



# A Guide to Analysing and Strengthening Root and Tuber Value Chains in the Caribbean



The Caribbean Agricultural Research and Development Institute (CARDI) was founded in 1975 as an autonomous institution of 12 member countries of the Caribbean Community (CARICOM). The member countries are: Antigua and Barbuda, Barbados, Belize, Dominica, Grenada, Guyana, Jamaica, Montserrat, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Trinidad and Tobago. The Institute is governed by a Governing Body comprised of the Ministers responsible for agriculture and a Board of Directors comprised of Representatives nominated by member governments and key collaborating agencies.

CARDI

P.O. Bag 212, Frederick Hardy Building  
University of the West Indies  
St Augustine Campus, St. Augustine  
Trinidad and Tobago, W.I.

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## **Disclaimer**

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## **Foreword**

The CARICOM Heads of Government have targeted the Region to achieve an acceptable level of food and nutrition security by 2015. If this target is to be achieved, it will require more than a simple increase in crop and animal production. As the Region has developed economically, Caribbean people are much less dependent on crops harvested and taken straight to market with little or no processing or emphasis on food safety. Today, supermarkets and other food outlets are full of processed products. In recent years, there has been a move to become more health conscious and return to fresh rather than processed products. As such, processed food has increasingly embraced higher standards of quality and are likely to remain an important part of our diets. Even fresh produce is often “processed” in some form, for example, cleaning, labeling and placing in attractive packaging. Therefore, if we are to eat more local foods, we must pay attention to scientifically guided processing and packaging. This fact has led to CARDI adopting, since its Medium Term Plan, 2008 to 2011 the Value Chain approach to our research for development programme.

A Value Chain can be defined as a strategic partnership amongst interdependent business, input supplies, producers, processors, marketers that collaborate to create value for the final consumer on a competitive basis. So to help the drive to increase food and nutrition sovereignty, we must: understand the concept of Value Chains, be able to diagnose their strengths and weaknesses; and determine how to make improvements. In the Caribbean, there was no way of effectively analysing Value Chains. Further, our colleagues at Technical Centre for Agricultural and Rural Co-operation (CTA) informed us that Value Chain analyses developed elsewhere were more academic than practical. Hence, CARDI signed an Agreement with CTA to develop a method of analysis of Value Chains that is relevant, easily managed and understood.

During six pilot studies, the focus was on roots and tubers, partly because these have been identified as a key to increasing food and nutrition sovereignty, and also because of their (sometimes untapped) potential for climate resilience and accompanying potential for attractive processing and attractive packaging. Despite the use of roots and tubers’ products, the method of analysis developed is generic enough to be used for other food crops and also livestock and livestock products. We also believe that it will be found useful in other countries, particularly developing ones, as it will be in the Caribbean.

We recommend this Guide to all for use in improving the lives of the agricultural and rural communities worldwide. We will be most interested to hear users’ experiences of this Guide. Naturally suggestions for improvement and refinement are welcome.

**Dr Arlington Chesney-Executive Director, CARDI**

## Acronyms

ACP	African, Caribbean and Pacific Group of States
CaFAN	Caribbean Farmers Network
CARDI	Caribbean Agricultural Research and Development Institute
CARICOM	Caribbean Community
CFC	Common Fund for Commodities
CGGC	Centre on Globalization Governance and Competitiveness
CIAT	International Center for Tropical Agriculture, Colombia
CTA	Technical Centre for Agricultural and Rural Cooperation ACP-EU
CoP	Cost of Production
DFID	Department for International Development, UK
ECTAD	Eastern Caribbean Trading Agriculture and Development Organisation
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FOB	Free on Board
GAPD	Grace Agro Processors Division, Jamaica
GCC	Grenada Chocolate Company
GK	Grace Kennedy Group, Jamaica
GKFS	Grace Kennedy Foods and Services, Jamaica
GLOBALGAP	Global Good Agricultural Practice (a Global food certification system).
GTZ	German Agency for Technical Cooperation
HACCP	Hazard Analysis and Critical Control Points
IICA	Inter-American Institute for Cooperation on Agriculture
IPM	Integrated Pest Management
ITC	International Trade Centre, United Nations
NAMDEVCO	National Agricultural Marketing and Development Corporation, Trinidad & Tobago
NGO	Non-government organisation
OCFCS	Organic Cocoa Farmers Cooperative Society, Grenada
R & D	Research & Development
SMNR	Sustainable Management of Natural Resources in Central Vietnam
SWOT	Strengths, Weaknesses, Opportunities and Threats
TTABA	Trinidad & Tobago Agribusiness Association
UK	United Kingdom
US	United States of America
VCA	Value Chain Analysis
VCM	Value Chain Management

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## **Glossary**

This glossary contains definitions of terms used with the Guide. These definitions are not all-encompassing, but are useful “working definitions” for the concepts outlined herein.

### **Actors**

Persons (producers, wholesalers, processors, retailers) involved in getting the product from farm to final consumer.

### **Business service providers**

Organisation (policy/regulations, research, extension, credit, market information) whose support enables products to flow from the farm gate to the final consumer.

### **Consumers**

Individuals who use the final product at home.

### **Customers**

Businesses that buy products from suppliers, and resell products to another business or to consumers.

### **Market orientated approach**

Business decisions are based on information about customers’ needs and wants, rather than what the business thinks is right for the customer.

### **Market research**

Systematic, objective collection and analysis of data about a particular target market, competition, and/or environment.

### **Risk management**

Choosing among alternatives that reduce the financial effects of such uncertainties as weather, yields, prices, government policies, markets and other factors that can cause wide swings in income.

### **Upgrading**

Increasing the competitiveness of the Value Chain by moving it towards a new market, market segment, or customer, towards increased efficiency or towards new activities.

### **Value added**

Changing or transforming a product from its original state (cassava root) to a more valuable state (cassava flour).

### **Value Chain**

Refers to the whole range of activities necessary for an agricultural product to move from the farm to the final customer or consumer.

### **Value Chain Analysis (VCA)**

Assessing each part of the value chain to identify constraints/opportunities and seeing where improvements can be made, either from a production standpoint or a cost perspective, to improve profitability.

### **Value Chain Management (VCM)**

The process of organising connected groups of activities that create value by producing goods from basic raw materials for purchase by a consumer.

### **Value Chain mapping**

Developing a visual depiction of the basic structure of the Value Chain. A Value Chain map illustrates the way the product flows from raw material to end markets and presents how the industry functions.

## Overview

The traditional way of food production is being replaced by practices more closely related to manufacturing processes, with greater co-ordination across farmers, processors, retailers and other stakeholders in the Value Chain. Further, with increases in income, the pattern of food consumption is changing. Demand for high-value commodities like fruits, vegetables, and livestock product is growing and farmers are trying to diversify their production systems accordingly. On the other hand, consumers are becoming more demanding in terms of quality and safety of food commodities. In addition, demographic and income trends are inducing more enlightened consumers to demand convenience foods such as frozen, pre-cut, pre-cooked and ready-to-eat items, together with assurances of product quality and safety. Consequently, production, processing and distribution systems are adapting to such changes.

The organisation of agriculture along the value-chain framework has been conceived as one of the strategies to meet this changing orientation in food marketing, while at the same time bring more efficiency in the agricultural sector.

The Caribbean, and more specifically CARICOM countries are not immune to these challenges, and the agriculture sector has lagged behind in facing them. Notwithstanding that the concept of Value Chains might be relatively new to the Region, it is encompassed in the Regional Food and Nutrition Security Policy (CARICOM, 2010) which calls for “facilitating the creation of product clusters and Value Chains to satisfy increasing sophistication of consumer demand; and improved market access for small producers through improved market information and buyer/seller coordination and by promoting the Value Chain approach”.

The objective of this Guide is to provide a means to build capacity for Value Chains and so aid in the CARICOM regional effort to develop competitive, sustainable agri- businesses not only to meet changing demands, but also address concerns of food security

## Outline of the Guide

Each chapter of the Guide as outlined below provides a step by step approach to Value Chain analysis and, ultimately to competitive upgrade strategies

Chapters of the Guide	Outline of each Chapter in the Guide
<p><b>Chapter 1</b> Why another Guide and how can this Guide be used?</p>	<p>The aim of this Guide is to enable businesses and service providers in the root and tuber sector to design practical interventions that enable changes to occur in how businesses operate in relation to the marketplace.</p> <ul style="list-style-type: none"> <li>• Notwithstanding the focus on roots and tubers, this guide can also be used to analyse other sub sectors or commodities in the agri-business sector.</li> <li>• The intended beneficiaries of the Guide are stakeholders in Value Chains, governments, donors, farmers' organisations.</li> </ul>
<p><b>Chapter 2</b> Introduction to Value Chains</p>	<p>The concept of Value Chains and their management are described in this Chapter, which also addresses common misconceptions regarding Value Chains. In doing so, it answers questions such as:</p> <ul style="list-style-type: none"> <li>• What is the Value Chain concept and how can it be used to upgrade the efficiency and effectiveness of linkages from farmers all the way to consumers?</li> <li>• What are Value Chains?</li> <li>• Describes different forms of Value Chains</li> <li>• Gives examples of effective Value Chain management.</li> </ul>
<p><b>Chapter 3</b> Value Chain Analysis (VCA)</p>	<p>In this Chapter, the objective of Value Chain Analysis (VCA) is outlined and the tasks to be undertaken in VCA are examined.</p> <p>Among the reasons why VCA is undertaken are:</p> <ul style="list-style-type: none"> <li>• To improve the profitability and competitiveness of specific businesses by analysing the impact of different factors on the performance of an individual Value Chain;</li> <li>• To improve a sector's competitiveness by analysing the impact of different factors on the performance of businesses operating in multiple Value Chains.</li> </ul> <p>The process of Value Chain analysis can be divided into four basic tasks. They are:</p> <ul style="list-style-type: none"> <li>• Market Research.</li> <li>• Value Chain mapping.</li> <li>• Quantifying performance.</li> <li>• Economic and financial analysis.</li> </ul>

Chapters of the Guide	Outline of each Chapter in the Guide
<p><b>Chapter 4</b> Mapping the Value Chain</p>	<p>This Chapter describes the concept of ‘mapping the Value Chain’, including drawing a Value Chain map.</p> <p>It illustrates the objectives and benefits of chain mapping.</p> <p>It describes how to identify actors by their functions, and shows the steps involved in mapping actors, activities and services provided to the chain and gives examples.</p> <p>It also describes and gives examples of how to map product flows, information flows and challenges.</p>
<p><b>Chapter 5</b> Market Research</p>	<p>The importance of having a market-oriented approach is explained in this Chapter, as well as the steps in implementing this approach. The Chapter also;</p> <ul style="list-style-type: none"> <li>• Outlines the key elements in Market Research,</li> <li>• Presents a methodology for Market Research,</li> <li>• Indicates the expected outcomes of a market study.</li> </ul>
<p><b>Chapter 6</b> Quantitative analysis of the Value Chain</p>	<p>The Chapter explains why economic analysis of the Value Chain is an important step in developing an upgrading strategy.</p> <p>Explanations are given on how to:</p> <ul style="list-style-type: none"> <li>• Identify value at each stage of the chain</li> <li>• Calculate production costs</li> <li>• Identify costs drivers</li> <li>• Identify transaction costs.</li> </ul>
<p><b>Chapter 7</b> The role and importance of an enabling environment</p>	<p>This Chapter describes the impact that an enabling environment has on determining a Value Chain’s performance and its ability to profit from reacting to consumer demand.</p> <p>It emphasises the importance of incorporating support service providers, both public and private sector, in the chain analysis.</p> <p>A case study illustrates the positive impact of an intervention by the public sector.</p>

Chapters of the Guide	Outline of each Chapter in the Guide
<p><b>Chapter 8</b> Managing risk</p>	<p>This Chapter:</p> <ul style="list-style-type: none"> <li>• Defines risk</li> <li>• Lists potential risks for a Caribbean Value Chain</li> <li>• Gives examples of risk, such as, weather related, biological etc.</li> <li>• Shows through examples how to manage risk</li> <li>• Illustrates via a case study how a Caribbean company manages risk in its operation.</li> </ul>
<p><b>Chapter 9</b> Upgrading strategy</p>	<p>This Chapter defines what is meant by “upgrading strategy” and describes, with examples, different types of strategy.</p> <p>It lists the steps to be taken in an upgrading strategy. It explains how the chain can analyse opportunities and constraints.</p> <p>It explains the approach (with examples) to be undertaken in implementing an upgrade strategy, including the format for holding a Value Chain workshop.</p> <p>It explains the importance of having a plan to monitor and evaluate the implementation of an upgrade strategy and provides a checklist of indicators to monitor e.g. production costs.</p>



## CHAPTER

# 1

## Why another Guide and how can this Guide be used?

It is important to remember that, whatever the benefits; the guiding principle of a Value Chain is sustainability, by enabling the involved businesses to make a profit.

The Value Chain concept has gained prominence for addressing several areas of concern to the Caribbean. The development of Value Chains is being actively promoted as an answer to problems of low producer incomes, poor market access and even food security.

Nevertheless, it is important to remember that, whatever the benefits the guiding principle of a Value Chain is sustainability, by enabling the involved businesses to make a profit. As such, the focus of this Guide is on commercial businesses whose long-term success rests on reducing costs or increasing revenues. Businesses can use the Value Chain approach to not only analyse root and tuber chains, the main focus of this Guide, but also chains for any other commodities in the agribusiness sector, including, livestock, floriculture and non-root crops.

The development of a sustainable Value Chain rests on the participants possessing a roadmap of what they need to achieve, and why, when, and how. This includes possessing the ability to monitor progress as they implement improvements along the chain. The purpose of Value Chain Analysis (VCA) is to create just such a roadmap.

An important feature of analysing value chains is that it should be done with the maximum participation of all those involved, whether they are part of the direct chain, e.g. farmers or exporters, or provide support to the chain, such as input dealers, transporters, banks, and extension services.

An important feature of analysing Value Chains is that it should be done with the maximum participation of all those involved, whether they are part of the direct chain, e.g. farmers or exporters, or whether they provide support to the chain, such as input dealers, transporters, banks, and extension services. There are many guides on analysing value chains already in existence. However, as Nang'ole et al. (2011) state, "the large number of manuals and guidelines can be confusing due to the differing objectives, a lack of guidance on which one to use in a particular situation and the inconsistent use of concepts and terms". Research for CTA has also concluded that the existing methodologies are set at too high a level to be used by people who actually operate in a Value Chain (Donovan et al, 2013). They are largely written by donors, for donors. Moreover, guides tend to be generic with the intention that they be used all over the world. None is tailored to the needs of the Caribbean. Hence CARDI and CTA jointly agreed that there was a need

for a simpler methodology that could be used by Caribbean agro-entrepreneurs and others to identify problems in chains and seek ways of addressing those problems.

The aim of this Guide is to enable businesses and service providers in the root and tuber sector to design practical interventions that enable changes to occur in how businesses operate in relation to the marketplace. It seeks to achieve this by enabling producers, traders, and processors to make the shift from relying on ad hoc and irregular market linkages to more sustainable business practices.

Notwithstanding the focus on roots and tubers, this Guide can also be used to analyse other sub sectors or commodities in the agri-business sector.

The intended beneficiaries of the Guide are stakeholders in the Value Chain, governments, donors, farmers' organisations.

