / Taste				
Freshness				
% Impurities				






### Take Note



If there are no formal, clear standards with specified grades these need to be developed with relevant actors. Key features should be as specific as possible so they can be understood by all and are not open to multiple interpretations.

3

**Box 17: Norm table developed for dried longan in North Vietnam**

Key Features	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5
<b>Visual</b>					
<b>Shape</b>	Round and regular shape	Quite round shape	Round-flat, irregular shape	Half-flat, very irregular shape	Flat shape
<b>Colour</b>	Bright yellow colour	Yellow-orange colour	Orange-caramel colour	Caramel colour	Caramel to black colour
<b>Dryness</b>	Very dry	Very dry	Not very dry, "elastic" texture	"Elastic", sticky texture	"Elastic" texture
<b>Smell &amp; taste</b>	Sweet smell and taste	Sweet smell and taste	Quite sweet smell and taste	Little sweet, caramel and coal smell and taste	"Burnt" and coal smell and taste
<b>Level of impurities</b>	No impurities < 10%	Very few impurities 10 - 20%	Some impurities 20 - 30%	Impurities 30 - 40%	A lot of impurities >40%

Source: (ITTPC and SNV 2006)

### Box 18: Official grading tables for certain Indian cashew types

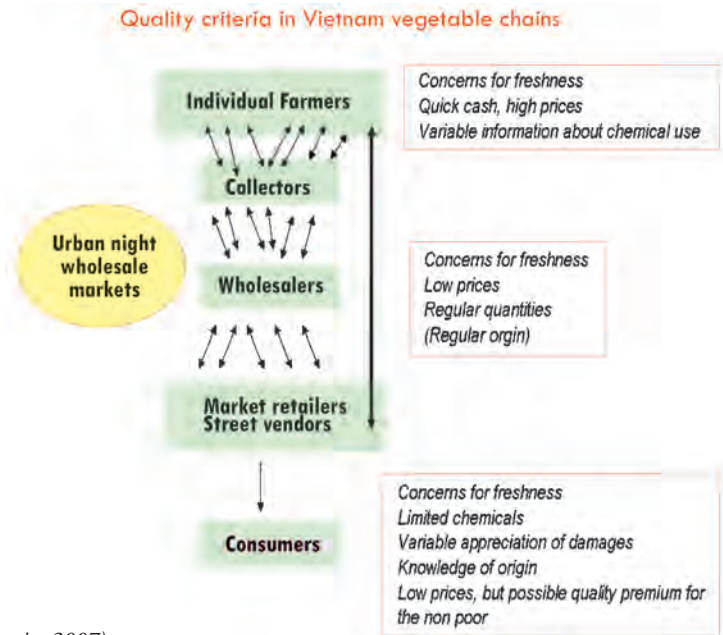
Grade Designation	Trade Name	Colour Characteristics	Count 454 gms size description	Maximum Moisture %	Broken Max %	NLSG NLG Max %
<p><b>SWP</b></p> 	Small white pieces	White/pale ivory or light ash	Broken kernels smaller than those described on LWP but not passing through 6 mesh 20 SWG sieve/2.80mm I.S Sieve	5	Nil	5 (BB & SSP Together)
<p><b>BB</b></p> 	Baby Bits	Do	Plemules & broken kernels smaller than those described as SWP but not passing through a 10 mesh 24 SWG Sieve/1.70 mm I.S.Sieve	5	Nil	1% (Cashew Powder)
<p><b>SPS</b></p> 	Scorched Pieces Second	Kernels may be over scorched, immature, shriveled (Pirival), speckled (Karaniram), discoloured and light blue	Kernels broken into pieces but Not passing through a 4 mesh 16 SWG sieve/4.75 mm I.S. Sieve.	5	Nil	7.5 (DP & DSP together)
<p><b>DP</b></p> 	Dessert Pieces	Kernels may be deep scorched, deep brown, deep blue, speckled, discoloured & black spotted.	Kernels broken into piecesbut not passing through a 4 mesh 16 SWG sieve/4.75 mm I.S.Sieve	5	Nil	7.5 (DSP)

Remarks: Kernels shall be completely free from infestation, insect damage, mould, rancidity, adhering testa and objectionable extraneous matter.

