



MARKETS AND RURAL POVERTY

UPGRADING IN VALUE CHAINS

EDITED BY

JONATHAN MITCHELL AND CHRISTOPHER COLES

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Upgrading in Value Chains

Edited by Jonathan Mitchell and Christopher Coles

International Development Research Centre

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Acronyms and Abbreviations

AFA	An Giang Fisheries Association
AGSC	An Giang Seed Centre
AMEDD	Association Malienne d'Eveil au Développement Durable
ASC	Aquaculture Stewardship Council
BAFAMCO	Batu Farmers Multi-purpose Cooperative
BDS	Business Development Service
BFAD	Bureau of Food & Drug Administration
BLGU	Barangay local government unit
BPL	below the poverty line
BRC	British Retail Consortium (developed BRC Food Technical Standard, a global food standard)
CEC	community enterprise cluster
CEO	Chief Executive Officer
CFA	<i>Communauté financière d'Afrique</i> (Francophone West African unit of currency)
CI	Conservation International (an American NGO)
XOF	Abbreviation of CFA – <i>Communauté financière d'Afrique</i> (Francophone West African unit of currency)
CGRH	Fisheries Resource Management Committee
CI	Conservation International
CIBART	Centre for Indian Bamboo Research and Technology
CFUG	community forestry user group
CPR	common property resources
CPRC	Chronic Poverty Research Centre
CRS	Catholic Relief Services
CSF	critical success factor
CSR	corporate social responsibility
CST	central sales tax
DARD	Provincial Department of Agriculture and Rural Development
DIIS	Danish Institute of International Studies
DOST	Department of Science and Technology
DTI	Department of Trade & Industry
EEZ	exclusive economic zone
ENDA/REPAO	Environnement et Développement du Tiers Monde (a Dakar-based fishery research organization)

EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FCFA	Franc CFA (see entry for CFA)
FECOFUN	Federation of Community Forest User Groups of Nepal
FMI	Food Marketing Institute
GCC	global commodity chain
GDP	gross domestic product
GHG	greenhouse gas
GlobalGAP	The Global Partnership for Good Agricultural Practice
GM	genetically modified
GVC	global value chain
ha	hectare
HACCP	Hazard Analysis and Critical Control Point management system
HARC	Himalayan Action Research Centre
HGG	head of grower group
HQCF	high quality cassava flour
HYV	higher yielding variety
ICIMOD	International Centre for Integrated Mountain Development
IDS	Institute of Development Studies
IDRC	International Development Research Centre
ILFS	Infrastructure Leasing and Financial Services Ltd
INBAR	International Network for Bamboo and Rattan
INR	Indian rupee
IOF	investor orientated farm
JFMC	Joint Forest Management Committees
JICA	Japanese International Aid Programme
LCA	life-cycle assessment
LGU	local government unit
MAP	medicinal and aromatic plant
MAP	modified atmospheric packaging
MIC	middle income country
MLGU	municipal local government unit
MRAG	a UK-based marine research and fisheries consultancy
MSC	Marine Stewardship Council
MT	United States abbreviation for the metric ton
MVIWATA	Mtandao wa Vikundi vya Wakulima Tanzania, a Network of Farmers Groups in Tanzania
NFTS	Natural Farming Technology Scheme
NGO	non-governmental organization
NIC	newly industrialized country
NPR	Nepalese rupee
NREGA	National Rural Employment Guarantee Act
NRM	natural resource management
NTFP	non-timber forest products
ODI	Overseas Development Institute

OECD	Organization for Economic Co-operation and Development
OTOP	One Town One Product
PLGU	provincial local government unit
PMA	professional marketing agent
PMG	product marketing group
PPP	purchasing power parity
Q&S	quality and safety
ROI	return on investment
SHG	self-help group
SME	small and medium enterprises
SPEG	Sea Freight Exporters of Ghana
SQF1000	Safe Quality Food Programme
SQF M&E	SQF (see above) monitoring and evaluation
SWOT	Strengths, Weaknesses, Opportunities, and Threats
TIF	Transaction Insurance Fund
TRIBAC	Tripura Bamboo and Cane Development Centre
Tsh	Tanzanian shilling (can also be written TZS)
UACT	Union des Agriculteurs de Cercle de Tominian
UCD	Coordination d'Unions paysannes de District
UNIDO	United Nations Industrial Development Organisation
UNRISD	United Nations Research Institute for Social Development
UPA	agricultural production units
UPA	extended household production units
USAID	United States Agency for International Development
USD	United States dollar
VAT	value added tax
VCA	value chain analysis
VDC	village development committee
VND	Vietnam dong
WDR	World Development Report
WESMIARC	Western Mindanao Agricultural Research Centre

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Glossary

Value chains glossary terms

Bulking – aggregation of products to achieve economies of scale

Critical success factors – essential criteria (for a product or service) for entry into, and successful competition in, markets

‘Order qualifying’ CSFs – essential criteria (for a product or service) for entry into markets

‘Order winning’ CSFs – criteria that give a product or service a competitive advantage in markets once ‘order qualifying’ CSFs are met – differentiating characteristics

Downstream – describes the flow of products or services toward market

First-tier suppliers or retailers – a company that sells and delivers materials or goods to a customer’s factory or shop

Functional upgrading – changing the mix of functions performed by an actor in a value chain

Horizontal alliances – informal collaboration by firms of the same type within the same functional node of a value chain

Horizontal coordination – the process of forming closer relationships, formal or informal, among actors within a functional node of a value chain

Functional node – a collection of value chain actors or firms who perform the same activity, for example production, processing or retail

Second-tier supplier – a company that sells and delivers materials or goods to a first-tier supplier

Upstream – describes a flow (of information, for example) or position toward the origin of a value chain (i.e. at the point of production or preceding this – such as input supplies)

Vertical coordination – the process of forming closer relationships among actors or firms at different functional nodes of a value chain

Vertical integration – a form of vertical coordination; the process of acquiring additional functions by a firm

General glossary terms

Carbon accounting – the accounting process undertaken to measure the amount of carbon dioxide equivalents that will not be released into the atmosphere as a result of Flexible Mechanisms projects under the Kyoto Protocol. These projects thus include (but are not limited to) renewable energy projects and biomass, forage and tree plantations

Common property resources – (economics) also known as a common pool resource; a type of good consisting of a natural or human-made resource system (for example, an irrigation system or fishing grounds), whose size or characteristics makes it costly, but not impossible, to exclude potential beneficiaries from obtaining benefits from its use

Cooperative union – a collection of primary cooperatives that performs higher-level centralized services or functions on their behalf

Developmental State – a form of capitalism, the phenomenon of state-led macroeconomic planning in east Asia in the late 20th century

Higher yielding varieties – plant varieties that have been bred or bioengineered to produce higher yields than traditional, endemic varieties

Human capital – the stock of competences, knowledge and personality attributes embodied in the ability to perform labour so as to produce economic value

Life-cycle assessment – a technique to assess each impact associated with all the stages of a process from inception to disposal (that is, from raw materials through processing, manufacture, distribution, use, repair and maintenance, and disposal or recycling)

Monopsony – a market form in which demand comes from one source; that is, there is only one customer for a certain good and the number of sellers in theory could be large

Oligopsony – a market form in which the number of buyers is small while the number of sellers in theory could be large

Primary cooperative – assemblage of producers that performs services or functions on their behalf

Small scale enterprise – a privately owned business characterized by a small number of employees and low turnover. In Africa, a business is considered to be small scale if it employs 5 to 50 people, whereas in Asia and the United States, it is between 30 and 100, and any number below 500, respectively

Tragedy of commons – a dilemma arising from the situation in which multiple individuals, acting independently, and solely and rationally based on their own self-interest, will ultimately deplete a shared limited resource even when it is clear that it is not in anyone's long-term interest for this to happen

Transaction costs – a cost incurred in making an economic exchange

1

An Introduction

Jonathan Mitchell, Andrew Shepherd and Jodie Keane

Origins of this book

This book addresses one of the most intractable problems in development – what can poor people in rural areas do to improve their lives? Most of the one billion people living in rich countries and about three-quarters of the 5.6 billion people living in developing countries have left poverty behind and are enjoying improving livelihoods. There are, however, about one billion people living in rural areas who have not benefited from globalization and are being left behind – often in extreme income poverty – and many more face deprivation even if their income is above the poverty line (Alkire and Santos, 2010). Their livelihoods are stagnant and the prospects for ending this humanitarian disaster are not encouraging.

The usual development policy prescriptions, of development aid and increased trade liberalization, do not seem to be working effectively for the rural poor. Hence, some development thinkers have gone back to the drawing board. Recent influential analyses have suggested that the only way for the so-called ‘bottom billion’ to break out of the poverty trap is through more radical policy prescriptions – from military intervention to charters for better governance and unrestricted access to the markets of high-income countries for labour-intensive manufactured exports (Collier, 2007).

This book looks at the problem differently. Rather than trying to generate a policy framework for the North to support the rural poor, or pursue policies which have a history of limited success – like trade preferences for manufactures from low-income countries (Cali and Page, 2010) – this analysis is conceived and based upon the experience of farmers, development workers and policy makers from the South. The origins of the programme on which this book is based are in a scoping exercise which took place in 2006. Issues were explored around the following question – ‘What productive strategies can poor, rural households adopt to participate successfully in global economic processes?’ (Farrington and Mitchell, 2006).

This exercise found that the poorest people globally mainly live in rural areas in Asia and sub-Saharan Africa. The poverty they experience is different because it has been relentless. They are poor because they are adversely incorporated into the social, economic and political mainstream. Scenario analysis suggests no room for complacency in addressing poverty in rural areas of the South – it is entirely possible for absolute rural poverty to remain at the current level for the next two decades.

There is an important role for government policy to reduce poverty through reducing risk, encouraging sustainable agriculture, education and skills, and implementing measures to tighten rural labour markets and improve access to land. Poor rural areas are characterized by multiple and deep market failures – many of which militate against the development of broad-based enterprise. However, rural poverty will only be reduced significantly if low-income rural communities engage much more successfully with the market. A value chain framework is helpful because it allows us to understand why poor participants are not currently benefiting from their productive activities and what can be done to improve the success of this engagement.

The agricultural sector is undergoing a transformation which is generating both challenges and opportunities for the rural poor. Poor people in rural areas are unlikely to make a successful transition to globally competitive industrial production in many places. But if we consider different products (natural resource based products), different markets (often local and regional rather than global markets) and different governance structures (relating to the organization of production and linkages with traders rather than the multilateral trading system) we believe that the rural poor can find their true competitive advantage. This book focuses on working with seven disadvantaged rural communities in Africa and Asia to see how an adapted form of value chain analysis can allow people to engage with the market in a way that reduces poverty and benefits women, without damaging the environment.

The overall objective of the International Development Research Centre (IDRC) programme (henceforth called ‘the programme’) that emerged is to integrate poverty, gender and environmental concerns into value chain research and interventions. The aim is to increase incomes for the rural poor in a sustainable manner. This objective was pursued through building better conceptual and methodological frameworks and applying them in action research interventions among target groups of poor, rural producers in Africa and Asia.

In the remainder of this chapter, we begin by explaining the poverty context which reinforces the challenge that persistent rural poverty poses. Subsequently, the programme from which this book emerged is outlined and we explain the centrality of value chains to the analysis.

Trends in rural poverty

Our world is changing much faster than our frameworks for understanding what is going on. Just five decades after the surge of interest in development studies in the 1960s, motivated largely by the recognition that since

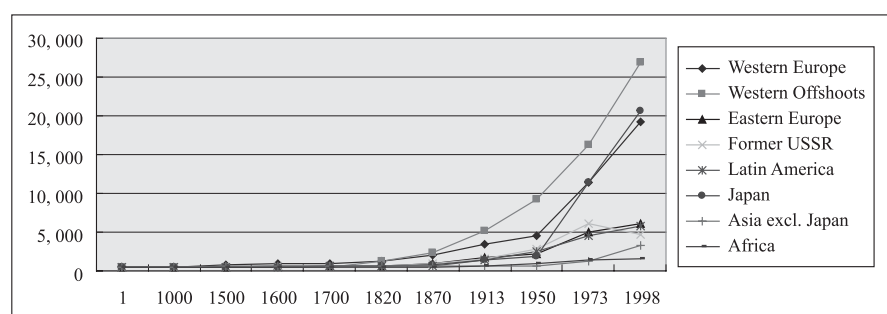
BOX 1.1 OBJECTIVES OF THE PROGRAMME

The specific aims of the programme were to:

- stimulate innovations in value chain analysis to integrate poverty and environment issues;
- identify how producers in disadvantaged regions can participate more effectively in mainstream domestic markets as well as higher value specialist export markets; how the rural poor can be most effectively supported to access the viable value chain identified; and, how to increase returns to communities that currently have low returns;
- explore the impact of green marketing, fair trade and indigenous branding on disadvantaged regions;
- identify the kinds of value chains (different kinds of chains, commodities and governance structures) most likely to optimize the benefits for women, and the social and economic barriers which constrain the ability of women to engage in and benefit from value chains.

the industrial revolution the world had become a very unequal place, there is evidence that living standards in the South are catching up.

