



Value Chains  
& Trade



OPPORTUNITIES FOR SUSTAINABLE, GREEN AND INCLUSIVE AGRICULTURAL VALUE CHAINS IN  
**ACP COUNTRIES**



OPPORTUNITIES FOR SUSTAINABLE, GREEN AND  
INCLUSIVE AGRICULTURAL VALUE CHAINS IN  
**ACP COUNTRIES**

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## FOREWORD

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During 2012, CTA and FAO undertook case studies of eighteen value chains in eleven countries in East, Central and West Africa, the Caribbean, and the Pacific. The objective of these studies was to identify the factors affecting commercial value chain development in ACP countries, with emphasis on maximising the inclusion of smallholders, on greening of the value chain and on sustainability concerns.

This publication summarises the findings of the case studies and draws lessons on both the critical success factors for and the constraints on entrepreneurial initiative and commercial viability.

We trust that the publication will prove useful not only to governments but also to private companies, as well as to those supporting value chain development, such as donors and NGOs. The need to clarify public sector strategies and priorities for fostering development of value chains is essential in all ACP countries. The agrifood sector is an important source of income for the poorer populations in these regions, and inclusive value chains can make a major contribution to improving their livelihoods. At the same time, inclusiveness cannot be achieved at all costs: value chains should be efficient and sustainable. The publication therefore highlights some important “green” initiatives taken by the value chains studied.

FAO and CTA share an interest in taking stock of approaches for the development of sustainable value chains that are also economically viable. We were pleased to have the opportunity to partner on this work, thus continuing the many years of fruitful collaboration between our two organisations.

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## ACRONYMS

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<b>ACIAR</b>	Australian Centre for International Agricultural Research
<b>ACP</b>	African, Caribbean, and Pacific Group of States
<b>AI</b>	Artificial Insemination
<b>ANEM</b>	National Association of Mango Exporters (Haiti)
<b>APHIS</b>	Animal and Plant Health Inspection Service of the US Department of Agriculture
<b>ASPVEFS</b>	Association of Fruit Producers and Sellers from the South (Haiti)
<b>BA</b>	Biosecurity Australia
<b>BCGA</b>	Belize Citrus Growers Association
<b>Brookside</b>	Brookside Dairies Limited (Kenya)
<b>BHL</b>	Bank Holdings Limited (Barbados)
<b>BQA</b>	Bilateral quarantine agreement
<b>BSHL</b>	Blue Skies Holdings Limited
<b>BSJ</b>	Bureau of Standards Jamaica
<b>CARDI</b>	Caribbean Agricultural Research and Development Institute
<b>CARICOM</b>	Caribbean Community
<b>CARIRI</b>	Caribbean Industrial Research Institute
<b>CARISEC</b>	CARICOM Secretariat
<b>CBOT</b>	Chicago Board of Trade
<b>CCIC</b>	Cocoa and Coffee Inter-Professional Council (Cameroon)
<b>CDC</b>	Commonwealth Development Corporation
<b>CEDA</b>	Caribbean Export Development Agency
<b>CEMAC</b>	Economic and Monetary Community of Central Africa
<b>CEP</b>	Caribbean Egg Processors Ltd.
<b>CET</b>	Common external tariff
<b>COMESA</b>	Common Market for Eastern and Southern Africa
<b>CPBL</b>	Citrus Products of Belize Limited
<b>CPJL</b>	Caribbean Producers Jamaica Limited
<b>CREI</b>	Citrus Research and Education Institute (Belize)
<b>CTA</b>	Technical Centre for Agricultural and Rural Cooperation (ACP-EU)
<b>DFCU</b>	Development Finance Company of Uganda
<b>DFID</b>	Department for International Development (United Kingdom)
<b>EDB</b>	Ethylene dibromide
<b>FAO</b>	Food and Agriculture Organization of the United Nations
<b>FFS</b>	Farmer field school
<b>FPP</b>	Fiji Papaya Project
<b>FSA</b>	Farmers Support Association (Vanuatu)
<b>FTO</b>	Fair trade organisation
<b>GAPD</b>	Grace Agro Processors Division (Jamaica)
<b>GCC</b>	Grenada Cocoa Company
<b>GK</b>	Grace Kennedy Group (Jamaica)
<b>GKFS</b>	GK Foods and Services Limited (Jamaica)
<b>GOCFCS</b>	Grenada Organic Cocoa Farmers Co-operative Society Limited

<b>HACCP</b>	Hazard Analysis Critical Control Point
<b>HTFA</b>	High temperature forced air
<b>IADB</b>	Inter-American Development Bank
<b>IDH</b>	Sustainable Trade Initiative (Netherlands)
<b>IFOAM</b>	International Federation of Organic Agriculture Movements
<b>IQF</b>	Individually quick frozen
<b>ISO</b>	International Standards Organization
<b>HWT</b>	Hot water treatment
<b>JBRP</b>	Jamaica Business Recovery Programme
<b>JEFA</b>	Jamaica Egg Farmers Association
<b>JMB</b>	JMB S.A. (Haiti)
<b>KARI</b>	Kenya Agricultural Research Institute
<b>KSL</b>	Kakira Sugar Limited (Uganda)
<b>KTDA</b>	Kenya Tea Development Agency Limited
<b>LEAF</b>	Linking Environment and Farming
<b>LEL</b>	Liquid Eggs Limited (Jamaica)
<b>LEAP</b>	Local Enterprise and Agriculture Programme (Uganda)
<b>MAFA</b>	Masara N'Arziki Farmers Association (Ghana)
<b>MARCO</b>	Morris-American Rubber Company Incorporated (Liberia)
<b>MARNDR</b>	Ministry of Agriculture, Natural Resources and Rural Development (Haiti)
<b>NAADS</b>	National Agricultural Advisory Services (Uganda)
<b>NBL</b>	Nile Breweries Limited (Uganda)
<b>NGO</b>	Non-governmental organization
<b>NHIL</b>	National Health and Insurance Levy (Ghana)
<b>NWC</b>	Nature's Way Cooperative Fiji Ltd
<b>OCFCS</b>	Grenada Organic Farmers Co-operative Society Ltd
<b>OMF</b>	Organic Matters Foundation
<b>ORE</b>	Organization for the Rehabilitation of the Environment (Haiti)
<b>PIC</b>	Pacific island country
<b>PPP</b>	Public-private partnership
<b>RA</b>	Rainforest Alliance
<b>RAMSI</b>	Regional Assistance Mission to the Solomon Islands
<b>RoRo</b>	Roll-on roll-off
<b>SAFACAM</b>	Société Africaine Forestière et Agricole du Cameroun
<b>SIC Cacaos</b>	Société Industrielle Camerounaise des Cacaos SA
<b>SPC</b>	Secretariat of the Pacific Community
<b>SPS</b>	Sanitary and phytosanitary
<b>TLB</b>	Taro leaf blight
<b>UBL</b>	Uganda Breweries Limited
<b>UHT</b>	Ultra-High-Temperature
<b>UNDP</b>	United Nations Development Programme
<b>USAID</b>	United States Agency for International Development
<b>USDA</b>	United States Department of Agriculture
<b>UTK</b>	Unilever Tea Kenya
<b>VAT</b>	Value added tax

# Executive Summary

## Introduction

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This paper summarises and integrates four reports on agricultural commodity chains prepared in early 2013 as part of a study of ACP value chains. The four reports were funded by FAO and commissioned by CTA.

The reports cover value chains in countries in West and Central Africa, East Africa, the Caribbean, and the Pacific. The selected chains were all established through private sector initiative and have proved to be sustainable or to have the potential to be so. They relate to the output of a single crop or livestock product in a single country and, in most cases, to that part of the output which is exported or which passes through a set of one or more exporters.

## The Case Studies

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### The value chains considered here are:

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**Cocoa/Cameroon** *Coverage:* the value chain for the throughput of Société Industrielle Camerounaise des Cacaos SA. *Focus:* the company's efforts to develop strong links with cocoa farmer cooperatives and groups.

**Rubber/Cameroon** *Coverage:* the chain for rubber processed by Société Africaine Forestière et Agricole du Cameroon. *Focus:* estate production and processing.

**Rubber/Liberia** *Coverage:* the value chain for rubber processed by the Morris-American Rubber Company. *Focus:* the company's estate production and processing of rubber, and its attempts to increase its throughput by initiating contract farming with smallholders.

**Pineapples/Ghana** *Coverage:* pineapple processed by Blue Skies Products Ghana Limited. *Focus:* the impact of a switch in demand in export markets away from the variety traditionally exported by Ghana, and the means by which Blue

Skies has successfully reacted to this while continuing to purchase from small-scale farmers.

**Maize/Ghana** *Coverage:* maize grown by members of the Masara N'Arziki Farmers Association. *Focus:* support for the establishment of this association by a major supplier of agricultural inputs and its contract farming of maize with association members.

**Barley and Sorghum/Uganda** *Coverage:* the value chains for barley and sorghum grown for, respectively, Uganda Breweries Limited and Nile Breweries Limited. *Focus:* the fiscal incentives for the establishment of the contract farming of these crops to replace imports, together with the process of establishment, and downstream collective investment by farmers.

**Sugarcane/Uganda** *Coverage:* nucleus estate and outgrower sugarcane milled by Kakira Sugar Limited. *Focus:* contract farming by small-scale outgrowers and the policy and legislative environment in which it takes place.

**Milk/Kenya** *Coverage:* the milk which passes through Brookside Dairies Limited. *Focus:* milk market liberalisation, the growth and structure of the industry, and the company's strategy for working with dairy farmers to increase its market share.

**Tea/Kenya** *Coverage:* the tea produced by smallholders, which is manufactured at cooperatively owned factories managed by the Kenya Tea Development Agency. *Focus:* programmes to support smallholders to increase their per-hectare yields and enhance the environmental sustainability of their cultural practices.

**Citrus/Belize** *Coverage:* the national export value chain for frozen orange and grapefruit juice concentrate. *Focus:* the roles played by the Belize Citrus Growers Association and by Citrus Products of Belize Limited, which owns and operates the nation's two main citrus processing plants.

**Cocoa/Grenada** *Coverage:* the output of the Grenada Organic Cocoa Farmers Cooperative Society. *Focus:* the cooperative and the Grenada Chocolate Company, which initiated the domestic manufacture and export of organic chocolate products.

**Hot Peppers/Jamaica** *Coverage:* hot peppers grown by small and medium-scale farmers and processed and exported by the Grace Kennedy Group. *Focus:* the establishment of contract farming to supply a new processing facility for the production of hot pepper mash.

**Eggs/Jamaica** *Coverage:* eggs produced by members of the Jamaica Egg Farmers Association and processed into liquid eggs for use principally in the domestic hospitality industry. *Focus:* producer-led value addition aimed at domestic sales expansion through import substitution.

**Mangoes/Haiti** *Coverage:* fresh mangoes and frozen mango pieces exported by JMB SA. *Focus:* the role of the Association of Fruit Producers and Sellers from the South and value addition and quarantine treatment by JMB.

**Taro/Fiji** *Coverage:* fresh taro produced for export on the Fijian island of Taveuni. *Focus:* the triggering of rapid production growth by crop failure in Samoa, reversing the environmental damage on the island of Taveuni caused by this growth, and Australia's protection of its taro growers.

**Papaya/Fiji** *Coverage:* papaya grown on Fiji for export in fresh form. *Focus:* the means by which Fiji re-established an export market by creating Nature's Way Cooperative to run a quarantine treatment facility and the impact of this on the development and structure of the value chain.

**Vanilla/Vanuatu** *Coverage:* the national export value chain for vanilla. *Focus:* the roles played by the sole exporting enterprise Venui Vanilla and by its partnership with an NGO, in establishing a viable chain for a high value commodity produced and processed by remote farmers.

## Main Findings

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The case studies demonstrate the great diversity of ACP agricultural value chains, which differ markedly in terms of the age, structure and practices which they embody. Despite such differences, a number of strong themes emerge from the set of studies as a whole:

- Agricultural value chains established through private initiative invariably develop to exploit market opportunities rather than as means of utilising autonomous increases in farm production.
- The liberalisation of agricultural markets which has taken place in ACP countries has had a major impact on the development and present structure of agricultural commodity value chains, especially in Africa.
- Fiscal incentives are an effective but possibly distorting means of encouraging the growth of agricultural value chains.

- Changes in technology and events external to the country in question are frequently critical determinants of the initiation and structure of agricultural value chains.
- The integration of farmers into value chains can have mutually beneficial outcomes both for the farmers themselves and for other value chain participants. Consequently, value chains for agricultural commodities often function more efficiently and effectively when small-scale farmers develop collaborative relationships with suppliers of inputs and services and with entities which market and process their output.
- Depending on the characteristics of the chain, contract farming, vertical integration or a combination of both can be effective means of achieving greater small-scale farmer inclusion.
- Provided that side-selling can be controlled, contract farming is likely to be of greatest benefit to farmers when the enterprise contracting to buy the output of farmers faces competition from other buyers.
- The downstream vertical integration of small-scale farmers is most likely to be effective if it is done into activities that are technically straight forward and can be easily managed.
- The adoption of many green activities, including non-polluting measures to increase per-hectare yields, is driven by market forces rather than by explicit attempts to be green. In the case of production, this is principally because it is in the interest of farmers to conserve their productive natural resources. When certified as such, green measures can also raise the selling prices of the raw product and products derived from it. For both production, processing and transportation, many means of raising profitability also incidentally conserve natural resources.
- Agricultural processors owned by large-scale companies now routinely adopt measures to minimise and/or mitigate adverse environmental impacts, both to comply with environmental legislation and to establish a green corporate identity.
- Small-island Caribbean and Pacific ACP countries are able to export agricultural commodities successfully despite the high production costs that stem from a lack of economies of scale. This is due principally to their unique agro-climatic, physical and cultural characteristics.

# 1

# Introduction

## 1.1 Background

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In 2012 CTA commissioned separate studies of agricultural value chains in East Africa, Central and West Africa, the Caribbean, and the Pacific.<sup>1</sup> These studies, which were funded by FAO, focused on issues relating to inclusive and sustainable green value chains established through private sector initiative.

A report for each region was prepared in early 2013. This report summarises and integrates the findings of the four regional reports, focusing on the inclusive and green characteristics of the chain and on innovative and otherwise interesting aspects of chain structure and development.

## 1.2 The nature of the value chains covered by the case studies

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Production of an agricultural commodity and its transformation into one or more products delivered to final markets involves a sequence of activities. Value chain analysis focuses on the enterprises involved in these activities and the commercial relationships between them. Normally, such analysis covers the full set of activities from the supply of inputs and services to farmers down to the point of sale to end users.

The 'value chains' covered by the ACP case studies mostly refer to *a part* of the full national network of channels for output by a single country of a single agricultural commodity, either focusing only on that part which is exported or that part which passes through a subset of one or more processors or exporters. For each case study, we use the term 'value chain' to refer to the network of channels that are the focus of the study.

<sup>1</sup> *Value Chain Assessment for Uganda, Kenya and Tanzania, Paul Wagubi. Appraisal of Value Chain Development in West and Central Africa, Victor Antwi. An Assessment of Agri-Food Value Chains in the Caribbean, Robert A. Best. Appraisal of Value Chain Development in the Pacific Islands, Koko Siga Pacific.*

## 1.3 Value chain selection

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The West and Central Africa report covers five value chains in three countries, three in West and two in Central Africa. The five chains were selected by the report's author with the aims of (a) covering chains with different degrees of smallholder participation, (b) including a politically stable country (Ghana) and a country in the process of recovering from civil war (Liberia), and (c) including chains from both West and Central Africa. For Central Africa, Cameroon was selected due to its position as by far the largest economy in the Economic and Monetary Community of Central Africa (CEMAC). Four of the value chains selected are for commodities that are principally exported. One refers to maize, which is utilised domestically.

The East Africa report reviews the value chains for ten commodities, double the number covered by the other regional studies. The five chains with the most interesting features are covered by this publication. These refer to three crops in Uganda and two commodities in Kenya, tea and milk. The Ugandan crops all substitute for imports. In Kenya, tea is grown mainly for export. All but a small amount of Kenya's national output of milk is consumed domestically.

The Caribbean report covers the value chains for four crops and one livestock commodity, eggs produced in Jamaica. These were selected for study from an initial list of 10, with the aim of covering chains with differing governance structures and diverse technological, product and market configurations. The products derived from three of the four crops are principally exported. In Grenada the manufactured chocolate products are mainly sold domestically. In Jamaica, the eggs entering the chain are sold domestically in fresh and processed form.

The Pacific islands report is based on analysis of the value chains for three crops, all of which are principally exported.

Descriptors of the 18 case studies are contained in Table 1.

## 1.4 Value chain diversity

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There is great diversity between the value chains selected for study. This is partly a consequence of marked differences between ACP countries in land area, population and population density. Amongst the countries selected for the case studies, national land area ranges from 344 km<sup>2</sup> in Grenada to 569,000 km<sup>2</sup> in Kenya, national population from 110,000 in Grenada to 41 million in Kenya, and population density from 16 per km<sup>2</sup> in Belize to 370 per

km<sup>2</sup> in Haiti. There are also significant differences between the case study countries in many of the other factors that shape value chains, including colonial history, GDP per capita, topographical and climatic characteristics, size of domestic markets, intensity of donor assistance, and distance from key foreign markets.

For West and East Africa and the Caribbean, each value chain is in effect defined with reference to a specific 'focus' enterprise. With two exceptions, these enterprises acquire ownership of the commodity and process it. The exceptions are tea in Kenya, where the focus enterprise is a managing agency, and papaya in Fiji, where it is a cooperative, which quarantine treats fruits prior to export, without taking ownership. The Pacific value chains refer to national crop sub-sectors and are in effect sub-sector studies with an emphasis on value chain issues. Table 2 shows for each case study the country, the commodity, the focus enterprise selected, and the acronym that is used for the enterprise throughout the report.

In addition to differences in the current structure of the chains, there are marked differences in the nature of the chain development that has taken place:

- A set of studies refer to recent development of long-established value chains, namely those for cocoa in Cameroon, rubber in Cameroon and Liberia, pineapples in Ghana, sugar in Uganda, tea in Kenya, citrus in Belize, and mangoes in Haiti. This development has involved a wide variety of changes, such as improvement in the efficiency and environmental impact of production and on-farm post-harvest activities, a large expansion in the throughput of the focus enterprise, improved cooperation between entities at different stages of the chain, additions to the varieties processed, and a widening of the range of the focus enterprise's products. In each of these chains there has been little recent change in the levels of activity at which the focus enterprise operates.
- One study - that for hot pepper in Jamaica - refers to a long-established enterprise which has moved upstream into contract farming and primary processing and downstream into manufacture in a main overseas market.
- Two studies - those for sorghum and barley in Uganda - refer to pre-existing enterprises that became involved relatively recently with a commodity that was already being grown in the country for other purposes.<sup>2</sup>

<sup>2</sup> *Sorghum was already being used for traditional beer brewing. UBL initiated industrial scale brewing. Note that, prior to its use for malting, barley was only grown in Uganda in small amounts.*

- A further set of chains refers to enterprises that were established relatively recently to compete with imports or with existing enterprises operating at chain stages downstream from the farm-gate. Eggs in Jamaica, milk in Kenya and cocoa in Grenada fall into this category.
- In the case of maize in Ghana, an input supplier has moved downstream into the support of small-scale maize producers and has become involved in the acquisition and marketing of their output.
- Two of the Pacific studies, namely those for taro and papaya in Fiji, developed to meet new markets which came about unexpectedly and rapidly as a result of single unforeseen events.
- One case study, vanilla in Vanuatu, is for a crop that was not previously grown in the country and was established some 20 years ago at the initiative of one individual.