This Guide provides advice on how to:

- Systematically map the actors in the chain and their characteristics
- Identify the distribution of benefits to actors in the chain
- Identify risks and determine measures to mitigate them
- Identify facilitating agencies and organisations
- Assess the level of information sharing among the actors
- Measure value added at each stage of the chain
- Examine the potential for upgrading within the chain
- Promote good governance and management

## CHAPTER

# 2

## Introduction to Value Chains

This Chapter describes the concept of Value Chains and their management. It also addresses common misconceptions regarding Value Chains. In doing so, it answers questions such as:

- What is new about the Value Chain concept and how can it be used to upgrade the efficiency and effectiveness of linkages from farmers all the way to consumers?
- What is the difference between the concept of Value Chains and how Supply Chains have traditionally operated?

This Chapter also emphasises that Value Chains begin with the consumer and the market, not with the producer. Value Chains are about coordination, collaboration, information exchange and relationship building. Value Chains are not about ad hoc sales of surplus farm produce at low prices, but about selling products produced to meet an identified demand. An important concept that businesses need to grasp is that opportunities come from aligning operations to enable products to be pulled through the Value Chain, rather than the traditional approach of pushing products to market. Accordingly, the emphasis is on understanding and responding to the needs and requirements of consumers and marketing enterprises. The primary difference between Supply Chain and Value Chain approaches is that the former focuses on production and lowest cost, while the latter focuses on consumers and highest value. Using both text and illustrations, the following pages describe how your business and the Value Chain in which you operate can benefit from applying these concepts and principles.

The section also includes a series of short case studies (box examples) that help to provide context for the above concepts and principles:

- “Las Brisas”, Santa Cruz de Turrialba Value Chain
- The Grenada Organic Cocoa Farmers Co-operative Society Ltd Value Chain
- The Grace Agro Processors Hot Pepper Value Chain, Jamaica
- The Cassava Value Chain in Jamaica

### 2.1 The Value Chain concept

The value chain concept is relatively new to the Caribbean agriculture and food sector.

While value chain development is in an embryonic stage in most Caribbean states, it is generating a lot of interest. Although there are no quick and easy recipes for building a successful Value Chain, the creation of a successful chain is considerably easier if the involved businesses possess a roadmap of where to focus their attention and resources, and why. The roadmap will enable participants to significantly increase their chances of success by determining factors such as: what must be achieved by the participants, which of the participants are involved at each stage of the journey, how the

participants will benefit from their involvement, and how to monitor progress.

While what works for one Value Chain (and the businesses that it includes) in one set of circumstances may not necessarily work for another, all successful Value Chains reflect five key principles that together enable them to create and capture greater value than otherwise possible:

1. Focus on customers and consumers (market led)
2. Ensure effective logistics and distribution
3. Proactively form and manage effective relationships
4. Get the product right every time
5. Establish an effective information and communication strategy

Traditionally farmers have made decisions on what they should grow, what they should keep for home consumption, and what they are able to sell at the marketplace. In former times sales centred on local markets and it would have been rare for a farmer to venture far afield in search of new market opportunities or to consider developing new, higher value products. Traditional forms of agriculture are, however, unable to adapt to the pressures placed on them by communities and nations as they modernise. Through the process of urbanisation, demand for food from urban dwellers becomes dependent upon more sophisticated arrangements that require aggregation of farm produce, transportation, storage, wholesaling, processing and retailing.

## 2.2 What are Value Chains?

Although there is no universally accepted definition of the term “Value Chain”, it normally refers to the whole range of activities undertaken (e.g. production, processes, marketing) for an agricultural product to move from the farm to the final customer or consumer.

The most effective Value Chains are mutually beneficial partnerships established among all players involved (from input supplier to retailer) in the production of a product purchased by consumers (e.g. cassava or cassava bread if processed). Each partner must commit to contribute and share knowledge, and contribute their resources to delivering a product to the consumer more efficiently, with a higher quality and/or in a more unique form than competing chains. The chain’s sustainability rests on all of the involved businesses committing to the initiative, possessing the ability to “add consumer recognised value” to the product, and benefiting from their involvement.

According to Hobbs et al. (2000), a Value Chain is differentiated from a Supply Chain (Table 1) because:

- Participants have a long-term strategic vision.
- Participants recognise their interdependence and are disposed to work together to define a common objective, share risks and benefits, and make the relationship work
- The chain is oriented by demand and not by supply, and thus responds to consumer needs
- Participants have a shared commitment to control product quality and consistency
- Participants have a high level of confidence in one another. This allows greater security in business and facilitates the development of common goals and objectives.

Factors	Supply Chain	Value Chain
Information flow	Little or none	Extensive
Principal focus	Cost/price	Value/quality
Strategy	Maximising efficiencies	Maximising effectiveness
Orientation	Led by supply	Led by demand
Organisational structure	Independent actors	Interdependent actors
Philosophy	Competitiveness of the production-driven enterprise	Competitiveness of the market-driven chain

**Table 1: Comparison of Supply and Value Chain business relationships | Adapted from Hobbs et al. (2000)**

In today’s competitive business environment a focus on separate links in the overall supply chain is not likely to bring long term success. For a business to maintain viability and increase market share a Value Chain is increasingly necessary. A Value Chain provides a platform for sustainable competitive advantage through reduction of costs increases and reduced risk.

A Value Chain (Figure 1) is created when organisations come together to share information and trust, share risks and benefits, and invest time and resources to add value to their products while simultaneously reducing costs wherever possible.



Figure 1: Generic Value Chain

Note that in this figure the arrows point in both directions. This conveys the important features of Value Chains – that they reflect demand and that information is shared in both directions to enable them to do this.

Although consumers are not technically members of the Value Chain, the retailers or businesses closest to the consumer usually are. The information they supply regarding the consumer is essential to the success of the chain.

### 2.3 Different forms of Value Chains

Not all Value Chains are the same. Understanding why Value Chains differ and what this means for the involved businesses will enable completion of a more informed VCA; thereby increasing the impact and the benefits produced by the study. For the purposes of this Guide, we first describe what is commonly referred to as a Supply Chain. This is followed by three types of value chains defined as: ‘cooperative’, ‘coordinated’ and ‘collaborative’. While it is unlikely that a specific chain will fit neatly into one of the four structures presented in this section, knowing what determines their structure and method of operation provides a useful way of assessing and comparing the relative nature, benefits and challenges associated with each approach.

In Figures 2-5 the wider arrows represent the flow of products along the chain. The narrower arrows and their number represent the amount of information shared, and its direction. The narrower arrows’ length represents the extent to which people from across the involved businesses share information, which impacts the depth and value of the information shared for enabling these businesses to innovate in ways which are difficult (perhaps impossible) for competitors to replicate.

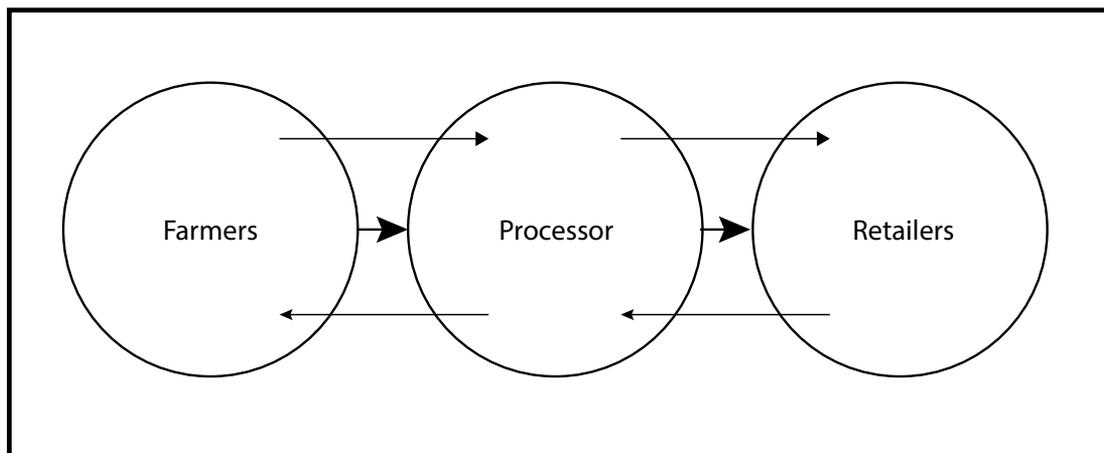
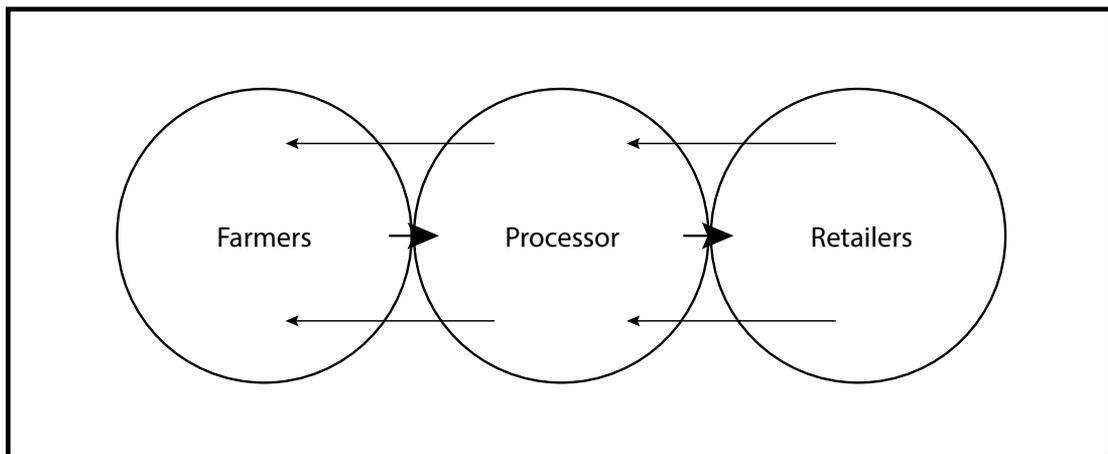


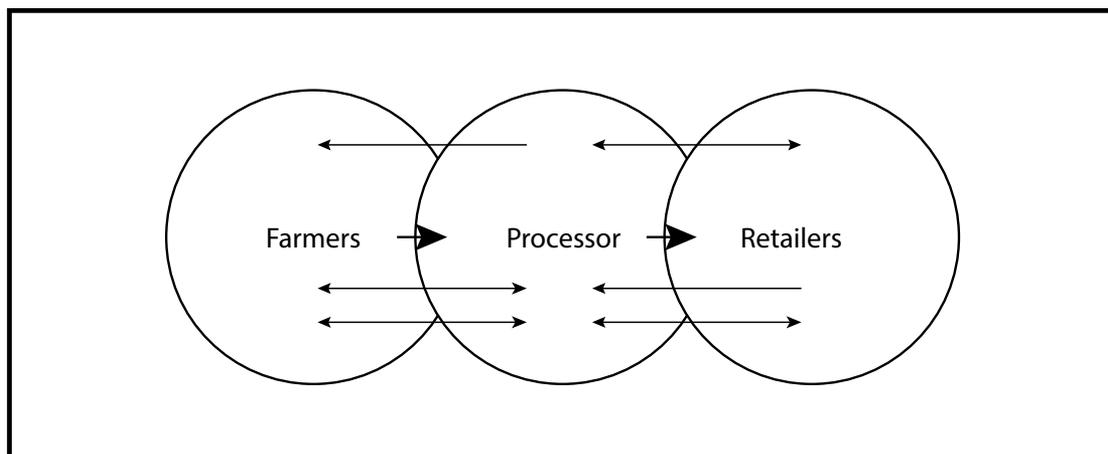
Figure 2: Supply Chain

**Supply Chain:** In a Supply Chain, the majority of business is conducted as a series of short-term or one-off transactions. The little information that is shared relates directly to immediate business decisions surrounding the availability of supply, price, volume, and basic quality. To ensure that they are paying the minimum price possible, customers will play suppliers off against each other. Any feedback that customers provide suppliers on the performance of their products will invariably be limited to complaints. They will not proactively communicate in ways such as “we liked and valued x; can you supply it again?”



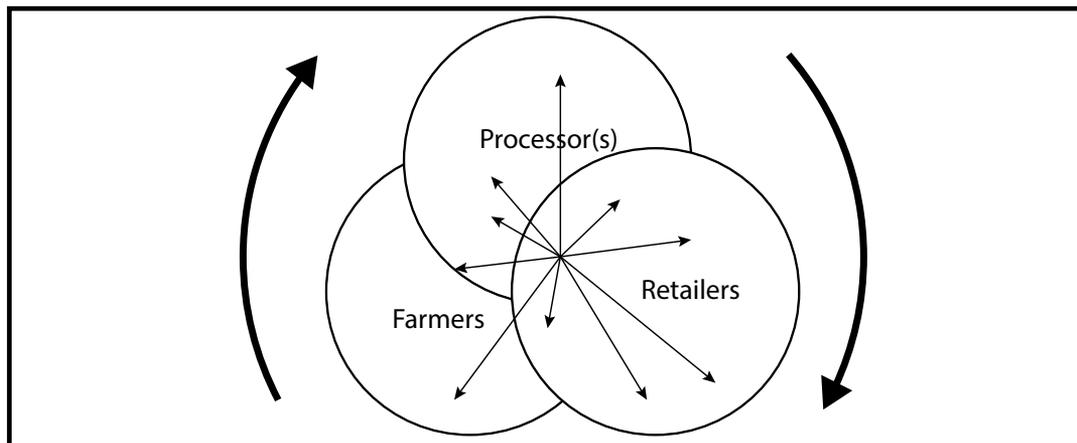
**Figure 3: Cooperative Value Chain**

Cooperative Value Chain: In a cooperative Value Chain, companies possess a mutual understanding of how and why they can benefit from cooperating with one another over the medium-term rather than resolutely sticking to short-term or one-off business deals. Those in the chain share operational information with their suppliers, such as the factors related to product and service that are important to them and why. On occasions, people from different parts of the involved businesses will begin communicating with each other. For example, people from the processor's purchasing and quality assurance unit will occasionally talk to producers about their needs, what matters to them, and why. Looking at how, for example, the quality of a supplier's products or service enables it to reduce costs or access higher value markets lessens customers' tendency to play suppliers off against one another and increases the likelihood that suppliers will invest resources into identifying how they can differentiate themselves from other suppliers by better meeting customers' needs.



**Figure 4: Coordinated Value Chain**

Coordinated Value Chain: In a coordinated Value Chain, companies choose to coordinate their business arrangements over a medium to long timeframe. This leads to a greater sense of inter-dependence developing between the businesses. In sharing operationally important information and sharing a limited amount of strategically important information, people from different areas of different businesses start communicating with each other more often, in greater detail, and with greater purpose. For example, a group of farmers may meet with the processors' and retailers' marketing and buying operations to discuss challenges and opportunities. Over time this leads to the participants expressly acknowledging the benefits of conducting medium-term business deals with chosen suppliers and buyers. As participants' commitment to the partnership and their depth of knowledge grows, they acquire increasingly sophisticated Value Chain management capabilities.