Two recent events illustrate the significance of these changes. In the second quarter of 2010, China overtook Japan to become the second largest economy in the world at US\$5.4 trillion. It is estimated that the Chinese economy will exceed that of the US between 2020 and 2030, although Chinese GDP per capita is unlikely to exceed that of the US until the end of this century.



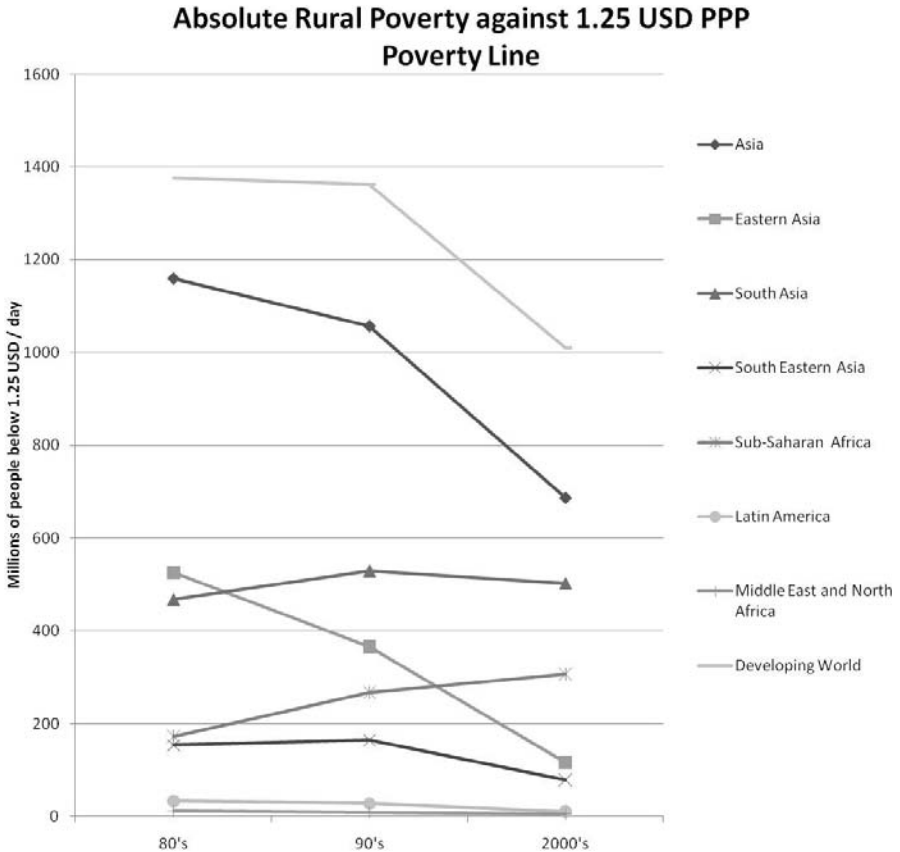
Note: Gross domestic product (GDP) is calculated with 1990 international Geary-Khamis dollar. The Geary-Khamis dollar – also known as the international dollar – is a sophisticated aggregation method of calculating purchasing power parity (PPP). This facilitates comparing countries with one another. The statistical definition can be found at <http://unstats.un.org/unsd/methods/icp/ipc7.htm>

Source: Based on data from Maddison (2006)

Figure 1.1 *Per capita GDP of various Regions, 1–2001 AD*

Second, in April 2010 at a speech to the Woodrow Wilson Centre, the President of the World Bank announced the end of the Third World. As a result of the global economic crisis in 2009 and the rise of developing countries in the global economy, the old way of categorizing countries is simply no longer relevant. ‘This has profound implications for multilateralism, global cooperative action, power relationships, development and international institutions ...’ (World Bank, 2010). ‘We need fresh perspectives to understand the world. Obviously, it is possible to overstate the impact of these changes. Many people in even the more rapidly developing countries of the South exist in appalling conditions – not dissimilar to the squalor found in Victorian Britain’ (Marr, 2008). However, it is clear that on present trajectories, the living standards of many people living in the South will catch up with those of the one billion people living in the North during the coming century.

Despite huge progress in the South, over one billion people in developing countries are being left behind by this convergence. Their living standards are



Source: IFAD (2010)

Figure 1.2 Global rural poverty by region since 1980

BOX 1.2 THE DIFFICULTIES OF GENERATING ROBUST CROSS-COUNTRY POVERTY ESTIMATES

There are no internationally comparable rural poverty estimates available in the public domain. Rural poverty incidence estimates made available by the World Bank or Food and Agriculture Organization (FAO), are poverty headcounts against national poverty lines, and are therefore not comparable between countries. These figures represent an estimate.

The significance of India in world poverty is indicated in Figure 1.3. There are other large developing countries, some of which are already middle income, and others soon to become middle income countries (MICs) which will account for three-quarters of the total number of people living in poverty (Sumner, 2010). Many of the global poor live in countries which are not, on average, poor.

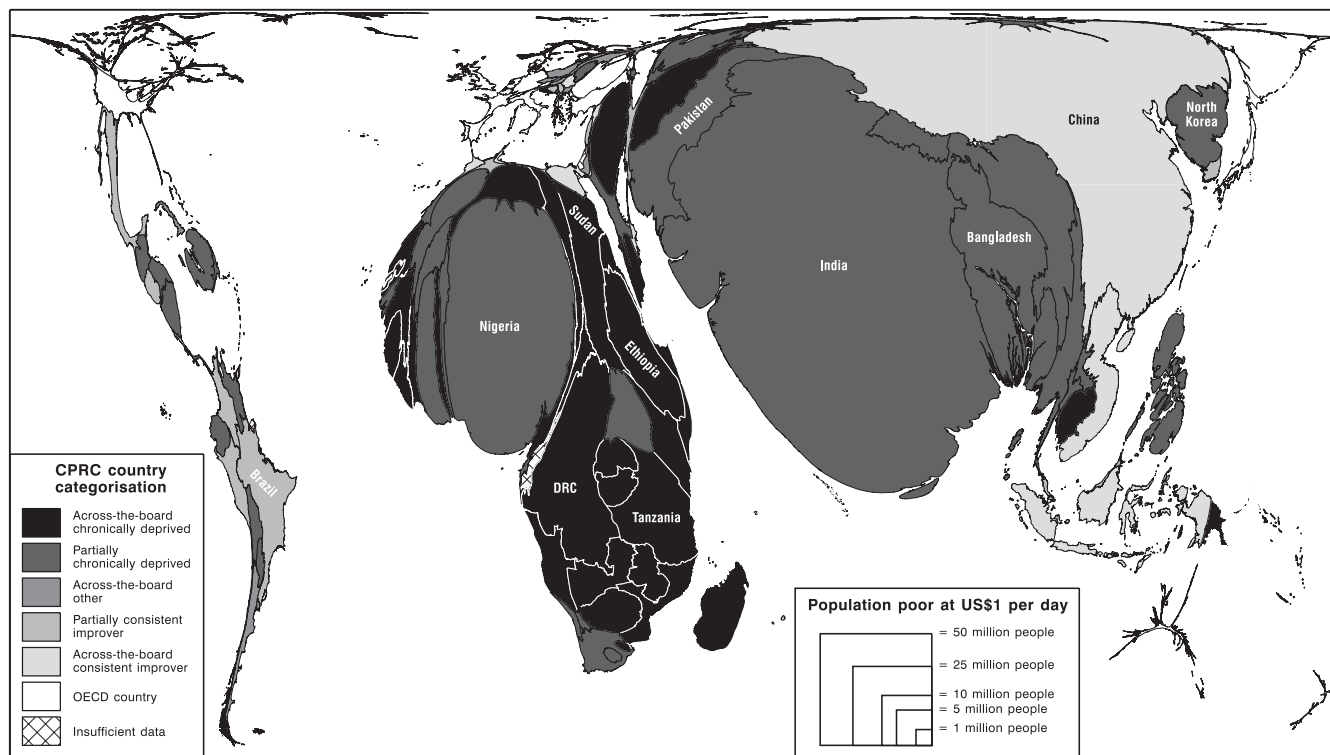
stagnant and show no prospect of improving for this 15 per cent of humanity (Collier, 2007). Perhaps most concerning is the fact that development economists find it hard to explain why a billion poor people are excluded, why our standard trade and growth models have not benefited them or how to support them onto a path to join the rest of the world in rising living standards.

The roughly one billion people who have the lowest living standards are predominantly rural dwellers, mainly living in south Asia and sub-Saharan Africa. Using a \$1.25 international poverty benchmark, there were 1.4 billion poor people in 2005, of whom around one billion were rural.

Many would argue that poverty should not be measured monetarily at international level. There are many technical difficulties of such comparisons and such comparisons should be reserved for national level analysis (Anand et al, 2010). Instead, deprivation across countries can be measured multidimensionally. This has been done by the Oxford Poverty and Human Development Initiative (Alkire and Santos, 2010), which found that 1.7 billion people are ‘multidimensionally poor’, including 844 million in South Asia, and 458 million in sub-Saharan Africa. The added value of this multidimensional measure is that it can describe more accurately the character of deprivation, which varies significantly across countries at similar levels of GDP.

Despite rapid urbanization, rural poverty still accounts for around 70 per cent of absolute poverty in the South, and affects roughly a billion people, using the \$1.25 poverty line. From Figure 1.2 it is clear that rural poverty has persisted in many developing countries and regions and across large numbers of people. There are notable cases where the number of poor rural people has declined during the last 20 years, China and Vietnam most impressively, but otherwise numbers have been stagnant or, in some parts of Africa, on the rise.

The poor have urbanized more rapidly than the population as a whole, so poverty is gradually transferring to urban areas. A careful study based on national data on prices to set urban and rural poverty lines separately concluded



Note: The area of each country is drawn to reflect the extent of poverty in it

Source: CPRC (2008)

Figure 1.3 *Mapping world poverty*

that urban poverty reduced far less than rural during 1993–2002, and stagnated at around 13 per cent (or 17 per cent excluding China). The poorer the country, the bigger the difference in poverty lines between rural and urban areas.

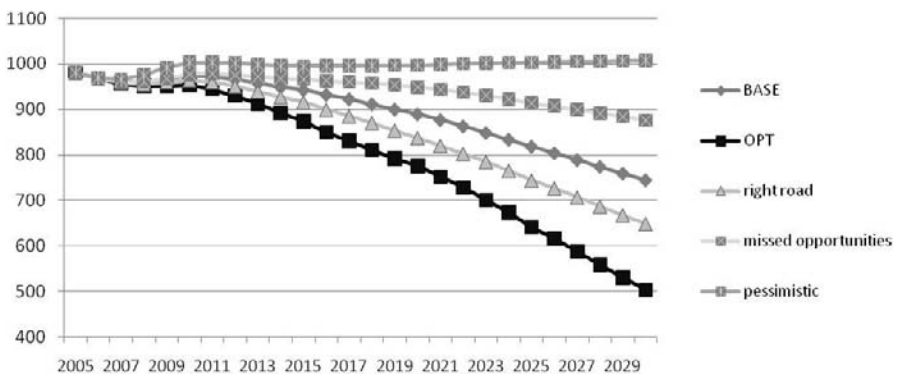
What prospects for poor people in rural areas?

Scenario analysis tells us that the elimination of absolute rural poverty is feasible, but getting close to this by 2030 will require significant improvements not only in technology (including agricultural and energy) and patterns of growth, but also in global leadership (e.g. on climate change) and national public policy and investment, governance and social development.

These sets of factors make a significant difference to rural poverty outcomes, according to modelling carried out using the continuously updated International Futures model at Duke's University.¹ A 'missed opportunities'² scenario – in which growth and technology development continue, but the other factors worsen compared with today's trends – is quite a realistic possibility as the world emerges from deep recession and struggles with its response to climate change. This generates a rural poverty outcome significantly worse than today's trend projected forwards: without good leadership and policies the number of poor rural people in 2030 will be barely less than it is today.

The more optimistic scenarios are influenced by better policies, governance and leadership, enhanced social networks and produce significantly better outcomes for the rural poor. It is conceivable that the number of rural poor reduce to well below half a billion by 2030. The key policy priorities to halve rural poverty by 2030 are: developing more sustainable forms of agriculture; greatly enhancing education and skills; rural wage labour markets tightening; and access to land (IFAD, 2010).