In practice, there are overlaps between these categories for some of the chains studied. For example, in addition to competing with existing enterprises, Brookside Dairies, the focus enterprise of the milk value chain in Kenya, has introduced innovations both upstream and downstream from its core milk processing activity. In the case of cocoa in Grenada, the enterprise has both introduced manufacturing and operates in competition with the established buyer, the Grenada Cocoa Board.

The non-random selection of the value chains means that they cannot be taken as being representative of the chains in each of the regions. Thus no attempt is made to draw definitive conclusions on differences between regions. The main aim of this report is to discuss interesting features and findings and to illustrate them with reference to one or more of the case studies.



## TABLE 1: CASE STUDY DESCRIPTORS

Raw Commodity	Producing country				
		Total land area (km <sup>2</sup> )	% of land used for agriculture	Population (2012 est.)	2012 GDP per capita (US\$)
<b>West/Central Africa</b>					
Cocoa	Cameroon	472,710	20.3	19,958,000	1,151
Rubber	Cameroon	472,710	20.3	19,958,000	1,151
Rubber	Liberia	96,320	27.3	3,477,000	422
Pineapple	Ghana	227,533	69.9	24,333,000	1,605
Maize	Ghana	227,533	69.9	24,333,000	1,605
<b>East Africa</b>					
Barley	Uganda	197,100	70.4	33,796,000	547
Sorghum	Uganda	197,100	70.4	33,796,000	547
Sugarcane	Uganda	197,100	70.4	33,796,000	547
Milk	Kenya	569,140	48.2	40,863,000	862
Tea	Kenya	569,140	48.2	40,863,000	862
<b>Caribbean</b>					
Citrus	Belize	22,806	6.9	357,000	4,577
Cocoa	Grenada	344	32.4	104,000	7,845
Hot peppers	Jamaica	10,831	41.5	2,700,000	5,472
Eggs	Jamaica	10,831	41.5	2,730,000	5,472
Mangoes	Haiti	27,560	64.2	10,188,000	771
<b>Pacific Islands</b>					
Taro	Fiji	18,274	23.4	854,000	4,438
Papaya	Fiji	18,274	23.4	854,000	4,438
Vanilla	Vanuatu	12,189	15.3	246,000	3,176

1. Where there is more than one significant scale of production, the most important is listed first.

Sources:

Total land area: World Bank <http://data.worldbank.org/indicator/AG.LND.TOTL.K2>.

Percentage of land used for agriculture in 2011 (including permanent pasture): World Bank <http://data.worldbank.org/indicator/AG.LND.AGRI.ZS/countries>.

Population: World Atlas <http://www.worldatlas.com/aatlas/populations/ctypopls.htm#.UjyRxcasjvY>.

GDP per capita in 2012: World Bank <http://data.worldbank.org/indicator/NY.GDP.PCAP.CD>

## TABLE 1: CASE STUDY DESCRIPTORS

Raw Commodity	Scale of the main producers of the raw commodity <sup>1</sup>	Main destinations	Main products retailed/ exported
<b>West/Central Africa</b>			
Cocoa	Small	Central Africa	Cocoa products
Rubber	Large	Exports to various destinations	Baled raw rubber
Rubber	Large	India, USA	Baled raw rubber
Pineapple	Large/medium/small	Western Europe	Cut fresh pineapple
Maize	Small/medium	Domestic	Maize flour and milled feed
<b>East Africa</b>			
Barley	Small/medium	Domestic	Beer
Sorghum	Small	Domestic	Beer
Sugarcane	Small/nucleus estate	Domestic	Sugar
Milk	Small	Domestic	Milk and other dairy products
Tea	Small	Export	Black tea
<b>Caribbean</b>			
Citrus	Large/medium	USA, EU, Japan	Concentrate, essential oil, feed
Cocoa	Large/small/medium	Domestic, US, EU	Chocolate bars
Hot peppers	Small	EU, US, CARICOM	Hot pepper sauces and mash
Eggs	Large	Domestic	Fresh and liquid eggs
Mangoes	Small	USA	Fresh branded, IQF, dried
<b>Pacific Islands</b>			
Taro	Small	New Zealand, Australia	Fresh taro
Papaya	Small/large	New Zealand, Australia	Fresh papaya
Vanilla	Small	Aus, NZ, Japan, domestic	Vanilla beans, paste, concentrate

## TABLE 2: CASE-STUDY FOCUS ENTERPRISES

Commodity	Country	Focus Enterprise	Acronym
<b>West/ Central Africa</b>			
Cocoa	Cameroon	Société Industrielle Camerounaise des Cacaos SA	SIC Cacaos
Rubber	Cameroon	Société Africaine Forestière et Agricole du Cameroun	SAFACAM
Rubber	Liberia	Morris-American Rubber Company Incorporated	MARCO
Pineapple	Ghana	Blue Skies Products Ghana Limited	Blue Skies
Maize	Ghana	Wienco Ghana Limited/Masara N'Arziki Farmers Association	Wienco/MAFA
<b>East Africa</b>			
Barley	Uganda	Uganda Breweries Limited	UBL
Sorghum	Uganda	Nile Breweries Limited	NBL
Sugarcane	Uganda	Kakira Sugar Limited	KSL
Milk	Kenya	Brookside Dairies Limited	Brookside
Tea	Kenya	Kenya Tea Development Agency	KTDA
<b>Caribbean</b>			
Citrus	Belize	Citrus Products of Belize Limited	CBL
Cocoa	Grenada	Grenada Organic Cocoa Farmers Co-operative Society Limited	GOCFCS
Peppers	Jamaica	Grace Agro Processors Division	GAPD
Eggs	Jamaica	Jamaica Egg Farmers Association/ Caribbean Egg Processors	JEFA/CEP
Mangoes	Haiti	JMB S.A.	JMB
<b>Pacific Islands</b>			
Taro	Fiji	None	-
Papaya	Fiji	Natures Way Cooperative (Fiji) Limited	NWC
Vanilla	Vanuatu	Venui Vanilla	Venui Vanilla

# 2

# Characteristics

## of Each Value Chain and its Development

This section provides a brief description of the value chain covered by each case study.

### 2.1 West and Central Africa

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The case studies for this region all cover value chains that are defined in terms of produce which passes through a single large company.

#### 2.1.1 Cocoa in Cameroon: the *Société Industrielle Camerounaise des Cacaos* value chain

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West and Central Africa accounts for over two-thirds of global cocoa production. Cameroon is Africa's fourth largest producer, after Côte d'Ivoire, Ghana and Nigeria. National production has grown strongly in recent years and cocoa remains Cameroon's main agricultural export commodity, earning much more foreign exchange than any other crop.<sup>3</sup>

Most of the nation's cocoa is produced by some 400,000-500,000 small-scale farmers. In the south-west region, which accounts for almost 50% of national output, most farmers sell their production to agents or sub-agents of exporters, most of whom are pre-financed by the exporter. Some of these sales are made through common interest groups of farmers. In central Cameroon, many farmers sell through cooperatives that aggregate deliveries into consignments, which they then sell to exporters by tender. The majority of national output is exported in bean form by around 30 private traders.

After transporting to the country's main port, Douala, the beans are dried, sorted, graded and bagged. This is done either by the exporter or contracted out to specialised *transitors* who undertake these activities on behalf of exporters for a fee. There are approximately 30 cocoa exporters, down from the 250 which initially entered the market after it was liberalised in 1995. Most cocoa is exported

3 Crude oil is now Cameroon's main export earner.

in bean form, with some 12% processed domestically into chocolate and cocoa liqueur, butter and cake.

Exports are subject to a levy which contributes towards financing the Cocoa and Coffee Inter-Professional Council (CCIC), which comprises the national associations of producers, buyers, processors and exporters of cocoa and coffee in Cameroon. CCIC is embarking on a number of initiatives aimed at supporting development of the sector, including the certification of growers, encouraging sales through farmer cooperatives, and facilitating the establishment of small to medium-scale rural processing facilities to be owned eventually by individual farmers or farmer cooperatives.

The case-study value chain was initiated in 2010-11. It is centred on the chocolate processing company, Société Industrielle Camerounaise des Cacaos SA (SIC Cacaos), which operates Cameroon's largest cocoa processing facility. The Swiss-based company, Barry Callebaut AG, owns 70% of SIC Cacaos and the Cameroon Government the remaining 30%. As a strategy for acquiring sufficient supplies of good quality beans, the company provides extension advice to small-scale farmers, supplies them with early maturing planting material, and constructs buildings and provides infrastructure for cooperatives in the major producing areas. In recent years it has focused increasingly on developing strong relationships with cooperatives, supporting them through its West Africa Barry Callebaut Quality Partner Programme. SIC Cacaos purchases cocoa beans from farmers using cooperatives, private initiative groups and individuals as buying agents. It currently acquires around 32,000 tons of beans annually, equivalent to about one eighth of national output. These are processed at its factory in Douala into chocolate and cocoa liquor, butter and cake. It exports some 97% of these products, principally to neighbouring countries and sells small amounts of butter and cake to a local firm which makes drinking chocolate, chocolate spread and confectionary.

## **2.1.2 Rubber in Cameroon: the Société Africaine Forestière et Agricole du Cameroun value chain**

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Most of the world's rubber is produced in south-east Asia - in Indonesia, Thailand, Malaysia and Vietnam. Côte d'Ivoire is the largest African rubber exporting country, with about one-tenth the quantity and value of the exports of Indonesia. Cameroon is the third largest African exporter, with a quantity and export value that is roughly half that of second-ranked Liberia (see below).

As noted above, Cameroon's agricultural exports are dominated by cocoa. Cocoa is followed by rubber, cotton, coffee and bananas, with their ranking changing from

year to year, principally as a result of changes in relative export prices.

Some 95% of rubber in Cameroon is produced on large-scale estates. In recent years these have been expanding their planted area in response to sharply increased world prices. Most of Cameroon's rubber trees are old and many estates now have comprehensive replanting programmes. High world rubber prices have also encouraged new entrants, including palm oil producers diversifying into rubber growing. To further increase their throughput, estate companies with their own processing plants have started entering into agreements with small-scale farmers under which they provide them with loans to establish rubber trees. In return, farmers undertake to sell their future output to the company and agree that it can recover the loan over a number of years once their trees become productive.

On their estates the rubber companies normally undertake all activities along the value chain using their own staff, other than for unskilled operations, such as land preparation, which they have been increasingly contracting out. Small-scale growers sell their production to estates in the form of cuplumps,<sup>4</sup> either directly or through traders.

The value chain refers to one of Cameroon's long-established estate companies, Société Africaine Forestière et Agricole du Cameroun (SAFACAM), which owns a mixed rubber and oil palm estate in the coastal region of Cameroon, on which there are 4,500 ha planted to rubber. SAFACAM is a member of the multinational Socfin Group which owns rubber and oil palm estates in West, Central and East Africa and in South-East Asia. It is one of only a small number of estate companies in Cameroon that has a plant to process rubber coagulum into different grades. Its main source of supply is its own estate. In recent years it has increased its yields by adopting improved cultural and tapping techniques and through contracting out a set of its estate activities. It obtains some 3-5% of its latex from smallholders, principally via small-scale traders.

### **2.1.3 Rubber in Liberia: Morris-American Rubber Company value chain**

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Liberia's export earnings are dominated by iron ore, rubber and timber. Rubber is the country's most important export crop, accounting for well over half of national agricultural export earnings (excluding timber). Rubber production in Liberia differs substantially from that in Cameroon in that some 40% of the country's rubber trees are owned by small and medium-scale growers. The

4 Naturally coagulated rubber.

remainder belong to large-scale Liberian farmers and estate companies. The high level of world natural rubber prices in recent years has made rubber production potentially highly profitable for both estate companies and smallholders.

Five of Liberia's major rubber plantation companies have their own processing plants. There are also two further processing companies that do not have their own estates but obtain their supplies from smallholders and large-scale farmers.

The case-study value chain refers to the Morris-American Rubber Company Incorporated (MARCO), which is one of the large estate companies with a rubber processing plant. MARCO was established in 1995 as a rubber plantation producing cuplumps for Firestone Liberia. It was one of the few large companies to survive the 1989-96 and 1999-2003 civil wars. In 2008, it invested in a US\$ 2.5 million rubber processing facility to produce exportable technical specified block rubbers. It is currently one of the two largest Liberian owned estate companies, with some 4,000 acres planted to rubber and a further 4,000 acres yet to be developed. It is in the process of expanding its estate because its processing plant has been operating at only about 40% of capacity. It uses labour from the local community to prepare land, plant and weed on a contract basis but uses its own labour for tapping, due to the specific skills needed.

To further raise its throughput, MARCO has recently been purchasing cuplumps from about 50 farmers within a 16 km radius of its plant. It supports them by providing credit in the form of inputs, the cost of which it recovers from payments for deliveries. Farmers are responsible for transporting loads of under 0.5 tons directly to the plant. MARCO collects larger loads from farmers, charging them for this service. It ceased buying through pre-financed agents after losing a part of the monies loaned to those agents.

MARCO is attempting to establish outgrowers on 1,000 acres of the unplanted 4,000 acres that remain on its estate, beginning with 100 acres to be planted by a cluster of 50 farm families. This is currently facing a number of constraints, including the inability of the national cooperative organisation to facilitate the participation of families in an outgrower scheme.

## **2.1.4 Pineapples in Ghana: Blue Skies Products Ghana Limited value chain**

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Ghana's main export crop is cocoa, followed by banana, cotton, rubber and coffee. Although Ghana is Africa's leading exporter of fresh pineapple, it is a relatively minor export crop for the country, generating gross export earnings equal to about 0.4% those of national cocoa exports.

Ghana produces pineapple for both export and domestic consumption. Exports go principally to the EU and are mostly supplied by sea. National exports grew strongly in the decade from 1994 to 2004 but then declined, more than halving by 2009 as demand in Ghana's main European export markets switched from the main variety grown in Ghana, *Smooth Cayenne*, to the *MD2* variety grown principally in Costa Rica. Since *MD2* is more difficult to grow than *Smooth Cayenne*, the larger estates in Ghana were able to make the switch to growing this variety whereas the majority of commercial medium and small-scale farmers ceased pineapple production, leading to a decline in the number of export growers from a peak of roughly 16,000 to just 200 today. The reduced supply led to a fall in the number of exporters from over 30 to around 8.

There has recently been an expansion in Ghana in the number of firms processing pineapples into fresh cut and dried portions and cubes for export and into pasteurised juice for both export and domestic sale. This has led to a revival of interest in producing the *Smooth Cayenne* variety, which is suitable for such processing. USAID has been supporting small-scale farmers to re-establish a capacity to produce pineapple through a programme to support the supply of planting material, develop quality standards, introduce farmers to improved production technologies and management, and help link farmers to processors.

Currently, it is estimated that some 6,300 people are directly employed by the pineapple industry. Of these, nearly 4,000 work on commercial farms, 600 on small-scale farms and a further 2,000 in processing.

The case study is centred on Blue Skies Products Ghana Limited (hereafter 'Blue Skies'), which was established in Ghana by a British entrepreneur in 1998 to assemble and export fresh cut pineapple.<sup>5</sup> Soon after its establishment it helped form a collective of small farmers to supply it with the sweet *Sugarloaf* variety of pineapple. The company is now a part of Blue Skies Holdings Limited (BSHL) following an expansion from its base in Ghana into Egypt, South Africa and Brazil. BSHL now has factories in each of these countries. This has allowed it to widen its range of fresh fruit exports to citrus and other fruits that cannot be grown in Ghana or for which production in Ghana is seasonal. All of its products are cut and packed in the country of origin. Its operation in Ghana remains its largest undertaking. This processes and exports freshly cut fruit to supermarkets in Europe and also presses and packages fruit juice, which it sells as 100% natural juice both to Europe and domestically in Ghana.

5 Roughly half the value of global pineapple exports comprises fruits shipped in fresh form, either whole or cut. The remainder principally comprises canned portions and concentrated juice.

Unlike much of the tropical cut fruit available in Europe, which is shipped in over a period of weeks and processed after importation, Blue Skies products are prepared shortly after harvest at a plant close to where the raw material is produced. Its exports are air-freighted daily to Europe using cargo space on passenger flights.<sup>6</sup> This allows for the retailing of fresher products without the need to use chemical ripening agents to extend the life of the raw material. It also means that a much higher percentage of the retail value in Europe is added in the country of origin.

In Ghana, Blue Skies acquires its supplies of fresh pineapple from over 150 farmers. The bulk of its purchases are from large and medium scale growers and from small-scale farmers organised into collectives. In 2007, the company replaced its original processing plant with a larger more modern facility located 20 miles to the north of the national capital Accra. This currently employs over 1,500 people. The plant's gross output in 2010 was 3,798 tons yielding a sales revenue UK£ 15.5 million. The main fruits it currently processes are *Smooth Cayenne*, fairtrade *MD2* and fairtrade organic *Sugarloaf* pineapple, mango, papaya, coconut, passion fruit and banana.

Blue Skies currently exports 3,000 tons of cut pineapples and other fresh cut fruit to over twelve European retailers, packed either as retailer own label or Blue Skies branded products. Half of the total weight of its exports comprises pineapples, just over half of which consist of MD2, some 60% of which are sourced from a single farm company and the remainder from five other large-scale farms. Blue Skies also sells a number of products in the Ghanaian market, including fresh squeezed juices and smoothies. In 2010, these accounted for 6.3% of its total sales.

Some 41% of Blue Skies's pineapple purchases are still of Smooth Cayenne, some 70% of which it sources from Ghana, acquiring the remainder from neighbouring countries. Some 15 years after its establishment, it continues to buy the *sugarloaf* variety from the farmer collective.

### **2.1.5 Maize in Ghana: the Masara N'Arziki - Wienco value chain**

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Ghana is approximately self-sufficient in staple foodstuffs, other than for imports of rice and small amounts of yellow maize used for animal feed. After cassava

6 Gatune J, Chapman-Kodman M, Korboa K, Mulangu F and Rakotoarisoa M A, Analysis of Trade Impact on the Fresh Pineapple Sector in Ghana, FAO Commodity Trade Policy Research Working Paper, Rome, 2013.

and other root crops, white maize is the country's most important staple. In recent years, the demand for white maize has stagnated as the positive impact of population growth on demand has been offset by the substitution of rice for maize, especially in urban areas. Annual national production of maize (both white and yellow) is around 1.8 million tons, of which about 1.0 million tons is marketed. Some 42% of marketed maize is used for animal feed, with the remainder being purchased for household consumption in the form of either whole grain or flour.

The case study is centred on the value chain for maize grown by members of the Masara N'Arziki (MAFA) Farmers Association. MAFA was set up by Wienco (Ghana) Limited as a subsidiary company limited by guarantee. Wienco, which was established in 1979, is owned jointly by Dutch and Ghanaian shareholders. Its main business is the importation and distribution of crop protection inputs. It also imports and distributes the seeds of two maize hybrids produced by the South African company Pannar Seeds.

MAFA has its headquarters in Ghana's Northern Region and a membership scattered across the north of the country, including Upper East and Upper West Regions and parts of Brong Ahafo Region. MAFA members participate in an innovative programme under which Wienco provides inputs and services as loans-in-kind to members of groups of from 5 to 12 small and medium-scale farmers. Wienco's support package comprises improved high-yielding seed, herbicides, insecticides, spraying equipment, farm implements, agricultural and business advice, and training. It also provides a guaranteed market for group members' maize. All participating farmers agree to grow a minimum of two hectares of white and yellow maize, to sell their maize output to Wienco and to allow it to recover the full cost of the input package from their gross sales proceeds. To date the programme has met with some success, although a significant number of farmers defaulted on repayment (23% in 2010) despite peer pressure to repay from other farmers in their group. Participation in the programme grew from 1,250 farmers in 2008 to 8,300 in 2012. Farmers reportedly obtain well above mean national smallholder yields.

Wienco benefits from the expanded market which the programme creates for its inputs, both by providing a direct supply conduit to MAFA farmers and by demonstrating to non-member farmers the impact that these inputs could have on their yields. Wienco also benefits from the additional income which it generates from trading the maize that it acquires under the programme.