**Figure 5: Collaborative Value Chain**

Collaborative Value Chains: In a collaborative Value Chain, companies engage in longer-term strategic arrangements that involve collaboratively sharing resources and/or investing in the capabilities required to achieve mutually beneficial outcomes. Successfully adopting this type of model requires the involved businesses to be committed and able to respond to market demands in the most effective and efficient way possible.

In a collaborative Value Chain the entire chain will be taken into consideration by the individual businesses throughout the management process. The ability to achieve this stems from the involved businesses to being able to communicate and exchange information more effectively than would otherwise be possible. They will also possess the ability to act upon the information by executing decisions, in conjunction with the other participants. This, combined with the benefits attained from their participation, motivates members of the Value Chains to remain committed to the initiative's long-term success and ensure that they equitably share the financial rewards created by the partnership.

The matrix in Annex 1 describes the characteristics of each of these chains in relation to strategic factors and governance arrangements.

#### **2.4 Examples of effective Value Chain management**

There are a number of key organisational factors that must be considered in order to establish a successful Value Chain initiative. The example in Box 1 describes how the Las Brisas company in Costa Rica increased its competitiveness and profitability by adopting a Value Chain approach. Factors involved include:

- Establishing common objectives
- Managing information flows
- Evaluating performance
- Achieving tangible benefits for all involved
- Building trust through establishing cooperative working relationships.

## Using the Value Chain Approach to increase competitiveness and profitability

When Las Brisas began activities, it functioned like all the other plants in the cheese-making cluster of Santa Cruz de Turrialba in Costa Rica. The company had unstable relations with suppliers and buyers. As the sector evolved and became more competitive, Las Brisas developed strategies to move from being just one more player in the production chain, to differentiating itself from its competitors by carving out its own Value Chain.

This search led to the establishment of trust-based relationships with both suppliers and buyers. On the milk production side, Las Brisas made its biggest milk supplier a new partner in the business, and thus guarantee 77% of its daily consumption.

On the output market side, Las Brisas pursued two market strategies. First, it developed contacts with one of its clients—a biscuit factory—to produce a special cheese for manufacturing biscuits. The two businesses jointly obtained support from the University of Costa Rica for specific research on the best type of cheese for the biscuits. Through this product development process, Las Brisas was able to enter a new market, in which no competition existed, as well as assist the biscuit factory to expand production and sales. Secondly, Las Brisas consolidated relations with an important chain of supermarkets in San José, the country's capital, through the application of a methodical quality control process for its own brand. This relationship resulted in joint promotion and marketing strategies as well as the development and testing of new products based on consumer demand detected by the supermarket chain.

### **What are the results that Las Brisas achieved through its Value Chain strategy?**

1. The quality of its products is recognised as being the best in the zone and, therefore, they have high acceptance in the market.
  2. Las Brisas is the only business from the cheese cluster in Santa Cruz that consistently sells directly to supermarkets in San José. In 2001, a promotion of cream was so successful that it contracted additional production with other plants of Santa Cruz, but under its supervision and brand.
  3. Las Brisas suffers less than other businesses during times of milk shortage.
- In summary, constructing a Value Chain has given Las Brisas an important competitive edge over similar plants that share the same basic advantages.

#### **Box 1: “Las Brisas”, Santa Cruz de Turrialba Value Chain | Source: Lundy et al (2004)**

As shown in the case of Las Brisas the Value Chain approach can be used to adapt to changing market conditions ahead of competitors by:

- Bringing a new product to market
- Introducing an existing product to a new market
- Providing assurances of food safety, traceability and/or quality to end consumers
- Maintaining or expanding market share in the face of increased competition from imports or from domestic competitors
- Enhancing food and nutrition security
- Strengthening and deepening existing relationships with a view to increasing market share.

The case studies in Boxes 2, 3 and 4 illustrate how these same characteristics were utilised by three Caribbean Value Chains to achieve success.

## **Value Chain for organic cocoa**

Value Chain for organic cocoa This case study refers to the Value Chain for organic cocoa produced by the Grenada Organic Cocoa Farmers' Cooperative Society (OCFCS), fermented and dried at a single facility, and manufactured into high-value chocolate products by the Grenada Chocolate Company (GCC). The Value Chain is very small, comprising only some 13 farms and a total of about 60 people working on the chain. GCC is one of the world's smallest chocolate manufacturers, accounting for about 0.001% of world production.

The key features of this Value Chain are production of value added products, use of green and environment friendly methods to create niche markets and building alliances to support the chain.

### **Mode of increased value addition**

This chain differs from the chains for the rest of Grenada's cocoa output in that, rather than being exported after fermentation and drying, the beans are manufactured in Grenada into high-value finished products packed in a form ready for retailing. The resulting value addition within Grenada is several times the gross FOB value of a similar tonnage of non-organic beans exported in raw form.

The total value of retail sales in Grenada and abroad is sufficient to cover the costs of manufacture, processing and marketing and the provision of free advice and services to farmers, while leaving a surplus that allows the payment of a higher farm-gate price than received by other Grenadian growers. Thus, in addition to creating jobs in manufacturing and domestic retailing, establishment of the chain has improved the livelihoods of a small number of farm households and workers engaged in fermenting, manufacturing and retailing.

### **The use of green and environmentally friendly methods to create niche markets**

The small size of GCC output has allowed the relatively small demand generated by cruise-based tourism in Grenada to provide the core market for the firm's output, which has served as a foundation for GCC to exploit niche markets for gourmet chocolate in developed countries. GCC initially accessed the local tourist market at Grenada's cruise ship complex and subsequently partnered with Belmont Estate in a mutually beneficial relationship in which Belmont has diversified into agro-tourism linked to the cocoa value chain and GCC has used this agro-tourism as a means of expanding its sales of manufactured chocolate products. The green, environmentally friendly and socially responsible nature of the Value Chain, in turn, has been used by GCC to expand into high value commerce export markets.

### **The need for small-scale chain leaders to utilise business alliances**

Small stakeholders frequently turn to NGOs or donors to provide financial support for Value Chain development. In practice it is invariably more effective to build alliances with commercial enterprises that have established capacity rather than seeking to create such capacity from scratch. This is well demonstrated by the success of GCC which depended, inter alia, on the ability of the company to make alliances with the following diverse set of people and enterprises:

- A US partner who provided initial loan support
- Farmers who were willing to switch to organic production
- Belmont Estate, which provided well-managed fermentation facilities and links to cruise ship tourism
- Chocolate retailers prepared to share their e-commerce platforms.

**Box 2: The Grenada Organic Cocoa Farmers' Co-operative Society Ltd Value Chain | Source: Westlake (2014)**

## Value Chain Governance

### **Definition, scale and background**

This case study refers to peppers that are grown by a small number of small and medium-scale Jamaican farmers and sold to the Grace Agro Processors Division (GAPD) of GK Foods and Services Ltd (GKFS), a wholly owned subsidiary of the Food Division of the Grace Kennedy Group (GK) of companies.

### **Value Chain governance by the GK Group**

The GK group:

- Obtains its basic raw material through contracting and organising a set of hot pepper growers
- Processes hot peppers into mash at its Jamaican processing plant
- Contracts Jamaican packers to manufacture and pack its products
- Manufactures and distributes a set of own-brand hot pepper products at a plant in the UK
- Distributes own-branded products made in Jamaica within the domestic and export markets.

Its involvement in the value chain is comprehensive, from cooperating with CARDI in the supply of pepper seed with taste profiles required by customers, through to retailing final products at its own supermarkets in Jamaica and distributing through wholesalers in overseas markets. Its establishment of a pepper mash processing capacity and its associated contracting of pepper growers means that GK management is now in a position to plan and integrate activities at all stages of the chain. A high level of information flows along the chain in both directions and increasingly efforts are being made to align the chain to meet market requirements. GK coordinates and seeks to improve the competitiveness of the chain at a set of different levels and using different means.

The volume, characteristics and timing of peppers entering the chain are affected by the relationship it maintains with CARDI, GAPD's support for breeding, its technical advice to farmers, and the set of provisions in its supply contracts with them.

Quarterly meetings are held with all the contract farmers and farmer cooperative society meetings are attended when issues arise relating to pepper and fresh cut vegetables.

GAPD has a long history of working with co-packers of pepper products to coordinate and plan their activities in line with its needs.

Finally, through its board of directors, GAPD is able to communicate with other units of the GK group, which supply the Value Chain with market information, inputs and finance.

### The producer link in the Value Chain

This case study highlights the importance of formal farmers' groups being strategically linked to stakeholders which add value to the overall industry. The study refers to the development of the Cassava Value Chain in Jamaica through the support of a project implemented by CARDI through funding from the Common Fund for Commodities (CFC) and the European Union (EU).

Bernard Lodge farmers' group consists of mostly male farmers between 35 and 52 years. It is a very diverse and resourceful group: education levels vary from primary to tertiary; there is a combination of full-time and part-time farmers; a few members have formal agriculture training; and although two members have more than 30 years farming experience, most of the members have been farming for less than 10 years. Cassava is not the main crop for any member of the group. Only five of the 12 members interviewed had grown cassava before the project. More than 80% of the members interviewed believed cassava could be a profitable crop. However, profitable production is perceived to be restricted by the low selling price, laborious and expensive harvesting procedures, and small and easily saturated markets. These were highlighted as serious constraints to expanding cassava production. The quantities that could be absorbed by the two processing facilities were not deemed adequate to support profitable production of the crop.

From stakeholder consultations, the producer link in the Value Chain was considered the most critical point for intervention. This was because producers determined the quantity and quality of primary product available to consumers. Based on the general observation of the widespread use of inappropriate agronomic practices; special focus was given to exposing the producers to good agricultural practices. The needs assessment conducted among the producers found specific challenges, and relevant capacity building programmes were developed to address these. Issues arose with respect to group functionality and technical adeptness. Training modules targeting group dynamics were used. With respect to technical adeptness, modules were delivered to build the group's capacity in: marketing and business management; land preparation; IPM; integrated crop management; post-harvest management; GLOBALGAP and food safety and HACCP.

The small size of the cassava market available to farmers in Bernard Lodge was a major deterrent to cassava production. Initially, Twickenham Industries one of the major processor's in the area was only able to absorb very small quantities from the group (1,400 kg weekly). The other processor, Central Packers was also not ready to absorb a lot more. Organisations were reluctant to enter formal relationships (contracts) with the group. Members of the group pointed out that this was because of the small profit margins. Cassava's profitability is dependent on farmers producing larger quantities.

Consequently, accessing new and larger markets was crucial. Since then, the facilities of Twickenham Industries have been upgraded and their production capacities increased. The installation of purpose-built oven racks and mill installations resulted in a three-fold increase in the number of value-added products made by the Twickenham Industries. The milling and drying facilities will also be rented by other cottage industry groups/entities as a means of generating additional income for Twickenham Industries.

By group formation and strengthening activities conducted across the region under the CFC EU-funded projects, producers have been empowered by improved skills in group dynamics and linkages to critical players along their respective value chains. The case of the Bernard Lodge United Progressive Farmers Co-operative Limited demonstrates the potential opportunities of formal farmers' groups being strategically linked to stakeholders which add value to the overall industry. By providing the necessary training and giving the right exposure to other players in the Value Chain, farmers and other actors are able to contribute more effectively and have a greater appreciation for the other players involved. Multi-stakeholder events such as a Cassava Day were able to highlight the possibilities, facilitate dialogue among stakeholders along the Value Chain, develop networking and share information with the consumer.

**Box 4: Strengthening of the Cassava Value Chain in Jamaica | Source: Reid et al. (2013)**



This Chapter explains the objective of Value Chain Analysis (VCA) and describes the tasks to be undertaken in VCA. Value Chain Analysis is a useful tool for working out how to create the greatest possible value for customers. It is the process of analysing how effectively value is created and added at different steps in the chain. Its basic objective is to assess current performance and, consequently, opportunities to increase the Value Chain's performance through cost advantages or product differentiation.

VCA utilises quantitative and qualitative techniques to diagnose the opportunities that exist for businesses, including farmers, to profit from delivering products to consumers more effectively and efficiently; and minimise risk. It achieves this by providing a way of identifying how the Value Chain as a system can create consumer-recognised value at lower cost; and whether the Value Chain can (perhaps simultaneously) increase revenues by producing attributes for which customers or consumers are willing to pay. It can also suggest ways of improving a region's food security through producing, processing, and distributing products better than presently occurs. Analysis is carried out by interviewing the participants in the chain (including consumers purchasing the end product), measuring performance, and evaluating the causes of factors impacting the Value Chain's performance. Those involved in Value Chains usually know what the problems are: the farmers know their problems, the traders know their problems, the processors theirs' and the retailers theirs'. But if these chain "actors" rarely talk to each other, no one has an accurate overview of all problems facing a chain; and therefore how to address them in a systematic fashion.

In summary, the reasons why VCA is undertaken include:

- a) Improving the profitability and competitiveness of specific businesses by analysing the impact of different factors on the performance of an individual Value Chain
- b) Improving a sector's competitiveness by analysing the impact of different factors on the performance of businesses operating in multiple Value Chains.

VCA will seek to find answers to some key questions. These are:

- What consumers buy the products produced by the Value Chain, from where, and why?
- What qualities or services (the attributes) do customers and consumers value about the products, and for which of these attributes are they willing to pay?
- What are the core processes in the Value Chain? Who are the actors involved in these processes and what they actually do?
- What are the flows of product, information and knowledge in the Value Chain?
- What is the volume of products, the number of actors and jobs?
- Where does the product originate and where does it go?
- How does the value change along the chain?
- What types of relationships and linkages exist?
- What types of services are feeding into the chain? Who provides them?
- What key constraints exist at various levels in the chain and what are potential solutions to those constraints?
- How do products, information and knowledge flow through the Value Chain?
- What are costs, margins, profits, losses and risks at the different levels of the Value Chain?

### 3.1. Selecting the chain for analysis

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In most cases a chain will select itself, as this Guide is designed primarily to assist existing Value Chains to identify ways in which they can implement improvements. However, the Guide can also be used by governments, donors and NGOs to identify chains that may benefit from external support, or to identify ways of promoting food security through Value Chain upgrading.

A Value Chain's sustainability relies upon the participants' ability to profit from their involvement. Therefore, selecting a chain for analysis should be guided by the following criteria:

- Market demand: how much market demand is there for the chain's product? Is the market for this product growing strongly or slowly, or is it stable or diminishing. If the latter is occurring is enough known about the market to expect increased demand if the product is produced, processed, or marketed differently?
- Product profitability: how profitable is the production or processing of this product? What is the opportunity cost<sup>1</sup> of alternative investments?
- Feasibility of production: even though market demand exists for a product, is it possible to produce this product given existing social, economic, and environmental conditions? Can the quality that the market demands be achieved? Are there overseas suppliers who can supply products more cheaply, even with tariff protection?
- Support agencies: are there one or more support organisations associated with this chain? What services do they or could they offer to the chain? Are they willing to facilitate or participate in the design and implementation of a strategy to increase competitiveness?
- Existence of business organisations: what are the business organisations in the chain like? Are there formal or informal groups of producers, processors, or traders in this chain? How strong or weak are they in business terms? Is there coordination among them or was there in the past?
- Risk assessment: risk can be measured in terms of exposure to credit (debt), suitability of a specific area for producing particular product, the possibility of new competitors and volatility of price or volume in the market.