The findings generated by the rural poverty scenario exercise have important implications for the analysis in this book. First, it is certainly true that



Source: Cantore and Shepherd (2010)

Figure 1.4 *Scenarios for the number of poor people in rural areas 2005–2030*

the external enabling environment has a significant impact on the viability of rural value chains (see Chapter 9). Second, rural poverty will not be reduced purely by the actions of public policy makers – irrespective of how conducive agricultural, education and environment policy is formulated. Third, making significant progress in reducing rural poverty requires a response from low-income communities to engage with the market. Finally, the ‘right road’³ and ‘optimistic’⁴ scenarios suggest that a market development approach will affect far more people than a small section of the more advantaged rural poor. Enterprise combined with a supportive policy framework can halve the number of people living in poverty in rural areas within 20 years.

However, we know that enterprise per se will not necessarily or inevitably benefit most people in rural areas because many people are already producing for the market and remain poor. They are adversely incorporated into the market. This programme seeks to understand and then change this reality.

The programme

To test the hypothesis that the rural poor can improve their livelihoods through upgrading their position in natural resource-based value chains, the IDRC commissioned the Overseas Development Institute (ODI) to manage a three-year research programme from 2007 to 2010. This programme comprised several different elements:

- a first research call to develop a conceptual framework and toolbox of research methods for value chain analysis;
- a second research call to select seven action research teams across Africa and Asia for proposals on value chains within which the rural poor can be upgraded;
- a systematic review of upgrading literature;
- a synthesis of the resulting evidence from the above.

Developing a conceptual framework and toolbox

Following a competitive tender process, a team from the Danish Institute of International Studies (DIIS) was selected to develop an approach and method for integrating poverty, environment and gender concerns into value chain analysis. This was important because, as outlined in Chapter 2, value chain analysis has generally overlooked these issues – which are critical in a rural development context. In addition, the DIIS team provided practical guidance on how to carry out value chain analysis in a developing country context.

The output of this work informed the inception period of the seven action research teams in early 2008. The DIIS team participated throughout the programme, from the inception workshops to the mid-term review and final synthesis – to ensure that the programme retained its conceptual coherence. The DIIS conceptual framework and action research approach is outlined in Chapter 2.

Selecting seven action research teams

An open Call for Concept Notes was published in early 2007. This resulted in 225 concept notes, of which just seven were selected. All seven projects are in sub-Saharan Africa and Asia, where the bulk of the people living in rural poverty traps are located. All target groups are low-income households in rural areas, and often particularly disadvantaged or ‘lagging’ rural areas.

The action research projects, detailed in Chapter 3, include a broad range of value chains: commercializing subsistence crops (cassava and fonio); increasing returns from domestic value chain (bay leaves, kalamansi and incense sticks); and improving the terms of engagement with globally traded products (octopus and *pangasius* catfish). The seven projects were selected to generate data that would not only be of value to the target group, but also to provide evidence that could feed into a broader comparative framework which would allow us to generalize about appropriate upgrading strategies in different geographical areas and with contrasting natural resource-based products.

The selected action research teams then prepared their full project proposals and the inception process was launched during two Inception Workshops in Cairo in December 2007 and April 2008. Implementation took place during 2008 and 2009. The results of these seven projects are summarized in Chapter 3.

Table 1.1 *The action research projects*

<i>Location</i>	<i>Title</i>	<i>Researchers</i>
India	Incense value chain study: Addressing poverty, environment and gender concerns in value chains	International Centre for Bamboo and Rattan and TRIBAC (a local NGO).
Mali	Committed to enriching collective action fonio value chain	Association Malienne d'Eveil au Développement Durable (AMEDD)
Vietnam	Upgrading small-holders in the Vietnamese catfish (<i>Pangasius</i> variety) value chain	An Giang University, Wageningen University, Can Tho University
Tanzania	Unlocking market opportunities for small scale cassava farmers in Tanzania	Sokoine Agricultural University
Nepal and India	Developing entrepreneurship in value chains of bay leaf: Linking poor producers to markets of essential oils and spices	International Centre for Integrated Mountain Development and Himalayan Action Research Centre with the Federation of Community Forest Users
Senegal	Analysing the octopus value chain and the implications of certification schemes in the area of Mbour: A case study of Nianing and Pointe Sarene	Enda and Réseau sur les Politiques de Pêche en Afrique de l'Ouest with the Marine Research and Fisheries Consultancy
Philippines	Enhancing participation of small scale producers and labourers in high value kalamansi chain	University of the Philippines Mindanao and the Catholic Relief Services

Not only was the content of this programme defined by a Southern audience, the action research studies themselves were also conceived, implemented and managed by Southern researchers. A range of organizations from local development and advocacy NGOs (non-governmental organizations), to university and religious organizations were contracted to work with the target groups. The aim was to align with IDRC's mission to support local research communities to build healthier, more equitable and prosperous societies. A consequence of this was that the quality of research generated by Southern researchers was mixed, although in some cases, excellent.

Upgrading in value chains: Systematic literature review

In order to gather existing evidence outside the programme, we systematically reviewed published and unpublished documents for the outcomes of upgrading events on poor rural chain participants.

A systematic literature review is a summary of research that uses explicit methods to perform a thorough literature search and critical appraisal of individual studies to identify the valid and applicable evidence. A key feature of systematic reviews is their objective and transparent approach for identifying and weighing both published and unpublished evidence (for the effectiveness of given interventions) while minimizing biases.

Following standard systematic review protocols,⁵ we generated a collection of unpublished 'grey' and published literature. Each article was critically appraised according to the research and action methods employed. We synthesized evidence by the level of analysis – along a scaled continuum ranging from chain level (proximate) impacts, to intermediate impacts and household and community level (ultimate) outcomes. This synthesis then formed the structural and evidential basis for each of the empirical chapters into which the findings of our own action research studies are placed.

Synthesis

In mid-2010, ODI undertook the synthesis, which forms the basis of Chapters 4 to 10 of this book. Adopting a common conceptual framework and methodology, together with ongoing support during the implementation process was important to allow the research findings to be brought together in a synthesis. The aim is to move beyond a series of project case studies towards an analysis relevant to the broad range of people who wish to improve the lives of people living in the rural South through upgrading in natural resource-based value chains.

Why value chains?

Value chain analysis provides researchers with a tool to ask important questions about the distribution of power and value across the chain and is therefore eminently capable of addressing the agency of workers and small producers. This analysis can identify the scope for improving incorporation

into the market – increasing returns and reducing risks. It acknowledges the political and competitive nature of the relationships involved and explores the difference which the organization of poor producers or labourers can make. But addressing labour markets, social arrangements and vulnerability is required to get the poorest people onto trajectories where more advantageous incorporation into chains becomes possible. An important thrust of this book is to demonstrate conceptually, as well as practically, how to incorporate these critical concerns into value chain analysis.

While much of the value chain literature and policy prescriptions – such as export-led manufacturing growth – focus on global chains, it is local and regional chains and labour markets associated with all value chains which are often of greatest relevance to poor people.

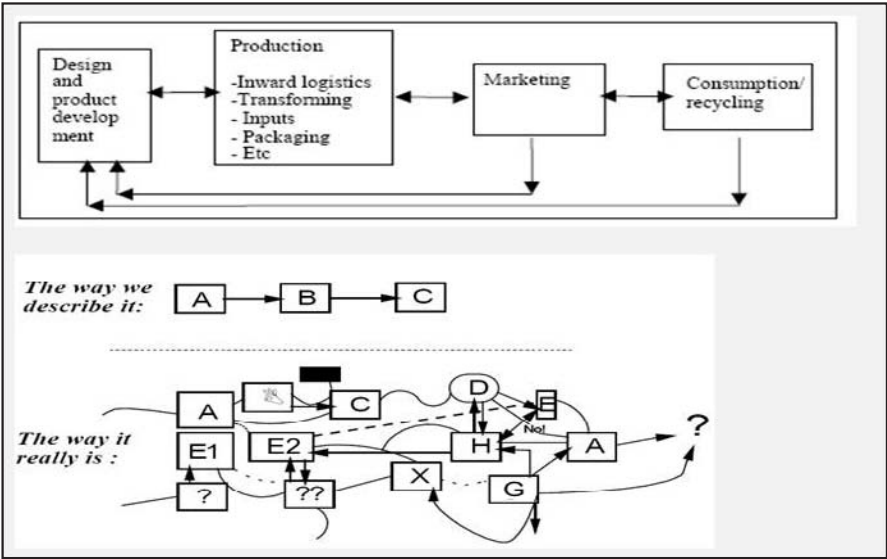
Defining and describing value chains

In the seminal value chain handbook, produced by Kaplinsky and Morris in 2001, a value chain is defined as: ‘the full range of activities which are required to bring a product or service from conception, through the different phases of production (involving a combination of physical transformation and the input of various producer services), delivery to final consumers, and final disposal after use’.

Global value chains (GVCs) are defined in the same way, but with the activities spread over international borders and not constrained within one country. Clearly, this definition is simplistic. In reality, it may be difficult to clearly delineate a single value chain which may contain several different strands⁶ and multiple actors (see Figure 1.5). However, identifying the value chain by tracing production through to consumption in discrete steps is typically the first step in the methodology; each step representing a stage in production as encompassed by the term value chain ‘node’.

Despite the range and diversity of the value chain literature and its application across actors, products and sectors, its historical antecedent is rooted within world systems theory. The French *filrière* approach was developed to improve the efficiency with which its colonies (plantation economies), were able to supply the ‘metropole’. Wallerstein (1974) developed a core-periphery model within which Northern industrialized nations are located in the central core and developing Southern nations around the periphery; global commodity chains (GCCs) link the two. The approach was inherently sociological, indicated by the inclusion of notions of economic power, which are particularly useful when examining how poor people in rural areas can access viable value chains. It is within this vein that the literature continues to develop through the inclusion of governance and hierarchies of structures, which reflect power and identify the drivers of GCCs and GVCs.

Development economists have increasingly recognized parallels between the GVC literature and more recent contributions to economic theory such as new trade theory and new economic geography (see North, 1993). These recent contributions to economic theory bring back some elements of the dynamic feedback loops and processes of cumulative causation recognized by ‘high development’



Source: Kaplinsky and Morris (2001); Brown et al (2000)

Figure 1.5 Defining a value chain

theorists as necessary to harness in order to move towards a higher equilibrium. However, they also assist in understanding the impetus for the internationalization and fragmentation of production across countries trading within GVCs.

The policy rhetoric during the 1990s focused almost exclusively upon ‘competitiveness’ as the business school literature developed by Porter (1990) sought to recommend how to first attract global firms and plug into GVCs and production networks, and second to foster industry by developing clusters. Increased interest in the enabling environment of value chains (see Chapter 9) reflects the ‘new’ revolution in economics generally: the state as facilitator to address market failures. But also recognition that in order to sustain the dynamism of growth, there is a need to foster technological development, human capital and capabilities (Lall, 1993; Lall, 2000; Lall and Urata, 2003) – and maximize the potential knowledge spillover effects from interaction with lead firms. Increasingly the approach of linking local producers with lead firms in order to access higher-value markets and fostering the development of clusters has been adopted enthusiastically within the agricultural sector (see Chapter 5).

The GVC literature has become increasingly influential since the 1990s – motivated by the need to better understand how producers engage with the process of globalization and its implications for production and the development of productive capacity and capabilities. A number of value chain studies focus on changes in global production and methods of coordination and investigate what this implies for firms and labourers within them (Kaplinsky and Kaplan, 1998; Cramer, 1999; Dolan et al, 1999; Gereffi, 1999; Daviron, 2002; Ponte, 2002; Navdi and Thoburn, 2004). The literature continues to develop, both

conceptually (e.g. increasing recognition of production networks) and empirically (e.g. by employing more robust research methods, such as survey design).

The GCC literature has moved the world systems theory discourse from the macro to the meso and micro level by focusing on the organization of industry and firms within a more integrated global economy. The GCC discourse has extended further from its singular consideration of homogenous commodities or products, to recognize increasingly differentiated products (indicated for example by labels and standards – see discussions in Chapter 7). This has shifted the emphasis of the discourse from a descriptive analysis of how firms are organized, in a static sense, to better understanding the creation of value, which may be conditioned by both local economic processes as well as global (Gereffi and Christian, 2008).

Looking at production by firms linked to international markets through the GVC lens raises the question of how producers (firms, regions or countries) participate in the global economy rather than whether or not they should do so. The key message from the value chain literature mirrors the new trade theory literature. What is more important than the fact of trade openness is how it is achieved. As Kaplinsky and Morris (2001, p22) state, ‘if they [producers] get it wrong, they are likely to enter a “race to the bottom”, that is a path of immiserising growth in which they are locked into ever-greater competition and reducing incomes’.