## 2.2 East Africa

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The case studies for this region all cover value chains that are defined in terms of a commodity that passes through a single large company. Each study pays particular attention to small-scale farmer groups, associations and cooperatives.

### 2.2.1 Barley and Sorghum in Uganda: the Uganda and Nile Breweries value chains

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Two of the East African case studies are for crops used by Ugandan brewing companies.

Over 90% of the alcoholic drinks consumed in Uganda are brewed and distilled using traditional methods, principally from banana, millet, sorghum, maize and molasses.<sup>7</sup> Most of the remaining demand has been met for over 50 years by two companies, Uganda Breweries Limited (UBL) and Nile Breweries Limited (NBL), which produce clear bottled beers and a range of spirits. Both companies have been taken over by multinational brewing conglomerates. NBL has been owned by SABMiller since 2001. UBL is now part of the large EABL group.<sup>8</sup>

Malted barley is the main raw material conventionally used in the commercial brewing of clear beers. In recent years, both companies have adopted a policy of substituting domestically grown barley and sorghum for imported barley, encouraged by fiscal incentives.

Sorghum has traditionally been grown widely in Uganda for use both as a foodstuff and in brewing. Barley production has more specific temperature, rainfall and soil requirements. Commercial production is only possible at altitudes of over 1,500 metres in the mountainous regions in the eastern, western and south-western parts of the country. While barley has been produced in Kenya since before it gained independence in 1963, there was little commercial production in Uganda until a decade ago.<sup>9</sup>

UBL developed its business using imported malt until 2003 when it initiated a

7 See: Jocelyn Edwards, Uganda's beer flies high, Global Post June 21, 2012. <http://www.globalpost.com/dispatch/news/regions/africa/120620/uganda-eagle-beer-SABMiller>

8 EABL also has breweries in Kenya and Tanzania that are supplied with malt, barley and sorghum from a processing facility in Nairobi owned by its subsidiary, East African Maltings Limited. SABMiller is the world's second largest brewer, which originated in South Africa and is now headquartered in London. In 2012/13 its total revenue was US\$34.4 billion generated by operations that produce over 200 brands of beer in 75 countries across five continents.

9 A collaborative attempt in 1991 by the Uganda Development Corporation and UBL to initiate barley growing in Uganda was rapidly suspended. It was resuscitated by UBL in 2003.

programme to establish a domestic source of malting barley. A pilot phase successfully showed that Ugandan barley is suitable for malting. The pilot also demonstrated to farmers the advantages of growing barley twice yearly as a cash crop rather than the established alternative of a single crop of maize. By 2010, some 1,200 farmers were supplying UBL with an annual quantity of 1,500 tons of barley for malting. Under a system of contract farming, UBL provides farmers with seeds and other inputs, which it recovers from its payout for deliveries of barley. Farmers receive a guaranteed pre-contracted price.

The second of the two Ugandan brewing case studies covers sorghum utilised by NBL.<sup>10</sup> Utilising sorghum in conventional brewing in Uganda has two cost advantages. First, delivered to the brewery it is only some 60% of the cost of malted barley. Second, domestic sale of the products qualifies for a reduced excise duty. This makes bottled beer that incorporates sorghum cheaper and accessible to a larger part of the population than beer brewed from imported barley. Thus, the use of sorghum offers the potential to expand sales in the short term and increase sales potential over the longer term by making bottled beer rather than traditional brews the cultural norm amongst a larger proportion of the population.

In 2002, NBL introduced a separate brand of bottled beer, 'Eagle Lager', based on a mix of malt and sorghum. The Eagle range was subsequently extended to include a higher alcohol 'extra' version. From 2014, both lagers will be produced at a new brewery being established by NBL in western Uganda, where sorghum is widely grown and Eagle beers are particularly popular. Since 2002, NBL has increased the domestic content of its beer from close to zero to 64% of total raw material cost.<sup>11</sup>

To be in a position to utilise sorghum in brewing, NBL first worked with Serere Agriculture and Animal Research Institute to produce a high-yielding, drought-resistant sorghum variety suitable for industrial brewing. NBL then took a similar route to that taken later by UBL, basing production on contract farming with smallholders whom it encouraged to group into associations. Formally, NBL sources sorghum, maize and barley through its Local Enterprise and Agriculture Programme (LEAP). Over 95% of its 9,000 sorghum suppliers are smallholders with less than 2 hectares of land. NBL has entered into a public-private partnership with the National Agricultural Advisory Services (NAADS) for the provision of extension to its farmers. It provides them with inputs on credit and pays them a contracted price for their sorghum.

10 Note that, in addition to sorghum, NBL initiated a barley production programme in Uganda in 2008 and has established a malting planting in the south-east of the country at Jinja.

11 Mbogo G (2013), Impact of Local Sourcing Initiatives: A case of Nile Breweries (SABMiller) Sorghum and Malting Barley Programmes in Uganda, Nile Breweries Ltd, Jinja, 5 March 2013 (draft).

Farmer associations have established infrastructure for assembling and storing sorghum, using loans from financial institutions guaranteed by NBL. NBL also supported Kapcorwa Farmers Association to obtain finance from the Development Finance Company of Uganda (DFCU) to obtain cleaning equipment. NBL has now devolved cleaning and bulking to this Association, paying it for the costs involved.

### **2.2.2 Sugarcane in Uganda: the Kakira Sugar Limited value chain**

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Uganda is currently a deficit producer of sugar, with net imports in recent years equal to about 10% of national production.<sup>12</sup> The case study refers to sugarcane produced in south-western Uganda by outgrowers of Kakira Sugar Limited (KSL), Uganda's largest sugar producer. KSL is owned by the Mahdvani Group, the leading industrial investor in Uganda which has assets in excess of US\$200 million. Sugar cane is grown on the company's own 9,700 ha nucleus estate and on a further 18,000 ha farmed by 8,500 registered outgrowers. Its sugar factory was rehabilitated and expanded between 2004 and 2008, financed by long-term loans from the World Bank, the African Development Bank and the Netherlands Development Finance Corporation, by medium term loans from commercial banks, and by contributions from promoters. The factory currently has the capacity to crush 6,000 tons of cane per day and produces approximately 150,000 tons of sugar per year. In total, the KSL complex provides employment for over 7,500 people.

Outgrowers contract to sell all their cane to KSL.<sup>13</sup> In return, they receive comprehensive support from the company, which prepares their land and provides seed cane, fertilisers, herbicides and farm labour, the cost of which is deducted from the payout for cane deliveries. KSL has facilitated the formation of an outgrowers' association to improve dialogue with its management. The 2010 National Sugar Policy, which has yet to be reflected in changes to the existing Sugar Control Act, provides for the cane price to be established using a formula to be negotiated by millers, out-growers' associations and the government.<sup>14</sup>

### **2.2.3 Milk in Kenya: the Brookside Dairies Limited value chain**

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12 See Uganda Sugarcane Technologists Association, Annual Report 2011, Appendix 4.

13 In the past there was reportedly extensive side-selling by outgrowers. See: Ministry of Tourism, Trade and Industry (MTTI), National Sugar Policy: A Framework for Enhancement of Competitiveness, Public – Private Partnerships, and Social Transformation), August 2010. [www.mtti.go.ug](http://www.mtti.go.ug), (Section 2.2.7).

14 MTTI, *ibid*.

Dairying accounts for an estimated 14% of Kenya's agricultural GDP. Although large semi-arid areas of the country are devoted to pastoralism, the majority of the nation's milk is produced in the country's high-potential highlands, principally by some 1.5 million smallholders who provide more than 70% of marketed output. A typical smallholder has 1-2 hectares of land and 2-5 head of cattle yielding about 5 kg of milk per cow per day, of which an average of about 45% is consumed by farm household members and calves.<sup>15</sup> About 20 percent of output and a little over 40 percent of marketed output is handled by cooperatives and farmer groups. Most of the nation's milk is still consumed in raw form, including much of the milk consumed in urban areas. However, there is now an intensively competitive market for processed milk and dairy products consumed principally by middle and upper income households.<sup>16</sup> In 2012, the milk intake in the formal sector was an estimated 495 million litres.<sup>17</sup>

The marketing of milk was liberalised in 1992 with the implementation of a set of reforms that included the abolition of Kenya Cooperative Creameries's (KCC's) monopoly of formal milk processing, the liberalisation of milk pricing, and the legalisation of raw milk sales in urban areas. This paved the way for a radical transformation of dairy marketing. By 2010, roughly 45 private dairies and over 150 cooperative milk processing units had emerged. Some of the private dairies obtain a part of their raw milk supplies from their own herds, but virtually all dairies and processing units rely either principally or wholly on raw milk purchased from farmers. Increases in private processing capacity and the attendant competition for supplies require that individual processors actively cultivate suppliers.<sup>18</sup> Success in this activity has been vital to the development of Brookside Dairies Limited ('Brookside') which now dominates formal sector milk processing together with the transformed KCC (now incorporated as New Kenya Cooperative Creameries Limited).<sup>19</sup> The case study of dairying in Kenya focuses on the value chain for milk that is processed by Brookside.

The company was established in 1993, shortly after the milk market was liberalised. Its processing operations now cover Kenya, Tanzania and Uganda. In Kenya it currently acquires its milk from over 145,000 contracted farmers

15 Muriuki F H (2011) Dairy Development in Kenya, FAO Dairy Reports, Rome.

16 The continued popularity of raw milk is due to its low cost (no pasteurisation and no expensive packaging) and because Kenyans habitually boil all fresh milk before consuming it in tea, coffee or as a hot drink. See: Ngigi M, Abdelwahab M, Ahmed B, Ehui S and Assef Y H (2010) Smallholder dairying in Eastern Africa, Chapter 6 in Haggblade S and Hazell P B R (editors), *Successes in African Agriculture: Lessons for the Future*. Baltimore: Johns Hopkins University Press.

17 Kenya Dairy Board, April 2013. <http://www.kdb.co.ke/>

18 Ngigi M, et al, op cit.

19 Together, they account for about two-thirds of sales of processed dairy products, with Brookside's market share having moved ahead of KCC.

spread over six provinces, who supply it daily with an average of over 600,000 litres of raw milk. Brookside classifies 95% of its contracted farmers as small-scale and 5% as commercial. Farmers deliver directly or through cooperatives and farmer groups to one of BDL's 30 cooling and milk bulking stations. The company produces a wide range of dairy products that are sold mainly in Kenya. It also exports within the Common Market for Eastern and Southern Africa (COMESA) and as far afield as the Middle East.

Brookside has pursued a strategy of building strong links with producers as a means of increasing its purchases and improving the efficiency with which its main raw material is produced and assembled. BDL now tends to be a price leader, aggressively using its buying price as an additional means of increasing market share.<sup>20</sup>

## **2.2.4 Tea in Kenya: the Kenya Tea Development Agency value chain**

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Kenya is the world's third largest tea producer after China and India, accounting for some 10% of world production. World exports are dominated by Kenya, China, India and Sri Lanka, each of which accounts for about 18% of the weight of global exports.<sup>21</sup>

The tea industry in Kenya comprises an estate sector and a larger smallholder sector. The latter consists of 560,000 smallholders who farm over 100,000 hectares of tea. The entire national output of fresh green leaf is processed into black tea in large-scale factories.

Following national independence in 1962, development of the Kenyan smallholder tea sector was driven by the Kenya Tea Development Authority, which coordinated new planting and factory construction, provided services to farmers, processed and marketed their tea, and returned net sales realisations to them through a two-payment system. In 2000, the Authority was privatised, with the ownership of its factories being transferred to smallholder-owned companies. Its development support and management functions were shifted to the newly established Kenya Tea Development Agency Ltd. (KTDA), a state-owned company registered under the Companies Act (CAP 486). Under contracts with each factory company, KTDA provides inputs and services to growers, collects green leaf, manages the manufacture of black tea, markets this tea, and provides the smallholder sector with a set of supporting financial and development services. Currently there are some 66 tea factories which process green leaf into black

20 For example, see Brookside increases milk producer prices, *The People in Business*, September 2013, <http://www.thepeople.co.ke/18609/brookside-increases-milk-producer-prices/>

21 In recent years Kenya has tended to export a slightly higher tonnage than its main competitors, Sri Lanka a higher value.

tea owned by smallholders through 58 companies.<sup>22</sup> The total production of these factories in 2012/13 was 258,000 tons of black tea, equivalent to about 6% of global black and green tea production. Some 75% of KTDA teas are sold by auction in Mombasa, 15% are sold directly for domestic consumption or export, 7% are sold to Kenya Tea Packers Ltd, and 3% are sold at the factory gate. Most of Kenya's tea estates are owned by multinational companies, each of which has sustainability programmes aimed at achieving international certification. The largest of these is Unilever Tea Kenya Ltd (UTK), a subsidiary of Unilever, an Anglo-Dutch conglomerate, which acquired the estates of Brooke Bond Kenya Ltd. in 2004. It now has 20 Kenyan tea estates and eight tea factories with a combined output of around 32,000 tons of black tea per year. Unilever is also the largest buyer of Kenyan smallholder tea.

UTK initiated a sustainable agriculture programme for its estate production in 1999, and in 2007 obtained Rainforest Alliance (RA) certification for its estates. Unilever's strategy is to extend its sourcing of RA tea to smallholders. In 2007 it set an initial target of 2015 for sourcing all the tea used globally in its Lipton brand blends from RA certified sources.

The case study focuses on initiatives to train smallholder tea farmers in sustainable practices through a partnership between KTDA, Unilever and the Rainforest Alliance (RA), supported by the Sustainable Trade Initiative (IDH)<sup>23</sup> and the UK Government's Department for International Development (DFID).<sup>24</sup>

## 2.3 Caribbean

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Four of the five Caribbean studies are focused on export value chains for foodstuffs. Each chain has markedly different characteristics in terms of size of throughput, date of establishment, extent of small-scale farmer involvement and chain governance.

### 2.3.1 Citrus in Belize: The Citrus Products of Belize Limited value chain

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Belize, located in Central America, has a population of 357,000. Agricultural

22 Some companies have added satellite factories, resulting in more smallholder-owned factories than factory companies. In addition to smallholder leaf, the factories also process leaf grown by the Nyayo Tea Zone Development Corporation on estates established some 25 years ago to help form a barrier to protect Kenya's forests.

23 IDH is a Netherlands-based organisation financed by the Danish, Netherlands and Swiss governments. It has an IDH Tea Programme that supports environmentally sound production and processing of tea in Africa and Asia.

24 The training of smallholders under this initiative is discussed in section 5.2.3, which covers non-organic green measures.

production is almost entirely of food crops, of which citrus has the highest farm-gate value. Some 85% of national citrus production comprises Valencia oranges, and the remainder grapefruit. Most production derives from large-scale estates of over 300 acres. Some 30% of acreage is on medium and small-scale farms, the majority of which have 3-10 acres of citrus. Until recently, all farmers with over 3.0 acres of citrus were members of the long-standing Belize Citrus Growers Association (BCGA). Growers with from 1-3 acres can join this association as non-voting provisional members.

Most citrus production is exported in the form of frozen concentrate, processed domestically at two large-scale plants. The industry was consolidated both horizontally and vertically in 2001-02, when both plants were brought under the ownership of a newly created company, Citrus Products of Belize Limited (CPBL). The BCGA has a majority shareholding in CPBL. A Barbados-based company, Bank Holdings Limited, is the sole minority shareholder. CPBL currently has an annual processing capacity of approximately 400,000 tons of fresh citrus.

BCGA and CPBL work together closely to schedule and organise harvesting and delivery to the two plants and also to provide farmers with a wide set of services funded by BCGA fees levied on fresh fruit deliveries to the factory. Growers have access to loans from a revolving fund and longer-term loans to rehabilitate their citrus, funded by the European Investment Bank and the Development Finance Corporation. Amongst the services available to growers are assistance to weed citrus groves mechanically, transport for fresh citrus, access to agro-chemicals and diesel at cost price, disease control and management, training at BCGA's own research and training institute, advice on grove management, and soil and foliar nutrition testing.

CPBL has recently invested in facilities that make productive use of the byproducts of processing, thereby generating additional income for the company, reducing its unit production costs, and cutting environmental pollution.

### **2.3.2 Cocoa in Grenada: The Grenada Organic Cocoa Farmers Co-operative Society Limited value chain**

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Grenada is the most southerly of the Windward Islands, located about 140km to the north of Venezuela and 2,500 km to the south-east of Florida. It has a land area of only 344 km<sup>2</sup> and a population of 104,000. The island's GDP per capita of around US\$8,000 is the highest of all the case-study countries. Cocoa, once an important plantation crop, has fallen in importance, partly because production capacity has yet to recover fully from hurricane damage in 2004 and 2005. The crop is currently produced principally on small and medium-sized holdings.

This case study refers to the value chain for organic cocoa that is 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, with a throughput deriving from only one estate and some 12-13 small-scale farms. In total it involves about 60 Grenadian stakeholders.

GCC was established some 15 years ago by an expatriate, the late Mott Green, who was the driving force throughout the successful initiation, establishment and consolidation of the value chain. It was through his encouragement that a group of small-scale farmers formed the OCFCS. These farmers made their first deliveries of cocoa beans to GCC in 2004. The long established Belmont Estate that grows cocoa and other crops subsequently joined the cooperative, converting 100 acres of its existing cocoa area to organic production. All initial processing of the organic beans now takes place at Belmont's fermentary, one of three on Grenada.

GCC uses refurbished and custom-built equipment suited to the manufacture of cocoa in Grenada. Its factory is powered partly by solar energy and employs highly labour-intensive processes based on traditional methods. All OCFCS members have shares in GCC and all factory workers receive equal pay. GCC produces about 22 tons of cocoa-based products annually, including a range of organic chocolate bars, chocolate bonbons and cocoa.

The company sells most of its products domestically to tourists, including at an outlet on the Belmont estate, which uses its cocoa production and fermentary as a basis for a small agro-tourism business. GCC's products are also exported to speciality dark chocolate retailers based in New York and London, which sell gourmet products through their websites. The high quality of GCC's chocolate, coupled with skilled promotion of its distinctive characteristics and exotic origin, allows it to retail at exceptionally high prices that are sufficient to offset the necessarily high costs of traditional manufacturing.

### **2.3.3 Hot Peppers in Jamaica: The Agro Grace hot pepper value chain**

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Jamaica is located in the Western Caribbean to the south of Cuba. It has a land area of 10,831 km<sup>2</sup> and a population of 2.7 million. Extensive emigration, principally in the second half of the last century, has led to a large Jamaican diaspora. This is thought to number over 2 million, of which the majority are in the UK, the USA and Canada.

Hot pepper sauce and other hot pepper products feature extensively in Jamaican cuisine. To prepare them, fresh peppers are crushed, salted and fermented in cane vinegar to produce hot pepper mash. Other ingredients are then added to give the final products their unique flavour.

This case study refers to peppers that are grown by small and medium-scale Jamaican farmers and sold to the Grace Agro Processors Division (GAPD) of GK Foods and Services Ltd, a wholly owned subsidiary of the Food Division of the Grace Kennedy Group (GK) of companies. GK is a Jamaican-based international food and financial services conglomerate with companies located in Jamaica, elsewhere in the Caribbean region, North America and Europe. The value chain runs from the supply of inputs to farmers through to sale of processed 'Grace' products in Jamaica and in overseas markets.

The present value chain was established in 2009 when GAPD first contracted some 15 small-scale Jamaican farmers to produce hot peppers to be grown at its newly established Jamaican mash processing facility. The pepper plots of these farmers average about 2 acres. In 2013 some 56 farmers grew pepper for the company. Each farmer contracts to supply GAPD with peppers which meet procurement standards relating to ripeness, grades and maximum pesticide residue levels. Delivery must be in accordance with an agreed schedule. GAPD contracts to pay farmers a pre-agreed price and to support them with seed and other inputs provided by GK's farm and gardening supply branches at discounted prices and also with technical assistance provided in partnership with the National Rural Agricultural Development Authority. For 2013, GAPD projected that sufficient peppers would be produced by its contracted farmers to allow its mash processing facility to operate at around 40% of its rated capacity.