### 3.2 Tasks in Value Chain Analysis

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The process of Value Chain Analysis can be divided into four basic tasks:

- Value Chain mapping
- Market Research
- Quantifying performance
- Economic and financial analysis

The most essential of these tasks is Value Chain mapping. The three subsequent tasks, i.e. Market Research, quantifying performance and economic and financial analysis, provide the level of detail required to make effective and informed decisions that lead to long-term improvement in the chain's performance.

The processes of VCA involves four basic tasks

- 1) Value Chain mapping
- 2) Market Research
- 3) Quantifying performance
- 4) Economic and financial analysis

The most essential of these tasks is Value Chain mapping.

Value Chain mapping is the process of developing a visual depiction of the basic structure of the Value Chain. A Value Chain map illustrates the way the product flows from raw material to end markets and presents how the industry functions. It is a compressed visual diagram of the data collected at different stages of the Value Chain Analysis. The purpose of a visual tool in the analysis process is to develop a shared understanding among Value Chain stakeholders of the current situation of the industry. The mapping exercise provides an opportunity for multi-stakeholder discussions to reveal opportunities and bottlenecks to be addressed. Maps also help to identify information gaps that require further research.

Market Research is systematic, objective collection and analysis of data about a particular target market, competition, and/or environment. It always incorporates some form of data collection whether it be secondary research (often referred to as desk research) or primary research. The objective of Market Research is to determine the demand among consumers most likely to purchase products produced by the Value Chain, the product attributes for which they are willing to pay, as well as new market opportunities.

Quantifying Value Chain performance is the assessment of chain performance in terms of efficiency. This includes determining the value added along the stages of the Value Chain, the cost of production and, to the extent possible, the income of operators. Another aspect is the cost of doing business, collecting information and enforcing contracts.



## CHAPTER

# 4

# Mapping the Value Chain

This Chapter describes the concept of ‘mapping the Value Chain’, including drawing a Value Chain map. It illustrates the objectives and benefits of chain mapping. A map will show the direct chain linkages to the consumer and the indirect linkages that support the chain actors (e.g. input supply). It describes how to identify actors by their functions, and shows the steps involved in mapping actors, activities and services provided to the chain.

The Value Chain map is made up of three inter-linked components

- Value Chain actors (inputs sourced, functions performed, and products produced)
- Service providers (the business or extension services that support the Value Chain operations)
- Enabling environment (infrastructure and policies, institutions and processes that shape the market environment).

The process of developing a Value Chain map involves the use of a participatory approach. This process, (often referred to as “walking the Value Chain”) involves interviewing many chain actors, individually or in multi-stakeholder forums. Wherever possible, those conducting the VCA should see how the entire value chain operates by meeting and interacting with participants within the environment in which they operate (e.g. farmers on their farms).

Chain mapping serves both an analytical purpose and a communication purpose. A Value Chain map should be comprehensible to all involved. The point is to achieve the right degree of detail to deliver sufficient information to be useful, while it remains simple enough to be easily understood. Because chain maps are used for different purposes, we are not talking about just one chain map but about several maps that differ according to their respective purposes.

Use of the Value Chain mapping approach has several advantages:

1. It permits a more complete vision of the chain, including the route that products follow on their journey to the end market, and the roles that different actors play at specific points along that journey.
2. It divides the chain into separate functions and enables the actors to see who performs which functions and their relative importance. This allows, for example, the farmer group to begin to understand the chain, including issues such as bottlenecks in product or information flows that impact performance.

### 4.1 Tools for Value Chain mapping and analysis

There are a number of qualitative and quantitative tools that can be used in value chain mapping and analysis. Box 7 gives some methods and sources for gathering information.

#### Secondary desk research

- Official statistical data and internet research - Existing sub-sector studies
- Existing consumer studies.

#### Primary participatory research

- Consumer research
- Key informant interviews with lead farmers, local businesses and traders, researchers, or important service providers
- Focus group discussions with farmer groups or industry associations - Stakeholder workshops, expert fora and Value Chain meetings
- Questionnaire surveys of chain operators.

**Box 7: Practical hints: some methods and information sources for Value Chain studies | Source: Adapted from GTZ (2008)**

## 4.2 Steps in mapping

This section describes the process in mapping the value chain in terms of the actors and the activities, and provides some questions to ask in order to permit a first analysis of the Value Chain.

### 4.2.1 Drawing a Value Chain map

Mapping a chain means creating a visual representation of the connections between businesses in Value Chains as well as other market players. In its simplest form it is merely a flow diagram (i.e. illustrating the core transactions of Value Chains).

As a standard tool in Value Chain research and analysis, a Value Chain map is not an objective in itself, but a means of help to realise the overall objectives of the analysis by acting as a roadmap of the condition of the chain and how to improve its performance.

It achieves this by helping to illustrate how the Value Chain is structured and helping those doing the analysis to understand the process by which a product goes through several stages until it reaches the final customer. It also serves as an effective tool for communicating what occurs, where and why, and the opportunities that exist to improve performance.

A Value Chain map can serve as a way of identifying and categorising key market players. Apart from businesses involved in core transactions, Value Chain maps can also illustrate which other supporting organisations (government, business development services, NGOs, associations) are available, and on which Value Chain levels they concentrate their services.

If a Value Chain initiative intends to explore market opportunities, Value Chain maps can show up different market channels through which products and services reach the final customer. Combined with findings from the market research, the maps can also show additional information on the comparative relevance and viability of individual market channels (e.g. number of competitors, size of market, number of workers, unrealised market opportunities, etc.) and factors that determine the involved businesses ability to innovate in unique ways (the nature of relationships among the buyers, sellers, service providers and regulatory institutions that operate within or influence the range of activities in the chain).

#### Steps in mapping the Value Chain

- Map the core processes in the value chain
- Map the actors involved at the various stages in the chain
- Map the activities as the product moves along the chain
- Map the support service providers to the chain

#### 4.2.2 Identifying actors

The mapping process begins by identifying the key actors in the Value Chain according to their function (production, post-harvest management, processing, marketing and provision of business development services).

##### Production

This category includes people or companies, whose functions are directly related to basic farming, including input supplies (products and services), land preparation, production and harvest.

##### Post- harvest management/processing

This includes those whose functions are directly related to post-harvest management (cleaning, sorting, and packaging) or processing of basic goods into value-added products (for example, processing cassava into flour or fries). These activities may be done by individual actors or companies, e.g. Trinidad & Tobago Agribusiness Association (TTABA).

##### Trading

This includes those whose functions are related to the buying and selling of the product(s). In general, these actors (traders or wholesalers) move the product from the production area to the end markets. Various marketing actors can be involved depending on the geographic scope of the market chain under analysis.

##### Providers of business services

These are individuals, organisations, or companies that offer business services to the chain. These services can be tangible (input suppliers, transport, machinery, storage, among others, or in tangible (technical assistance, training, etc.), and formal (NGOs, state agencies, companies, etc.) or informal (transporters, local traders, other farmers, etc.)

***In operational terms, most actors can be identified through brainstorming with a small group that knows the chain. If the participants do not have information on some functions, then further interviews may be necessary to generate reliable data about the actors in the chain and the functions that they perform.***

#### Step 1: Mapping the core processes in making the product.

**A key question to ask is: What happens to the product before it reaches the consumer?**

Start with the product in the consumer's hand and work backwards. Figure 6 shows the mapping of the core processes in making cassava bread.



Figure 6: Map of the processes in the Cassava Bread Value Chain

**Step 2: List all the major actors.**

A key question to ask is: Who is involved in the various processes of making cassava bread before it gets to the consumer?

The actors involved in the production of cassava bread are shown in Figure 7

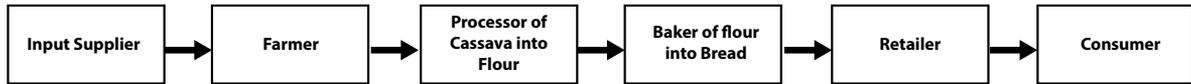


Figure 7: Example of actors in Cassava Bread Value Chain

**Step 3: List all the activities undertaken by each actor in the chain.**

**Identify the activities undertaken by each actor.**

For example, the activities involved in making cassava bread begins with the farmer who;

- Buys inputs
- Produces cassava
- Harvests cassava
- Sells cassava at the farm-gate to a trader.

A number of other activities are undertaken by the trader and other actors all the way until consumption of the cassava bread.

At the end of this exercise it should be possible to produce the type of map shown in Figure 8.

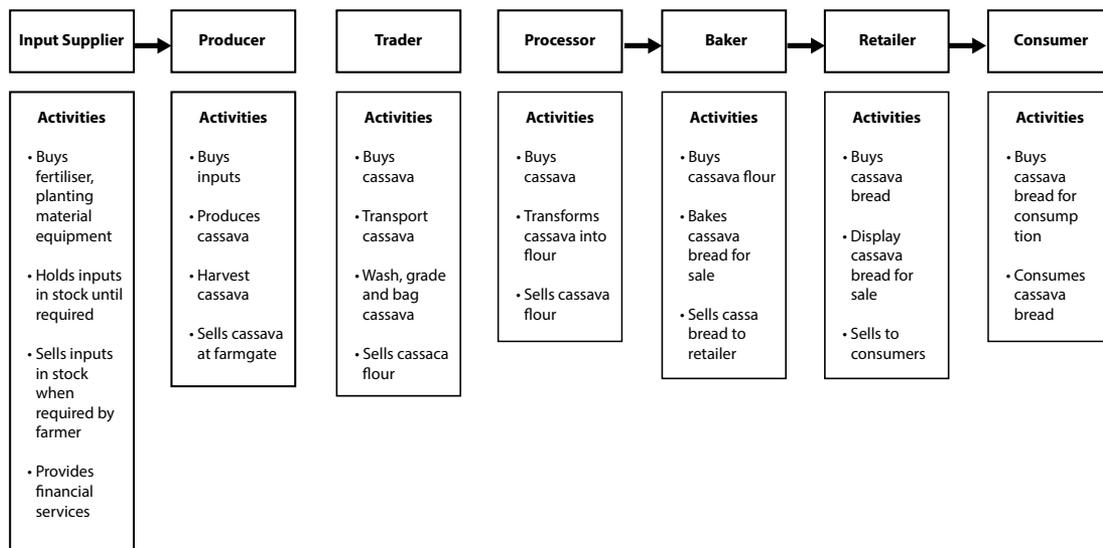


Figure 8: Activities in the Cassava Bread Value Chain map

Step 4: The next step is to list the support services required by the chain (Figure 9).

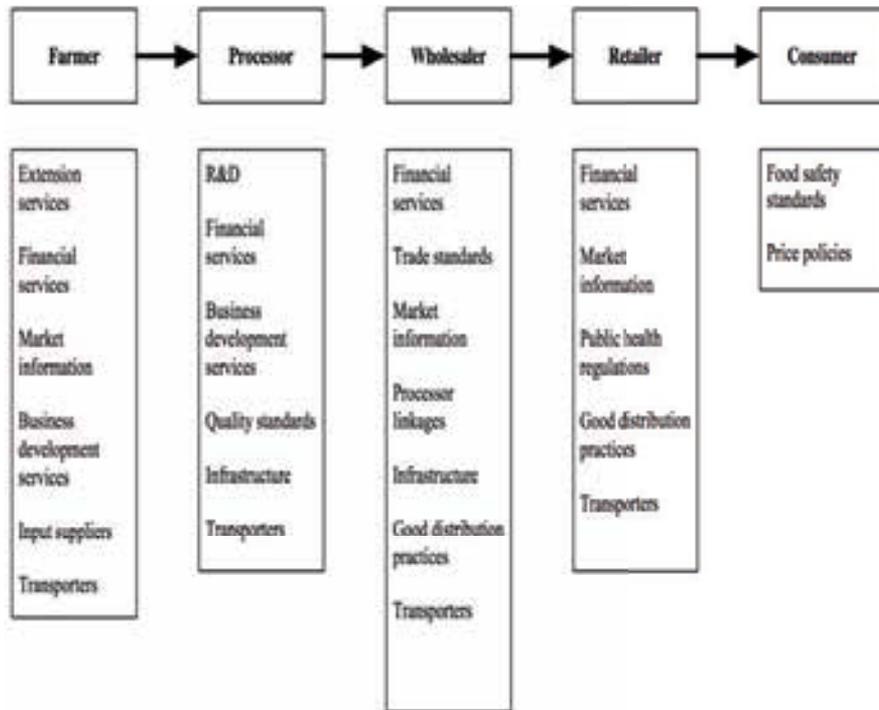


Figure 9: Support services

Having gone through the process of mapping the process, actors, activities and services providers to the chain, an overall map can be drawn, as illustrated in Figure 10. Two examples of mapped chains in the Region, Yellow Yam in Jamaica and Cassava Bread in Trinidad and Tobago are shown in Annex 2.

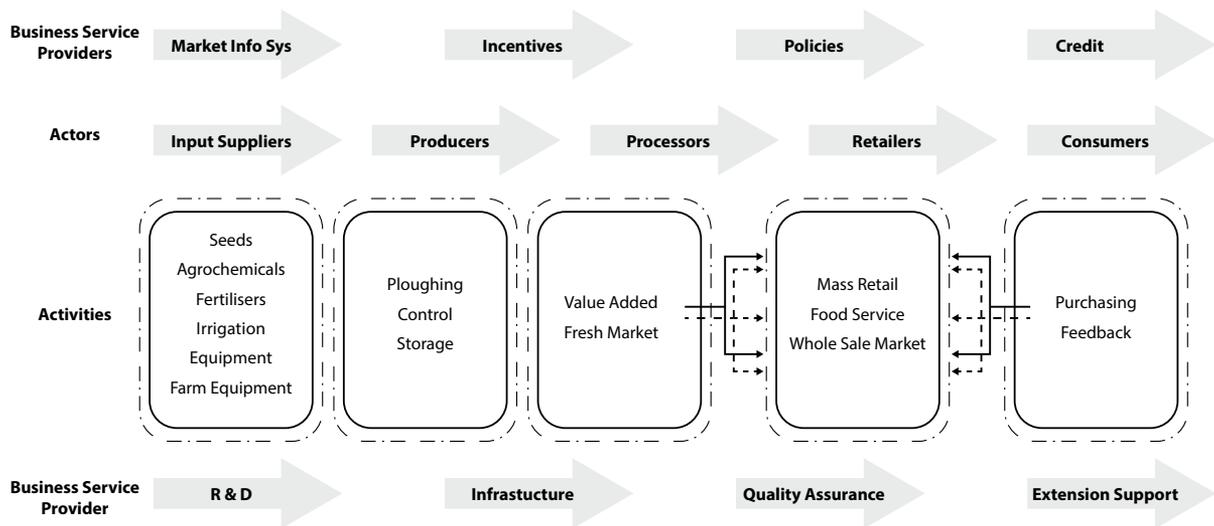


Figure 10: Generic example of mapped Value Chain illustrating actors, activities and business service providers | Source: Adapted from Lowe and Gereffi (2008)

### 4.2.3 Mapping product flows

Presented in the following sections is information gained from walking a Value Chain to follow cassava products as they move from the farmer through various processes before reaching the final consumer (as cassava fries). The number of stages through which a product passes en route to consumers will depend on the market outlet chosen by the farmer, the extent to which a product is processed prior to purchase by a consumer, and the geographical area covered.

There is no substitute for arranging interviews with people from across the chain when seeking to identify how products flow along the Value Chain and factors impacting performance.