NLSG denotes: Next Lower Size Grade, NLG denotes :Next Lower Grade

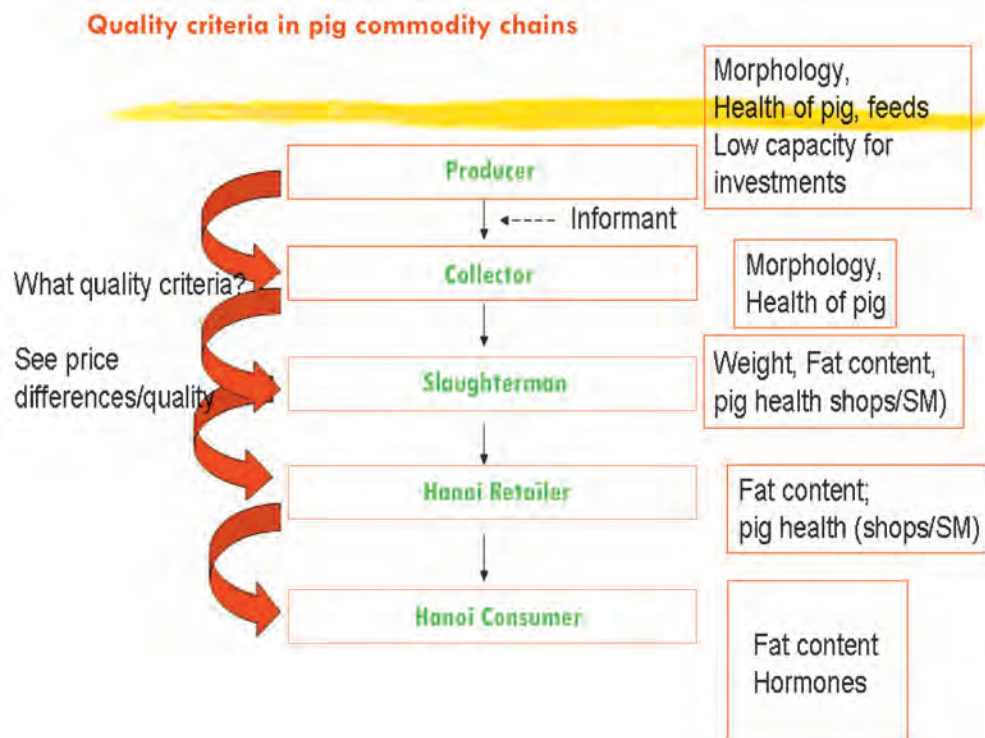
Source: <http://www.cashewcorporation.com/spec.htm>

### Box 19: Quality criteria for green leaf vegetables along a value chain in North Vietnam



Source: (Moustier 2007)

### Box 20: Quality criteria along a pig value chain in North Vietnam



Source: (Le Goulven, Boutonnet et al. 1999; Binh 2002; Figuié 2004)

### Step 3 Identify distinct market chains based on applied knowledge, skills and technology and product grade levels achieved.

In this step the analysis continues by analysing the different results and outputs from different technologies and knowledge levels.

In many value chains there are distinct market channels, often with regard to value and end-consumers using the products. By analysing these different channels and the technology and knowledge used in these channels it is possible to get a clear picture of the activities the poor are involved in, and an assessment can be made what their best options are if they would like to upgrade technology.

#### Take Note



During the analysis, it is helpful to support investigations with photo materials, especially to show different technologies that are being used.