In 2007 GK acquired Enco Products Ltd, a UK company specialising in supplying the UK Caribbean diaspora with ethnic products. GK now exports a part of its Jamaican mash output to Enco for the manufacture of hot pepper products in the UK. In Jamaica, non-GK companies, following GK specifications, manufacture its mash into hot pepper products, which they pack into Grace-brand labelled bottles and containers. GK then retails these domestically via wholesalers and through its own Jamaican supermarkets.

GKs value chain involvement is exceptionally comprehensive, spanning the full length of the chain from the supply of inputs to farmers to retailing through its own outlets in Jamaica and the manufacturing of Grace-branded products in the UK.

### **2.3.4 Eggs in Jamaica: The Jamaica Egg Farmers Association/Caribbean Egg Processors value chain**

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About 130 million eggs are produced annually in Jamaica by 500 commercial farmers. Members of the Jamaica Egg Farmers Association (JEFA) account for about three-quarters of this total. JEFA, which was formed in 1998 and now has in excess of 50 members, is registered as a not-for-profit limited liability company. The remaining quarter of national marketed egg output is produced by over 400 small and medium-sized backyard farmers and a few large-scale farmers who are not members of JEFA. Most of these small and medium farmers contribute to JEFA's revenue through service fees levied on their purchased inputs and, in turn, benefit from services provided by JEFA.

In the first half of the last decade, the country's fresh in-shell eggs faced increasing competition from imports of processed liquid and dried egg products. These are preferred by the hospitality and commercial food sectors, which consider them both safer and more convenient. In 2004, to counter the resulting downward trend in demand, around ten members of JEFA, with co-funding from the Jamaica Business Development Corporation (JBDC), developed a plan to commence egg processing in Jamaica. In the same year, these members invested in an egg inspection, grading and storage unit using finance provided under the Jamaica Business Recovery Programme (JBRP).<sup>25</sup> The main purpose of the unit was to handle and assure the quality of the output of the group of farmers who had made the investment. This group runs the packhouse and also accepts eggs from other nearby farmers. On delivery, eggs are graded using the Jamaica Egg Standards, which JEFA played a key role in developing, together with the Bureau of Standards Jamaica (BSJ).

In 2007, with strong support from JEFA, 30 members of the association took the initiative to establish an egg processing company, Caribbean Egg Processors Limited (CEP), as a joint venture with Caribbean Producers Jamaica Limited (CPJL). CPJL was founded in 1994 to service the hospitality industry as an integrated food service distributor. It has subsequently added a merchandising service for the retail trade and now has its own branded ranges of fruit juice and dairy, meat and seafood products, which it processes and packs at its Montego Bay Freeport complex.

<sup>25</sup> The JBRP was a one-year USAID-funded vehicle for providing technical assistance, training and grants to assist the recovery of producers in the horticulture, poultry, fishing and craft manufacturing sectors, whose businesses were devastated by Hurricane Ivan.

CEP is owned equally by CPJL and Liquid Eggs Limited (LEL), a company which the 30 JEFA members established for this purpose.<sup>26</sup> The CEP Board is chaired by JEFA and comprises representatives of JEFA, CPJL, CEP, and large private agro-processors. This wide membership provides a platform for dialogue on means of improving the competitiveness of the domestic egg industry and of furthering the development of an efficient egg processing sector able to compete effectively with imports.

CEP has established a US\$500,000 fully-automated egg processing plant which sources most of its in-shell eggs from the JEFA packhouse. The plant initially produced food-service packed pasteurised liquefied whole eggs, egg whites and egg yolks. Pasteurisation takes place within a HACCP-standard environment to reduce the risk of contamination. All CEP products are subjected to batch-by-batch testing before dispatch.

Once established, CEP rapidly captured 60% of the hospitality market. In 2012, to dilute its dependence on the hospitality industry, CEP extended its product line into retail-packed liquid eggs for the domestic supermarket trade. In October 2013, it also commenced delivering liquid eggs to Nutrition Products Limited, the contractor for the Ministry of Education's school feeding programme. These will replace imported butter oil in the production of nutri-buns, both saving foreign exchange and improving the nutritional content of the buns.

### **2.3.5 Mangoes in Haiti: The JMB S.A. mango value chain**

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Haiti occupies 36% of the land area of Hispaniola, the second largest Caribbean island. Its capital, Port-au-Prince, is some 1,200 km south-east of Miami. The country's population of 10.1 million is the second largest in the Caribbean (after the 11.2 million of Cuba), and much larger than that of any of the other Caribbean-Pacific case-study countries. Haiti is the poorest country in the Americas with roughly the same GDP per capita as the average in East Africa. Mangoes are grown and consumed widely in Haiti and are one of its main exports. Production is mainly on small farms where mango trees are scattered amongst food crops. These farms use virtually no agricultural chemicals. Exports are of the *Madame Francique* variety, which is unaffected by the pre-export hot water treatment (HWT), which is mandatory for exports to the USA market.

This case study refers to mangoes that are exported in fresh or processed form by a single company, JMB S.A (JMB). This company is one of the largest Haitian exporters of tropical fruits and vegetables to the USA, and accounts for about

<sup>26</sup> JEFA, itself, did not invest in LEL.

one-fifth of national mango exports. It obtains its mangoes from small estates, from small-scale farms via traders, and through the Associations of Fruit Producers and Sellers from the South (ASPVEFS). The latter is an agglomeration of small-scale farmer associations which, together, have approximately 250 members. The main role of ASPVEFS is to organise and undertake all activities from harvesting fruit from the tree through to sale to exporters and small-scale domestic buyers.

JMB has a large quarantine treatment and packing plant in Port-au-Prince, which employs 50 full-time and 100 part-time workers. In 2010, with the assistance of a debt and equity investment of US\$2.3 million by the George Soros Fund, it invested in a facility to quick freeze individual mango pieces.

JMB packs mangoes using both its own-brand and third-party labelling. By working closely with USDA/APHIS, the US Whole Foods supermarket chain, and NGO-supported programmes in Haiti, it has skilfully carved out a market niche in the USA, positioning its brands around natural production, organic and fairtrade themes. Its exports to the USA include USDA/APHIS and BCS Oko Garantie GmbH certified products.

## **2.4 Pacific**

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Two of the three Pacific island studies are for perishable food crops - taro and papaya - which are exported in fresh form without processing. The third is for a high value crop, vanilla, which requires extensive post-harvest treatment prior to export in whole form or after processing.

### **2.4.1 Taro in Fiji: The Taveuni taro export value chain**

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Fiji is located in the south-western Pacific some 2,500 km to the north of Auckland, New Zealand, which is the nearest developed country port. Fiji comprises two main islands, Vanua Levu and Viti Levu. Suva, the national capital and the country's main port, is located on Viti Levu. Fiji has a large number of smaller islands, the largest of which are Taveuni and Kadavu. Fiji's total land area is 10,831 km<sup>2</sup>. Its population is 854,000.

Taro is a tropical root crop that can be grown on flooded land or under upland conditions. It is grown principally for its corm, which is harvested 7-10 months after planting. This has a post-harvest storage life of only a few days at tropical ambient temperatures and of about two weeks when chilled. Taro is grown widely in the Pacific Island Countries (PICs), where it is an important provider of dietary calories.

Taro was traditionally grown in Fiji for home consumption and sale in local markets, whereas, in the neighbouring island state of Samoa, there was a flourishing export trade for taro supplied to the large Samoan populations in New Zealand and Australia. This changed dramatically in 1993, when the Samoan industry was decimated by taro leaf blight (TLB), suddenly opening up the New Zealand taro market to exports from Fiji. Taveuni, which is free of taro beetle (*Papuana uninodis*) and has rich volcanic soils well suited to the growing of the *Tausala ni Samoa* variety, rapidly established itself as Fiji's main source of taro for export. This was solely the result of private-sector initiative by Taveuni's farmers, responding to the sudden increase in demand from exporters.

There are now some 2,000 taro farmers on Taveuni, of which about 750 are fully commercial. Agents of exporters based in Suva compete to buy their crop either at the farm-gate or at the agent's local store. Consignments are then shipped by ferry to Suva, where about six independent exporters re-grade and wash the corms prior to shipment in refrigerated reefer containers to New Zealand and by air to Australia. Some 65% of Fijian taro exports currently go to New Zealand and a further 30% to Australia, with small amounts shipped to the USA (principally Hawaii) and other destinations.

After the collapse of Samoan production, Fiji obtained rapid access to the New Zealand market. Australia, which has its own small taro industry in northern Queensland, has insisted that taro corms be devitalised in Fiji prior to export. This greatly increases the perishability of the corms, requiring that exports to Australia be made by air. The high cost of this, coupled with the cost of the devitalisation process, has hampered market expansion in Australia for almost two decades.

## **2.4.2 Papaya in Fiji: The national papaya export value chain**

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Most of Fiji's papaya is grown on a relatively small scale, with farmers typically planting around 0.1 ha mixed with other horticultural crops. There are two large-scale growers that export their own output plus additional amounts that they acquire from small-scale farmers. In recent years, the proportion of national papaya output exported has varied between 20% and 50% depending on the national quantity grown, which, in turn, varies markedly from year-to-year due to frequent damage by cyclones.

This case study refers to all papaya that is grown on Fiji for export to New Zealand in fresh form. There are currently about nine exporters of which four account for the bulk of exports. These have each adopted their own means of acquiring

papaya, including growing on their own farm, arranging supply contracts with farmers, and buying at the farm gate in competition with other traders.

In 1990, exports of papaya from Fiji ceased after the established means of pre-export fumigation using Ethylene dibromide (EDB) at a government-operated facility was banned. With assistance from the United States Agency for International Development (USAID), the Fiji government replaced the EDB facility with a high temperature forced air (HTFA) quarantine treatment plant. USAID's assistance was conditional on this new plant being operated by the industry rather than by the government. This represented a fundamental departure from the practice in the Pacific islands of government-operated quarantine facilities. The condition was met through the creation in 1994 of Nature's Way Cooperative (Fiji) Ltd (NWC) to undertake mandatory quarantine treatment on behalf of Fiji's fruit export industry. NWC began the pre-export treatment of horticultural produce in October 1996.

For the past 17 years, NWC's core business has remained the treatment and packing of fruit for a fee. NWC initially had 65 members comprising exporters and farmers and now has over 140. Although its core business is as a provider of a service at a single stage of the papaya value chain, it has proved to be a key institution for supporting development along the full length of the chain.

In 1996, Fiji negotiated a bilateral quarantine agreement (BQA) for market access to New Zealand for papaya and three other fruit-fly host crops. This agreement has remained in effect with only small amendments. It took until October 2002 for a BQA to be established for Fijian papaya exported to Australia.<sup>27</sup> By early 2014, USDA/APHIS had yet to approve a BQA for the import of Fijian papaya into the USA, despite the critical role played by USAID in establishing the HTFA facility.

### **2.4.3 Vanilla in Vanuatu: The Venui vanilla value chain**

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Vanuatu comprises a chain of islands with a total land area of 12,189 km<sup>2</sup>. Its population is only 246,000.

Vanilla is a climbing orchid which is normally productive for 12-14 years. Both cultivation and post-harvest activities are knowledge and management intensive. Immediately after harvest, vanilla beans are subjected to a lengthy on-farm process of water killing to stop further growth, sun drying and sweating, in box sweating, in-shed curing, bundling and in-box conditioning. The total time

<sup>27</sup> Quarantine Requirements for Import of Fijian Papaya to Australia, Ministry of Agriculture, Fisheries and Forestry, October 2002.

from harvest to finished product is 110-140 days. Cured vanilla beans have a very high value-to-weight ratio and can be stored for lengthy periods without marked deterioration.

The value chain covers all the approximately 300 farmers who produce vanilla in Vanuatu and the single entity which undertakes processing and exporting. The chain runs from vanilla farms to the final points of retail sale within Vanuatu and in export markets in the region. The value chain is very small, with total annual sales amounting to about US\$85,000.

The commercial growing of vanilla in Vanuatu was initiated by an Italian scientist, Piero Bianchessi, who set up a family-owned Vanuatu-registered company, Venui Vanilla, for this purpose in 1987. Vanilla is currently produced on seven of Vanuatu's islands, with the 2011 production of individual islands ranging from 88-449 kg. A typical farm plot has 100-200 vanilla plants covering approximately 0.25 ha. The majority of the crop is processed into vanilla extract and paste at a facility established and operated by Venui Vanilla on Vanuatu's largest island, Espiritu Santo. The company exports the highest quality beans without processing. Roughly one third of production is organically certified by AsureQuality NZ, which is IFOAM accredited.

Development of the value chain has been driven for over 20 years by Bianchessi working closely in partnership with a Vanuatu NGO, the Farmers Support Association (FSA). This productive arrangement has been based on a division of labour under which Venui Vanilla provides the market and FSA provides extension outreach to remote locations and provides internal control for the organic certification process.

In 2011, high-quality beans accounted for roughly half of the total value of Venui Vanilla's sales, extract for 45% and paste for 6%. The company's main export market in terms of value comprises three New Zealand ice cream companies. In 2011 these accounted for 43% of the total value of Venui Vanilla's exports of vanilla beans and products. In the same year, exports of beans to Japan comprised the company's second largest export market, with Australia ranking third. Sales to the domestic market accounted for just under one fifth of the value of all sales.

# 3

# Value Chain Dynamics:

## Triggers and Drivers of Chain Development

### 3.1 Government policies and measures

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#### 3.1.1 Structural adjustment and market liberalisation

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Until the mid-1980s, agricultural input supply, processing and marketing in ACP countries was characterised by widespread government intervention and regulation. This was especially prevalent in sub-Saharan Africa. The intention was to achieve loosely defined objectives relating to national food security, export earnings and agricultural growth by ensuring that farmers could readily acquire low-cost inputs and had an assured market for their produce at prices either guaranteed by the government or based on the net earnings of state processing and marketing institutions. Many of these systems proved unmanageable and prone to political interference and corruption. They failed to meet their objectives and resulted in an inefficient use of resources and large government losses. Many of these systems were dismantled in the late 1980s and the 1990s under economy-wide programmes of structural adjustment. In the agriculture and livestock sectors, commodity boards were closed down, state enterprises were privatised, price controls on inputs and products were abandoned, and input subsidies were abolished. Despite some backpedalling, such as the reintroduction of the subsidisation of fertiliser in countries such as Kenya, Malawi and Zambia, there is now relatively little direct government involvement in agricultural markets, with the exception of staple food crops.

Amongst the case studies, the only chain in which liberalisation was clearly the main *trigger for initiating* the chain was that for milk in Kenya. Brookside was established shortly after the liberalisation of the dairy sector in Kenya in 2003, which made it possible for it to enter the market in competition with KCC. Liberalisation has also had a strong influence on the structure and growth of the company's value chain, since it has led to the emergence of large numbers of privately and cooperatively owned milk cooling plants from which it and other processors source their supplies. Liberalisation also made it much easier

for traders to sell raw milk in urban areas.<sup>28</sup> As a consequence, Brookside's development has been achieved in the face of stiff competition, not only from the other private and cooperative dairies that have been established since liberalisation but also from sellers of much cheaper raw milk.

The other case-study chains that have been the most obvious beneficiaries of sector-specific liberalisation are those for cocoa in Cameroon and maize in Ghana. The SIC Cacaos value chain in Cameroon could not have been established without the 1995 liberalisation of the cocoa market. In Ghana, the joint activities of Wienco and MAFA would also not have been possible had the Ghana Food Marketing Corporation and the market controls associated with it not been abolished in 1996.

Where the characteristics of growing and processing a commodity mean that its efficient production requires that processing takes place on a large scale, that processors have monopsonistic powers, and that farmers have to make medium or long-term investments that are asset specific, it appears desirable that this be recognised and that the subsector is subjected to appropriate public oversight and control. Tea and sugar are such commodities. For tea, the Kenya Government has established a largely sound system of oversight and control for its smallholder sector founded on the procedures operated by the former Kenya Tea Development Authority, suitably modified by amendments to the Tea Act and legal notices under this act. As a consequence the industry continues to function efficiently with only relatively minor problems, most notably growers' concerns relating to a lack of transparency in the setting of KTDA's agency fees. In Uganda, on the other hand, the policies in the 2010 Sugar Act aimed at making good the deficiencies in the existing Sugar Control Act have yet to be reflected in new legislation. As a consequence, there is reportedly widespread dissatisfaction amongst sugarcane outgrowers at their lack of input into decision-making, especially regarding the price that KSL and other factory companies pay for their cane.<sup>29</sup> Millers, on the other hand, are concerned with the lack of regulation of factory construction, which is leading to greater opportunities for side-selling and to an inefficient spatial location of mills.<sup>30</sup>

28 See: Section 2.2.3 and Baiya H and Kithinji J (2010). *Transforming the Dairy Sector: Benefits from the Formalization of the Raw Milk Trade in Kenya*, SITE Case Study, SITE Enterprise Promotion, Nairobi.

29 For example, see daily Monitor 12 August 2011. <http://mobile.monitor.co.ug/Oped/-/691272/1217370/-/format/xhtml/-/23epsk/-/1347101904000> and the Observer, May 2013: [http://www.observer.ug/index.php?option=com\\_content&view=article&id=25272%3AAbusoga-outgrowers-demand-higher-pay&catid=38%3AAbusiness&Itemid=68](http://www.observer.ug/index.php?option=com_content&view=article&id=25272%3AAbusoga-outgrowers-demand-higher-pay&catid=38%3AAbusiness&Itemid=68)

30 See: New Vision, *MPs asked to turn sugar policy into law*, <http://www.newvision.co.ug/news/649494-mps-asked-to-turn-sugar-policy-into-law.html>

Where there is less of a tendency towards processors becoming a natural monopsony, there is frequently need for entities other than processors to provide a conducive commercial environment to encourage the expansion of small-scale farming. In Liberia, this has yet to occur due to a lack of an effective legal and institutional environment. MARCO has attempted to encourage small-scale farmers to plant rubber trees but has faced two constraints. First, the national cooperative organisation has been unable to facilitate the participation of families in outgrower schemes. Second, there is a lack of national land tenure legislation able to assure that farmers have the right of long-term possession to the land that they have planted to rubber. This makes it impossible for farmers to access finance for a long-term investment that first generates revenue after 6-7 years and for which the payback period for establishment loans needs to be of the order of 20 years.

Within the studies, the only crop sector that is still subject to significant direct government intervention is that of cocoa in Grenada, where the Grenada Cocoa Board is still a monopoly exporter of cocoa beans. The GCC value chain provides an example of how farmers can circumvent the continued existence of such a monopoly, in this case by selling their beans for domestic manufacture into products for domestic sale and export, activities over which the Board has no control.

In the PICs, there was traditionally less government intervention and control of the agricultural sector than in the other ACP regions, especially those of West and East Africa. None of the commodities covered by the PIC case studies has been the subject of significant government intervention or control.

### **3.1.2 Fiscal incentives**

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The majority of ACP governments employ import duties and direct and indirect tax incentives to encourage domestic commodity production and value-adding. The case studies cite a large number of examples where national governments have used such incentives to increase net profitability within the value chain. These are exemplified by the incentives available for enterprises operating in the pineapple value chain in Ghana. These include:

- subsidised fertiliser
- zero duties on other agricultural inputs and farm machinery
- access to finance provided by the Export Development and Investment Fund
- zero value added tax (VAT) and national health insurance levy (NHIL) on inputs
- reduced corporate tax rates
- zero VAT and NHIL on imported packaging material

- subsidies on port handling charges between 1994 and 2009
- substantial additional fiscal benefits under the 1995 Free Zone Act.<sup>31</sup>

In most instances, the aims of such government incentives are to raise the rate of national economic growth and to improve the country's balance of payments by increasing export earnings and substituting domestically produced products for imports. Fiscal measures are also used to meet other national objectives, such as redistributing income and improving national and household food security. Thus, for example, the Kenya Government subsidises fertiliser used in maize production by small-scale farmers but does not do so for fertiliser used in tea production.