When seeking to identify how products flow along the Value Chain and factors impacting performance, there is no substitute for arranging interviews with people from across the chain (i.e. farmers, processors, distributors, and retailers). This will provide a first-hand understanding of each activity performed along the chain, (e.g. from meeting the farmer in the field, or the processor at the factory), and how these processes impact the overall Value Chain's performance. Understanding this comes from using the chain participants' differing perspectives and experiences to identify exactly what is occurring at each step along the chain, and why.

Having a first-hand understanding of the activities can reveal a lot about the chain's strengths and weaknesses, such as bottlenecks in information or product flows, wastages and non-value adding points; along with opportunities presently being missed. It also enables beginning the determination of the root causes of issues impacting the chain's performance, such as strained business relationships or inadequately trained staff.

Walking the Value Chain also enables measurement and determination of timelines, such as the time that a shipment is delayed at any point along the chain and how the product is handled as it journeys towards the end market. It also provides an ideal opportunity to learn what information is collected and where and how that information is used, and determine what will be measured later and why. An added benefit of this process is that it commonly identifies "low hanging fruit"; i.e. potential changes that can immediately produce improvements to the Value Chain's performance.

For the farmer to commence production he/she must receive inputs from input suppliers. Table 2 illustrates the product flow occurring at each stage along a Value Chain that transforms raw materials into a final product that a consumer purchases in a retail store.

Process	Cassava production	Processing	Retailing
Input	Planting material, chemicals, fertiliser, labour	Cassava tuber	Fries, frozen cassava
Output	Cassava tuber	Fries, frozen cassava	

Table 2: Example of product flows in a Cassava Value Chain | Source: Adapted from M4P (2008)

Another type of mapping is to show main production, processing and retail areas (Figure 11).

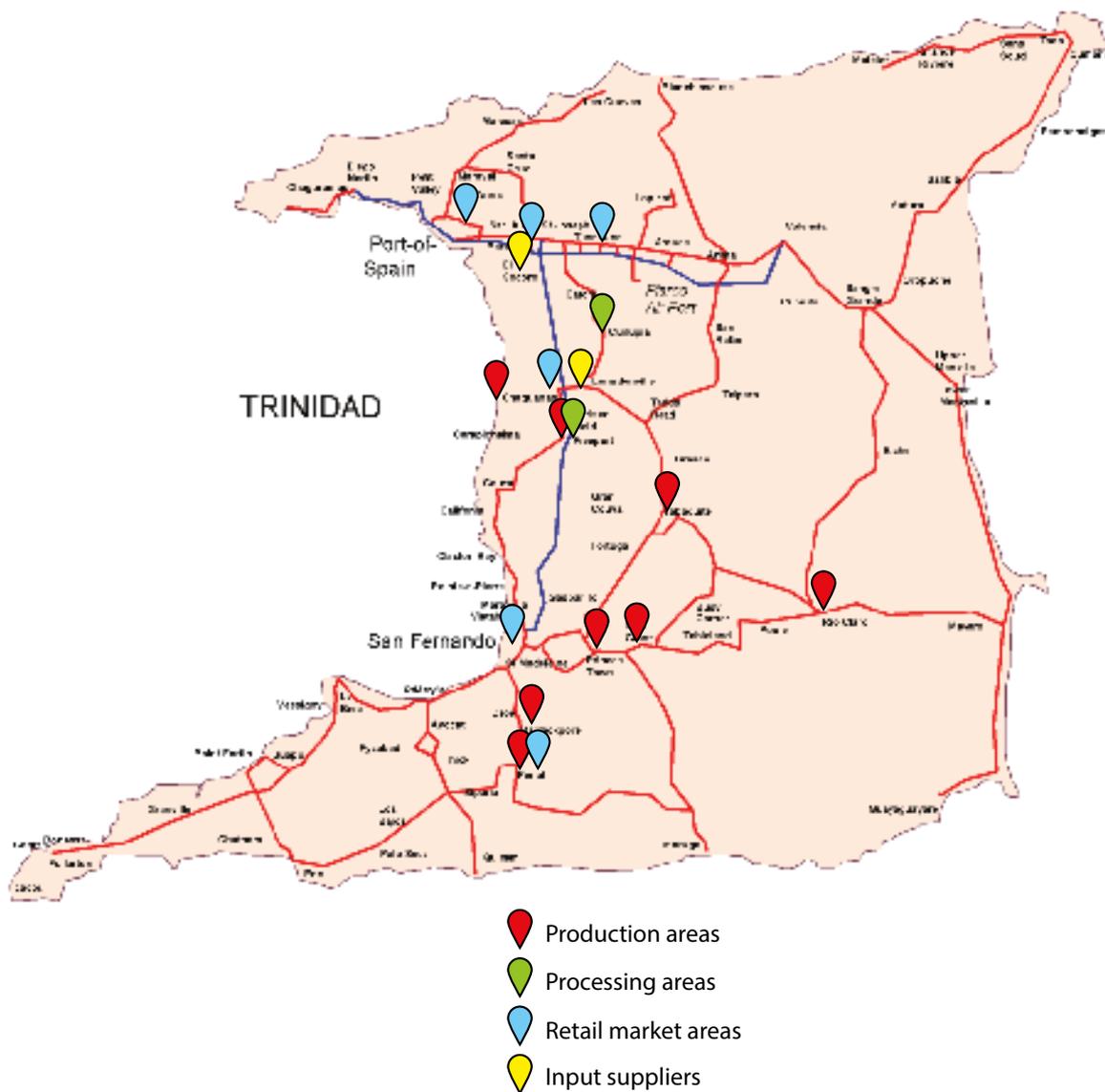


Figure 11: Map showing main cassava production, processing and retail areas in Trinidad

#### 4.2.4 Mapping information flows

The effective two-way flow of information is the life blood of all Value Chains. The nature of information that flows from consumers, back to producers and through those in the middle of the chain is a primary determinant of how a Value Chain operates and the opportunities that exist to improve its performance.

Information is needed to flow from consumers, both domestic and foreign, all the way back to the producers. A few examples of some of the questions that producers need answers to are:

- What products are needed?
- What volumes are needed?
- What quality factors or service requirements are most important to customers and consumers? When are these needed?

This type of information must be provided in order to make informed management decisions. Information should always come through the chain as shown in Table 3.

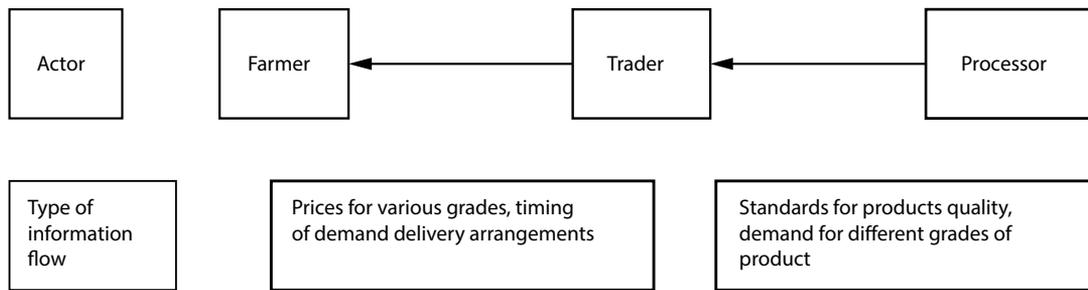


Table 3: Mapping information flows | Source: M4P (2008)

The more sophisticated the chain the more sophisticated the information flow. For example, farmers who just grow a crop and sell to the first available huckster would not receive much information. Many people would argue that this sort of arrangement does not constitute a “Value Chain”; instead reflecting the “Supply Chain” model presented in Figure 2 (Chapter 2). A Value Chain occurs when there is a direct two-way flow of information between consumers and the businesses and producers involved in supplying products to the end market.

#### 4.2.5 Mapping Constraints

Presented in Figure 12 are the types of insights that Value Chain analysis can produce about constraints impacting the Value Chain’s performance, and their cause.

Function	Actors	Current situation/ constraints problems				
Services: Inputs Advice Finance	Input suppliers Extension Plant protection	Inputs	Low demand on farmers' side	Limited extension and plant protection resources	No access to finance	Lack of market information
Production	Farmers	<ul style="list-style-type: none"> <li>- Affected by diseases, viruses, insects, etc.</li> <li>- Little knowledge of plant protection</li> <li>- Use of old non-resistant varieties</li> </ul>	<ul style="list-style-type: none"> <li>- High production density</li> <li>- Low yields</li> <li>- Only little inputs</li> <li>- Old fashioned technology, cultivation methods</li> </ul>	<ul style="list-style-type: none"> <li>- No awareness about group advantages</li> <li>- More individual mind set</li> </ul>	No value adding	
Post Harvest						
Trade	Traders	<ul style="list-style-type: none"> <li>- Small size of traders</li> </ul>	<ul style="list-style-type: none"> <li>- Competition due to small quantities</li> </ul>	<ul style="list-style-type: none"> <li>- Limited knowledge of quality standards</li> </ul>	<ul style="list-style-type: none"> <li>- No technology for quality measurement</li> </ul>	<ul style="list-style-type: none"> <li>- Poor roads</li> <li>- High transport costs</li> </ul>

Figure 12: Example of mapping constraints | Source: Giencke (2008)

Initial identification of constraints in the Value Chain should be made at all levels, additionally potential solutions can be identified as well.

These insights enable the development of upgrading strategies that are effective as a result of having identified what needs to be achieved at each stage along the Value Chain, the resources required to effect change, and how performance will be monitored to ensure that the desired outcomes are consistently met.

## CHAPTER

# 5

## Market Research

Successful Value Chains are driven by information about consumers' expectations and satisfaction with the products that they chose to purchase (or not) compared to alternative products. This is best achieved through Market Research. A Value Chain's success therefore hinges on possessing accurate informed information about the market potential for the product(s) being produced by the Value Chain which means gathering

information such as, the demand for the product, where the markets are located, who are the customers and other relevant data. To do this requires the collection and analysis of information about the markets into which the value chain currently sells its product(s), or intends to sell its product(s).

A successful chain responds to its customer's needs which are derived from Market Research. In other words, it must adopt a market oriented approach.

It is important to undertake Market Research to assist not only in chain selection but also to determine the type of upgrade strategies that are required to meet demand. To be successful the chain must adopt a market-oriented approach. This allows it to have its pulse on the market, which enables it to remain competitive and profitable by reacting to changing needs.

What is a market-oriented approach? The market-oriented approach enables the chain to have a competitive advantage at the point of sale by improving quality, applying product differentiation and market segmentation

and develop specific market niches. Gathering market intelligence is necessary for monitoring developments in the market and enabling the chain actors to make informed decisions by having:

- Assessed the growth potential of the market
- Identified other market opportunities
- Designed support actions in line with market conditions.

There are two types of Market Research: Secondary Market Research and Primary Market Research. Secondary Market Research is based on information from studies previously performed by government agencies, trade associations, and other organisations. There are number of sources for gathering secondary data. These range from statistical units within government ministries to marketing agencies e.g. NAMDEVCO in Trinidad and Tobago. In addition, information can be sourced from the CARICOM Secretariat and international bodies, e.g. ITC and FAO.

Primary Market Research is tailored to a chain's or company's particular needs and is conducted either by those in the chain or someone that they pay to conduct the research. Focus groups, surveys, field tests, interviews, and observation are examples of primary market research.

Secondary research lays the groundwork, while primary research fills in the gaps. By using both types of Market Research, a business gets a well-rounded view of its markets. Box 5 summarises the main elements of any type of Market Research and an outline of the methodology of a market study is shown in Box 6.

Lead questions and criteria:

(a) Is there a market and how can it be characterised?

- Types of products in demand (e.g. varieties and seasonality of demand, as well as product quality and packaging as preferred by the processing industry and/ or final consumers)
- Market size and trends (e.g. volumes traded, consumption of different consumer groups)
- Seasonality of supply (e.g. periods of over and undersupply), demand peaks, changes in quality - Product prices (e.g. maximum and minimum prices, price trends, fluctuations, price range)
- Requirements of buyers in terms of quality, price, volume and reliability.

(b) Who are the competitors and how do they perform?

- Competing producers/ Value Chains (e.g. imports, supplies from other regions)
- Performance of competing market participants (e.g. price, quality, market shares) - Advantages of competitors (e.g. distance from the market)
- Competing products (e.g. products used as substitutes).

(c) What are the conditions of market access?

- Existing distribution channels (e.g. industry, export or end consumer markets)
- Power of market participants (e.g. monopolies)
- Infrastructure of roads and market places (e.g. rural/ urban markets, storage facilities) - Product standards (e.g. laws/regulations on product safety, labelling or packaging)
- Tax and tariff regimes (e.g. customs tariffs on inputs)
- Services facilitating market access (e.g. financial and information services).

**Box 5: Key elements in Market Research | Source: Adapted from GTZ (2008)**

## Preliminary work

### 1. Desk research – main tasks:

- Collection of relevant documents (market/technology studies, statistics, demographics,
- Analysis of documents/secondary data
- Outline of the field research
- Draft of interview guidelines/surveys for the field research.

### 2. Field research - main tasks:

- Survey of final consumers (limited number; probably product testing)
- Interviews of processors, exporters, retailers (probably round table discussion) and other key experts.

### Analysis and presentation of results

#### 1. Demand analysis of the target market(s):

- Demand of final consumers, including from where these products are mainly purchased and why?
- Demand of industrial customers and exporters.

#### 2. Demand trend analysis:

- Describing recent demand trends over time (in terms of value, volume, variety and market growth).

#### 3. Quantified marketing channel diagram.

#### 4. Description of market access requirements (legal, industry and trade standards).

#### 5. Description of product profiles of value-added products:

- Available in the market (domestic and/or imported)
- Processed by the domestic industry for the domestic and/or export markets
- Possible new products having a market potential in the regional and target markets.

#### 6. SWOT analysis (Strengths/Weaknesses/Opportunities/Threats) of factors likely to impact the proposed Value Chain's sustainability. This will cover, among other things

- Processing capacities and technology
- Physical infrastructure
- Logistics /transport/ cooling facilities in processing and wholesale/retail trade - Technical barriers to export trade
- Marketing services
- Policy and regulatory impediments, administrative requirements, etc.

#### 7. Conclusions

Strategic options and recommendations with regard to further steps in the value chain's upgrading or establishing a presence in the market that was researched.

If the study comes to the conclusion that there is demand potential for domestically produced and processed products, the study should also:

- Give first recommendations for improving the Value Chain from the perspective of the demand side (processing industry, export and retail trade, consumers)
- Draft Terms of Reference for potential subsequent analyses.

**Box 6: Methodology of a market study | Source: Adapted from GTZ (2008)**

The results of the market study will provide the chain with the following:

- Figures on the size of markets, and a figure of the total market demand for the product in question
- Information on price, volume, trends, quality criteria, uses as well as potential uses
- Which consumers are most likely to purchase the product, which attributes they value above others and for which they are therefore willing to pay

- Where the chain can increase sales, increase product value and volume of trade, i.e., how to be more competitive
- The names of traders, buyers and processors, so that any future intervention can be developed in partnership with these actors after the analysis of the results have been made
- Major production areas of the selected commodity
- Information on seasonality of production
- Information on prices of the target raw commodity and if possible for processed products derived from the raw material, i.e., cassava roots, cassava chips, cassava flour, etc.
- Marketing costs along the market chain, showing costs paid by and to the intermediaries from the farmer to the consumer.