A key feature of the GVC literature is how the relative position of firms and the dynamic governance structures within which they trade – internal as well as external – condition their potential upgrading options (Humphrey and Schmitz, 2001; 2004). It is generally acknowledged that since the 1980s the trend within agricultural markets has been towards increasingly coordinated governance structures, away from spot markets and looser forms of coordination such as arms-length trade, to tighter relationships between value chain nodes on an intra-firm basis, between vertically integrated firms (Daviron, 2002). Much of the more recent debate as to the how the rural poor – as producers, and to a much lesser extent, labourers – should engage with buyer-driven GVCs highlights the tensions between, on the one hand, achieving systematic competitiveness, and on the other, serving to raise barriers to entry which excludes other producers.⁷ However, the literature is divided as to the circumstances within which smaller, and poorer, producers are excluded rather than included from value chains (Henson and Jaffe, 2007). This is the critical issue which our hypothesis – that the poor can improve their livelihoods through interacting with the market in a different way – examines.

The limitations of value chain analysis

Value chain approaches are not a ‘silver bullet’. Despite the frequency with which value chain methodology is applied to development contexts, the limitations of the approach are significant. First, as a methodological tool, it is highly eclectic with a diverse application that is far from standardized. Second, it is highly sector, firm and temporally specific – it offers a ‘snapshot’ of the

organization of production and consumption at a point in time, but a limited guide to monitoring over time. Third, it is, by definition, heuristic and needs adaptation in order to become a tool to generate interventions.⁸

Despite these limitations, value chain analysis for development has progressed as a diagnostic tool and guide to:

- maximize efficiency at the firm level – focusing on more micro aspects of participation and linking to the investment climate and enabling environment;
- highlight asymmetries in the trading relations between actors – focusing on more macro aspects and the distribution of value added (economic surplus) and rents;
- be adapted to incorporate urgent development considerations of the rural poor – namely, poverty, natural resource management and gender analysis, as Chapter 2 illustrates;
- facilitate identifying the poorest actors within the value chain and designing interventions to improve the distributional outcomes of participation, or leverage points with the greatest potential to reduce poverty.

Structural transformation of the agricultural sector

This book has a heavy bias to agricultural value chains – all seven of the action research projects involve products in the agriculture, forestry and fisheries sector. With the emphasis on the sustainable management of natural resources in our approach, perhaps this is not surprising. Coupled with the fact that a large proportion of the rural poor derive a significant proportion of their livelihood from farming, this underlines the centrality of agriculture to the lives of the rural poor. However, this emphasis on agriculture – and specifically agricultural production – should not blind readers to the increasing opportunities available to poor people in the non-farm rural economy and the important backwards and forwards linkages between farm and non-farm sectors.

The renewed focus by the development community on the agricultural sector, exemplified by the 2008 World Development Report, is timely as it was launched in a year that saw record food price rises cause considerable food insecurity across the developing world. The role of agriculture in development is being given a new lease of life with assessments of the contribution of specific products to growth and structural transformation (Hausmann and Klinger, 2006). The dividing line between sectors as driving and sustaining growth, which clearly delineated the structuralists of the past, appears to be becoming blurred, in part due to the impact of the Asian drivers on global trade-flows and the changing income drivers of terms of trade (Kaplinsky and Morris, 2008; Kaplinsky and Farooki, 2010).

The ‘modern’ aspects of particular agricultural activities and products are increasingly being recognized (Rodrik, 2009; World Bank, 2007). Countries are being advised not to stray too far from their revealed comparative advantage,⁹ with calls for a renewed policy focus on the structural aspects and dynamics of achieving and sustaining economic growth (Lin, 2009, 2010), in contrast to the ‘laissez-faire’ attitude of the past. This is reflected in a policy shift from

the state failure, pro-market approach of the ‘Washington Consensus’ towards the market imperfection, state intervention approach of ‘new development economics’ and the post-Washington Consensus (Fine and Jomo, 2006).

Structural transformation within the agricultural sector towards more modern activities and products includes market development approaches: enhancing the role of producer associations; linking producers with buyers; and ensuring producers are able to meet buyers’ specifications. As opposed to solely ‘getting prices right’ so as to induce supply-side responses, a more targeted approach to linking producers with demand (with government assistance) is increasingly being followed.

There has been consolidation among large multinational players within the agricultural sector who coordinate global supply-chains and drive through product and process innovations changes. Moreover, within countries the increasing demands of affluent middle classes and the supermarket revolution are spurring organizational change among agricultural producers.

The opportunities as well as challenges of these general trends for small rural producers are increasingly recognized. A lively debate over the future of agricultural production and role of small-scale growers has seen some authors positing that small farms don’t have a future (Collier, 2007), and others arguing to the contrary, that there are plenty of examples where small farms have contributed to growth success stories, and this includes among the east Asian newly industrialized countries (NICs) (Chang, 2009; Wiggins, 2009).

For producers linked to global markets and buyers, the increasing demand and stringency by which performance is monitored and regulated has been well documented in the value chain literature. Small producers may be marginalized from higher value supply chains because they are unable to meet buyer specifications without donor support (Ellis and Keane, 2008). Even with donor support, interventions may not necessarily be sustainable.¹⁰ Trading down as opposed to up may be a more profitable and sustainable option for producers locked into buyer-driven global value chains (Gibbon and Ponte, 2005; Ponte 2009, Bolwig et al, 2010).

The value chain literature documenting the complexities of linking small, rural and poor producers to larger producer-exporters, and particularly Northern markets, has received much attention in recent years. The treatment of domestic value chains has been much less prominent in the literature, but dominates the analysis in this book. Five of the seven projects involve products that are mainly produced for the domestic market, and for one of the two globally traded products, pangasius, farmers improved their livelihoods by abandoning the export chain and focusing on the production of indigenous fish for domestic consumption.

Summary

This book seeks to address one of the most intractable contemporary development challenges – what can the billion poorest people do to improve their livelihoods and join the trend of rising prosperity in the developing world?

In this introduction, we have identified the poor to be predominantly rural people living in sub-Saharan Africa and Asia. The progression of this group of people out of poverty is not inevitable and many of the current development policy prescriptions are unlikely to work. The programme on which this book is based is introduced. It seeks to support the rural poor to improve their livelihoods through upgrading their position in a range of natural resource-based value chains. The value chain framework is introduced and set in the context of the transformation of the agricultural sector.

In Chapter 2, the conceptual and methodological framework for this research is described. It is explained how poverty, environment and gender can be incorporated in value chain analysis, how value chains can be upgraded and how action research projects are implemented. In Chapter 3, the key findings of the seven projects which are the basis of this project are summarized. Chapters 4 to 10 are a synthesis of the findings from the seven action research projects, enriched with the results of a systematic literature review locating the projects within a broader context. Each chapter is focused upon a specific type of value chain upgrading: horizontal coordination; vertical coordination; functional upgrading; process and product upgrading; and inter-chain upgrading respectively. Chapter 9 considers the external enabling environment, how can stakeholders outside the value chain support a successful upgrading process? The main findings and implications of this book are summarized in Chapter 10.

Notes

- 1 www.ifs.du.edu/ifs/index.aspx. This analysis used version 6.18. See Cantore and Shepherd (2010, forthcoming) for the analysis.
- 2 Missed opportunities: Economic growth is fine, but little investments public in public goods, and slow improvement in governance, and social policies.
- 3 On the right road: Economic growth is fine (same level), and is coming together with significant public investments, and improvement in governance and social policies.
- 4 Optimistic scenario: Heavy push on public investments and improvement in governance and social policies, leading to enhanced economic growth.

Table N1.1 Scenario analysis design, IFs model

	BASE	OPTIMISTIC	ON THE RIGHT ROAD	MISSED OPPORTUNITIES	PESSIMISTIC
GROWTH AND TECHNOLOGY	Reference	+	+(but less than optimistic)	+(but less than optimistic)	–
INVESTMENTS	Reference	+	+(but less than optimistic)	–	–
GOVERNANCE	Reference	+	+(but less than optimistic)	–	–
SOCIAL POLICY	Reference	+	+(but less than optimistic)	–	–

- 5 See Khan et al (2001) for an exemplary description of systematic review rationale and protocols.

- 6 Which includes different types of end product.
- 7 Gibbon et al (2008) note that the unevenness and theoretical eclecticism of the GVC literature to date poses the question of whether it is possible to reconcile the different approaches within a unified paradigm. And if not, then GVC analysis is better understood as a methodological approach that can be mobilized under various theoretical perspectives. This is a positive attribute of the methodology since a single orthodoxy would put a 'straightjacket' on a methodology that has been able to illuminate some broad trends, commonalities and differences.
- 8 It is this role of coordination, and the complementary role of identifying dynamic rent opportunities and apportioning roles to key players that reflects an important part of the act of governance.
- 9 As indicated by their current export basket and proximity of products which reflects capabilities and level of endogenous technological development.
- 10 First, given the annual costs of certification and weak national compliance and monitoring mechanisms and local linkages, and second, because of business rationale: it may be more profitable for producers to opt out of global value chains so as to supply local chains instead.

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2

A Methodology for Integrating Developmental Concerns into Value Chain Analysis and Interventions¹

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Introduction

This chapter provides a background to value chain analysis, and then outlines the conceptual framework developed for the purpose of this programme to help overcome the shortcomings of ‘stand-alone’ value chain, poverty, gender and environmental analyses. This conceptual framework attempts to integrate analytically the ‘vertical’ and ‘horizontal’ elements of value chains that affect poverty and sustainability, focusing on the participation in agro-food value chains of small producers and other weak chain actors in developing countries. The conceptual framework is followed by a strategic framework – the practical guide to action research in value chains, which informed the action research activities detailed in subsequent chapters.

Background to value chain analysis

Many contemporary development policy prescriptions place emphasis on the potential for closer integration of poor people or areas with global and, less often, regional and local markets. However, the prospects for poverty reduction depend largely both on the nature of the broader economic processes that, according to how they are configured, can either exacerbate or alleviate poverty, and on the forms of local economic growth.

Value chain studies have rarely succeeded in explicitly documenting or theoretically linking the impact of value chain activities on poverty, gender and the environment. The few attempts to quantitatively assess poverty impacts have been carried out mainly in terms of household income (e.g. Bolwig et al, 2009). Explicitly gendered studies of value chains have been mostly concerned with the horticultural sector (for example, Barrientos et al, 2003; du Toit, 2004b; Tallontire et al, 2005). Little attention has been paid to how participation in value chains exposes poor people to risks, as opposed to how it affects income opportunities. Most value chain studies to date have ignored the role of labour as other than a productive asset (for exceptions, see Barrientos et al, 2003; Riisgaard, 2009). Studies that do focus on labour have rarely ventured beyond the workplace level – except for the gender studies concentrating narrowly on ‘ethical value chains’ (for example, Barrientos et al, 2003; Tallontire et al, 2005). Research on the environmental implications of agro-food value chain dynamics generally lacks a deep analysis of the latter (Donald, 2004; Halberg, 2004; Dalgaard et al, 2008). Alternatively, research has been focused on environmental labels and certifications (Klooster, 2005; Ponte, 2008) or on fair trade (Taylor, 2005; Raynolds et al, 2007). In both cases, impacts are either not analysed systematically or are simply assumed.

Similarly, little attention has been paid to integrating ‘horizontal’ and ‘vertical’ in the analysis of impacts, resulting in the failure to account properly for how the local workings and impacts of value chain analysis are mediated by factors relating to social relations, local history and environment (Jarosz, 2008). Perhaps most significantly, value chain analysis has been dominated by a focus on global markets, which contrasts with the predominant orientation of developing country producers towards local and regional markets.

Recently, international organizations and donor agencies have made increasing use of global value chain (GVC) analysis in policy and project work in developing countries. While a number of manuals have been produced (for example, Schmitz, 2005; KIT et al, 2006; Vermeulen et al, 2008), a conceptual framework that coherently combines GVC theory with practice to guide such activities in agro-food chains is lacking. Past applications of GVC research have been narrowly focused on functional ‘upgrading’ and have not considered the broader issue of the terms on which poor people participate in value chains. There has also been a tendency to address upgrading and inclusion as ‘management’ and ‘competence’ problems. This downplays the often highly asymmetrical power relations in agro-food value chains including the fact that the terms of participation are to a large extent controlled by ‘downstream’ actors such as importers and retailers. This in turn suggests that upgrading and inclusion for small producers require interventions at sites located beyond their areas of operation, often drawing on external resources and networks.