In the case studies, fiscal measures aimed directly at *raising agricultural production* mainly comprise subsidies or zero tax rates on fertiliser and other agricultural inputs, but also the zero rating of import duty on capital equipment used in establishing production capacity.

Fiscal measures targeted at *processing* enterprises have a number of possible impacts:

- They can encourage greater value addition to products that are both sold in domestic markets and exported, in the following ways:
  - For export crops and livestock products, they can induce domestic enterprises to undertake processing activities that were formerly undertaken in the importing country. This has occurred for rubber in Cameroon and Liberia, pineapple in Ghana, and cocoa in Ghana and Grenada. In Jamaica, processing of in-shell eggs into liquid eggs sold domestically has in effect replaced the foreign processing of formerly imported liquid eggs.
  - They can result in investment in processing activities that result in safer and/or higher quality produce. Safer milk has been one effect of the incentives offered for milk processing in Kenya.
  - They can encourage the productive use of byproducts that were formally wasted, as has taken place in the processing of citrus in Belize and sugar in Uganda.
- If targeted at capital investment, fiscal incentives may lead to more capital intensive methods of processing. There is no explicit discussion of this in the case studies. However, in Uganda, it is likely that investment in

<sup>31</sup> Pineapple processors have been treated as free zone enterprises since 2001.

large-scale brewing of sorghum-based beer has led to less labour use in beer brewing, since some of the sorghum-based beer brewed industrially almost certainly substitutes for more labour-intensive, traditionally produced beers.

- They may confer advantages on certain enterprises at the expense of others. In particular, they are likely to increase the throughput of supply channels for processed commodities at the expense of channels for unprocessed commodities. This is likely to have been the case for milk in Kenya, where Brookside and other milk processors benefit from tax incentives, which the government provides to companies for investment in the processing of milk and milk products. However, the impact has been masked by the de facto legalisation of the selling of raw milk in urban areas.<sup>32</sup>

In Uganda the government has encouraged the country's brewery companies to substitute domestically produced raw materials for imports of malting barley through a set of fiscal measures, including:

- reduced import duties on equipment to be used in manufacturing that employs domestically produced commodities
- high import taxation on raw materials
- reduced excise duties on domestic sales of beers made from local raw materials.

Both of the main brewery companies have successful ongoing programmes to substitute domestically grown barley and sorghum for imported malting barley. The net impact on the economy is unclear since it depends on the opportunity cost of the factors of production used in the growing of these substitutes, the impact of the induced change in alcohol drinking patterns on the health and welfare of the population, and the broader impact on the economy of the loss in excise duty.<sup>33</sup>

The value chain for papaya in Fiji provides an example in which a fiscal change benefits enterprises in the value chain through improving the efficiency of marketing. Lobbying by NWC led to the successful removal of a 32% import duty on plastic crates, leading to their widespread adoption for the collection and domestic

32 For many years, the Kenyan government banned sales of raw milk in urban areas on public health grounds. The liberalization of the milk markets in 1992 opened an active debate on this topic, resulting in less active suppression and triggering rapid growth of raw milk trade in urban centres. See: Haggblade S, Veronique Theriault V, Staatz J, Dembele N and Diallo B (2012) A Conceptual Framework for Promoting Inclusive Agricultural Value Chains, Department of Agricultural, Food and Resource Economics, Michigan State University, November 2012.

33 Estimating this net impact would require detailed analysis beyond the scope of the original East Africa study.

transportation of papaya. This has reduced post-harvest damage significantly. Since there is competition between traders to acquire papaya for export one would expect the positive impact of such a reduction on the total cost of marketing to be passed back partially to producers in the form of higher farm-gate prices.

### **3.1.3 Trade agreements**

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All the case-study countries are members of regional economic communities that embody trade agreements.<sup>34</sup> As one would expect, regional trade agreements tend to benefit value chains in which the commodity is exported to countries who are party to the agreement but inhibit the development of those where the commodity competes in the domestic market with imports from such countries. An example of the former is CBL, whose exports of fruit juices from Belize (a) receive protection within CARICOM since they are shielded from external competition by the community's common external tariff (CET) and (b) face no duty on importation into EU countries under the Lomé Caribbean Initiative.

In Uganda, on the other hand, further expansion of KSL and other sugar producers is likely to be inhibited once transitional protective measures relating to sugar trade within the Common Market for Eastern and Southern Africa (COMESA) cease. Ugandan producers will then face the full force of competition from Swaziland and other lower-cost COMESA sugar producing countries.

### **3.2 A new market opportunity or loss of a market**

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In a number of the case studies, market changes have been one of the main factors that have triggered the development of value chains and/or the direction in which they have developed. Some of these changes have been external to the country in question and beyond its control.

In the value chain descriptions in Section 2.4, we describe how two of the three PIC value chains were triggered by sudden changes in demand. For Fiji, a new export market emerged as a result of the collapse of taro production in Samoa, stimulating the rapid growth of a value chain for taro production on the island of Taveuni. A quite different external event led to the eventual creation of the enterprise that has shaped and driven the export value chain for papaya in Fiji, namely the finding that EDB used to eliminate fruit fly is potentially carcinogenic.

In the case of the value chain for pineapple produced by Blue Skies in Ghana, the case study examines how a rapid switch in demand in the European market

<sup>34</sup> Note that Kenya, Tanzania and Uganda are members of both the East African Community and COMESA.

to a variety that cannot be readily produced on a small scale in Ghana had a radical influence on the development of the Blue Skies value chain and the company's support for small-scale production (see sub-section 2.1.4).

The second Ghanaian value chain studied was also partially driven by a marketing opportunity.<sup>35</sup> In this case, although the value chain is for maize, the main opportunity was for an input supplier, Wienco, to establish a larger and more secure market for its inputs. It did this by initiating contract farming with small farmers groups and establishing an association of these groups and by diversifying into trading their maize output.

Finally, the Jamaica Egg Farmers Association (JEFA) decision to move into egg packing and processing was in effect triggered by a market non-event, namely the stagnation of the domestic market for eggs.

### **3.3 Adoption of new technology**

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The availability and adoption of new production, processing and/or marketing technology has played an important role in the development of most of the case-study value chains. For example, the rapid expansion of national milk output in Kenya has been an important factor in the development of Brookside.<sup>36</sup> This development, in turn, was founded on the importation of improved breeds of cattle and the use of artificial insemination.

In three chains, those for sorghum in Uganda, mangoes in Haiti and papaya in Fiji, the use of new technology was a condition for development of the value chain. In Uganda, NBL's access to technology to brew clear beer from sorghum was an essential prerequisite for development of the company's sorghum chain.

In Haiti, a newly developed technology was critical to the success of JMB. The treatment of mangoes with hot water to eliminate fruit flies prior to export was developed in the 1970s by a consortium of mango exporters, the Haitian Ministry of Agriculture and specialists from the US Department of Agriculture (USDA). The treatment was approved by the USA in 1984. This was a year after the Haitian mango exporter JMB was established and two years before the company established its HWT facility. JMB's facility was reportedly the first in the northern hemisphere. There are currently ten such facilities in Haiti approved by USDA APHIS. HWT is now used widely in all the main mango exporting countries.

35 This was possibly the most important of a *set of factors* that made it attractive for Wienco to establish the value chain (see subsection 3.6, below).

36 See Ngigi et al, op cit, p232-233.

The availability of HTFA treatment technology was developed in 1989, immediately prior to Fiji's loss of its export market for papaya due to the banning of export quarantine treatment with EDB.<sup>37</sup> Originally used for the treatment of papaya exports from Hawaii to the US mainland, its availability for use in Fiji was a prerequisite for the country's present export value chain, as described in the sub-section 3.2, above. Also in Fiji, the initiation of a roll-on roll-off (RoRo) ferry service between the country's islands was key to the development of fresh taro exports from Taveuni.

### 3.4 Individual entrepreneurial initiative

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Two of the value chains, vanilla/Vanuatu and cocoa/Grenada were established by individuals, both foreign nationals. Both took an explicit decision to create a new activity, motivated by a combination of altruism and their fascination with technical aspects of the value chain. Piero Bianchessi, an organic chemist, initiated the growing of vanilla in Vanuatu by establishing his own plantation and subsequently setting up a processing facility supplied by small-scale farmers whom he introduced to the crop with the support of an NGO. In Grenada, Mott Green, an engineer, initiated domestic manufacture of a commodity, cocoa, which had been grown in the country for many years but which had always been exported in bean form.

There would appear to have been no specific event relating to any aspect of the crops or to the products derived from them which triggered these two initiatives. It was simply a case of individuals identifying and exploiting already existing opportunities. A key to the success of the chains was that both individuals were able to foresee the potential of the then nascent markets for organic and gourmet vanilla and cocoa products.

### 3.5 Change or increase in the number of products

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A key feature driving the development of many of the studied chains has been the introduction of new products or an increase in product range. This not only benefits the enterprise concerned but also has implications for producers of the raw material, consumers of the new products and the national economy at large.

CPBL in Belize has expanded its line of products based on citrus juice and also

37 See: Armstrong J W, Hansen J D, Hu B K S and Brown S A (1989) *High-Temperature Forced-Air Quarantine Treatment for Papayas Infested with Tephritid Fruit Flies* (Diptera: Tephritidae), *Journal of Economic Entomology*, Volume 82, Number 6, December 1989, pp. 1667-1674(8).

now makes use of the byproducts of juice extraction, which it manufactures into essential citrus oils, organic fertiliser and solid fuel for use in the production of electricity. It remixes a proportion of its essential oil output back into its juices to fine tune their composition to meet the precise requirements of its customers, thereby in effect widening its product range further. These activities have both increased domestic value added and, in the case of the manufacture of essential oils, allowed CPBL to export its juices at premium prices. These impacts may provide scope for CPBL to pay higher producer prices to its citrus suppliers, but this depends on whether the additional export revenue being generated exceeds the costs incurred by CPBL in undertaking these additional activities. This is not examined in the case study.

Brookside in Kenya has progressively increased its product range since its establishment in 1993. The range now includes semi-skimmed fresh milk, plain and flavoured UHT milk, butter, ghee and plain and flavoured fermented milk products. These are sold within Kenya in different types and sizes of packaging. In addition, relatively small quantities are exported.<sup>38</sup> Brookside's processing activities and those of its direct competitors have increased domestic value added, national export earnings and the welfare of domestic consumers. The greater choice and variety of dairy products have almost certainly also resulted in an expansion in total national milk consumption. This is likely to have led to higher domestic producer prices for milk, including milk that is sold to consumers in raw form. There has been significant growth in the percentage of national milk output that is purchased by processors yet there is reportedly little difference between the farm-gate prices obtained for sale to Brookside and other processors of raw milk and for sales into the traditional informal market for unprocessed raw milk.<sup>39</sup>

In two of the case-study chains - sorghum in Uganda and eggs in Jamaica - the outcome of a widening of the product range has been the substitution of domestic output for imports.<sup>40</sup> NBL in Uganda now sells both a regular bottled beer brewed from sorghum plus a premium, higher alcohol version.<sup>41</sup> In Jamaica, CEP now processes whole, in-shell eggs into liquefied whole eggs, egg yolks and egg whites for domestic sale. In this case, it is the final product that has substituted for imports, indirectly stimulating demand for the domestically produced raw material, fresh in-shell eggs. In both value chains, the increase in

38 See: <http://www.brookside.co.ke/products.html>

39 See: *Ngigi et al, op cit.*

40 Note that, in the barley value chain in Uganda, domestically grown barley was also substituted for imported barley, but in the brewing of UBL's established brands of lager.

41 Following the success of these brands in Uganda, NBL's owner, SAB miller, has initiated brewing from locally grown crops in other African countries, including the production of a cassava-based beer in Mozambique.

product range has raised domestic value added and employment, improved the national balance of payments and probably raised farm-gate prices.<sup>42</sup> Domestic consumers have benefitted through the availability of a wider range of egg products, from greater efficiency in the domestic catering sector and from egg products that have a greatly reduced likelihood of containing salmonella. These egg products have also been substituted for less healthy ingredients used in the country's school feeding programme. In Uganda, consumers who have substituted industrially produced sorghum beers for less hygienically produced traditional beer face a greatly reduced health risk.

In the case of cocoa in Grenada and mangoes in Haiti, both processing companies have progressively widened their range of products. In Grenada, GCC's product range now comprises six different organic chocolate bars, organic cocoa, and over ten different organic chocolate bonbons filled with mixtures based on tropical fruits. In Haiti, JMB initially was solely an exporter of fresh mangoes. Having established a plant for quarantine treatment of fresh mangoes at its Port-au-Prince warehouse complex, it subsequently installed an IQF plant allowing it additionally to export frozen mango pieces. The company also now exports a part of the output of an NGO-assisted dried mango plant. Both GCC and JMB have raised domestic value added and employment, and improved the national balance of payments. As GCC's output has increased, the widening of its product range has allowed it to augment its niche markets and continue to sell its full output at very high prices. JMB's increase in product range has almost certainly also raised the income of the mango producers from which it purchases its raw fruits, since its exported IQF mango pieces are of high value yet can be manufactured from fruits that, for quality reasons, would otherwise only be saleable in the low-priced domestic market.

### **3.6 Evolution and multiple triggers**

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In seven of the case studies, the present chain is either the result of progressive development and change over many years, or the consequence of an amalgam of factors that together made investment in the chain commercially viable.

In the case of the Wienco/Masara N'Arziki Farmers Association chain for maize in Ghana, it would appear that the decision of Wienco to develop the chain was a response to a combination of conducive factors, such as farmers' access to government-subsidised fertiliser and a strengthening of the domestic demand for maize for use in feed, brewing and fructose manufacture.

42 No direct evidence is provided for this.

SIC Cacao has been operating in Cameroon for over half a century. The case study focuses on recent developments in its value chain, especially aspects of the Quality Partner Programme, which its holding company, Barry Callebaut, launched in Cameroon in 2010-11 and has now established in the other West African countries in which it operates.

The rubber value chain studied in Cameroon also involves a long-established company, SAFACAM, which owns a mixed rubber and oil palm estate in the country's coastal region. The value chain has developed over time with no obvious trigger for the present features described.

In Liberia, MARCO was established in 1995. The case study focuses on its efforts to encourage smallholders to supply rubber cuplumps. These efforts are principally a response to the fact that its factory has only been operating at some 40% of capacity in recent years.

In the case of the Citrus Company of Belize, the large-scale processing of citrus began over 70 years ago. The present value chain is the result of a succession of steps aimed at unifying and increasing the efficiency of the country's citrus sub-sector, the most important of which was the donor-supported combined vertical and horizontal integration of 2001-02.

In the case of mangoes exported from Haiti by JMB SA, the value chain has evolved since the creation of the company in 1983. No external events can be said to have triggered development of the chain, but two events in particular had a strong influence on its development. These are the development some 30 years ago of hot water treatment of mangoes with the assistance of USDA and the 2007 banning of Haitian mango exports to the USA, which required the introduction of domestic measures to detect and control fruit fly infestation.

### **3.7 Government and donor activities**

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The case-studies were selected with the aim of focusing on chains initiated by the private sector. Notwithstanding this, as discussed elsewhere in this report, for many of the chains national governments and donors have played an important support role.

Only two of the case-study chains can be said in effect to have been initiated by the government and/or donors, namely that for citrus in Belize, where the present value chain was created through government legislation and CFC support for consolidation of the processing industry. The CFC was

also instrumental in assisting the Kenya government to establish and support the state authority which was central to the development of smallholder tea farming in Kenya for over 30 years. Since this authority was transformed in 2002 into the KTDA under the Companies Act, its activities have been steered by the government through the Tea Board of Kenya and have been heavily supported by donors.

In Jamaica, the Grace Agro Processors value chain for hot pepper sauce has developed progressively over a 90-year period. However, it was only in 2011 that the GK Group first established a pepper mash processing plant and commenced the domestic contract farming of peppers. It would seem that this may have been triggered partly by the government's decision to lease to the company an abandoned warehouse in which to establish the processing plant.

### **3.8 Summary and conclusions**

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None of the triggers was an autonomous change in the quantity or nature of domestic production. This reflects the fact that, with the two exceptions mentioned immediately above, these chains were established principally at the initiative of the private sector. Even where there was no fundamental change in demand by final consumers or users of the commodity, increases in production and the throughput of the chain have invariably been the result of decisions by enterprises operating downstream from the farm gate.<sup>43</sup> Examples of such drivers are the decision of Barry Callebaut to extend its Quality Partner Programme to Cameroon, the decisions taken in Uganda by UBL and NBL to utilise sorghum and barley grown domestically, KSL's decision, also in Uganda, to rehabilitate its sugar complex, JEFA's decision in Jamaica to process and market liquid eggs, and GAPD's decision in Jamaica to process hot peppers into mash.

<sup>43</sup> The exception is Wienco in Ghana, which only began operating downstream as a consequence of its initiation of the value chain.

# 4

# Inclusion:

## Improved Coordination and Linkages

### **4.1 The need for pro-poor value chain structures and practices**

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Despite several decades of structural adjustment, the majority of ACP farm households remain poor and continue to face the same problems, which, from the late 1950s to the 1980s, the governments of newly independent ACP nations sought to address through intensive state intervention and control.

Most small farm households continue to experience problems in acquiring inputs due to lack of purchasing capacity and inefficient high-cost supply systems that lack economies of scale. For export crops, the relatively efficient crop-specific extension services provided by crop authorities financed by a cess on sales have been disbanded and replaced by less comprehensive and generally less effective agriculture-wide, government-run systems. Markets for agricultural commodities remain inherently volatile, resulting in farm-gate prices that are unstable and unpredictable. In addition, the markets from which farmers buy and into which they sell are often not fully competitive. In recent decades the marketing constraints faced by some small-scale farm households have been exacerbated by the more onerous quality, traceability and scheduling requirements of large-scale agricultural processors and supermarkets.

The challenge is to raise and improve the level and stability of the net incomes of small-scale farm households through:

- the greater inclusion of small-scale farmers in value chains, while
- ensuring that the value chains on which they depend remain efficient, competitive and therefore sustainable.

### **4.2 Parallel and mixed estate and smallholder value chains**

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The two main means by which rural households generate income from agriculture are producing commodities on their own land and/or working for

payment for enterprises engaged in the production, processing or marketing of agricultural commodities. Value chain analysis relating to inclusiveness has tended to focus on the activities and welfare of independent small-scale farmers, with only limited consideration of paid employment within chains.<sup>44</sup> Since small-scale farming is subject to high levels of production and price risk, it is possible that farming a smallholding may generate a lower and/or less stable household income in cash and kind than regular jobs for household members on an estate or with a processing or marketing enterprise.

Five of the case studies refer to commodities for which, in the country concerned, production takes place on both a large and small-scale and where large-scale producers have their own processing facilities:

- Most rubber in Cameroon and Liberia is processed at facilities owned by large estate companies, most of which seek to maximise their throughput by a combination of expanding their estate's output and by purchasing cuplumps from small-scale producers and small estates. These cuplumps are acquired both through contract farming arrangements between estate companies and growers and through open market purchases by company buying agents.
- In Kenya, there are two distinct types of supply channels for tea. Large estates have their own factories, some of which also process small amounts of green leaf delivered by small estates and by nearby smallholders. The majority of smallholder green leaf is processed in factories which are owned cooperatively by growers with tea smallholdings in the surrounding catchment area.
- In Uganda, the sugar factory of the case-study focus company has its own nucleus estate and a set of outgrowers who account for the majority of the factory's cane intake. Most of the cane produced in East Africa is grown using similar arrangements.<sup>45</sup> The operations of outgrowers are heavily supported, managed and coordinated by the factory company, with the aim of assuring a steady and continuous flow of cane to the factory.
- In the Caribbean, most citrus in Belize is grown on large estates and processed at two plants owned by a company that is majority owned by

44 This is the case for the ACP case studies, other than for those for rubber in West Africa which make reference to the focus companies' employment of full-time and casual labour.