For each market channel that is identified in the mapping exercise, a matrix should be made that shows the position of the process in terms of poor and non-poor users, the type of technology used and the type of output. Table 20 gives an example of the type of matrix that could be constructed.

**Table 20: Matrix for market channel analysis of poultry**

	Market Channel	Technology Used	Type of Output
Poor	Local market / Self consumption	Home yard growing	Eggs Live chickens
Medium	District / Provincial markets	Open shed farming for 50-150 animals	Eggs Live chickens
Non-poor	Supermarkets	Industrial chicken production and processing	Eggs Pre-processed frozen chicken

It is important to analyse which technology is used in each market channel but also to analyse from the consumer towards the producers to understand customer demand and to translate that into the correct use of technology. In Box 21 on Longan processing an example is given of how technology was developed to be able to go from low quality processing to medium quality processing for a different market channel in which different margins can be earned.

### Box 21: An example of technology development – Longan drying technology development

In Son La province, North-West Vietnam, farmers are growing Longan (a tropical fresh fruit). Most of the fruit is processed into dried Longan. This is partly due to the fact that there is an oversupply of fresh fruit in the season combined with infrastructure constraints to transport the fresh fruit directly to the end consumers.

Present technology was deemed to produce an inappropriate quality of output in the eyes of end consumers. An analysis of technology in use demonstrated that there were a number of weaknesses that caused the poor quality. These were related to temperature control, hygiene and energy inefficiency.

The department of agriculture had introduced new technology which was not adopted by small scale processors in the value chain because of high cost for the technology, complexity of the technology and the high running cost (energy input) of the technology.

Development of new technology, suitable to the investment levels of local processors and technologically appropriate, was facilitated by an outside development organisation. An analysis was done with potential investors (processors) to determine the financial limitations. Based on this information a new design was constructed and tested with a local training institute for demonstration and dissemination purposes.

*Source: (ITTPC and SNV 2006)*

3

## Step 4 Identify opportunities for upgrading knowledge, skills and technology for improving market chains.

In the fourth step of the analysis the possible upgrading solutions - and why they are not being applied - will be analysed. In other words, what are the limitations of these options, especially for the poor, to be put into practice?

### Terminology: Upgrading



**Process upgrading.** Process upgrading refers to the efficiency of production. Can costs be reduced? Can speed of delivery be increased? For example, can a farmer reduce the use of fertilisers while maintaining the same production levels? Or can a transporter use stronger boxes to reduce losses?

**Product upgrading.** Product upgrading refers to the introduction of new products or improving old products. For instance can a processor use a better drying oven to produce higher quality dried longan? Or can a tea processor introduce small tea bags instead of 1 kg loose tea boxes?





**Functional upgrading.** Functional upgrading refers to the basic question of which activities the actor in the chain should concentrate on. Should a farmer be both producer, processor and transporter or can concentration on one or two steps add more value? Can outsourcing of other activities improve added value? For example, can a group of small farmers bring their pigs together to the market in one small truck or should they all travel individually with the pigs on the back of their motorbikes?

In the search for upgrading possibilities it is important to look at the effect of the upgrade on the whole value chain. For example, the introduction of a new variety for the producer can mean that the processor also has to change technology or that different requirements have to be placed on transport.

In order to improve the performance of the whole value chain it is important to determine the most effective level in the value chain to upgrade. If upgrading should take place at more than one place in the value chain it is important to look where this will have the best impact for the poor.

Construct a matrix as shown in Table 21. For each level of the value chain identify potential product, process and functional upgrading possibilities. It may not be possible to identify all three types of upgrading strategy for each level of the chain. If no possibility can be identified, leave that cell blank.

The choice for upgrading possibilities can also be influenced by external factors such as availability of labour (permanent or seasonal). In the analysis these elements should be well looked at.