The vertical elements of value chain analysis

The use in GVC analysis of the term *chain* suggests a focus on ‘vertical’ relationships between buyers and suppliers and the movement of a good or

service from producer to consumer. This entails an analysis centred on *flows* of material resources, finance, knowledge and information between buyers and suppliers (where ‘upstream’ signals flow towards production, and ‘downstream’ towards consumption). Processes of coordination and competition among actors operating in the same function or segment of a particular chain are given less attention. A *node* is the point in a value chain where a product is exchanged or goes through a major transformation or processing. A *segment* is a ‘vertical chunk’ of a value chain between two nodes, for example from production to export, or from import to retail. A value chain can have different *strands*, due to different product characteristics, for example speciality coffee; a different institutional configuration, for example the presence of an auction; or a different end-market or origin of production.

Governance and coordination

Governance is the process by which so-called ‘lead firms’ (see below) organize activities with the purpose of achieving a certain functional division of labour along a value chain – resulting in specific allocations of resources and distributions of gains. It involves setting the terms of chain membership, the related incorporation or exclusion of other actors and the reallocation of value-adding activities (Gereffi, 1994; Kaplinsky, 2000; Ponte and Gibbon, 2005; Gibbon et al, 2008). Lead firms are seen not only as dictating the terms of participation to their immediate suppliers, but also as being capable of transmitting these demands upstream, often all the way to the primary producers.

External actors can have an important say in how a GVC is governed, particularly government agencies, large NGOs, certification bodies and service providers (Ponte, 2007; Riisgaard, 2009).

Such debates have led to efforts to refine definitions of governance in GVCs in terms of how certain actors establish, measure and enforce the ‘parameters under which others in the chain operate’ (Humphrey and Schmitz, 2002). In other words, governance refers to the process of exercising control along the chain through the specification of what type of product needs to be supplied, by whom, in what quantity and when, how it should be produced and at what price. When a group of firms in a particular functional position (or positions) in a value chain (or exercising external influence on its operation) is able to exercise this type or level of control, they are said to be in a ‘lead firm’ position.

Upgrading

In GVC analysis the concept of upgrading is used to identify the possibilities for producers to ‘move up the value chain’, either by shifting to more rewarding functional positions, or by making products with more value-added invested in them, and/or providing better returns. Upgrading is about acquiring capabilities and accessing new market segments through participation in particular chains. Humphrey and Schmitz (2002) have developed the following typology: *process* upgrading: achieving more efficient production by reorganization; *product* upgrading: moving into products with increased unit value; *functional*

upgrading: increasing skill content; *inter-chain* upgrading: applying competences acquired in one function to a different sector or chain.

Recent literature suggests that other forms of ‘upgrading’ are important for the rural poor, and go beyond the conventional list of upgrading strategies used in value chain analyses (Gibbon, 2001; Gibbon and Ponte, 2005; Ponte, 2009); specifically, *horizontal* and *vertical* coordination (referring to cooperation between actors within a functional node and establishing long-term relationships between actors at different chain nodes, respectively). Functional changes may involve upgrading, but functional ‘downgrading’ may in some instances offer a better solution, for example when faced with increasing standards in a chain make continued participation at a particular level unviable.

Later in the chapter, we use the concept of upgrading to think strategically about change in value chain participation for small producers. For this purpose, a broader definition is used, which allows for the consideration of both ‘horizontal’ and ‘vertical’ aspects: a desirable change in participation that increases rewards and/or reduces exposure to risk – where rewards and risks are understood both in financial terms and with regard to outcomes related to poverty, gender and the environment.

Standards

One way of linking vertical and horizontal concerns has been through the examination of social, labour and environmental standards and certification. Standards can be set up to specify technical characteristics of a product, specific process and producing methods, quality traits and safety. Increasingly, standards in agro-food chains include specifications relating to environmental impact, worker conditions and smallholder rewards. Standards are important for developing-country farms and firms because they determine access to specific segments of the market (for example, in defining forestry products that are ‘sustainable’), to specific countries (for example, through regulation on food safety and technical requirements) and the terms of participation in global chains (for example, through matching quality standards).

On the one hand, standards set entry barriers for new entrants and present new challenges for existing suppliers. On the other hand, the challenge of rising standards provides the opportunity for selected suppliers to add value, assimilate new functions, improve their products, and even encourage enhanced forms of cooperation among actors in a specific industry or country (Jaffee, 2003).

Expanding the horizontal elements of value chain analysis

Terms of participation, poverty, vulnerability, risk and inequality

There is a need for our framework to differentiate between different scales of analysis. For example, household- and intrahousehold-level micro-analyses are as important as value chain level assessment and accounts of global and national processes (Murray, 2002). This differentiation is a complex task.

Attention has to be paid both to the vertical links – the value chains that link local livelihoods upstream and downstream to distant networks of production and exchange (Kaplinsky, 2000; du Toit, 2002) – and to the horizontal ones – the ways in which the impact and nature of integration into globalized systems are locally mediated (Goodman and Watts, 1994).

Terms of participation

Poverty should be analysed in terms of not only exclusion (from value chains, for example) but also (pre)conditions and terms of participation (Murray, 2002; Bracking, 2003; du Toit, 2004a, b; Hickey and du Toit, 2007). People may be thoroughly incorporated in a particular value chain, but highly marginalized or excluded in another sense: African migrant workers picking fruit in the Western Cape region of South Africa, for example, are highly integrated into global agro-food value chains, but thoroughly marginalized within local patron–client relationships.

Exclusion or marginality is not necessarily disadvantageous. When people lack leverage within a particular economic or social field, retreat to the margins or externality from its operations may be an advantage (du Toit, 2008). Small farmers opting out of production for a GVC and choosing instead to produce for sometimes less lucrative but less risky local markets are in one sense becoming more marginal but may experience relatively more market leverage – as with the pangasius project (Tapela, 2008). Thus, issues of risk and vulnerability must be considered in addition to more obvious aspects like income.

The complexity of ‘participation’ is richly illustrated by the recent debate on contract farming as a possible means of avoiding the exclusion of small-holders from remunerative value chains (see discussion in Chapter 5).

Poverty

Poverty itself is a political and moral, not an analytical, term. Discourses about poverty draw on and are informed by deeply political and often ideologically loaded underlying narratives about human needs, the nature of society, and the obligations and entitlements of its members (Noble et al, 2004; du Toit, 2005). For the purposes of this book, a sensible approach is to say that assessments of the poverty impact of value chain restructuring and governance should be alive to the whole range of meanings and concerns that animate both policy debates and popular discourse about poverty.

Livelihoods: Value chain studies tend to focus on the incomes and – to a lesser extent – assets associated with the relevant chain, while other sources of wealth get less attention. But the livelihoods literature tells us that poor households typically depend on several economic activities for their survival and growth, including food and cash-crop farming, harvesting of wild products, off-farm work, migrant remittances and social protection payments.

Income and resources: An important set of issues involved in approaches to poverty focuses on identifying the resources over which the people concerned have the right of disposal (Sen, 1981; Lister, 2004). The most prominent of

these, of course, is cash income, but this is only one of the kinds of resources that this kind of analysis can include. Non-monetary kinds of income are important, as are other kinds of resources or assets (land, labour, skills, capital etc.) that can be central to the generation of value.

Capabilities and well-being outcomes: Another important set of issues of concern to those assessing poverty impact is the actual levels of well-being and agency that the resources at people's disposal allow them to achieve – what Sen termed the human 'capabilities' to achieve various 'beings and doings' or 'functionings' (Sen, 1992). The advantage of such approaches is that, rather than trying to prise information about income and expenditure from informants, researchers can get a more direct understanding of the poverty and well-being impacts by assessing whether want or material lack undermines the ability of people to achieve adequate nutrition, health, shelter, clothing, education and so on (for example, Klasen, 2000).

Chronic, persistent and structural poverty: Of particular concern in the field of development and pro-poor policy are the notions of chronic, persistent and structural poverty. The 'chronic poor' are then defined as those who live below the poverty line for long periods of time, while the transitory poor are those who move in and out of poverty (Hulme and Shepherd, 2003). The notion of 'persistent' poverty simply draws attention to situations where people are trapped by structural or other factors that make escape from poverty difficult, and where it is therefore unlikely that they will be able to better their lot.

Vulnerability and risk

Other concepts closely related to poverty are those of vulnerability and risk. Numerous approaches to vulnerability exist (for example, Alwang et al, 2001), but perhaps the most relevant comes from the extensive geographical literature on ecology and hazards. Vulnerability is not the same as risk. Whereas risk is the likelihood of a specific shock occurring, vulnerability is a function of two other properties – resilience and sensitivity (for example, Kasperson and Kasperson, 2001).

A system is *sensitive* to a particular shock if its response to that shock is quite large. If farmers are growing a crop that is primarily geared towards export, for instance, or dependent on imported inputs, their livelihood systems will be very sensitive to exchange-rate fluctuations, whereas those farmers producing for local markets will not be sensitive in that way. A system is *resilient* if it recovers or reverts to equilibrium after a shock easily or rapidly – for instance, if farmers hit by exchange-rate fluctuations can respond quickly by changing the nature of the inputs on which they rely, or can easily find resources that allow them to afford more expensive ones.

Inequality

A key effect of 'threshold'-based approaches to poverty (i.e. simply comparing people's income with a poverty line) is to disconnect its discussion from a concern with inequality. This is problematic for two key reasons. First, poverty and

inequality (including gender inequality, see below) are often very closely linked conceptually, especially when a particular individual group is being defined as poor in relation to society as a whole, or in relation to another group.

Second, there are often complex empirical links between the levels of poverty, on the one hand, and the nature and extent of inequality, on the other. There is significant research, for instance, suggesting that the impact of economic growth on poor people is strongly influenced by the extent of existing inequality (Nissanke and Thorbecke, 2005). Therefore the impact of value chain restructuring and governance on the well-being or access to resources of a particular group is important, but so too is the nature of change in the individual or group's position vis-à-vis other groups.

Gender and labour

The concept of the 'gendered economy' has already been adopted in a series of value chain studies that examine the extent to which ethical trade addresses the conditions of marginalized workers in the horticultural export sector (for example, Barrientos et al, 2003; Tallontire et al, 2005). These studies explicitly recognize that GVCs (and employment within them) are embedded in economies and labour markets that are themselves gendered institutions that reflect and reinforce socially constructed gender divisions and inequalities.

Gender inequality is often intricately linked with poverty, vulnerability and the mechanisms of inclusion or exclusion.

Finally, incorporating awareness of labour issues into the value chain methodology entails a breakdown of the consequences and potential benefits for workers. This means analysing how value chains and their restructuring affect job creation and job loss (both within and outside the chain) as well as the link between labour availability and skills for the upgrading possibilities of producers (Bair and Gereffi, 2001; Gereffi and Sturgeon, 2004). It also entails going beyond seeing labour as a productive asset and taking into consideration the terms and conditions under which workers participate in value chains and how they are affected by changes in these (Barrientos et al, 2003; Riisgaard, 2009). For most workers employed in GVCs (many of whom are women) their earnings will constitute the major source of household income. The risks faced by women workers in particular are thus compounded by their family and childcare responsibilities, and the risks and benefits from employment in value chains therefore have wider poverty implications.

Studies incorporating a labour focus have revealed how organizational restructuring by global firms has important consequences for labour and labour institutions in terms of encouraging flexibilization and feminization of labour at the production end of GVCs (Barrientos, 2003; Barrientos and Kritzing, 2004). While the latter have brought an increasing number of workers (particularly women) into paid employment, much of it is temporary or sourced through third-party contractors. This type of work is commonly informal in nature, with no legal rights or benefits. Ethical standards, particularly those adopted by large retailers and branded marketers, seek to address

some of these concerns, but often fail to reach more vulnerable workers such as casuals, migrants and/or women.

Other studies have revealed how the terms of trade between retailers and suppliers in large retailer-driven value chains are intimately connected to the working conditions at production sites. Retailer practices such as the extraction of favourable pricing terms and discounts, just-in-time ordering, the avoidance of legally binding contracts for supply, supply spreading and supplier switching have more or less direct effects on these conditions, including a lack of job security, low wages, pressure to work overtime and the employment of large numbers of temporary workers.

Environment

Value chains affect the environment through primary production utilizing the local resource base (for example, biodiversity, soil and water) and also by the emissions of nutrients, toxic substances and greenhouse gases (GHGs) from production, processing, transport and other activities along the value chain. When studying environmental impacts and management in the context of value chains, it is useful to distinguish between two types of processes, based on the scale at which they operate (Halberg et al, 2005): *local* processes related to the management and use of local natural resources, where the impact is mainly confined to the area of production, including positive or negative impacts on local biodiversity, soil fertility, soil and water contamination and water availability; and *global* processes that transgress ecosystem and landscape boundaries and are accumulated along the entire value chain and therefore have impacts and must be managed on a much larger scale, for example emissions of GHGs or toxic substances.