The market survey should provide initial ideas on opportunities and constraints, from having analysed the information to determine:

- Growth potential
- Growth trend, unmet market demand
- Available sales outlets, interest of buyers in the product
- Scope for expanding production and/or scope for value addition through processing or product improvement, competitive advantage of the Value Chain vis-à-vis competitors (unique product/local specialty, low cost of production)
- Technological and managerial skills of enterprises in the sector
- Access to infrastructure, qualified labour force, services, raw materials, inputs.

Expected outcomes from market study:

- a) Size of markets
- b) Total market demand (price, volume, trends, quality criteria, uses, users) of product
- c) Type of consumers (product attributes, price willing to pay)
- d) How to make product more competitive (increase product value and volume)
- e) Names of traders, buyers and processors
- f) Major production areas of the selected raw material for product ( commodity)
- g) Information on seasonality of production and prices of the target raw commodity
- h) Marketing costs along the market chain.

## CHAPTER

# 6

# Quantitative analysis of the Value Chain

Quantitative analysis of the Value Chain is an important step in developing an upgrading strategy. This is partly because production costs and revenues, along with associated factors such as quality and consistency, **are the most**

Assessing the Value Chain's cost structure allows you to identify critical issues that need to be addressed.

**important factors determining competitiveness. Assessing the Value Chain's cost structure identification of critical issues that need to be**

**addressed.** Collection of this baseline data will enable the Value Chain to monitor progress during and after the upgrading strategy. The quantitative data will help to create awareness among actors about the potential for value addition, about cost drivers (any factor which causes a change in the cost of an activity, e.g. changes in output) and about the scope for price negotiations along the Value Chain.

Quantitative analysis includes assessing:

- Overall added value generated by the chain and how this value is shared at each of the different stages
- The production and marketing costs at each stage of the chain, along with the cost structure of each stage of the Value Chain and the chain overall
- Number of operators (possibly differentiating size of farms and enterprises)
- Number of jobs and employees for each category of operators (also according to gender)
- Volumes and turnover in each chain stage
- Shares of product flow of the different sub-chains/distribution channels
- Market share of the value chain defined as percentage of the sales value in the overall market.
- The performance of operators (utilisation of productive capacity, productivity, profitability)

### 6.1 Identifying the value added at each stage of the chain

The Value Chain's performance can be quantified by calculating the value currently added at each stage in the Value Chain, and then identifying what this tells you about opportunities to improve performance.

"Value" refers to the value added to the product by activities at each step in the chain (for example, yam sells for \$X at the farm gate, but cleaning it makes it worth \$X + 1), as well as the value created by the product and activities and then captured by each of the actors involved (for example, \$X for the farmer and \$X + 4 for the retailer). **The "added" part means the difference between the total revenue created by the product and the costs of the materials, labour and other inputs used to produce it, which can then be captured by the actors along the chain.**

Numerous different tools have been developed and used to assess performance. Here we will look at things like the cost of production and distribution of margins along the chain. Obtaining accurate data on costs and margins might be time consuming and difficult since most small and medium size agri-business operations do not keep good records. Notwithstanding this, you should try to get the following data at each stage of the chain:

- Sales price
- Costs of intermediate products: costs of inputs from the previous stage
- Cost of other inputs: inputs used/added at present stage

Obtaining accurate data on costs and margins might be time consuming and difficult since most small and medium-size agri-business operations do not keep good records.

Applying the data collected along the different stages of the chain should permit the development of the typical value added diagram. Figure 13 shows how the dollars that flow from consumers purchasing an end product are distributed among the members of an actual chain. Each member of the chain is rewarded according to the relative value that they create in relation to the end product.

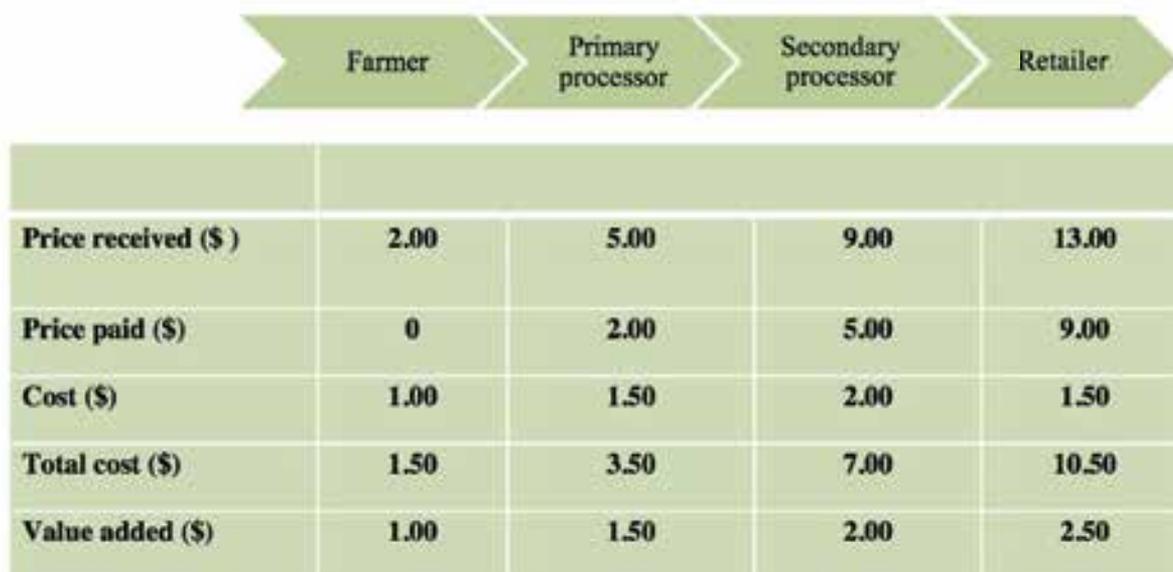


Figure 13: Example of value added along the chain

In looking at the diagram for how value is shared among the participants, what is important is not how much a chain member gets, but whether that member's share reflects the amount of value he or she created and the effort it took to create that value.

## 6.2 Calculating production cost in Value Chains

Value Chain Analysis enables businesses to develop innovative cost saving initiatives. Chain competitiveness depends on maintaining the most cost effective production within and between each of the businesses that together comprise the Value Chain. It does not depend on one business minimising its own costs without considering how its actions might impact the overall chain's performance.

Identifying how and where costs can be reduced in ways that are not damaging to the Value Chain's overall performance begins by calculating and then aggregating costs incurred by the business operating at each segment of the chain. This cost analysis can be used to:

- Identify cost drivers across different stages of the chain and hence the potential for cost reduction
- Benchmark the production cost of each segment of the chain and the Value Chain vis-à-vis competitors, for example by comparing unit production costs against those of competitors. It should however be noted that gathering information on competitors' costs is a challenge. The best sources of information may be data collected by Ministries of Agriculture, discussions with extension officers, and searching the internet

All of these are described in more detail below.

## 6.3 Identification of cost drivers

A cost driver is something that causes a change in the cost of performing an activity or a series of activities, such as unnecessary waste or variability in quality. Both are factors that will ultimately impact all of the involved businesses' profitability. An activity can have more than one cost driver attached to it. For example, in a Cassava

Bread Value Chain, some identified cost factors are machinery, labour to operate the machinery, consumption of power, the quantity of waste produced by unskilled labour operating machinery, and/or rejected products. These insights about which cost factors are impacting the chain's profitability and why enables cost improvement initiatives to be prioritised and addressed systematically.

The chain's competitiveness depends on maintaining the most cost effective production within and between each of the businesses who together comprise the value chain.

Listed below are cost items incurred along the Value Chain. As far as possible, every effort should be made to collect these costs:

- Production costs (at farm level includes planting, production, harvest, post-harvest)
- Packaging costs
- Handling costs
- Transport costs
- Product losses
- Storage costs
- Processing costs
- Capital costs.

As many small farmers in the Caribbean do not keep good records of their operations, collecting meaningful data often relies on asking targeted questions or implementing means of tracking costs and revenues over time.

The national average cost of production (CoP) for cassava, sweet potato and yams is available from the Ministries of Agriculture in most Caribbean countries. Whether individual farmers are above or below the national average will depend on their scale of production, location and management processes. If the CoP is not available from the farmers in the chain, national averages should be used as a guideline.

#### **6.4 Competitive benchmarking**

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Competitive benchmarking compares the value of key indicators of economic performance of the Value Chain with other, comparable Value Chains. Benchmarking can refer to the unit cost of production, labour productivity, transportation costs, or indicators of technical efficiency.

Besides these economic parameters, benchmarks can be established for any other quantitative or even qualitative aspect of the Value Chain, including, for example, growth rates or investment in technology. Benchmarking allows comparing the Value Chain with an industry average or best practices of competitors. In the Caribbean, sources of information for benchmarking are Ministries of Agriculture, finance agencies or agricultural development agencies (local, regional and international), who collect data and put together manuals on costs, yields, market prices and best practices. The comparison helps to identify upgrading needs and potential land identify new market opportunities.

#### **6.5 Identifying transaction costs**

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A type of cost that is particularly relevant in agricultural marketing is "transaction costs". Transaction costs result from activities to (a) search for market information and screening market opportunities and (b) handling the produce (e.g. labour, storage, transport and administrative costs).

Efficient Value Chains should minimise transaction costs because communication and information sharing in the chain should mean that there is little need to seek additional information. High transaction costs are mainly experienced when people have to spend time identifying markets.

Transparent calculation of production and processing costs also has a direct benefit for chain upgrading, as it helps to build trust between the partners in the Value Chain and provides a reference for negotiations.

*A detailed explanation of the costs and how to calculate them can be found in Shepherd, (2007)*

## **6.6 Challenges in gathering quantitative data**

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It should be noted that the collection of economic data is always a challenge. Hardly any farmer knows his or her costs, nor do the majority of transporters, traders or small-scale enterprises (including processors). As empirical research is costly and does not guarantee sufficiently accurate data, in most cases, analysts will have to be content with rough estimates. For these reasons and the fact that economic analysis often has a large bearing on business decisions, it is recommended that cost calculations are completed by trained staff.

## CHAPTER

# 7

## The role and importance of an enabling environment

Traditional chain analysis can overlook organisations, both public and private, that provide support services to the chain. It is important to understand the relationship between these support services and the factors that determine Value Chain development and sustainability. It is equally important to understand the quality, coverage, and effectiveness of existing support services to find possible ways of improving the functioning and competitiveness of the chain.

This Chapter describes the impact that an enabling environment has on determining a Value Chain's performance and its ability to profit from reacting to consumer demand. It emphasises the importance of incorporating support service providers, both public and private sector, in the chain analysis. A case study illustrates the positive impact of an intervention by the public sector.

An enabling environment includes laws, regulations, policies and public infrastructure that can either facilitate or hinder the flow of products along the chain. Within the context of a Value Chain, it refers to how farmers or businesses interact with the providers of support services, e.g. government and other agencies that provide the services to the chain (Table 4). Value Chains operate most competitively when they are supported (formally and informally) by dedicated organisations that participate in enabling products to flow from the farmgate to the final consumer. Infrastructure (roads, electricity etc.) which is government's responsibility, is a prerequisite for successful Value Chain development. In addition, policies (trade, fiscal, monetary) and services such as extension, training and research are also important for the development and strengthening of effective Value Chains. Business service providers offering loans, inputs, information and market opportunities can play a significant role in creating a favourable environment, whether they are organised by the state or by private enterprises, and they are likely to help improve Value Chain access to small-scale producers and other actors.

Basic infrastructure	Production and storage support	Marketing and business support
<ul style="list-style-type: none"> <li>- Roads and transportation</li> <li>- Communications</li> <li>- Water and irrigation access</li> <li>- Products from agricultural research</li> </ul>	<ul style="list-style-type: none"> <li>- Production input supply</li> <li>- Farm machinery</li> <li>- Extension services providing "know-how and innovation" to producers</li> <li>- Producer associations</li> <li>- Weather forecasting</li> <li>- Postharvest cooling and storage</li> <li>- Packing houses and infrastructure</li> </ul>	<ul style="list-style-type: none"> <li>- Market information services</li> <li>- Market intelligence</li> <li>- Technical and business training services</li> <li>- Local marketing centres</li> <li>- Export promotion</li> </ul>
Financial support	Policies regulations etc.	
<ul style="list-style-type: none"> <li>- Credit services</li> <li>- Banking services, cash and electronic</li> <li>- Crop/farm risk insurance schemes</li> </ul>	<ul style="list-style-type: none"> <li>- Security (praedial larceny)</li> <li>- Land tenure policy</li> <li>- Government policy and regulation on trading - Legal reforms and dispute settlement</li> <li>- Trade policies</li> <li>- Incentives</li> </ul>	

Table 4: List of support services that could be provided to the chain | Source: Adapted from Lundy et al 2004

Box 7 illustrates the positive impact that assistance provided by the state had on enabling a Value Chain to succeed in a particular geographic region.

A community centre made available by the government of St Vincent and the Grenadines is the focal point of post-harvest management activities for local dasheen farmers. These facilities, together with support from a local farmers' organisation, the Eastern Caribbean Trading Agriculture and Development Organisation (ECTAD), have enabled producers to add quality and value, command higher prices and secure a reliable export market.

With the collapse of the regional banana industry, many farmers in St Vincent turned to dasheen, resulting in low prices. Looking for solutions, farmers from three of the main dasheen producing areas came together to develop the Value Chain, with backing from the Caribbean Farmers Network (CaFAN), which hosts ECTAD. CaFAN provided training in the Value Chain approach. Farmers learned to increase spacing of plants so as to grow bigger crops. They also learned to improve packaging. CaFAN secured an arrangement with Solcaribbean, a supplier to the UK market; and local producers, organised into clusters, have now been an integral part of the chain for the past 4 years. The farmers' group handles all packaging and delivery and ECTAD also coordinates shipping. Producers have secured good prices by maintaining quality standards. Dasheen that previously sold for as little as €0.18 per kg can now earn up to €1 per kg. Success has drawn other farmers to the group, which now numbers 400 producers. Plans are in hand to expand into a similar approach with sweet potatoes and ginger.

**Box 7: Helping hand by St Vincent and the Grenadines Government | Source: [Publications.cta.int/media/publications/downloads/1692\\_PDF.pdf](https://publications.cta.int/media/publications/downloads/1692_PDF.pdf)**

Risk is the possibility that an event will have a negative impact a chain's performance. While farmers cannot control factors such as rainfall, they can implement management practices that mitigate the severity of rain related issues: such as drainage in the case of too much precipitation, and irrigation in the case of drought. The implementation of effective risk management practices can be influenced by the previously mentioned enabling environment.

Agriculture is associated with risk and uncertainty. This is caused by a number of factors including the vagaries of weather, the unpredictable nature of biological processes, the pronounced seasonality of production and market cycles, and the geographical separation of production and end uses. The Caribbean region is highly vulnerable to natural disasters, which significantly impact on agriculture. For example, the estimated cost of damage to Jamaica's agriculture sector from flooding due to storms and hurricanes over the period 2001-2011 was US\$87 million.