**Table 21: Example – upgrading possibilities matrix for Longan**

	Producer	Processor	Trader	Wholesaler	Retailer
Product		Better drying oven			Display shelving
Process	Increased fertilizer use		Use crates for transportation	Maintain low humidity in storage sheds	
Functional	Small scale drying facilities	Integrate processing and trading	Integrate trading and wholesaling		

### Box 22: An example of factors influencing upgrading possibilities in the cassava value chain

The production of dry chip rather than fresh cassava can be considered a form of upgrading. Dry chips have four major advantages: (i) creates more employment and adds value for cassava producers; (ii) farmers can keep dry chip as savings and speculate for higher prices; (iii) dry chip can be used as animal feed, giving more choices to farmers against market risk; (iv) the dry chip is lighter, which reduces transportation cost. The production of dry chips does not require a big capital investment (a basic dry-chip processing technology costs about 400,000-500,000 VND). This is an affordable investment also for poor farmers.

The opportunities that are there depend largely on the characteristics of cassava buyers. North and Central Vietnam are characterised by a scarcely diversified cassava processing sector, with buyers engaged in starch processing enterprises. This type of processing requires the utilisation of fresh cassava roots, and thus the potential for utilisation of dry chips is limited.

In contrast dry chips are favoured by buyers engaged in animal feed processing. In the South of Vietnam where important animal feed processing factories operate, market opportunities for dry chips are therefore much higher.

However, farmers are willing to participate in dry chip production only if the volume of cassava output is high enough to have a surplus beyond their own needs, as dry chips are produced for the purpose of animal feed, and cannot be eaten. Furthermore, the production of dry chips is associated with a high labour requirement. For these reasons the poorest or small holding farmers, which have limited land and cassava output and overall cash shortage, prefer to sell fresh cassava roots.

Source: (ADB 2005)

3

## Step 5 Analyse which options are within reach of the poor (in terms of knowledge level, investment, use etc)

In this step of the analysis the focus changes to which of the upgrading options are within reach of the poor. There are many aspects to consider when deciding if an upgrading option is within reach of the poor.

**Table 22: Example of different technology options available relative to investment levels**

	<b>Tomato on raised beds</b>	<b>Covered beds with simple irrigation</b>	<b>Green-house</b>
Short description	Open cultivation system on raised beds for water management	Beds covered with simple plastic tunnels and continuous water availability	Permanent green-house system with water and climate control
Advantages	Easy to construct Cheap	Better climate control inside the tunnel Easier to keep insects out Lower maintenance	Good climate control possible for all year production Good hygiene Low maintenance
Disadvantages Costs	High maintenance (labour) Not easy to keep insects out Only labour days	Relatively high investment costs Medium cash cost	High investment costs High cash cost

Some of the important aspects to consider in this step of the analysis are summarised in Table 23.

**Table 23: Important issues to consider when selecting the best potential upgrading options for the poor.**

Issue	Details to look for
Capacity to react to changes in demand (fashion)	Consumer demand is often changing. The success of a value chain is mostly determined by the capacity to react as quickly as possible to these changes. Upgraded technology should ideally have the capacity to deal with this without making a lot of extra changes or investments.
Bottleneck analysis to determine at what level to invest	In order to improve the performance of the whole value chain it is important to analyse the most efficient and effective level in the chain to upgrade. Especially if more than one place in the value chain is being upgraded, it is important to look where this will have best impact on the poor.
Prioritise options	Based on the bottleneck analysis a prioritisation should be made for which level in the chain the first interventions should take place to upgrade the whole chain and to have a direct impact on the poor.
Incentives that stimulate investments in knowledge technology / lack of incentives and barriers that limit the poor from upgrading	<p>In poverty situations there is often a lack of technology and knowledge development and thus also in subsequent upgrading of the value chain.</p> <p>It is important to analyse what the incentives or lack of incentives for investment are.</p> <ul style="list-style-type: none"> <li>- Why do people invest in new technology? Or</li> <li>- Why do people not invest in new technology?</li> <li>- Why do people gather new knowledge? Or</li> <li>- Why do people not look for new knowledge?</li> </ul> <p>Are there factors that hinder the poor from investing in technology of knowledge?</p>
Role of local institutes / organisations in R&D and innovation	<p>An often seen, limitation to technology upgrading is the “distance of the researchers to the local situation.”</p> <p>Technologies developed in location A do not suit to the circumstances in location B.</p> <p>In the analysis it is necessary to look at:</p> <ul style="list-style-type: none"> <li>- What local institutions / organisations are there which are involved in R&amp;D and innovation?</li> <li>- What have been their past contributions to technology development?</li> <li>- Can they play a role in the current value chain upgrading?</li> </ul>
Policy environment for pro-poor technology development	<p>What are the policies for technology development and value chain upgrading in place? (R&amp;D, dissemination, credit &amp; investment).</p> <p>Do these policies favour pro-poor technology development?</p> <p>Are people aware of these policies?</p>
Information flows	Trickle down of R&D information & bottom up flows of indigenous knowledge
Dissemination	Low-tech feasible technology can disseminate itself based on reputation - expensive promotion campaigns are often not necessary.