45 Note that there are a small number of sugar factories in East Africa which rely either solely on supplies from the factory company's estate or solely on supplies from smallholders.

the national citrus growers' cooperative. Medium and small-scale growers also deliver to the two plants, benefitting from the advanced technology that they employ and the economies of scale that stem from their large throughputs. Farmers also benefit from quality-based producer prices negotiated between the cooperative and the factory company.

- In Jamaica, the case-study value chain for eggs refers to grading, storing and processing facilities that were established by a small group of large-scale egg producers. Priority usage of these facilities is given to the eggs of this producer group. Smaller producers benefit principally from the indirect impact that the processing of eggs has on the aggregate demand for eggs produced domestically in Jamaica.

### **4.3 Potential beneficial outcomes of greater small-scale farmer inclusion in value chains**

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The inclusion of small-scale farmers into agricultural commodity value chains should not be seen as an end in itself. Its main purpose is to benefit rural households engaged in small-scale farming and/or enterprises operating at other stages of the chain. In addition, it also has the potential to benefit consumers and industrial end users by leading to lower priced and better quality products. Greater inclusion can also be used as a means of redistributing the total net income generated by all activities within the value chain in favour of small-scale farm households. In the sections below we use the case-study value chains to examine how greater inclusion has been achieved and to demonstrate how this has affected enterprises within the value chain, especially small-scale farm households.

Greater inclusion can lead to higher and more stable net returns *from small-scale farming* by leading to one or more of the following:

#### **A. Higher net returns**

##### **1. Farm inputs and services**

- reductions in the prices of inputs and services
- improvements in the quality of inputs and services
- increases in the capacity of the household to acquire inputs and service through:
  - their improved availability at accessible locations
  - improvements in the financial capacity of the household, either through increased access to credit or to inputs and services provided as loans in kind

## **2. Extension advice and training**

- improvements in on-farm production, harvesting and post-harvest techniques that, for any given set of inputs and services, raise yields and/or improve the quality of the commodity

## **3. Producer prices**

- increases in the price paid for each quality grade of the commodity

## **4. Downstream enterprise activities**

- increases in sources of income through downstream integration into storage, transporting and processing

## **B. Greater stability and predictability of net returns**

### **1. Farm inputs and services**

- improvements in the timeliness of the physical availability of inputs and services at accessible locations
- improvements in the timeliness of the availability of credit to acquire inputs

### **2. Extension advice and training**

- improvements to on-farm production, harvesting and post-harvest techniques that reduce the likelihood and extent of (a) partial or total crop failure and (b) losses in quantity or quality during harvesting and on-farm storage

### **3. Producer prices**

- more stable inter and intra-seasonal producer prices
- producer prices that are known prior to the time of sale or which are determined in a transparent systematic manner

Examples of these means of inclusion are discussed below in sub-section 4.6, after first examining the nature of contract farming and other means of inclusion embodied in the case study value chains.

## 4.4 The extent and nature of contract farming in the case studies

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Contract farming can be defined as an agreement between farmers and processing and or marketing firms for the production and supply of agricultural products under forward agreements.<sup>46</sup> Contract farming is the main vehicle for the inclusion of small-scale farmers in eight of the nine African case studies in which there is involvement of small-scale farmers in the value chain.<sup>47</sup> The exception is the smallholder value chain for tea in Kenya, which does not strictly embody such farming since the tea factories are now owned by farmer cooperatives and are in effect vertically integrated with growers. However, the value chain has retained virtually all the grower support, pricing and credit supply practices that characterised the contract farming that was in existence prior to 2000 when the factories for processing smallholder green leaf belonged to the former Kenya Tea Development Authority.

Out of the eight Caribbean and Pacific case studies, inclusiveness is based on formal contract farming in just two cases: hot peppers in Jamaica and vanilla in Vanuatu. In the latter case, the contract is informal and implicit, based on trust and the fact that farmers have only one remunerative outlet. In the Caribbean, three further case-study value chains embody a degree of inclusiveness that stems from vertical integration that involves practices normally associated with contract farming. In Haiti, members of ASPVEFS make an agreement with the Association to harvest and sell their mango crop. For citrus in Belize and cocoa in Grenada, growers own the factory company that buys their output. In Belize, growers sell directly to a company, CPBL, in which their growers' association has a majority shareholding. These sales embody procedures similar to contract farming, including pre-negotiated prices, buyer scheduling, and organised harvesting. In Grenada, small-scale organic cocoa farmers have a share in the ownership of GCC, which manufactures their beans. GCC, in turn, provides services to the growers' through their cooperative.

For papaya exports from Fiji there is a unique ownership structure within the value chain in which chain stakeholders, including farmers, are members of a

46 Eaton C and Shepherd A W (2001) *Contract Farming: Partnerships for growth*, FAO Agricultural Services Bulletin 145, Rome, 2001.

47 Note that the two West African case studies of value chains for rubber each focus mainly on a large-scale, vertically integrated company. These companies acquire a proportion of their rubber from contracted small-scale farmers. For pineapples in Ghana, Blue Skies does not contract formally with farmers, preferring to rely on indicative prices and volumes agreed with farmers with whom it has established a strong informal relationship founded on transparency and trust.

cooperative that quarantine treats and packs fruits prior to export. Although this gives some papaya farmers a degree of ownership in facilities employed down-stream in the value chain, it is neither contract farming, because traders compete at the farm gate to buy farmers' fruits, nor strictly vertical integration, because the fruits are owned by exporters when they are treated and packed. Notwithstanding this (as noted in sub-section 2.4.2), the cooperative is a focal point for the provision of services to the industry of a type which are frequently supplied under contract farming relationships.

The nature of contract farming varies significantly between the case-study value chains in terms of the extent of formality of the contracting and the stages of farming that it covers, i.e. input acquisition, cultivation, harvesting, and marketing. This is partly due to the scale of the chain, with only a handful of farmers being involved in the case of hot peppers in Jamaica compared with over 560,000 smallholders who supply tea to factories managed by the KTDA. It is also due to the length of time that the chain has been in existence, the extent of farmer cooperation, the existence of competing buyers, the seasonality of production, the physical characteristics of the harvested commodity, and the activities in the value chain with which farmers are vertically integrated.

Ten of the eleven value chains that include contract farming involve a processor that buys from small-scale farmers: rubber in Liberia, pineapple in Ghana, barley, sorghum and sugar in Uganda, milk and tea in Kenya, hot peppers in Jamaica, cocoa in Grenada, and vanilla in Vanuatu.<sup>48</sup> Processors seek to contract with farmers for a set of reasons:

- to increase and schedule the supply of their raw material with the aim of maximising utilisation of their processing capacity
- to ensure that their raw materials meet quality standards that make them suitable (a) for the processing technology involved and (b) for making products that meet the needs of customers
- to ensure that the cultural methods and labour practices employed and product traceability meet the requirements of organic, fairtrade and other certifying agencies
- to deal with farmers fairly to meet the altruistic aspirations of the proprietors of the processing enterprise and/or as an element of product positioning.

48 The exception is the case-study value chain for maize in Ghana, where the party contracting with farmers supplies them with inputs and purchases, stores and sells their output within the domestic market. Processing is undertaken by flour and feed millers.

Two of the processors are also producers of the commodity. In Uganda, the processor of sugar has its own nucleus estate and some 8,500 contracted outgrowers. In Liberia, the processor is attempting to establish outgrower rubber production on a part of the unutilised land on its estate, with the long-term aim of raising throughput.

## **4.5 Inclusiveness not involving contract farming**

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Three of the case studies do not involve contract farming with small-scale farmers.

In the case of eggs in Jamaica, commercial production is dominated by large-scale producers with little inclusion of small-scale farmers, who mostly acquire inputs for cash and sell informally.

In the Pacific, exporters of taro grown on the Fijian island of Taveuni frequently provided farmers with finance in the early years after an export market for taro was established. However, this practice ceased after exporters incurred losses due to farmers side-selling to buyers to whom they were not indebted. Formal relationships between entities within the value chain are largely limited to two Taveuni-based growers' organisations, Teitei Taveuni and Marist Tutu Rural Training Centre, which are spearheading efforts to help farmers reverse the decline in productivity by adopting sustainable farming practices.

Small-scale farmers growing papaya for export in Fiji also do not engage in contract farming. They typically buy inputs with cash and sell their output at prices negotiated at the time of sale.

## **4.6 The benefits of small-scale farmer inclusion**

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### **4.6.1 Farm inputs and services**

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A major constraint faced by small-scale farmers is that they experience difficulty in obtaining short-term credit from suppliers of inputs and are unable to raise the necessary funds from financial institutions. A common feature of contract farming is that the buying enterprise agrees to provide farmers with a set of inputs and services, the costs of which it recovers from its payout to them. Such an arrangement requires, as a minimum, that farmers sell sufficient of their output to the processor to cover the loan. In practice, enterprises will only consider it worth providing contracted farmers with loans-in-kind if they expect the arrangement to result in a throughput sufficient to generate a profit that they consider acceptable, having taken into account the risks involved in the arrangement.

In addition to giving farmers the capacity to acquire inputs and services, their provision by the processor benefits farmers in a number of further ways. First, because the processor can buy inputs in bulk, it can supply its contracted farmers at prices below those of local input traders. It can also import and transport inputs domestically in bulk, further lowering its distribution costs and the potential for discounting prices. Second, its close relationship with contracted farmers usually means that it can project their input usage more accurately than specialist input distributors and local input dealers, thereby minimising both local stockouts and the need to carry over unsold stocks. This reduces supply costs further and minimises the likelihood both of inputs being physically unavailable for farmers to buy and of available stocks having deteriorated during prolonged storage. Third, the processor can supply contracted farmers with the appropriate quantities and types of fertiliser they require, including specialised fertilisers with added micronutrients. The best example of such large-scale acquisition is in the smallholder tea value chain in Kenya. KTDA imports some 65,000 tons of specialised fertiliser annually to meet the nutrient needs of over half of Kenya's tea bushes. KTDA finances this through a commercial bank loan and sells to farmers at a price set at a level which covers its costs (including the financing cost), with no mark up. Compared with buying from dealers, the potential savings to farmers are large, as much as 28% in recent years according to KTDA.<sup>49</sup>

Also in Kenya, Brookside facilitates its dairy farmers both to invest in the expansion of their businesses and to run them efficiently, by providing technical assistance and training and by facilitating individual farmers and farmer cooperatives and groups to access credit. To this end it (a) helps groups to register as legal entities, which enables them to access credit from financial institutions, (b) supports the development of grassroots milk collection and cooling by assisting a number of farmer cooperatives to access the necessary finance, (c) has negotiated a loan facility with the Kenya Commercial Bank for farmers wishing to expand their dairying activities, and (d) bulk-purchases animal feed at low cost, which it sells to farmers at its milk collection centres. Making available good quality animal feed at collection centres means that farmers can buy it after delivering their milk, without the need for additional travel.

In Jamaica, the GK group subsidiary, GAPD contracts to support farmers

<sup>49</sup> In this regard, note that a 2008 study by the Christian Partners Development Agency (CPDA) argued that the then purchase system of KTDA lacked transparency and that farmers received deliveries of fertiliser from KTDA that were priced well above fertilisers available in the local market. See: CPDA (2008) *Report on Small-scale Tea Sector in Kenya*, Nairobi.

with seed and other inputs which they buy from the GK group's local farm and gardening supply branches at discounted prices and with deferred payment. GAPD, KTDA and Brookside all recover the cost of inputs from their payouts to farmers.

A processor gains in two ways from providing inputs to producers as credit in kind. First, this makes contract farming attractive to producers, making them more likely to engage in such farming and to deal with the processor in question. Second, by ensuring that its contracted suppliers are able to acquire optimal amounts of good quality inputs, the buyer increases the likelihood that they will obtain yields that are sufficient to allow them to meet their contracted supply obligations.

One of the Ghanaian value chains involves small groups of farmers contracting to buy inputs and sell maize (through a farmer association established for this purpose) to a company, Wienco, which specialises in the importation and distribution of crop protection inputs and hybrid maize seed. Through this arrangement, Wienco has both expanded the demand for its input supply business and diversified into the acquisition and trading of domestically produced maize. Farmers have reportedly benefitted from large increases in per-hectare maize yields and from a ready outlet for marketed surpluses.

In a number of the value chains the processor aims not only to supply inputs and services that increase the yield of the existing planting area or livestock herd of contracted farmers, but also assists them to expand their operations through medium and long-term investment. In Liberia, MARCO is planning to contract clusters of farmers to plant rubber trees and to buy latex from them. In Kenya, Brookside provides its contracted milk suppliers with Artificial Insemination (AI) facilities to replace the frequent use of low quality breeding bulls or low quality AI services. The main aim of this is to upgrade the quality of milking cows but it is also likely to lead to an increase in milking cow numbers. Brookside also guarantees the bank loans that farmers take out from Equity Bank, the Kenya Commercial Bank and the Cooperative Bank to expand their production capacity. Also in Kenya, the KTDA has directed factory managers to establish nurseries that will supply small-scale tea farmers with new high yielding clones.<sup>50</sup> In Jamaica, GAPD, which obtains its supplies of hot peppers from contracted farmers, has assisted a farmer to establish a commercial hot

50 See statement by the Chairman of the Kenya Tea Board, reported in the *The Star* on 20 July 2012: <http://www.the-star.co.ke/news/article-9558/ktda-give-farmers-new-tea-variety#sthash.XvCTbYPJ.dpuf>

pepper seedling nursery by providing him with technical agronomic support and inputs with deferred payment.

## 4.6.2 Extension advice and training

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Improved access to inputs and services under contract farming raises both yields and quality. In addition, in all the case-study value chains where it is practised, contract farming involves arrangements where the buying enterprise provides some form of technical assistance and/or training to farmers aimed at yield and quality increase. This is frequently done in partnership with staff of the government extension service. For example, both brewing companies in Uganda have established partnerships with the government extension service, with which they jointly provide technical support to growers.

Brookside Dairies in Kenya has its own extension service which runs training courses for dairy farmers, holds farmer field days and conducts seminars that cover topics such as breed selection, breeding, feed formulation, livestock healthcare, disease control and farm management.

In Jamaica, GAPD provides technical assistance to its contracted hot pepper farmers, which is provided in partnership with the National Rural Agricultural Development Authority.

## 4.6.3 Producer prices

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### Price levels

As discussed above, greater inclusion of farmers in the value chain, especially inclusion through contract farming, is likely to lower the unit costs of processors and other buyers and to raise their unit selling prices. In summary, this is because processors are able to acquire from their set of contracted farmers raw materials that (a) are of higher quality, (b) are of more uniform quality, (c) have characteristics that allow processing of products that are consistent with market demand, and (d) are supplied by producers in quantities and to schedules designed to maximise utilisation of their processing capacity. In addition, contract farming facilitates product traceability back to source, allowing products to be certified as, for example, organic, fairtrade or produced under environmentally friendly conditions. Such certification usually also provides the potential to sell at price premiums. In addition, contract farming can be used as a basis for a processor to agree with supermarkets and other buyers to deliver specific amounts of specific qualities at particular times. Buyers are prepared to pay a further price premium for this.

The extent to which higher retail prices and lower processing costs actually materialise in practice and the degree to which they are passed back to contracted farmers through higher producer prices are not examined systematically in the case studies. However, the studies contain interesting related information. For example, in Vanuatu, it is noted (a) that fairtrade certification is not possible since there is no scope for Venui Vanilla to pay farmers the necessary 'fair' price, (b) that the organic certification of vanilla does not lead to significant price premiums in the key New Zealand and Australian markets, and (c) that, notwithstanding this, organic certification can assist in the securing of markets, since the fact that a supplier has the capacity to provide organic products strengthens a buyer's expectation that the supplier will make a sound trading partner. This is particularly important for small exporting enterprises, such as Venui Vanilla, located in small remote countries.

The general lack of significant side-selling by farmers reported in the case studies suggests that contract farming *is* resulting in prices that are comparable to or higher than those available in the open market. However, it is possible that the low incidence of side-selling is due to farmers seeking to retain a good relationship with the processor in order to access loans in kind in the future or because the opportunity to sell to other buyers is limited. Within the case studies, in Uganda there is no alternative for most KSL sugarcane outgrowers other than to supply to the company's nearby factory because their cane is heavy and loses sucrose rapidly after cutting. There is also no alternative buyer of the green leaf produced by most Kenyan tea smallholders, for whom the only potentially remunerative destination for their rapidly perishable green leaf is their nearby KTDA factory. Vanilla growers in Vanuatu also have only one feasible remunerative outlet. Side-selling does, however, appear to depend on alternative marketing opportunities for farmers. In the case of maize in Ghana, Wienco experienced significant side-selling.

In exceptional circumstances, higher producer prices that result from contract farming may not result in farmers being better off. This may well be the case for small-scale tea growers in Kenya. This is because the only means by which KTDA can enforce leaf quality is through accepting green leaf that contains only stems with a bud and no more than two adjacent leaves. This results in manufactured black tea of consistently good quality but in lower yields than achieved on estates, which vary their plucking regimes depending on market conditions for manufactured black teas.<sup>51</sup>

51 Note that the lower yield is only partly due to the plucking regime. Estates also tend to use more inputs and are able to manage cultivation more effectively.

Given that such behaviour is employed by estates in pursuit of higher profits, it is likely that, were it practicable for KTDA to employ the use of flexible plucking regimes, it would raise the net incomes of smallholders.

### **Price transparency and predictability**

In the decades after independence, many governments in Africa used state boards to purchase annual crops at prices announced in advance of the planting season. In countries such as Kenya this practice was enshrined in legislation, which required that, for scheduled crops, the Minister for Agriculture pre-announced pan-territorial producer prices payable by state boards. With the price set many months before the main harvest and with no subsequent price flexibility to match supply and demand, the state boards frequently accumulated large stocks, which were either held for long periods at considerable cost or exported at a loss. In addition, due to lack of funds, insufficient covered storage and poor management, the boards often failed to honour the commitment to buy all deliveries at the announced price, leading to large, highly unstable residual markets.

Unlike the state boards, with no tax payers to bail them out, private-sector commodity buyers engaging in contract farming often build flexibility into the contracted price to ensure that they acquire the commodity from farmers at close to the prices being offered by other buyers. This is essential, both to discourage side-selling when market prices rise and to allow them to price their processed products competitively when prices fall. Flexible prices may also be preferable for contracted farmers since, where the output of most or all producers of the commodity is affected similarly by weather conditions or some other exogenous factor, they can lead to more stable farm income since output and prices move in opposite directions.

The case studies do not analyse systematically how producer prices are formed within the studied value chains. However, the majority of studies provide a limited amount of related information.

In four of the studies, the prices paid for agreed purchases from contract farmers are varied with market conditions. In Kenya, milk supply changes with the quality of pasture and the availability of grass cut for zero grazing. This makes it essential for the processor's contract with farmers to incorporate a degree of price flexibility. Thus Brookside Dairies sets seasonal prices which it then modifies intra-seasonally to reflect unanticipated shifts in supply. In Uganda, until 2010, a formula specified by the government was used to convert sugar prices in the domestic market into prices paid by sugar companies for outgrower cane.