Chain-wide environmental assessments

‘Global’ and ‘local’ processes are analytical distinctions and environmental change in reality can encompass both dimensions. For example, the conversion of forest into farmland may cause both soil erosion (with local and downstream effects) and GHG emissions (with truly global impacts). Likewise, insecticide use may cause toxicity for both local farmers and downstream communities and have large-scale impacts on biodiversity (Dalgaard et al, 2007). In practice, however, a research project can only examine the most important issues – the environmental ‘hot spots’ of the chain.

Although a variety of methods exist for environmental appraisal of systems of production, they are not usually integrated within analyses of the value chains of which these systems are part. For the assessment of resource uses and environmental impacts along an entire value chain – that is, assessments spanning the local and global scales – the main tool available is the life-cycle assessment (LCA) methodology (Wenzel et al, 1997). LCA has been used mainly to evaluate products from intensive, high-input production systems in the North (Dalgaard et al, 2007) and few LCA studies have assessed products from developing countries. LCA is also the method used in carbon accounting.

Carbon accounting is emerging as a way for retailers and manufacturers to show their commitment to climate-change mitigation, and could have significant cost and demand effects on chain actors in developing countries (Edwards-Jones et al, 2008; Bolwig and Gibbon, 2009). A comprehensive LCA is data- and time-demanding to perform; however, there are simpler forms, such as the *Product Life Cycle Check* guide (Wenzel et al, 2001) and the *Life Cycle Management* guide (UNEP, 2007), which can give a first idea of the importance of different emissions along the value chain and how to start reducing them.

In the following section, we discuss how these vertical and horizontal issues can be positioned within an overall conceptual framework. Thereafter we develop a strategic framework together with a more extensive discussion of related action-research methods.

A conceptual framework for integrating vertical and horizontal aspects

In the following discussion, we organize the integration of vertical and horizontal aspects of value chain analysis around four types of actors and four types of changes. The four kinds of actors are:

- *chain actors* – directly involved in within-chain exchanges of products, typically estates or small producers, processors, exporters, importers and retailers;
- *external actors* – individuals or organizations that do not directly handle the product but instead provide services, expertise and exert influence, such as NGOs, financial institutions, advisers, standard-setting bodies and government agencies. Workers and workers' unions also belong to this group because they have limited agency in within-chain exchanges;
- *expelled actors* – chain actors or workers who have withdrawn from the value chain due to pressure or coercion;
- *non-participants/excluded actors* – never participated in the value chain, by choice or for lack of capability.

The four kinds of change are:

- *inclusion of new participants* – refers to the incorporation of actors into an existing or newly created value chain, for example when farmers take up the production of a new crop for export.
- *continued participation under new terms (repositioning)* – refers to the alteration of the terms of participation for actors already in the chain, for example when supermarkets impose stricter quality standards, require conformity to fair trade standards, or simply squeeze prices. This can significantly change investment demands, rewards or risk exposure for producers, and salary levels or working conditions for workers; new terms of participation can also arise from upgrading, for example when producers through collective action negotiate improved sales contracts with buyers.

- *expulsion of participants* – often the result of value chain restructuring, for example when importers concentrate their sourcing on fewer suppliers or increasingly buy processed products, thus squeezing out small producers. Eviction from the chain may also result from changes in chain-external factors that undermine participants' ability to meet performance requirements.
- *non-participation* – concerns indirect implications of value chain activities for local people who are not and never have been part of the chain, for example recipients of remittances or people living downstream from toxic waste emissions.

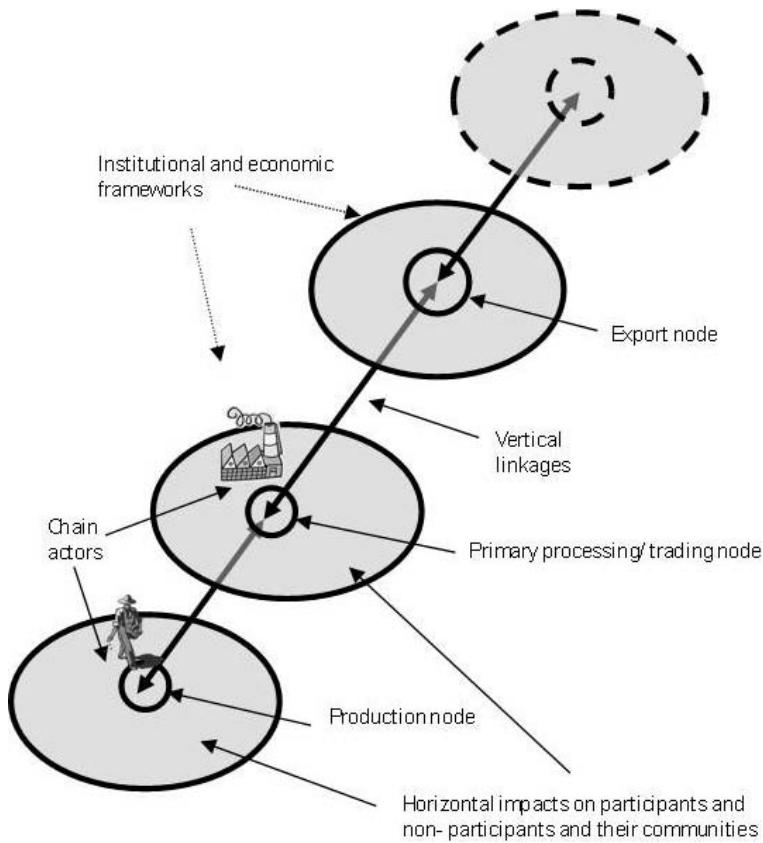
In our framework, we suggest examining changes affecting chain actors in relation to both the vertical linkages and the horizontal elements of value chains, as graphically represented in Figure 2.1. This shows selected chain nodes and the vertical linkages between nodes. It also illustrates the chain actors and external actors at each node.

The arrows (linkages) represent flows of products downstream as well as information, inputs and finance (typically in the upstream direction) between nodes, and the contractual or other relationships mediating these flows. The horizontal elements (poverty, gender, labour and the environment) are represented by 'discs' radiating from each node, with the chain actors at the centre of the disc and the external actors, expelled actors and non-participants (and their communities) in the outer parts of the discs. The discs also illustrate different ecosystems that are managed and impacted on in each node.

Around it all lie the institutional and economic frameworks, which are seen as external to the value chain since they are not directly 'operated' by chain actors, although actors may try to influence them. They include public and private regulation, corporate strategies, civil-society influence, local/national politics, supporting sectors (for example, finance and transport), infrastructure, resource tenure system and so on. These frameworks influence value chain governance and processes of upgrading as well as poverty, gender and the environment. Finally, it is emphasized that understanding the stakes or consequences of inclusion, repositioning or expulsion requires that analysis looks beyond the nature of relations in the value chain itself. The nature of participants' power and leverage depends on the full range of livelihood activities and social relations on which they depend, including with other social actors, such as patrons and dependants.

Table 2.1 provides an example of how the graphic representation in Figure 2.1 can be translated analytically to guide research and possibly action processes, and how each type of change in the value chain can be linked to gendered poverty and environmental elements. For illustrative purposes in Table 2.1 by 'continued participation under new terms', we list: selected dimensions of poverty/environment; common examples of value chain dynamics/patterns associated with each type of change in position; issues arising from gender differences related to each poverty/environment dimension.

The dynamics and impacts depicted in the table are meant to reflect simulations of real-world situations. Both negative and positive impacts are



Source: Bolwig et al (2010)

Figure 2.1 *Stylized value chain mapping highlighting horizontal and vertical elements*

represented, illustrating the complex ways in which value chain dynamics affect local communities and the environment.

A strategic framework and practical guide for value chain upgrading

Introduction

This section provides a strategic framework and practical guide for designing and implementing action research in value chains in a way that integrates poverty, gender, labour and environmental concerns – in short, ‘horizontal’ aspects. The methodology guided the action-research projects summarized in Chapter 3.

Table 2.1 *Integration of gendered poverty and environmental concerns with value chain dynamics*

<i>TYPE OF CHANGE IN CHAIN POSITION</i>	<i>POVERTY DIMENSION</i>	<i>VALUE CHAIN DYNAMICS AND THEIR IMPACTS ON POVERTY (EXAMPLES)</i>	<i>GENDER ISSUES (EXAMPLES)</i>
Continued participation under new terms	Income and assets	Certification to an organic standard enhances income potential but increases product quality demands	Gender-based labour roles mean increases in women's work burden in grading and processing
	Employment	Producers add new chain functions (grading and packaging) thus improving local employment opportunities	Gender differences in opportunities for advancement and skills upgrading
	Vulnerability and risk	Stricter quality standards require producers to invest in specific assets, thereby increasing their financial risks	Female producers hold fewer assets with which to mitigate the effects of risks
	Inequality	Buyers increasingly source from large suppliers, reducing smallholder revenue while increasing skilled labour income	Large producers prefer female labour for meticulous tasks such as sorting and grading
	Terms of participation	Stricter requirements on lead times and product quality set by lead firms result in increased costs of production and trade	Increased flexibilization of employment reduces women's ability to combine wage labour and domestic responsibilities
<i>TYPE OF CHANGE IN CHAIN POSITION</i>	<i>ENVIRONMENTAL DIMENSION</i>	<i>VALUE CHAIN DYNAMICS AND ASSOCIATED ENVIRONMENTAL IMPACTS AND MANAGEMENT ISSUES (EXAMPLES)</i>	<i>GENDER ISSUES (EXAMPLES)</i>
Continued participation under new terms	Local impacts and issues	Certification to organic standards induces more intensive soil management and conservation of on-farm biodiversity, but, could also lead to increased monoculture of cash crop	Women carry a disproportionate share of additional labour inputs in natural resource management (NRM)
		Price squeezes transmitted upstream from retailers reduce producer incentives to invest in soil conservation, but could also induce diversification thus increasing resilience	Women may be excluded from training and other forms of support to NRM

Table 2.1 *(Continued)*

<i>TYPE OF CHANGE IN CHAIN POSITION</i>	<i>ENVIRONMENTAL DIMENSION</i>	<i>VALUE CHAIN DYNAMICS AND ASSOCIATED ENVIRONMENTAL IMPACTS AND MANAGEMENT ISSUES (EXAMPLES)</i>	<i>GENDER ISSUES (EXAMPLES)</i>
		Change in use of crop varieties linked with certain inputs (for example, genetically modified (GM) varieties tailored to pesticides use) may increase toxic effects and undermine local varieties	Women use local varieties for cooking and other purposes
	Global impacts and issues	Higher quality standards require adoption of cool chain & air freight, thereby increasing GHG emissions	Gender-specific vulnerabilities to a deteriorating environment
		Upgrading to processing activities entails problems of handling of new waste products (nutrients and toxics) with local and downstream effects	
		Introduction of local processing such as drying of fruit may reduce energy use in later transport stages	Female workers may be preferred by processors

Source: Bolwig et al (2010)

Upgrading through action points

Addressing upgrading and inclusion mainly as management and competence problems tends to downplay the asymmetrical power relations in value chains. Decisions on performance requirements (for example, quality standards), functional divisions of labour and pricing are to a large extent taken by downstream actors, typically large retailers or processors, and transmitted upstream to traders and producers (Gibbon and Ponte, 2005). The strength of buyers places tight constraints on other actors' room for manoeuvre; for instance, farmers facing strict quality standards and price pressure may react by unilaterally restructuring their labour-sourcing regimes at workers' expense, passing costs and risk on to the most vulnerable (du Toit, 2004b). External actors such as large NGOs in the North may also influence the terms of chain participation, for example through standard setting, often with little participation from developing country actors (Gibbon and Bolwig, 2007).

Relationships between chain actors are often highly competitive and potentially conflictual. Producer upgrading therefore requires the identification of entry points or 'action points' where 'political' pressure or strategic action in relation to downstream actors is feasible. 'Action points' in this context apply to organizations, firms, institutions, private or public regulatory frameworks, the media and other 'sites' where what goes on inside value chains can be modified or regulated. Action points may also be time-sensitive and tied to specific windows of opportunity.

Intervening in an action point often requires political leverage and financial and human resources beyond the capacity of small producers, and mobilizing such resources from external sources is therefore central for upgrading. This may involve strengthening linkages with stronger chain actors (for example, first-tier suppliers or retailers) or building alliances with external actors (lawmakers, advocacy and consumer groups, international organizations, NGOs or standard-setting bodies) (see, for example, Kruger and du Toit, 2007). The tactic in both cases is to increase the stake of powerful actors in the conditions of the producers. The importance of 'linking up' means that successful upgrading is more likely if undertaken in more tightly coordinated value chains where the product is traceable upstream to specific producers, as opposed to market-based ones (for example, involving auctions or numerous middlemen) where trade flows are anonymous. Finally, producers may improve their performance and leverage through collective action, such as group certification to a sustainability standard, joint marketing of their produce, or the formation of larger associations to lobby for their interests. Indeed, this is often a precondition for increasing performance, improving linkages and accessing resources.