### Take Note



Innovations in knowledge and technology often come from external service providers (public or private). In many agricultural value chains the lack of these service providers causes a large bottleneck to the possibility of upgrading the chain. If present, these service providers (e.g. extension, vocational training, knowledge providers) need to be carefully analysed as their presence alone is not enough. It is also necessary to analyse whether the poor have equal access to these service providers to improve their knowledge and technology and if the services offered are suitable to the capacity level of the poor.

## Step 6 Analyse which services should be provided to assist the upgrading and who are the potential service providers

The following table provides an overview of services that might be needed to upgrade skills, knowledge or technology. In describing the services make sure to be as specific as possible about these services.

### Take Note



Describe the type of the service first, without thinking about who can or should provide the service. This will come in the next phase of the analysis, working towards intervention strategies.

# 3

**Table 24: Overview of potential services for upgrading**

Skills	Knowledge	Technology
Technical skills upgrading training	Market information	Research & Development
Demonstrations	Group management	Improved technology practitioners
Exchange visits	Technical knowledge / specialisation	Visits to proven / failed technology improvements
Unified skills application	Standards and control	Contacts / networks to sellers
Entrepreneurial skills improvement	Chain actor networks	Access to investment financing

To identify who could be potential providers of the services, the following lead questions can be used:

- Who are current leaders, owners, manufacturers for the upgraded solutions?
- Who have provided services in the past and what was their impact?
- Who has an interest in the delivery or availability of the service?

- Who will provide the service?
- Who will pay the service?
- Who will check quality control of service provision as well as the impact?

### Box 23: Possibilities for upgrading Thieu Thanh Ha Litchi value chains by combining local and scientific knowledge

#### Situation and Constraints:

- Lack of capital investment for production
- Limited scope of intensive production techniques and lax husbandry of litchi production
- Immature harvesting of fruit at harvest for quick cash flow reduces income
- Unstable and reducing market price for litchi
- Difficulties in drying, preservation and processing technologies
- Lack of market, technological and scientific information
- Small scale of production, processing and marketing leading to higher transaction costs

#### Opportunities for Upgrading:

- Develop extension mechanisms to expand Good Agricultural Practice (GAP) procedures for production and processing
- Support for new technology development in preservation equipment, long season varieties and extended ripening times
- Establishment of internal quality management systems and Protected Geographical Indicators
- Improve market information, identify stable market outlets
- Strengthening Producer Associations

Source: (Anh and Minh 2007)

## 5. What Should be Known after Analysis is Complete

After having followed all the steps related to skills, knowledge and technology, the position of actors involved in the chain with regard to upgrading should be clear, and a set of upgrading strategies with positive impacts on the poor can be designed. The role of embedded or external service providers in this process is often very important and should not be overlooked.