Risky events can be characterised by their magnitude, scope or spread, frequency and duration, all of which can affect a farm's or a chain's vulnerability. Micro-risk events affect individual farms or firms: examples include plant pests and diseases or theft (praedial larceny) and these are managed locally. On the other hand risks such, as drought and flooding may impact an entire community and require a coordinated external response. Thus an individual farmer or chain may face very different risks at the same time, with different levels of exposure and capacities to respond and adapt to them.

The Value Chain must be aware of risks associated with its business operations and factor these into its strategies for increasing competitiveness. The ability of the members of a Value Chain to manage risks relies on them possessing the ability to identify risks and their cause, determine their exposure to those risks and the impact that such risks could have on their businesses, and evaluate the relative effectiveness of the options that exist to manage those risks. This Chapter lists potential risks to a Caribbean value chain, including:

- Supply risks (including disease and climate extremes)
- Market access risks (establishing and maintaining markets)
- Management and operational risks
- Political instability.

The Value Chain must be aware of risks associated with its business operations and factor these into its strategies for increasing competitiveness.

This Chapter also considers how these risks impact on the Value Chain and steps to be taken to implement a risk management strategy. Two case studies are used to describe how to assess and minimise risks. Table 5 identifies some of the different types of risk that may be encountered

Type of risk	Examples
Weather-related	Periodic rain deficit; excess rainfall or temperature, hailstorms, strong winds.
Natural disasters (including extreme weather events)	Major floods and droughts, hurricanes, earthquakes, landslide, and volcanic activity; all of which can affect production, processing, transport and logistics.
Biological and environmental	Crop and livestock pests and diseases. Production of unsafe food due to poor sanitation, human contamination, illnesses, contamination and degradation of natural resources and the environment. Contamination and degradation of production and processing.
Praedial larceny	The theft of agricultural produce or livestock.
Market	Changes in supply and/or demand that impact on domestic and/or international prices of inputs and/or outputs. Changes in market demand for quantity and/or quality attributes. Entrance of new competitors. Changes in food safety requirements (e.g. more restrictive maximum residue level requirements). Changes in market demand for timing of product delivery. Changes in enterprise/supply chain reputation and dependability.
Logistical and infrastructural	Changes in transport, communication or energy costs. Degraded and/or undependable transport, communication, energy infrastructure. Conflicts or labour disputes affecting transport, communications, energy infrastructure and services.
Management and operational	Poor management decisions in asset allocation and livelihood/enterprise selection. Poor decision making in use of inputs. Poor quality control. Forecast and planning errors. Breakdowns in farm or firm equipment. Use of outdated seeds. Unwillingness to change product, process or markets. Inability to adapt to changes in cash and labour flows, etc.
Policy and institutional	Changing and/or uncertain monetary, fiscal and tax policies. Changing and/or uncertain financial (credit, savings, insurance) policies. Changing and/or uncertain regulatory and legal policies and enforcement. Changing and/or uncertain trade and market policies. Changing and/or uncertain land policies and tenure systems. Governance-related uncertainty (e.g. corruption). Weak institutional capacity to implement regulatory mandates.
Political	Security-related risks and uncertainty (e.g. threats to property and/or life) associated with politico-social instability within a country or in neighbouring countries. Interruption of trade due to disputes with other countries. Nationalisation/confiscation of assets, especially for foreign investors.

Table 5: Examples of agricultural risk | Source: Adapted from Jaffee et al (2008)

In addition to the above, Value Chains can be disrupted by illness or death of chain participants, or even of people outside the Value Chain. Funeral observations, for example, could disrupt the ability of a small Value Chain (e.g. one supplying roots or tubers to a local supermarket) to continue to honour a contract. Following natural disasters, crops may have escaped significant damage but those in the chain may need to neglect their farms or businesses in order to look after their homes and families.

### 8.1. Steps in risk management

In order to assess risks and put in place mitigating strategies, chain participants should identify their own exposure to risks that are internal and external to their business, such as the sourcing of inputs, their own production/processing operations, the marketing of products to customers and consumers, and the behaviour of competitors. The identification and assessment of risk should be done through holding formal and informal discussions with individuals and/or through a stakeholder meeting. This will enable the gathering of qualitative and quantitative data so that the probability and severity of different risks can be ranked, with some degree of confidence. The next step is to assess the impact and probability of the risks identified

The identification and assessment of risk should be done through holding formal and informal discussions with individuals and/or through a stakeholder meeting.

For example a risk impact/probability assessment of a Cassava Value Chain may rate the probability of the occurrence of pest and disease as high and the impact as high. This would then be considered a critical risk and therefore require appropriate risk mitigation measures.

An example of the type of risks faced by actors in a Cassava Value Chain in Guyana and how they addressed them is shown in Table 6.

Types of risk faced by farmers	Risk mitigation measures
Changes in output price	Look for ways to reduce costs; consider targeting different markets
Prolonged decline in output price, changes in demand	Look for ways to reduce costs; consider targeting different markets
Pest attacks	Diversification into other crops, application of more rigorous agronomic practices such as improved plant husbandry in coping with pests
Types of risk faced by traders	Risk mitigation measures
Changes in input price	Seek different markets for both sales and supply,
Changes in demand	Trading in a wider mix of products, use of informal credit and personal savings in times of unfavourable demand
Types of risk faced by traders	Risk mitigation measures
Changes in input price, Changes in final consumer demand	On a temporary basis, seek other markets for products
Changes in the operation of the domestic output market	Temporarily source inputs from other suppliers, temporarily change production mix
Late payments	Use of personal savings

Table 6: Risk faced and mitigation measures in the Cassava Value Chain in Guyana | Source: Blair (2010)

Box 9 describes how Grace Kennedy, a major food processor in the Caribbean applied risk management approaches in its hot pepper mash operations.

Grace Kennedy's (GK) decision to establish its own pepper mash production capacity was considered risky, given the seasonality of domestic production, the country's history of unstable annual pepper production, and the need to find a market for output in excess of that needed for the domestic production of its own GK-branded pepper products.

To offset these risks, the company undertook a number of measures:

- a. A set of farmers was contracted to grow and deliver peppers in such a manner as to assure a steady supply of high quality fresh peppers to the plant.
- b. Provided timely delivery of extension advice and input supplies.
- c. Made prompt payments.

In addition to the above, the large size of the GK Group meant that it had the capacity both to reduce the size of the risk involved and to bear the risk that remained in relation to the production and marketing of hot peppers. GK's other activities in Jamaica meant that it also had an advantage over smaller, single-activity companies in that it had the necessary experience and a pre-established capacity to take measures to reduce the risk of raw material supply failure.

**Box 8: Risk management: Grace Agro Processors Hot Pepper Value Chain in Jamaica | Source: Westlake (2014)**

To help small producers better understand risk management, the World Bank in conjunction with CARDI has made available a free on-line training program. Specifically, the course aims to provide smallholders and agricultural extension workers with an understanding of the major risks facing farmers in the Caribbean and the opportunities for taking action to mitigate and manage these risks. For further information go to the website; <https://www.agriskmanagementforum.org/blog/risk-mitigation-smallholder-agricultural-production-caribbean-new-training-available-free-online>

# CHAPTER

# 9

## Upgrading strategy

This Chapter defines what is meant by “upgrading strategy” and describes different types of strategy. It lists and describes the steps to be taken to develop an upgrade strategy by illustrating the use of SWOT analysis, and how to identify constraints in the chain.

“Upgrading” can be defined as increasing the competitiveness of the Value Chain by moving it towards a new market, market segment, or customer, towards increased efficiency, or towards new activities.

Upgrading” can be defined as increasing the competitiveness of the Value Chain by moving it towards a new market, market segment, or customer, towards increased efficiency, or towards new activities.

Research on global Value Chains has developed and advanced this concept, with Riisgaard et al. (2010) identifying five different types of upgrading:

- Process upgrading. Improving processes, such as increasing the efficiency of internal processes, or reducing waste.
- Product upgrading. Introducing new products or improving old products to give them greater unit value, or shifting away from bulk markets to high-value markets to gain more value.
- Volume upgrading. Producing more of the product.
- Functional upgrading. Changing the mix of activities conducted to gain more value from the chain, such as taking on a new function in the chain (for example, farmers involved in processing as well as growing). Improving Value Chain coordination. Improving coordination in the chain to improve performance.



**Manual grinder**



**Motorised grinder**

**Example of process upgrading from manual grinder to motorised one**



**Example of product upgrading from sale of primary product to value-added product**

Ultimately, the overall aim of any upgrading strategy is to increase the long term sustainability of the Value Chain and its members' activities by enabling the members to benefit from the creation of consumer-recognised value.

Ultimately, the overall aim of any upgrading strategy is to increase the long term sustainability of Value Chain and its members' activities by enabling the members to benefit from the creation of consumer-recognised value. This is achieved through:

- Increasing revenue by generating a higher sales volume (by increasing the number of products purchased by individual consumers or increasing the number of consumers purchasing the products), developing new products, and/or achieving better prices
- Reducing costs by increasing production capacity, improving management or production processes, investing in new equipment and infrastructure, or reducing waste.

### 9.1 Steps in an upgrading strategy

The commonly agreed steps to take in developing an upgrading strategy are:

- a) Agree on a vision. Know where you are, where you want to go in the near future (say, 3 years). What is the best route to achieve that vision?
- b) Review the results of the VCA analyses to identify strengths, weaknesses, opportunities and constraints
- c) Decide on priority areas for intervention
- d) Prepare an action plan for upgrading the Value Chain, including who will be involved and when
- e) Identify those responsible for implementing each element of the upgrading strategy.
- f) Determine the actors' specific roles and how their performance will be evaluated
- g) Implement the strategy
- h) Monitor and evaluate progress.

### 9.2 Agreeing on a vision

The chain should have an understanding of its current position, where it wants to be in a few years, and what steps are to be taken to achieve the desired goals. The emphasis must be on competitive issues, namely product differentiation, quality improvement and/or product innovation, cost reduction and improvement in operational efficiency.

The upgrading strategy describes how the vision can be reached by improving processes, the capacity and relationships of actors.

### 9.3 Analysing opportunities and constraints

One method of analysing opportunities and constraints is by linking the chain map with a SWOT analysis. These together can then be mapped in relation to each actor in the chain and the chain overall following the approaches described in Box 10 and subsequent sections.

A SWOT analysis is a planning method used to evaluate the Strengths, Weaknesses, Opportunities and Threats involved in a business venture. Identification of SWOTs is important because they can help to identify later steps in planning an upgrade strategy. Strengths and weakness are factors that define the ability of the chain to realise the identified opportunities. Opportunities and threats are the factors external to business operations that define what is possible in terms of profitability and market growth. Threats include competitors and other factors, such as risks previously discussed, that the chain must address to realise the identified opportunities.

**Box 9: What is a SWOT analysis?**

Figure 14 shows the principal stages of the Value Chain in the middle row, complemented with results of a SWOT analysis above and below, thus linking operators at different Value Chain stages to weaknesses/threats and strengths/ opportunities identified in the SWOT analysis. This enables results of the SWOT analysis to be readily incorporated into discussions designed to identify potential upgrade strategies.

#### Strengths and Opportunities

- |   |  |  |
|---|--|--|
| <ul style="list-style-type: none"> <li>• Extensive gene pool available in the public and private sector</li> <li>• Good knowledge of the characteristics of cassava and means of production by farmers.</li> <li>• Dependable yields can be produced in areas where other crops do not produce well.</li> <li>• Cassava is easy to grow and does not require much labour</li> </ul> | <ul style="list-style-type: none"> <li>• Potential strength lies in the culinary tradition and the likely value added products that can be developed</li> <li>• There is significant existing agroprocessing infrastructure</li> <li>• The international market for cassava value added products provide significant opportunities for new product development.</li> </ul> | <ul style="list-style-type: none"> <li>• High level of household penetration with 70% of household indicating that they have used cassava.</li> <li>• Large and growing market for cassava products given its complex carbohydrate and high fibre content</li> </ul> |
|---|--|--|



#### Weaknesses and Threats

- |   |   |   |
|---|---|---|
| <ul style="list-style-type: none"> <li>• Unstable cultivars leading to loss of hybrid vigor and low productivity.</li> <li>• Vast majority of soils are heavy clay which are not most appropriate for cassava production</li> <li>• The competition from other sectors for labor</li> </ul> | <ul style="list-style-type: none"> <li>• Poorly designed plants leading to inefficient operations and increased costs</li> <li>• Low confidence in Trinidad and Tobago as a supplier given the limited capacity of Trinidad to carry out pesticide residue tests, traceability systems and HACCP certified</li> </ul> | <ul style="list-style-type: none"> <li>• Extremely limited processing and value added products</li> <li>• The absence of effective systems in place to provide current and accurate market intelligence, and market development support to the industry.</li> </ul> |
|---|---|---|

**Figure 14: SWOT analysis of cassava sub-sector in Trinidad. | Source: Ministry of Food Production, Trinidad and Tobago. Internal document Cassava Value Chain Analysis (2013).**

## 9.4 Assessing the impact of interventions

From your SWOT analysis you can come up with list of potential interventions to upgrade your chain. The chain should have list of criteria for prioritising which ones to choose.

Some criteria for consideration are:

- Does it lead to an overall increase in chain revenue?
- Is it feasible to implement?
- Is it commercially viable?
- Are resources available?
- Is there interest by the chain partners?

## 9.5 Implementation of upgrade strategy

To achieve the desired results of the upgrading strategies emphasis must be on collaboration and cooperation. Working relations have to be developed vertically, for example amongst producers and horizontally with other chain actors such as, business service providers and external agencies.

In most cases the upgrading strategy will specify several fields of upgrading action that have to be dealt with in parallel, by different chain actors. Therefore, chain upgrading calls for coordinated decision making and action.

After completion of the Value Chain analysis, all stakeholders will have to gather to agree on the analysis and the steps that are to be taken for upgrading the chain. Typically, the format for dissemination of the results of the analysis is a workshop (see format in Box 11).

To achieve the desired results of upgrading strategies working relations have to be developed vertically, for example amongst producers and horizontally with other chain actors, such as, business service providers and external agencies.

Objective: exchange of ideas across chain stages

Participants: full representation of chain actors, 25-50 participants

Duration: 1 day

Programme: Presentation of preliminary chain maps (refining some elements) Presentation and discussion of key findings of sector and chain analyses Discussions by chain actors on issues such as:

- To what extent do we have an ideal chain?
- How will our collaboration make our chain more competitive with other chains?
- How will I benefit from collaborating within this chain? This leads to examination of prices, margins, quality, safety, volumes, losses, and terms of trade within the chain
- Which service providers will provide me, and on what terms, with sustainable solutions to allow me to benefit from the chain participation?
- The outputs of the workshop should be.;
  - Identification of constraints/opportunities based on input provided
  - Agreement on upgrading strategies
  - Agreement on quick actions and on the start of upgrading actions.

### Box 10: Template: format of a Value Chain workshop

The stakeholders should discuss the report and, more specifically, the constraints identified. It is important that there is understanding and agreement amongst the actors in the value chain as to:

- What will be done (purpose, objectives, expected benefits)?
- How will it be achieved (improved processes, information flow, financial investments, etc.)?
- Who will be involved (businesses, wider stakeholders, etc.)?
- When will activities take place (timelines, location)?
- How will improvements be monitored (roles, responsibilities, key performance indicators)?