The guide was developed specifically for the kind of intervention known as 'action research'. Action research is a research tradition that emphasizes strategic and 'political' approaches to achieving sustained improvements for disadvantaged groups (O'Brien, 2001; Reason, 2006). It takes place in real-world situations and aims at solving specific problems, while the initiating

researchers openly acknowledge their bias towards the target group of the research (for example, small producers). Moreover, action research stresses the involvement of the target group as co-researchers, on the assumption that people learn best and apply their knowledge more willingly through active participation. Co-learning also contributes to the sustainability of the change effected.

Upgrading strategies for small producers

We see upgrading as something that happens to a specific actor (an economic group, organization or individual) inside the chain; it directly improves the performance or position of this actor, thereby increasing rewards and/or reducing the exposure to risk. We identify six different upgrading strategies for small producers, grouped into three types:

Improve process, product or volume (same node)

This group of strategies is about ‘doing things better or bigger’ staying within the same node, through improvements in technology and management. This includes ‘defensive’ strategies devised to retain the current position in the chain, such as responding to lower prices through cost reductions. Combining process, product and volume strategies can be mutually reinforcing; for example, increasing volume may enable the investment in processing equipment needed to raise quality.

- **Process:** improving efficiency or reducing negative externalities; this includes delivering on delivery schedules, invoicing, improving client management, reducing wastage, or simply increasing production volumes (in the case of farming, by increasing yields and/or the cultivated area).
- **Product:** moving into more ‘sophisticated’ products with increased unit value, through complying with buyer requirements for physical quality, certification, food safety standards, traceability, packaging and so on. Alternatively, shifting from producing for high-value markets to bulk-commodity markets based on economies of scale could also increase rewards or reduce risks.

Change and/or add functions (up- or downstream; several nodes)

Functional ‘upgrading’ refers to a situation when producers take on a new function in the value chain, either by performing downstream activities (for example, grading, processing, bulking up, transporting or advertising), or by engaging in upstream functions such as the provision of services, inputs or finance. Functional upgrading normally leads to vertical integration (when an actor performs more than one value chain function), except when the producer decides to abandon primary production in order to focus on the new function. Vertical integration normally also increases coordination between the functions that become integrated within the same farm or firm (see below).

Functional ‘downgrading’ is where the producer moves one node down the chain (for example, from processing his or her product to focus back on production because of the low profitability of processing).

Improve value chain coordination

Small agricultural producers in developing countries are typically linked with buyers through spot market-type transactions. These transactions have some common characteristics, which tend to reduce rewards and/or increase risks for producers, often with negative ramifications along the entire chain:

- small volumes (high marketing costs per unit) and low supplier capabilities;
- high uncertainty of price (which is negotiated at each exchange);
- sales to many different buyers (implying moral-hazard problems and poor access to reliable market information, finance and other support from buyers);
- poorly specified quality grades and standards and lack of means of quality control (implying moral-hazard problems and low rewards for quality);
- lack of traceability, which is a precondition for certification to standards;
- poor transmission of complex product information, which may constrain value addition and certification to standards.

Upgrading under these conditions will therefore often depend on the development of other forms of coordination than the dominant ‘spot market’ one. The concept of ‘coordination’ as used here has two dimensions – ‘vertical’ and ‘horizontal’.

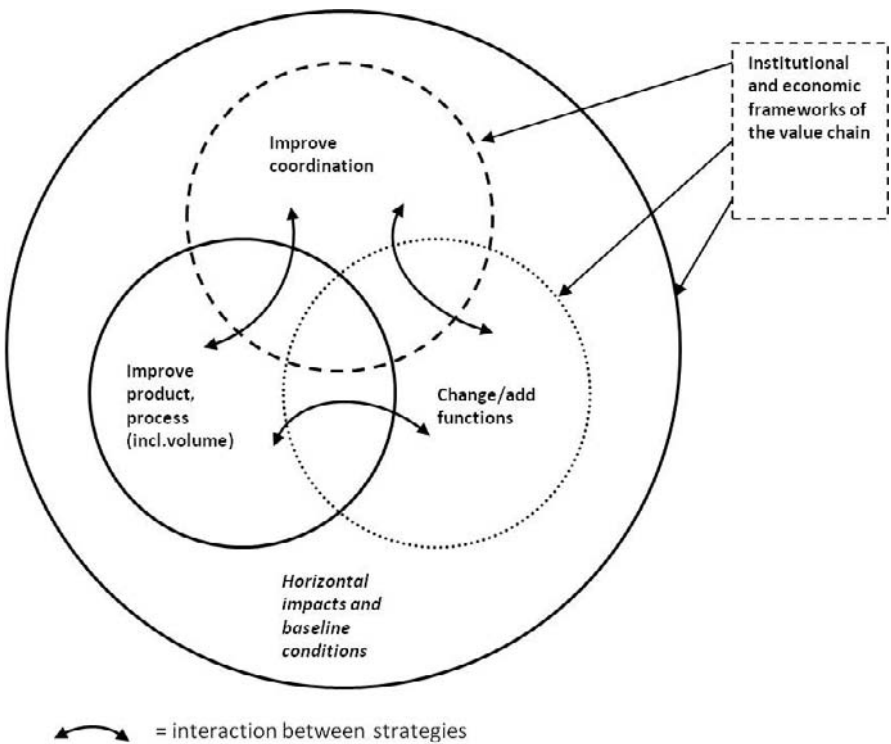
Vertical coordination (two actors, different nodes – farmers and wholesalers, cooperatives retailers and so on) means ‘getting a better deal’ through closer and longer-term business ties with buyers. It represents a move away from spot or repeated market-type transactions to an increasing use of contracts between producers and other chain actors.² It often involves ‘learning from buyers’ (about market requirements rather than prices) and ‘interlocking contracts’ where sales contracts include embedded services from the buyer (such as extension, credit, fertilizers and ice boxes). The benefits of contracts may include reduced price risks, access to price premiums, improved access to market information, inputs and finance or reduced marketing costs. However, contracts also involve higher performance requirements, for example in respect of quality, volume and certification, which can be difficult and costly to meet.

Horizontal coordination (same actors, same node – for example, farmer groups, cooperatives or fisher associations) describes agreements among producers to cooperate over input provision, marketing (for example, bulk-ing produce for sale, identification of buyers), certification and crop insurance in order to reduce costs, increase revenues or mitigate individual risks. Such collective action is often a precondition for increasing vertical coordination vis-à-vis buyers and can also strengthen producers’ bargaining power.

Increasing the level of coordination or vertical integration in a particular segment normally enhances overall chain performance in terms of cost, quality, volume and so on. Actors situated elsewhere in the chain may therefore benefit from strengthened coordination in the production segment, which may induce them to support producers' upgrading efforts. For example, organic food exporters in Africa have implemented coordination in the form of smallholder contract farming combined with group certification (Bolwig et al, 2009). In some cases, however, other actors may resist vertical coordination because it threatens their position in the chain, as when middlemen seek to prevent farmers from selling in bulk direct to wholesalers.

Upgrading strategies interact

The arrows between the circles in Figure 2.2 illustrate possible interactions between the strategies employed. In particular, coordination can often help achieve process, product or volume upgrading, and vice versa; producers who succeed in meeting buyers' quality and volume requirements are more likely to negotiate remunerative contracts. The circles overlap to illustrate that a



Source: Bolwig et al (2010)

Figure 2.2 Types of upgrading strategies for small producers

specific upgrading strategy (intervention) may encompass several of the strategies listed. For example, accessing certified organic export markets involves contractualization, quality improvement and process upgrading (traceability).

The large 'disc' underlying the three circles represents the possible horizontal impacts of upgrading as well as the horizontal baseline conditions, where 'horizontal' refers to different dimensions of poverty, gender, labour and the environment. The baseline conditions shape which upgrading strategies are feasible and desirable; for example, upgrading strategies involving high risks or large capital investments are often not appropriate for poor producers. The institutional and economic frameworks described earlier are depicted in the top right-hand corner. The different strategies are connected to different rewards and involve different levels of risks and performance requirements, implying the need for new competences, investments and/or networks.

Value chain interventions with broader scope and aims

Some value chain interventions have broader scope and aims, in terms of society or the whole chain, than those targeted exclusively at producers. Regulation, for example, can constrain or enhance the room for manoeuvre for coordination and functional upgrading and can place boundaries on what an actor can and cannot do. Corporate social responsibility (CSR) strategies can stimulate a number of changes in the downstream direction of the value chain, starting from a particular lead firm.

Horizontal impacts and issues

Different upgrading strategies have different implications for poverty and the environment and involve different gender issues. Some primarily improve the economic welfare of the target group, for example by increased cash income or greater income stability, while others have broader societal or environmental benefits. For example, farmers may convert to organic farming, which, under the right conditions, may preserve local biodiversity and soil and water resources, and provide health and employment benefits to their communities while raising their own income.

Small producers have little influence over key risk factors in agro-food chains such as price cuts, cancellation of orders, fraudulent buying practices or new food safety standards and they hold few assets to mitigate their effects. Reducing their exposure to risk and thereby avoiding forced chain exit and the loss of critical livelihood assets is thus often as important as increasing rewards. Any upgrading strategy should therefore be based on analyses of livelihood risks and of risks related to gender and the environment.

It should be emphasized that the assessment of the implications of upgrading should not focus narrowly on the power relations within the value chain or the direct benefits of participation, but should consider the full range of livelihood activities and networks on which participants and their communities depend. Upgrading may not always be the most desirable course of action

for value chain participants and exit from a value chain in some circumstances may be an appropriate strategy.

We have addressed the need for integrating horizontal and vertical elements when exploring the potential for closer integration of poor people with global markets. This we have done conceptually and strategically by adopting a broad view on upgrading which allows for the consideration of ‘horizontal’ aspects, because rewards and risks from upgrading are understood both in financial terms and in relation to poverty, gender, labour and the environment. However, full integration takes place in the operationalization of the framework to which we now turn.

A guide for doing action research in value chains

A stepwise approach to the design and execution of an action-research project concerned with the upgrading of small producers. Table 2.2 outlines the seven steps in the approach and describes their main components. The steps are sequenced in a logical progression, but in practice there will be iterations back and forth between them as new insights are gained or circumstances change. The approach assumes that the starting point is a particular value chain setting, and that one then goes on to identify the target group and the issues to address. But one may also start from an identified target group, a geographical area, or a specific environmental or poverty issue. In such cases the sequencing of steps can be adjusted. For example, if the key issue is predetermined as a global environmental problem, then step 4 may precede step 3.

Looking at Table 2.2, it is clear that, in practice, horizontal issues and considerations must necessarily form an integrated and coherent partner to more ‘traditional’ vertical value chain analysis. In the first step ‘Choice of overall research design’, the identification of major issues to be addressed might therefore just as well focus on gender equality or environmental sustainability rather than solely on more traditional issues such as increased financial returns to small producers.

Likewise in step 2, the selection of target group necessarily needs to consider how this selection feeds into local mechanisms of power and inequality. In step 3, poverty, environment, labour and gender issues are thoroughly addressed by analysing and identifying the main problems related to these issues as experienced by the target group. In step 4, the problems identified are related to the results of a detailed value chain analysis. This then forms the basis, in step 5, for formulating promising upgrading strategies that can then be implemented and adjusted (steps 6 and 7). Riisgaard et al (2010) elaborate on the analyses and actions in each step, demonstrating the specific ways in which horizontal and vertical dimensions of value chain analysis and action can be integrated. Chapter 3 summarizes the results of the seven action research projects.