The Uganda government's 2010 National Sugar Policy stated that "the cane payment formula shall be negotiated and agreed upon between the millers, the respective sugar cane out-growers' associations and Government using the sugar regulatory mechanism". Growers complain that this provision has not been implemented and that they have no involvement in the setting of the cane price. In Jamaica the price of hot peppers is set by GAPD periodically, roughly in line with domestic market prices. In Ghana, the informal nature of Blue Skies's contracts with growers allows for prices to be negotiated taking open market prices into account.

In a further three of the case studies, prices are negotiated and set in advance or at the start of the planting season. In Ghana, Wienco agrees with farmers at the start of the season to purchase specific quantities of maize at a price based on the previous year's market prices. Amounts in excess of this are purchased at a negotiated price if the market prices ruling at the time are substantially different from those originally contracted. Thus, once Wienco has purchased the contracted amount from a farmer, it in effect behaves as a conventional trader, buying at prices that reflect those being offered by competitors. In Uganda, UBL pays a guaranteed pre-contracted price for the barley which it acquires for malting and subsequent brewing. NBL reportedly does the same.<sup>52</sup>

Just one case study is of a value chain in which producer price changes are formally linked to world market prices. In Belize, CPBL pays farmers quality-based prices for oranges and grapefruit that are negotiated between CPL and BCGA at the start of the harvest season on the basis of Chicago Board of Trade (CBOT) futures prices for frozen concentrated juice. They are renegotiated within the season if the CBOT futures price originally used moves by more than a pre-agreed percentage. Farmers receive a 65% payment advance on delivery with subsequent payments that make the final price equal to that negotiated.

In Kenya, the government retained the green leaf pricing system that was in use when KTDA switched from being an authority to an agency. Throughout the crop year, growers receive a monthly payment made at a pre-announced per-kg rate that is fixed for the full year. After the end of the crop year, a second 'bonus' payment is made. The per-kg rate of this second payment varies from factory-to-factory to reflect each factory's realisations from the sale of its black

52 "Our farmers are paid a uniform price for every season and it remains the same throughout the season. We revise our prices upwards considering circumstances on the ground and the prices have more than doubled in the last 10-years", said Mr Onapito Ekomoloit, the NBL Director for Corporate Affairs. Reported in Nakaweesi D, 2013, Daily Monitor, 13 November 2013. <http://www.monitor.co.ug/Business/Prosper/Dry-spell-pushes-up-sorghum-prices/-/688616/2004080/-/x51u92z/-/index.html>

tea less the value of the first payment and the total costs incurred by the factory company including KTDA's agency fee. For many years, the first payment under the former Kenya Tea Development Authority was initially much larger than the second, resulting in tea smallholders receiving the majority of their income monthly. This resulted in a strong income flow for smallholders throughout the year. Over time, the ratio of the first to the second payment has fallen, with the result that growers now receive the majority of their income as one annual bonus. Growers complain that the calculation of the per-kg rate of this bonus lacks transparency due to their inability to check the deduction made to cover KTDA's management fees.

#### **4.6.4 Downstream vertical integration**

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For some commodities, it is efficient and effective for small-scale producers to undertake a substantial amount of post-harvest treatment or processing on farm. Amongst the case study commodities, this is currently the case only for vanilla in Vanuatu. Some non-perishable commodities can be stored efficiently on farm for short periods, but this typically leads to high losses. Rubber cuplumps, maize, barley and sorghum are the only case-study commodities for which more than very short-term on-farm storage is physically feasible. All the other case-study commodities are perishable and must be moved off farm rapidly.

Since both off-farm storage and processing are subject to economies of scale, most low-income small-scale farmers have insufficient resources to make downstream investments in these activities, either individually or in small groups. Consequently, downstream investment invariably requires that small-scale farmers band together into cooperatives or associations or become joint shareholders of downstream enterprises.

Producer cooperatives and associations are most likely to be successful when undertaking technically simple downstream activities that can be undertaken efficiently on a relatively small scale within a value chain context, such as milk cooling and the storage of grains.<sup>53</sup> The establishment of such collectively owned facilities is often supported by enterprises operating on a larger scale downstream. In Cameroon, SIC Cacaos has assisted cocoa cooperatives to construct dryers and warehouses. In Ghana, Wenco has supported its contracted

<sup>53</sup> Note that over long periods of time, it is possible for farmer cooperatives to move successfully from such straightforward activities into more complex downstream operations. For example, since its establishment in 1961, Githunguru Dairy Farmers Cooperative in Kenya has gradually expanded into Kenya's third largest dairying enterprise. It now has 17,000 members, collects an average of 170,000 litres of milk a day and makes a range of branded products. See: <http://www.fresha.co.ke>

farmers to establish communal warehousing, which helps them reduce storage losses in the immediate post-harvest period and makes it easier for Wienco to assemble its contracted farmers' crops. Also in Ghana, Blue Skies has provided loans to farmers who are members of collectives to build access roads to farms and construct collection points.<sup>54</sup> A company vehicle collects pineapples from these points daily. Both Uganda's main breweries have assisted their contracted growers of barley and sorghum to develop storage infrastructure through the guaranteeing of bank loans taken out by farmer associations for this purpose.

Such activities that involve both cooperation between small-scale farmers and the linking of farmers to markets have attracted considerable donor support in recent years, especially in Africa. UBL has partnered with USAID in the initial sensitisation of farmers to the growing of barley and, more recently, to establish a network of stores in the growing areas. These were used as a catalyst for the formation of farmer associations and serve as (a) a base for extension service delivery by UBL's network of field extension staff and NAADS, (b) a facility for the distribution of inputs, and the collection, assembly and bulking of barley, and (c) a focal point for the monitoring of farm activities and the sharing of experiences. Barley is moved from the rural stores to depots established by the farmers also with USAID funding and assistance from UBL. Consignments are cleaned at these depots prior to delivery to UBL's malting plant. All procurement, cleaning and transport costs are financed by UBL, which, in turn, benefits from the reliable supply of a high quality raw material. Brookside in Kenya acquires much of its milk from cooperatives. It both supports their establishment and helps improve their efficiency. This benefits farmers and also helps Brookside by reducing the need for it to establish its own milk collection points and satellite cooling centres. Some of Kenya's dairy cooperatives have grown into large enterprises which both bulk and cool milk and provide farmers with a range of veterinary and other services, including small-scale cooperative banking.<sup>55</sup> In Haiti, JMB provides support for ASPVEFS, the harvesting and sorting activities of which both increase the unit price which farmers receive for their crop and enable JMB to minimise the percentage of its purchases that are not of exportable quality.

The Cameroon and Liberia rubber case studies are examples of how *large-scale* companies can independently establish profitable integrated production and relatively sophisticated processing operations. The Jamaica value chain for processed eggs products shows how a small number of large-scale producers

54 Note that the collectives organised into the Blue Skies Organic Collective Association (BSOCA) are not formally involved in contract farming with the Blue Skies (see reference to BSOCA in subsection 5.2.2).

55 Nyala Dairy Multipurpose Co-operative Society Limited is an example. See: <http://nyala.co.ke>

can both cooperate and partner with established companies to set up vertically integrated production, processing and marketing.

It is rare for farmer cooperatives and associations in developing countries to invest independently in complex large-scale downstream enterprises since they normally have insufficient financial and entrepreneurial capacity. Thus, where farmers collectively own such enterprises it is usually a consequence of government programmes to change the ownership structure of the value chain. The case studies contain two examples of chains in which farmers have become the owners of relatively complex downstream processing enterprises through state programmes supported by donors: tea in Kenya and citrus in Belize. In Kenya, as discussed above, each smallholder tea factory is owned by the growers who supply to it and is managed for a fee by the Kenya Tea Development Agency, a quasi-government, legally independent state-owned company, which also manages export and domestic sale of the black tea manufactured in smallholder factories. In Belize the growers' company, CPBL, manages the citrus processing plants and the export of citrus products directly. In practice, in both countries, growers are unable to exert full control of the companies that they notionally own. This is most evident in the setting of producer prices. In Kenya, smallholders consider that determination of the rate of their end-of-year bonus payment lacks transparency because they cannot check the validity of the KTDA management fee which KTDA deducts from the gross sales value of their manufactured tea. In Belize BCGA negotiates producer prices with CPBL, a company which, formally, it owns. In practice, there is unlikely to be a single ideal ownership structure that both allows producers to be fully in control of the management of the processing enterprise and ensures that the enterprise is managed efficiently and effectively.

The alternative to farmer ownership of a monopsonistic processor of the output of small-scale farms is an independent privately owned enterprise. In this situation there is no market to determine the producer price. The only price imperative is for the enterprise to pay farmers sufficient to ensure that they deliver roughly the amount of the commodity it requires. For perennial crops, this may lead to farmers being disadvantaged, since, to encourage them to continue producing and delivering, the processor need only pay them a price sufficient to cover their variable costs. The producer price cannot be negotiated effectively by farmers and processors because neither has an alternative market. Farmers are locked into the perennial crop and into selling it to the processor. The processor must acquire their crop or go out of business. Ensuring that processors pay smallholders more than the marginal cost of production may require some form of public control of the producer price. In practice, while there are some successful examples, this can be extremely difficult to implement

because it requires an essentially political decision on target returns for farmers and processors. The case study of sugar in Uganda graphically demonstrates this difficulty. The national government has published a formal sugar policy that provides for producer prices to be determined through the application of a formula, but this provision has yet to be implemented.<sup>56</sup>

56 Section 4.2 (v) of the August 2010 National Sugar Policy states that, “the cane payment formula shall be negotiated and agreed upon between the millers, the respective sugar cane out-growers’ associations and Government using the sugar regulatory mechanism.”



# 5

## Green Aspects of Chain Development

The rapid increase in agricultural output in ACP countries over the past 50-60 years has been achieved at high environmental cost. It has adversely affected soils, damaged water catchments and reduced biological diversity. The detrimental impact of this on the capacity of ACP countries to produce foodstuffs and other agricultural commodities is being exacerbated by climate change. This is also partly the result of the expansion of agriculture, a significant part of which has been achieved at the expense of the destruction of forests.

The need to reverse the adverse environmental impact of rapid economic growth is now widely recognised. This requires that natural resources are used efficiently, that the destruction of existing natural resources through erosion and pollution is minimised, and that carbon emissions are reduced. To contribute to these aims, it is important that existing and new agricultural commodity value chains are as 'green' as possible.

The majority of the case studies contain examples of initiatives taken by value chain participants to adopt green practices. These cover production, processing and transportation. Only in the case of taro growing in Fiji has development of the value chain caused serious damage to the local environment and required explicit remedial measures. In all the other cases, chain development has either not had obvious adverse local environmental impacts or steps have been taken or are planned to introduce greener methods to reduce, eliminate or reverse such impacts.

### **5.1 Motivation for the adoption of green practices**

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It is possible for value-chain enterprises, including farms, to benefit directly from the adoption of green practices. This is because such adoption can reduce unit production, processing and marketing costs and/or raise product prices at points of final sale. To obtain such raised prices, there is usually need for cooperation between enterprises operating at different levels of the chain. For farmers to benefit from higher retail prices at the point of sale, a part of the price increase must be transmitted back to them in the form of higher producer prices.

Virtually all the green practices adopted by farmers and enterprises operating in the case-study value chains yield returns to the adopter. There are five conceptually distinct mechanisms for this:

- Environmentally sound practices can raise farm production and the total output of processors. In the case of farm production, this is mainly through their impact on the quantity and quality of resources available to farmers, especially their soils. In the case of processing, total output can be raised by switching from disposing to making productive use of waste products.
- Environmentally sound practices can result in lower unit costs at the growing, post-harvest, processing and transport stages of the value chain.
- The certification of one or more of a value chain's end products as organic or produced using other environmentally friendly methods can lead to higher selling prices in the final markets for products derived from the commodity.
- Even where such certification leads to little or no retail price premium, it can enhance market access by demonstrating to buyers that the supplier is dependable and likely to be a stable long-term partner or because it has become a *sine qua non* for market access.
- Green practices can improve the socio-political environment in which the chain operates, benefitting enterprises within the chain by, for example, improving labour relations, leading to the easing of planning restrictions, and improving the likelihood of receiving favourable fiscal treatment.

In some instances a single practice or programme can yield benefits through a number of these mechanisms. For example, tree planting in Kenya under the KTDA wood fuel programme has the potential to raise tea production through reducing wind damage and soil erosion on smallholdings, provide a low-cost, environmentally friendly fuel for tea factories, serve as an input into obtaining environmental certification for smallholder tea value chains, and benefit the environment through increased transpiration, thereby improving the corporate image of KTDA and the Kenyan smallholder tea sector.<sup>57</sup>

57 For a recent publicity statement relating to the wood fuel programme see: <http://www.ktdateas.com/index.php/press-releases/205-ktda-to-provide-millions-of-tree-seedlings-to-farmers>

## 5.2 Green initiatives at the production level

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### 5.2.1 Conservation of the environment through yield increase

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Globally, increased demand for agricultural commodities has been met partly by devoting more natural resources to agricultural production, especially previously unutilised land. Other than for the establishment of relatively small amounts of irrigated production in arid areas, this expansion of the area cultivated has been achieved by clearing areas of forest, bush and other natural vegetation and by draining wetlands. Such means of extending of the area devoted to agriculture has well-recognised adverse environmental effects. Given this, increasing agricultural output by raising per-hectare yields, rather than by utilising additional land, is an important means of environmental conservation, provided that the process of increasing yield is not itself environmentally damaging. Meeting this condition requires that farmers employ measures that result in *sustained* yield increase, especially measures that do not compromise the structure and nutrient content of their soils. It is also important that they employ agro-chemicals and veterinary drugs responsibly, backed by sound extension advice, to prevent adverse environmental impacts external to their farm. In this regard, it should be noted that in certain circumstances relatively high mineral fertiliser use, rather than being damaging, can contribute to protection of the environment. In Kenya, for example, tea smallholders use substantial amounts of fertiliser. In addition to raising yields, this leads to tea bushes with dense leaf cover, increasing the rate at which each bush removes carbon from the atmosphere and reducing soil erosion.<sup>58</sup>

The case studies contain examples of yield-increasing measures for which the primary aim is to increase farm income but which have no obvious adverse environmental consequences. For example, in Cameroon, SAFACAM has increased its latex yields simply by improving its tapping techniques. In Kenya, tea smallholders have raised per-bush yields by following advice to pluck their bushes more frequently. Also in Kenya, more milk is being produced per unit of fodder as a result of farmers having an increased capacity to breed and acquire high-grade dairy cattle.

On the other hand, the example of taro in Fiji illustrates graphically the need for yield increases to be attained through sustainable practices. The rapid uptake of taro growing on the Fijian island of Taveuni led to widespread destruction

<sup>58</sup> Note that this benefit is offset partly or wholly by the negative impact on the environment of manufacturing and transporting the fertiliser.

of indigenous forests and, on the land cleared, to heavy erosion of the island's highly fertile volcanic soil. It also led to a switch on existing smallholdings from traditional farming methods to monoculture and to the overuse of fertilisers, which damaged the structure of the soil and reduced its nutrient content. The experience of Taveuni emphasises the fact that yield increase is only inherently green if it is achieved through agronomic practices that are not environmentally damaging and which consequently allow the higher yields to be obtained over the long term. The mistakes made on the island are now well recognised by its farmers. They are being addressed by grower associations which, with the support of the Ministry of Agriculture and donors, are providing training and extension advice to their members on the adoption of sustainable production methods.

## 5.2.2 Organic production

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There is extensive literature on the advantages and drawbacks of organic production, which covers a wide range of biological and socio-economic issues.<sup>59</sup> Four of the case studies cover crops which are formally retailed in foreign markets in whole or in part as organic: those for pineapple in Ghana, mangoes in Haiti, cocoa in Grenada and vanilla in Vanuatu.<sup>60</sup> The existence of only one organic value chain amongst the African case studies is not necessarily of significance since the case studies were not selected randomly. However, there are a number of *a priori* reasons why organic certification in the Caribbean and Pacific is likely to be more prevalent than in West, Central and East Africa:

- more value chains tend to be initiated by individuals who originate from countries where organic products fetch premium prices
- the smaller number of farmers involved makes the monitoring of their input use less onerous
- soils often tend to be more fertile due to their volcanic origin, as in Grenada and Vanuatu. This reduces the need for mineral fertiliser
- there is more reliance on high-value niche markets
- there is greater involvement of donors and NGOs in value-chain development.

59 For example, see the references in: Seufert V, Navin Ramankutty N and Foley J A (2012) *Comparing the Yields of Organic and Conventional Agriculture*, Nature, 2012; and in: Colin Sage (2012) *Addressing the Faustian bargain of the modern food system: connecting sustainable agriculture with sustainable consumption*, International Journal of Agricultural Sustainability 10:3.

60 All the output of the GOCFCS value chain in Grenada is organic but only part of the output of the Blue Skies value chain in Ghana, the JMB chain in Haiti and the Venui Vanilla chain in Vanuatu.

Prior to the first domestic purchase of organic beans in 2004, all Grenada's cocoa was exported as conventional beans. The country's organic value chain for cocoa products is the only chain amongst the case studies that from the outset was developed explicitly as a green chain. Establishment of the chain was based on a set of farmers replacing fertilisers with organic mulches derived from the byproducts of cocoa production and fermentation (pods and shells) and from composted ruminant and pig manure. The organic nature of production, together with a set of downstream green and inclusive features of the chain, have been used by GCC to access specialist niche domestic and export markets and to achieve prices well above those obtained by mainstream cocoa products.

In Haiti, mangoes are grown organically without any use of inorganic fertiliser or other agro-chemicals. In the past, this was considered a factor inhibiting growth of the industry but it is now being exploited as a means of raising export prices. The exporter, JMB, is working with selected small-scale grower cooperatives in certified growing regions in the north-west of Haiti to progressively obtain USDA and BCS öko-Garantie certification for their output.<sup>61</sup>

Vanilla is grown organically on all seven of Vanuatu's islands on which it is produced. Since Vanilla vines have root systems that extend just below the surface, heavy mulching is the best means of providing nutrition while simultaneously aerating, protecting and enhancing water retention in the soil, protecting the roots from the sun, and controlling weeds.<sup>62</sup> A wide range of organic mulching material is recommended, including byproducts and waste products from other crops, such as coconut husks, cocoa pods and oil palm waste. Despite the fact that all production is organic, less than half is certified as such due to the high cost of certification that results from the widely scattered nature of Vanuatu's vanilla producers (all of whom are small scale) and the fact that they market individually due to the lack of a cooperative tradition in the PICS. This, coupled with the small price premiums obtainable for organic vanilla in regional markets, means that the unit cost of certification exceeds the price premium. As described above, the certification that does take place is undertaken principally because it enhances market access.

Within Africa, the only case-study value chain that incorporates organic production is that for pineapple in Ghana. In 1998, soon after its establishment,

61 BCS öko-Garantie is a private agency that is licensed to implement EU regulations on organic certification.

62 Piero Bianchessi, *Vanilla Handbook*, Venui Vanilla, 2012.

Blue Skies assisted in the creation of Blue Skies Organic Collective Association (BSOCA) to supply it with the sugarloaf pineapple variety. The association comprises over fifty farmers, who are members of four village-level collectives. They mostly have around two hectares planted to pineapple. BSOCA enables Blue Skies to consolidate its relationship with a set of small-scale farmers and provide a platform for it to provide the training and systems required for the certification it needs to access European markets. The association's farmers now have certification from the Soil Association, GlobalGap, Linking Environment and Farming (LEAF), the Organic Food Federation and the Fairtrade Foundation.

### **5.2.3 Other explicitly green production measures**

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In 16 of the 19 case-studies, agro-chemicals and/or veterinary drugs are used by at least some of the producers involved in the value chain. The exceptions are mangoes in Haiti, organic cocoa in Grenada and vanilla in Vanuatu.