Participants at a Value Chain workshop

The discussions on the upgrading will provide a number of possible options which are then assessed for feasibility. A suggested approach is to initiate a pilot activity. This will enable the chain to:

1. In a short time (6 months), generate tangible, measurable results for more than one actor in the chain.
2. Lay the ground work for more ambitious activities by showing the utility of working together.
3. Include a simple monitoring system that allows chain members to assess the progress of the upgrade and make changes in a timely fashion if needed.
4. Be relatively low-cost and, where possible, draw principally on locally available resources, people and knowledge.
5. Focus on building positive relationships among chain actors.

An example of upgrading possibilities in the cassava value chain is shown in Table 7. It is taken from a case study in Vietnam.

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

Table 7: Example of upgrading possibilities matrix for Cassava Value Chain | Source: M4P (2008)

Once the upgrade strategies have been developed, these can then be incorporated into an action plan (Table 8) which will show what needs to be done, by whom and when. This tool can be used to track your progress.

Action (What)	Who	When
Better drying oven	Processor	February 2015
Display shelving	Retailer	March 2015
Increased use of fertiliser	Producer	February 2015
Use crates for transport	Trader	January 2015

Table 8: Example of action plan

## 9.6 Who will implement the upgrading strategy?

It is important to identify who will be responsible for implementation of the upgrade strategy. The general rule is that this must be the responsibility of the designated members of the Value Chain. In planning for upgrading these actors and their roles must be identified. They must have the capacity and willingness to take the project ahead. Therefore, it is necessary to review the capacity of value chain actors to tackle the opportunities and constraints. This review is done by going through the list of upgrading actions identified beforehand. For each upgrading action, Value Chain actors and facilitators should determine;

- Who among the chain actors (enterprises, associations or business organisations) takes the lead in the respective upgrading action
- Whether this enterprise or association is capable of completing the task with its own resources, or
- Whether the intended action requires external support.

While enterprises may know what is required to take the industry forward, they may not possess the resources; knowhow or organisation required to implement upgrading and may require external support.

External support could be to build capacity of the chain actors to undertake an upgrading strategy, as well as the ability to organise themselves and resolve common problems jointly. As such, the upgrading strategy has to be complemented with a strategy for the effective facilitation of the upgrading process, including planning for external support.

At the end of the workshop, there should be agreement by the chain actors on the upgrade strategies, an action plan and the structure for its implementation and monitoring. These should be incorporated into a revised Value Chain report which would then be shared with the chain actors to ensure validity.

## 9.7 Monitoring and evaluation

The effectiveness of an upgrading strategy relies on the ability to determine if the strategy is achieving its objectives and, if not, what revisions must be made to the strategy and how they should be implemented.

These questions can be answered by the design of a monitoring and evaluation system. Monitoring is a tool that provides information indicating whether the upgrade project is on the right track. Evaluation refers to an assessment of whether the upgrade achieved intended objectives.

Some possible factors to take into account when designing such a system are set out in Tables 9 and 10. They include reference to the respective sources of each type of information. It is recommended that the baseline data for these indicators be taken from the Value Chain analysis.

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The effectiveness of an upgrading strategy relies on the ability to determine if the strategy is achieving its objectives and, if not, what revisions must be made to the strategy and how they should be implemented. These questions can be answered by the design of a monitoring and evaluation system.

Indicators	Source of verification
Production costs	Interviews or periodic workshops with actors in the chain
Yields per unit	Interviews or periodic workshops with actors in the chain
Value of final product	Survey of final value of product in the market
Profitability	Interviews or periodic workshops with actors in the chain
Distribution of benefits	Interviews or periodic workshops with actors in the chain
Improvement (processes, products, functions, market chain)	Direct observations, interviews, or periodic workshops with actors in the chain

Table 9: Indicators and sources of verification within the chain | Source: Lundy et al (2004)

Indicators	Source of verification
Market penetration	Periodic interviews or workshops with actors of the chain. Periodic surveys in the target markets of the chain.
Sales volume	Periodic interviews or workshops with actors in the chain. Periodic surveys in the target markets of the chain.
Sales value	Periodic interviews or workshops with actors in the chain. Periodic surveys in the target markets of the chain, revision of secondary data on market prices.
Product differentiation	Periodic interviews or workshops with actors in the chain. Periodic surveys in the target markets of the chain.

Table 10: Indicators and sources of verification of the market | Source: Lundy et al (2004)

For a monitoring and evaluation system to be effective it must be maintained for a period of time. Since the chain is responsible for upgrading, it is best to use the services of external personnel for information collection, data analysis, report preparation and information dissemination. In carrying out these activities cost becomes a consideration. One way to minimise the cost of monitoring and evaluation is sharing of data collection between external personnel and the chain actors. Another approach is for the chain to enlist the support of agencies active in the Value Chain to assist with data collection, analysis and dissemination



# Annex

# 1

## Characteristics of the four primary chain structures

Characteristics	Chain Structure			
	Supply Chain	Cooperative Value Chain	Coordinated Value Chain	Collaborative Value Chain
<b>Strategic factors</b>				
Each member's strategic orientation	Self interest	Self-interest, limited mutual benefit	Mixed interest, moderate focus on mutual benefit	Mutual interest, extensive focus on mutual benefit
Extent to which value chains' and businesses' strategies are aligned	Not unless accidental	To a limited degree	Closely, regularly evaluated in relation to specific goals	Extensive, regularly monitored in relation to specific goals
Most important benefit	Traditional business model, no new skills required	Provides opportunity to learn/adapt with limited risk	Enables moderate cost reductions and revenue gain with little risk	Enables co-innovation, unique strengths, with little risk
<b>Governance arrangements</b>				
Existence of a chain champion	No	Perhaps, most often not	Usually clearly defined	Defined and articulated
Presence of trust and commitment	Little existence of either	Limited existence of either	Considerable existence of both	Extensive existence of both
Mechanisms to prevent freeloading	Little to none	Limited	Usually significant	Always extensive
<b>Financial</b>				
Financial focus, basis of negotiation	Maximise own profitability	Enhance own profits, perhaps others' profits too	Increase own profits first, other actors second	Protect/increase all actors' profits
Primary method of mitigating risk	Short-term focus, seek to pass risk onto third parties	Limit catastrophic risk through using preferred suppliers	Medium-term focus, try to ensure correct accountability	Long-term focus; regularly monitor, ensure accountability
<b>Communication</b>				
Key attitudinal characteristic	Primary focus is towards own operations and personal gain	Work closely with others	Each member views itself as part of interrelated system	Each member views itself as part of aligned and interlinked system

Nature of business communication	Short-term; often untimely and inaccurate, primarily one direction with few details shared	Short to medium-term; often untimely, limited details, irregular two -way communication.	Short to medium-term; usually timely, accurate, detailed. Regular two -way communication.	Short, medium and long-term; timely, accurate, detailed. Extensive two - way communication.
<b>Operations</b>				
Primary focus of chain's operations	Immediate customer	Immediate customer	Suppliers, customers and consumers (to a degree)	Target consumers from a systems perspective
Number of customers and suppliers	Many customers, moderate importance; many suppliers	Many customers, range in importance; many suppliers	Fewer customers, range in importance; fewer suppliers	A few important customers; often few suppliers
Extent to which businesses' operations are aligned	Not unless accidental	Transactional: such as suppliers ensure capacity to guarantee the supply of consistently high quality products	Closely, forecasting customers' immediate and future needs factor directly in management decisions	Extensive, businesses plan operations and monitor performance; may jointly invest in infrastructure

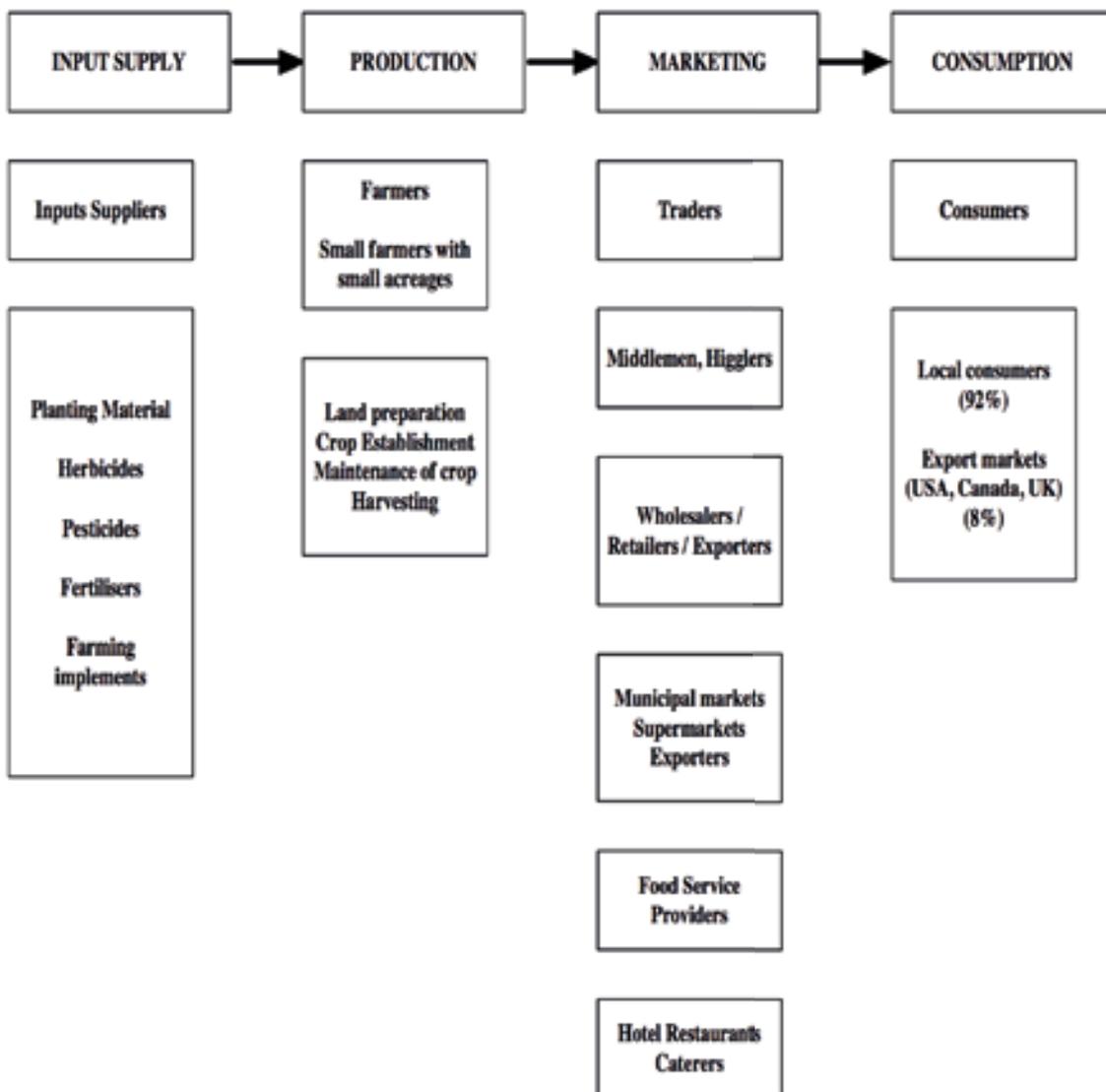
Source: Gooch and Marenick (2012)

# Annex

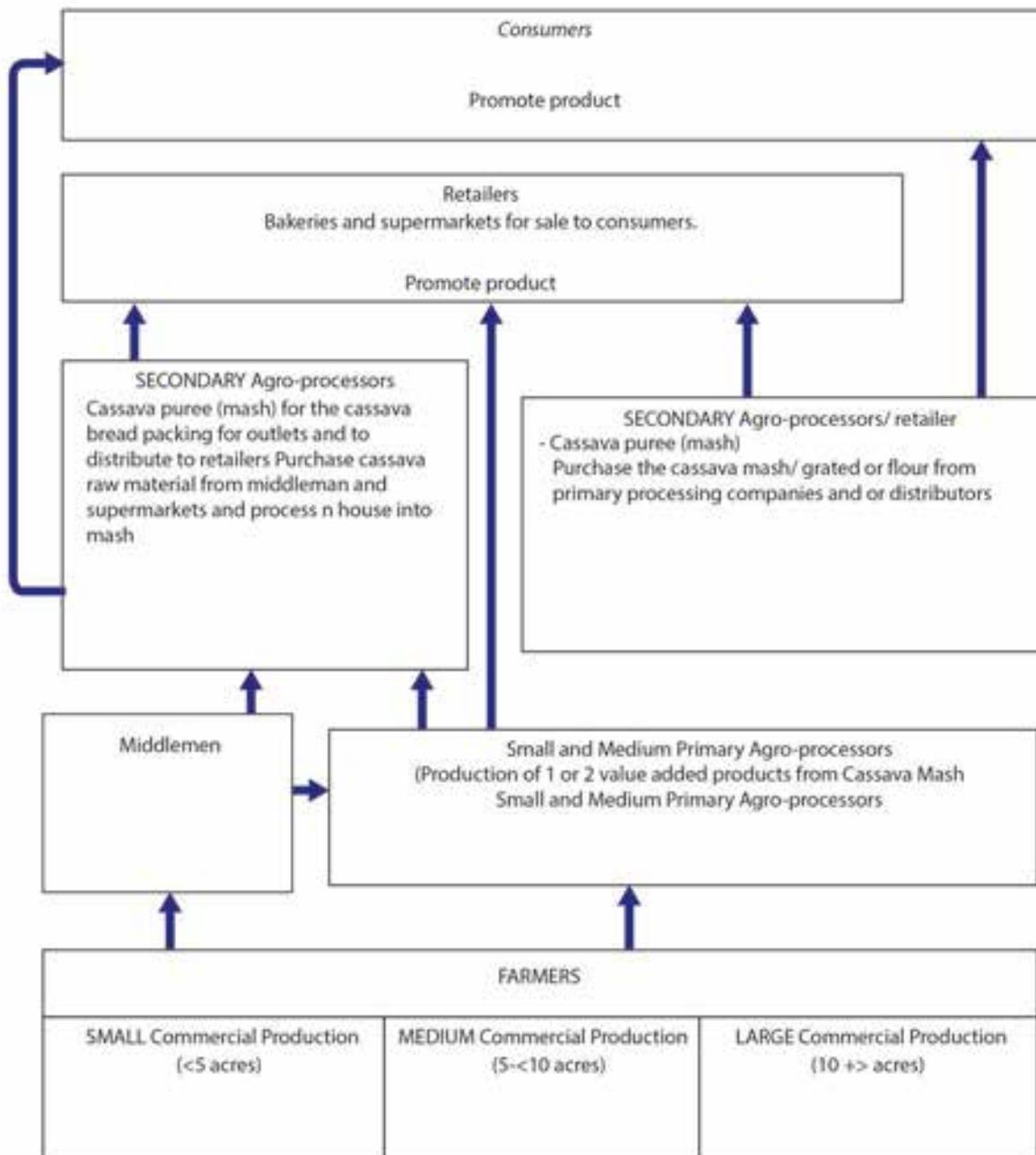
# 2

## Examples of Mapped Value Chains

Yellow Yam Value Chain in Jamaica



In Trinidad Map of Cassava Bread Value Chain based on channels of utilisation of the end products



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## NOTES

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