With two exceptions - rubber in Cameroon and tea in Kenya - the African case studies tend to focus on green measures downstream from the farm gate. In Cameroon, foliage and soil test research jointly funded by rubber companies has led to mineral fertiliser use in rubber production falling by 60%, both reducing the environmental load from rubber growing and raising the profitability of growers. The use of ethereal to stimulate rubber trees has also been reduced with support from the Institute of Agricultural Research for Development.

Compared with the growing of annual crops, such as maize, tea growing is relatively environmentally friendly in that it gives good permanent ground cover and the bushes have a high rate of transpiration.<sup>63</sup> Notwithstanding this, it is recognised in Kenya that there is scope to improve further the green characteristics of national tea production. Since the start of the millennium, there has been a drive in the tea sector for the adoption of improved agricultural practices. This originated in the estate sub-sector, where the large estate companies, seeking to gain an edge on competitors through international certification of their teas as environmentally friendly, have been taking measures to increase biological diversity on their estates.<sup>64</sup> For example, Unilever, the leading large-scale producer of tea in Kenya, has introduced indigenous species into the trees that form windbreaks on its estates and also established small areas of wetland within the estates' perimeters.

63 It is also an ideal smallholder crop when grown near the equator in that it yields throughout the year, providing regular employment and the potential for a regular flow of income from the sale of green leaf.

64 See Ecoagriculture Partners, Ecoagriculture Snapshots 07, Sustainable Tea production in Kericho, Kenya. [http://www.ecoagriculture.org/case\\_study.php?id=39](http://www.ecoagriculture.org/case_study.php?id=39)

Within the Kenyan smallholder tea sector, there remains scope for growers to raise their yields and to conserve natural resources within their holding, to adopt measures to reduce external environmental damage, and to make a positive contribution to local biodiversity. Since Unilever is not only a producer in its own right in Kenya but also the largest buyer of KTDA teas, it has worked with KTDA and other partners to establish and implement a Farmer Field School Project under which tea smallholders have been trained in improved cultivation techniques that both raise per hectare yields and enhance environmental sustainability.<sup>65</sup> Since 2006, commencing with a small pilot programme and, from 2009, progressively scaling this up to cover all tea smallholders, farmer field schools (FFSs) have been established at which growers are trained over a period of one year at 26 two-hour sessions that include short talks, lectures and field visits. Topics are selected by farmers and the training is supported by farm trials aimed at identifying improved practices relating, for example, to pruning methods, plucking regimes and the management of the plucking table. Tea smallholders have been trained in a wide range of topics, including (a) mineral fertiliser and herbicide application aimed at both cost-effective usage and minimising waste and the pollution of nearby water courses, (b) mulching, manuring and other practices to maintain soil fertility, (c) practices that minimise soil loss, (d) means of increasing biodiversity, (e) the use and storage of rainwater and the management of runoff, and (f) local renewable energy production using fuel wood and biogas.<sup>66</sup>

Since 2010, farmers have also been trained in practices necessary to meet the basic requirements for Rainforest Alliance (RA) certification, which are designed to ensure that smallholder tea is grown in a manner that is not harmful to either the environment or the workforce. This is organised through the training of lead farmers by RA and by its local implementing associate, Partner Africa. These lead farmers then train other smallholders with the assistance of extension staff

<sup>65</sup> The main partners involved were the UK Government's Department for International Development (DFID), which provided a £509,000 grant, and Wageningen University and ETC East Africa (a not-for-profit consultancy organisation that works mainly on sustainable development projects), which together provided training and undertook analysis and project monitoring. In addition, the Tea Research Foundation of Kenya provided technical information and backup.

<sup>66</sup> See Appendix 1 of: Yuca Waarts, Lan Ge, Giel Ton and Don Jansen, *Sustainable Tea Production in Kenya: Impact Assessment of Rainforest Alliance and Farmer Field School*, Wageningen UR, LEI report 2012-043, June 2012, Project code 2273000285, LEI Wageningen UR, The Hague. Note that the programme also led to a greater use of fertiliser. Provided the programme's guidance on how to prevent fertiliser from polluting water courses has been followed correctly by most farmers, adverse environmental impacts of greater fertiliser use are likely to have been more than offset by the positive environmental impacts of increased leaf growth on transpiration and soil erosion.

and the staff of RA and Partner Africa. Reflecting its limited objective, the RA training is less comprehensive than that provided at the FFSs. For the output of a factory to be RA certified, at least 30% of its green leaf purchases must be from RA-certified farms and the factory company must undertake to increase this proportion over time to 100%.<sup>67</sup>

By 2012, some 360,000 farmers had reportedly been trained for RA certification.<sup>68</sup> By mid 2013, 798 FFSs had been established covering all 66 KTDA-managed factory areas. At 228 of the schools, the programmes had been completed. An evaluation of the FFS and RA training, commissioned in 2012 by the Netherlands Ministry of Economic Affairs Agriculture and Innovation, showed that the programmes had improved both the quality and quantity of KTDA tea production and led generally to the adoption of more environmentally friendly methods of production.<sup>69</sup>

The Caribbean and Pacific case studies provide a number of examples of the adoption of more environmentally friendly practices. Those that are part of the establishment of explicitly organic value chains are discussed above in sub-section 5.2.2. Attempts to stem and reverse environmental damage from taro growing in Fiji are covered in sub-section 5.2.1. Further examples of environmentally friendly practices in Belize, Haiti and Jamaica are as follows:

- In Belize, BCGA and CPBL have promoted green production techniques, including the use of integrated pest management and more efficient use of fertilisers and plant hormones.
- In Haiti, JMB, the US retailer Whole Foods, the 3M Corporation and a number of donors have supported the training of mango farmers in a range of green production and post-harvest measures, including the infilling of small plots, reforestation, the top grafting of less desirable species with export varieties, and improved post-harvest techniques aimed at reducing losses.
- In Jamaica, JEFA supplies waste generated by poultry to fruit and vegetable farmers for use as fertiliser.

67 A study by IDH showed that the RA certification raises selling prices by no more than the cost of the necessary audit. The main benefit to farmers is the increased yield and quality that result from the training necessary to obtain certification. See: IDH, *Cost-Benefit Analysis of Farmer Field Schools and Certification for Smallholder Tea Farmers in Kenya*, Utrecht (undated).

68 IDH, *ibid*. Note that this figure presumably assumes that all farmers who receive secondary training from lead farmers are trained effectively.

69 See Waarts et al, *op cit*.

- Also in Jamaica, GAPD has promoted measures to increase the efficiency with which its contracted hot pepper farmers use land and water.

## 5.3 Green initiatives involving transport and processing

### 5.3.1 Introduction

Large-scale agricultural processing and trading enterprises in developing countries are now almost universally aware of the extent to which their activities can damage the environment and of the fact that well-publicised action to prevent or ameliorate such damage is essential for establishing a green corporate identity.<sup>70</sup> This, coupled with the tightening of national environmental legislation and the premiums obtainable for products certified as 'green', means that virtually all large-scale processing enterprises now, as matter of course, invest in green technologies and seek to employ green practices.

The case studies contain a large number of examples of green measures that have been taken by the value-chain's focus processing enterprise. These meet one or more of the following green outcomes:

- reducing total energy use in the inward transportation of raw materials, processing, and the onward transportation of processed products
- increasing the proportion of energy usage that is generated using green methods
- minimising the percentage of the original commodity that is wasted
- making productive use of former waste byproducts
- using eco-friendly means to dispose of waste products that have no potential commercial value.

### 5.3.2 Transport

Crops are most commonly processed near to the point of production. There are two main reasons for this. First, processing usually reduces the weight of the main product. Processing near points of production consequently reduces

<sup>70</sup> This is exemplified by this 2012 statement by the Managing Director of UBL: "We recognize that in order to ensure sustainable growth in our business we must remain committed to continuously reducing the environmental impact of our operations and in our broader supply chain. This involves working towards reducing the pressure on water exerted by our production processes and managing the pollution effect of waste water from our facilities. The Effluent treatment plant that we set up in 2005 has enabled us set up a world class waste water management system and helped us achieve these objectives." EABL Archives: <https://www.eablfoundation.com/cgblog/53/48/Uganda-Breweries-Limited-Commissions-Water-Recovery-Projects-and-launches-a-Community-Sanitation-Project-on-World-Water-Day>

total transport costs from the farm to points of final sale. Good examples of this amongst the case study crops are sugarcane and citrus. In the case of cane, the main processed product weighs only around one tenth of the original raw material. Citrus juice is pressed from the fruit and is frequently concentrated with the aim of reducing both the weight and volume of the original raw material transported from the processing facility. The second reason for processing near to the farm gate is that the commodity is more perishable in its raw than in its processed form. Tea and hot peppers are good examples. Tea also loses most of its weight during processing, reinforcing the reason why, worldwide, all large-scale processing of black tea takes place in factories either on estates or which source their green leaf from nearby smallholders. If destined for export, it is essential that perishable commodities are processed domestically, except where the commodity is only consumed in importing countries in fresh whole form or where the fresh form has a much higher retail value than that of processed products derived from it.

The domestic processing of export crops that results in a loss of weight and/or volume is of itself a 'green' activity in that it lowers the amount of polluting transport required for shipment to foreign markets. One caveat is that, if the processed product is packaged domestically, and especially if it is bottled, weight and volume are added, offsetting and possibly wiping out the green transport advantage gained from processing near the source of production.

In all the value chains covered by the African and Caribbean case studies the commodity is processed domestically, other than for a proportion of the mangoes entering the JMB value chain in Haiti. In the African studies, the only commodities that are transported substantial distances in the form in which they leave the farm are grains in Ghana and Uganda. These are storable and lose little weight during processing. Indeed, in the case of the grains used for brewing in Uganda, the final products are bottled fluids which weigh substantially more than the original weight of the grain they embody.

In three of the four export value chains covered by the Caribbean case studies, all or most of the crop is processed prior to export. In Grenada, all the chocolate entering the BSOCA value chain is manufactured into a set of products domestically. In Belize, all CPBL citrus exports are made in the form of concentrated juice. In Jamaica, by establishing its own domestic hot pepper mash processing facility, GK has reduced the need for Jamaican processors to import mash from Central America, thereby reducing transport costs. It has further cut transport costs by manufacturing and packing a part of its pepper-mash based products in

the UK, thereby needing to ship only mash to the UK rather than the bottles and other packaging in which its products are retailed. In Haiti, JMB only exports high quality fruits in fresh form. It processes low-quality fruits into frozen pieces, which are lighter than the fruits from which they are cut and are much less perishable provided they are kept frozen.

Of the commodities covered by the PIC case studies, only a part of the vanilla exported from Vanuatu is processed domestically prior to export.<sup>71</sup> The two Fijian case studies refer to commodities - taro and papaya - which are exported without processing, reflecting the fact that consumers in importing countries have a strong preference for the fresh fruit over processed derivatives.

In addition to the 'green' *location* of processing, many of the case-study focus enterprises have made efforts to further reduce the environmental footprint of transportation. For example, in Kenya, Brookside has encouraged small-scale local fresh milk collection by bicycle. Across the country, 'bicycle boys' travel between farmers collecting raw milk and delivering it to collection points, allowing the company to source its milk efficiently from a large and diverse base of suppliers. This is a good example of the convergence of commercial interests, environmental concerns and employment objectives, since, in addition to being non-polluting, this delivery network minimises Brookside's assembly costs and generates rural employment. In the Caribbean, CPBL has improved the logistics of inward haulage of citrus from growers and of outward transportation of its products to reduce both its haulage costs and the company's total carbon emissions. GCC in Grenada recently exported a consignment of its cocoa products to Europe using a sailing boat, enabling it to promote its products as completely 'carbon free'. In the PICs, efforts are being made to substitute air-freighting with transport by sea. The case study of taro in Fiji highlights how this is being frustrated for exports to Australia due to the Australian Government's insistence that corms be devitalised in Fiji prior to shipment. This makes them more perishable and necessitates transportation by air.

### 5.3.3 Processing

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Amongst the case studies, the most comprehensive set of green measures relating to processing are those undertaken by CPBL in the processing of citrus

71 All vanilla is cured on farm. The best quality vanilla has a high value-to-weight ratio and is exported as cured whole beans. Lower quality cured beans are processed into extract and paste by Venui Vanilla.

at its plants in Belize. In addition to the green gains from exporting frozen citrus concentrate rather than whole oranges or normal strength juice, CPBL:

- minimises losses during processing by (a) testing fruit maturity prior to harvesting and systematically planning and scheduling fruit deliveries accordingly, and (b) investing in state-of-the-art processing equipment
- uses solid byproducts productively to extract citrus oils, to make organic fertiliser and cattle feed, and as fuel for the generation of electricity
- biologically cleanses liquid wastes using effluent ponds, and processes residual solids into byproducts
- has reduced its carbon emissions from processing by switching from diesel and bunker fuel to sweet crude oil.

The case studies contain other examples of green initiatives relating to processing. In Cameroon, SAFACAM has constructed a facility for the treatment of effluent discharged from its rubber processing plant. The company is also working towards ISO 140001 certification of its environmental management standards. In Liberia, MARCO is reported to have an operational waste disposal system at its rubber processing plant. In Ghana, Blue Skies converts the off-cuts that result from its processing of pineapple into fertiliser, which it recycles to farmers. It also regularly takes samples of effluent from its plant's pineapple processing floor, which are analysed to ensure that it is meeting the minimum requirements of national laws relating to the environment. It has also recently established a biogas plant which uses waste both from the factory and from the local community.

In East Africa, the large amounts of bagasse produced at the KSL sugar factory in Uganda are used for the generation of electricity. This is used as an energy source in the factory itself, with the remainder being fed into the national grid.<sup>72</sup> Also in Uganda, in 2005 UBL installed an effluent treatment facility at its original brewery to prevent its activities polluting Lake Victoria. Its new, second brewery in western Uganda includes state-of-the-art water and effluent treatment. In Kenya, all of KTDA's factories use wood fuel. The factory companies currently have some 4,000 acres of trees planted for this purpose. KTDA has an ambitious programme to expand this area to 33,000 acres in future years. KTDA also supports the growing of trees by tea farmers through the provision of seedlings at subsidised rates.<sup>73</sup>

<sup>72</sup> Bagasse is the fibrous matter that remains after sugarcane is crushed to extract the juice. In addition to being green, KSL's use of bagasse serves to raise its profits and is also in line with Uganda's 2010 Sugar Policy, which provides for the government "to encourage" factories to use bagasse for electricity generation to help ease the national power shortfall facing the country.

<sup>73</sup> See: <http://www.ktdateas.com/pdfdocuments/ktda%20trees.pdf> for recent KTDA publicity on its tree-growing plans.

In the Caribbean, GCC generates solar power, which is used in the processing of its chocolate products. In Jamaica, CEP renders waste eggshells into organic fertiliser. In Haiti, the hot water treatment facility introduced by JMB to eliminate fruit flies from export consignments allows Haitian mangoes to be exported without resort to more invasive agrochemical-based means of eliminating fruit flies.



# 6

# Key Findings

The case studies demonstrate the great diversity of ACP agricultural value chains, which differ in terms of the age, structure and practices that they embody. For example, they vary markedly in terms of:

- number of years since establishment
- physical characteristics of the commodity and the products derived from it
- number of producers and number of end users
- inter-seasonal production stability
- number of sequential activities from the supply of inputs and services to farmers to the point of final sale of the commodity and derived products
- extent of spatial coverage of each chain activity
- value of annual throughput
- extent of vertical integration
- scale of processing
- weight and volume of the principal product relative to the raw material
- number of products resulting from processing and the value of each secondary product relative to that of the principal product
- means of price formation at each point where ownership changes.

Despite such differences, a number of strong themes emerge from the set of studies as a whole.

## 6.1 Chain development

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1. Agricultural commodity chains established through private initiative invariably develop to exploit market opportunities rather than as means of utilising autonomous increases in farm production. Similarly, the structure of privately driven chains usually evolves to accommodate changes in demand rather than autonomous changes in production. Notwithstanding this, the ability of agricultural producers to expand production in response to an increase in demand is an important factor in the pace at which a value chain develops.

2. In the period from the mid-1980s to early in the present century, steps taken by national governments to liberalise agricultural markets have had a major impact on the development and present structure of value chains, especially in Africa.
3. There is wide use of fiscal incentives to encourage investment in activities within agricultural commodity value chains, especially processing. These can be effective in encouraging the growth of particular chains but may result in an inefficient allocation of resources between commodities. When targeted at imports of machinery, they can encourage capital intensive production at the expense of the use of labour.
4. Natural events in foreign countries and decisions taken by foreign governments over which the nation in question has no control can play a critical role in triggering the development of value chains and in shaping their structure.
5. The adoption of new technologies can be a key factor in value-chain development and, in some circumstances, is a necessary condition for such development. The adoption of new technologies in the case-study value chains has:
  - a. led to rapid increase in production of the commodity and in the scale of the value chain
  - b. enabled products to be processed to replace imports and expand domestic sales
  - c. allowed lost export markets to be re-established
  - d. enabled new high-value products to be manufactured viably on a small scale
  - e. made it possible for waste products to be turned into valuable goods.

## **6.2 Small-scale farmer inclusion**

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6. Value chains for agricultural commodities can function more efficiently and effectively when small-scale farmers develop relationships with suppliers of inputs and services and with entities that market and process their output. The integration of farmers into value chains can have mutually beneficial outcomes both for the farmers themselves and for other value chain participants. Farmers can aim to supply a product that is suited to the requirements of processors and end users, both in terms of physical characteristics and the reliability and timing of supply. Processors, traders and other chain participants, in turn, can provide farmers with information, training, inputs and finance.

7. Depending on the characteristics of the chain, contract farming, vertical integration or a combination of both can be effective means of achieving greater small-scale farmer inclusion in value chains.
8. Contract farming can be a highly effective means of improving the efficiency of both commodity production and downstream activities. It has improved the welfare of large numbers of rural farm households, increased the efficiency of processing and marketing enterprises, and benefitted consumers of agricultural commodities and products derived from them.
9. Provided that side-selling can be controlled, contract farming is most effective where the enterprise that contracts to buy a commodity from farmers does so in the face of competition from other buyers.
10. Where an enterprise engaging in contract farming is a monopsonistic buyer of perennial crops, it is desirable that its interaction with farmers is governed by appropriate laws and regulations that assure that the monopsonist does not make excess profits at the expense of small-scale farmers. However, in practice, such arrangements are difficult to implement.
11. The vertical integration of small-scale farmers into downstream activities often needs to be done through their collective ownership and involvement in these activities. Such integration is most likely to be feasible and successful where the activity has low investment costs and its management is straightforward. It is likely to be facilitated financially and technically by the purchasing enterprise if it leads to a more reliable supply of its raw material in terms of quality and availability.

### **6.3 Green value chains**

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12. It is common for market forces, rather than encouragement of explicitly green activities, to drive the adoption of green investments and practices. This is because:
  - a. Increases in per-hectare yields driven by market forces are green in that they enable market demand for agricultural commodities to be met from a smaller total land area, thereby conserving forests and other areas with natural plant cover. The exception is where the yield-increasing activities themselves have adverse environmental effects
  - b. Natural resources within the farm's boundaries are an essential factor

of production and the long-term viability of production consequently depends on their conservation

- c. Many means of raising profitability also incidentally conserve natural resources
  - d. Green processing and transport practices can be used as marketing tools to expand export sales and raise export prices.
13. In recent years sound practices aimed explicitly at being environmentally sound have become widespread, especially in value chains that involve large enterprises that are concerned with improving their green credentials as part of their brand positioning strategy.

## **6.4 Small island value chains**

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14. Small island Caribbean and Pacific ACP countries are able to export agricultural commodities successfully despite the high production costs that stem from a lack of economies of scale. This is partly due to their unique agro-climatic, physical and cultural characteristics that enable them to successfully exploit niche export markets through being able to (a) supply at times of high seasonal prices, (b) provide products with unique physical qualities, and (c) export speciality food crops and products to their country or region's diaspora.

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