Table 2.2 *Identifying and implementing upgrading strategies through action research*

<i>Action research step</i>	<i>Main components of step</i>
Choice of overall research design	Identify major issues to be addressed Choose value chain type and geographical focus
Identification and engagement of the target group (setting boundaries of the research)	Define and select the target group Identify local organizations with which to work Agree on action research process and define roles and responsibilities Agree on level of ambition and timeframe Consider local 'political' issues arising from choice of target group and how to deal with them
Address poverty, gender, labour and environmental issues (horizontal aspects of chain)	Conduct participatory and 'gendered' problem identification and prioritization Place the prioritized problems in the broader value chain context
Conduct value chain analysis (vertical aspects of chain)	Analyse and map the value chain Identify the position of the target group within the chain Identify the performance requirements, risks and rewards experienced by the target group Quantify key elements of the value chain in each relevant node (including assessment of the target group's competitiveness) Relate the problems identified in Step 3 to the detailed value chain analysis. Then eliminate problems that cannot be addressed through a value chain approach and prioritize problems to address
Choice of upgrading strategy	Formulate promising upgrading strategies for ex-ante evaluation and select one 'best bet' strategy Identify promising 'action points' where change can be stimulated Establish a baseline for ex post evaluation of the action research
Implementation of research and action (support activities)	Develop a concrete plan of action Implement research and strategy through support activities such as: collecting and analysing data, building competences, mobilizing political & economic resources, organising and creating alliances Collect, analyse and disseminate information (research and documentation)
Evaluation and adjustment (or exit)	Evaluate the results of the action research (ex post). Distinguish between 'horizontal' impacts and immediate outcomes Formulate new/adjusted strategy and start new cycle of action research, or end the action research (exit)

Source: Riisgaard et al (2010)

Summary

In this chapter we have elaborated a conceptual framework for value chain analysis that seeks to combine a detailed and nuanced understanding of local

social relations, the internal structure and composition of livelihoods and environmental issues with the broader political economy within which they are situated, and the transnational linkages and networks that exist along a value chain. In outlining important conceptual dimensions of poverty, gender, labour and the environment, we have attempted to combine existing but largely separate bodies of knowledge on 'vertical' and 'horizontal' aspects of value chains. This conceptual framework is centred on the kinds of change that can be experienced by small producers and other weak value chain actors in developing countries.

The conceptual framework informs a strategic and practical methodology for designing and implementing action research projects in value chains in a way that integrates poverty, gender, labour and/or environmental concerns. The stepwise approach is an attempt to guide in detail the design and implementation of such projects, suggesting for each step what to do, what questions to ask and what issues to consider.

The practical guide is assisted by the strategic framework for identifying 'upgrading' strategies potentially available for improving value chain participation for small producers and other weak chain actors, with the ultimate purpose of increasing the rewards and/or reducing the risks from participation. Among other strategic considerations, we have stressed the importance of working through 'action points' and of 'linking up' with more powerful actors internal or external to the value chain. This approach is an attempt to take seriously the highly unequal power relations in the value chains in which small rural producers typically participate (and the latter's general position of weakness), pointing at the same time to the limitations of 'cooperative' and 'managerial'-type interventions.

Notes

- 1 This chapter is based on Bolwig et al (2010) and Riisgaard et al (2010).
- 2 We define 'contract' in broad terms as an agreement between two or more parties for performing, or refraining from performing, some specified act(s). A contract in this sense is not limited to legally enforceable agreements, and 'sanctions' for breaking contracts often amount to lost future economic opportunities.

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3

Summaries of the Seven Action Research Projects

Introduction

The seven action research projects, which were implemented for two years 2007–2009, lie at the heart of this programme. They cover a broad spectrum of agricultural products from basic food crops (cassava and fonio) to higher value products (bay leaves, kalamansi) to globally traded products (pangasius and octopus and incense sticks) across a broad range of rural contexts in the South. The projects were all implemented within the conceptual and methodological framework outlined in Chapter 2.

Before proceeding with the synthesis in Chapters 4–9, we believe that readers will find it useful to understand the projects from which primary data were derived. The following summaries provide a brief description of each project around a common format: context, critical issues, activities and impact of poverty, environmental and gender outcomes. We have also evaluated the success of each project in research and development terms. In addition to these summaries we give greater detail on individual projects to illustrate our argument throughout the book.

'Increasing the economic benefits derived by poor rural women producers from the incense sticks (*agarbatti*) value chain' (or 'the incense stick project')

*Bhargavi Motukuri, Selim Reza, Suneel Pandey and
Kate Schreckenberg*

Introducing incense sticks

Incense sticks are burned for their fragrance, and used daily by many Indian families, as well as for religious and cultural ceremonies. India is the largest producer of incense sticks (called *agarbatti* in India), with an estimated production of

208 billion sticks per year at a market value in 2008 of US\$926 million and an estimated annual growth in value of 20 per cent (INBAR, 2010). The sector is an important provider of home-based and part-time work for large numbers of women. Tripura state produces raw bamboo sticks for the national and international market but, prior to the project, almost all value-adding – consisting of adding the ‘masala’ incense paste to the sticks and scenting, packaging and branding them – was largely carried out in southern India.

Location and general livelihood context

The project was undertaken by the International Network for Bamboo and Rattan (INBAR) together with NGO the Tripura Bamboo and Cane Development Centre (TRIBAC). TRIBAC was established in 2003 by INBAR, in collaboration with the Centre for Indian Bamboo Research and Technology (CIBART) and the government of Tripura as a not-for-profit, community-based organization that carries out a number of bamboo-based development activities.

This was a relatively successful project in that the project partners were committed and competent, and represented a good team of an ‘activist’ local NGO and an international organization, requiring limited technical support from the Overseas Development Institute (ODI). The project area has functioning community organizations and the chosen product – incense sticks – is



Source: INBAR (2010)

Figure 3.1 *Incense stick project – Action area location*

not tied to crop-growing cycles. A great deal of preparatory work had been carried out by previous interventions. As with most of the other projects, monitoring of impacts beyond the target value chain (a holistic view of household livelihood outcomes) was lacking. In addition, the project target group was relatively small and isolated and the initiative relied heavily upon government subsidy in the form of tax concessions and support to the NGO; this raises some issues around scalability and market distortion.

The incense stick project was implemented in Tripura state, located in the north-east of India and almost entirely surrounded by Bangladesh. With trade to and through Bangladesh being heavily constrained, Tripura is both geographically and economically isolated from the main part of India. Its hilly and forested terrain mean that there is little land available for the predominantly agriculture-dependent population while low levels of infrastructure development hamper other economic activities. Socially, the state has seen many conflicts between the predominantly upland tribal groups (about one-third of the population) and the now dominant Bengali population, many of whom arrived as refugees after the 1971 Bangla war and have increased pressure on scarce agricultural land.

Poverty rates in Tripura are 34.4 per cent, making it the sixth poorest state in the country. Poverty rates among the 82 per cent of the population that is rural are even higher at 40 per cent (INBAR, 2010). The economic status of women in the state is generally low, with only 19 per cent of rural women finding non-agricultural work (e.g. in handicrafts or sericulture) and their dependency on incomes of others, such as their husbands, is one of the highest in India (INBAR, 2010). For those below the poverty line (BPL)¹ the National Rural Employment Guarantee Act (NREGA – a government administered social protection programme) provides up to 100 days of employment at US\$2.22 per day.

The project was implemented in the West, South and North Districts of Tripura, all of which are predominantly lowland areas in which TRIBAC had an active network of collaborators at village and block (several villages) level. TRIBAC itself is located in the state capital Agartala in West Tripura.

Value chain description and target group

A surprising number of steps and suppliers are involved in making incense sticks which, individually, are small and relatively low value. Three key raw material inputs are bamboo sticks, charcoal and *jiggat* (the material which makes the incense stick burn), each sourced through a different supply chain.

Bamboo is the main natural resource in Tripura, dominating 23 per cent of its forests and being used for everything from housing to supplying paper mills and making handicrafts. Current estimates suggest that annual extraction for all purposes combined is almost 30 per cent higher than sustainable yields (INBAR, 2010). This includes around 25,000MT (metric tons) of sticks per year for the incense stick trade. Tribal harvesters are permitted to cut the bamboo (predominantly *Melocanna baccifera*) for free and float it down river,

where it is tied into rafts by collectors (agents of licensed traders) and floated on to key docking areas such as Chakmaghat, from where the trader's transport agents bring the culms to a bamboo market for sale to consumers.

In a separate project, INBAR and TRIBAC have promoted sustainable use of bamboos by working with harvesting communities to set up bamboo nurseries, introducing systems to ensure only culms of a particular age (and hence quality) are harvested, and have encouraged homestead and riverbank planting of bamboos. For incense sticks, bamboo culms have to be cut into cylinders and these are then slivered into sticks, dried and polished to remove loose fibres. Prior to the project, rejection rates were up to 25–30 per cent as many sticks were not the required length or were insufficiently polished. About 30,000 women are active in making bamboo sticks in Tripura.

'Jiggat' refers to the bark of several trees, all of which have an adhesive quality. Most commonly it is sourced from the bark of *Litsea glutinosa* and *Machilus macrantha* trees which are found scattered in the forests of Tripura. However, overexploitation and unsustainable harvesting (by complete debarking leading to the death of the trees) led the state government to ban jiggat harvesting, forcing incense stick producers to import the dried and chipped bark from outside the state for about US\$0.88 per kg. The powdered jiggat is mixed with a fine charcoal powder (in a ratio of 1:1) to produce the 'masala' incense paste. The masala paste is rolled onto the raw bamboo sticks by 'rollers', 95 per cent of whom are women. Rolling masala onto raw bamboo sticks is an activity which did not take place in Tripura before the intervention of TRIBAC from 2005. Many of these rollers are home-workers for incense stick companies, who provide them with the raw materials. The quality of the masala determines how long and evenly the final incense stick burns, with company standards specifying burns to a precise number of minutes. Women rollers are vulnerable to insufficient and poor quality supplies (e.g. containing charcoal that is not sufficiently well powdered or with the wrong proportions of jiggat) which takes longer to roll and may break off the rolled sticks (or 'batti').

Productivity is about 0.5kg of rolled sticks per hour, with 35 per cent of women producing less than 5kg per week, 55 per cent producing 5–10kgs and only 10 per cent of rollers producing 10–20kgs per week. The finished batti are sold in bundles of 1kg or 1500 sticks to companies that scent the sticks by dipping them in a perfume (usually a house brand) to produce the final incense stick. While slivering and rolling are predominantly outsourced to home-based workers, companies often produce their own masala and carry out the highest value-adding step of scenting the incense sticks in-house.

TRIBAC's Gandhigram Bamboo Crafts and Processing Centre (established in 2005) operates as a commercial enterprise on land leased from the government. The centre buys the raw materials and processes them into products using its own workforce organized in self-help groups (SHGs), grouped into community enterprise clusters (CECs) of around 100 women. It then markets the products within the state, including three of its own brands of incense sticks. Both costs and profits are shared by the SHGs involved through adjustments to the price paid for finished incense sticks. Overheads, like marketing and transportation

expenses, are all chargeable. TRIBAC mainly supplies incense sticks to large companies who perfume them and sell them under their own brand names.

The Tripura incense sticks value chain supplies the domestic state market as well as supplying 60 per cent of the raw bamboo sticks to the national market. However, this market share has declined from 90 per cent of the national market in the past as other states closer to the main market centre in southern India capitalize on their bamboo resources. Companies in Tripura have the capacity to absorb more production but find that primary production of both bamboo sticks and rolled incense is inadequate. This is because, unlike urban women in main production centres such as Bangalore and Mysore, Tripura women have to fit production around their main agricultural work and also their experience of rolling is limited. The fact that they are outsourced and work part-time means these women have no access to health care or union support as is the case for full-time rollers employed by companies. Prior to the project's intervention, traders dictated prices (allegedly operating a cartel to keep prices low) to 'their' stick producers, paying US\$0.22 per kg of rolled incense sticks compared with TRIBAC's payment of US\$0.26.² Because of the lower prices offered by traders in the region, many rollers preferred to work through the TRIBAC/Gandhi-gram Centre. TRIBAC rollers earned US\$0.44–1.10 per day based on about four hours work, providing monthly earnings of US\$11 to US\$33.

Depending on brand and size, consumers pay 50–75 Indian *paise*³ (1–1.7 US cents) per incense stick. Of this final cost, the raw stick costs only about 0.6 per cent of the consumer price and the perfumed and packaged agarbatti costs half of the consumer price – with the remaining value being contributed by marketing, transportation and sales costs.

The project targeted rural home-based women rollers who were identified as being poor because they had been issued with a government BPL card. One thousand women working with existing SHGs and CECs linked to TRIBAC were selected. Another 500 new entrants to the value chain were selected on the basis of their BPL status, their location within the project area (lowland Tripura) and their willingness to participate in the project. Some of this latter group were already involved in slivering bamboo, while the rest were interested in becoming rollers.

To provide women rollers with better quantity and quality of inputs, action was also taken with other chain participants, namely bamboo stick, charcoal and jiggat suppliers, companies buying unscented batti and various parts of the state government. Baseline and follow-up monitoring were carried out with 150 women, of whom 125 were existing rollers and 25 were new entrants to the value chain.

Critical issues

The aim of the project was to increase the economic benefits to poor rural women producers in Tripura, India from the incense stick value chain within the context of a sustainable resource base. Achievement of this aim was constrained by the following critical issues:

- Low production volumes of rolled incense sticks meant that women rollers were unable to attract better-paying, large-scale buyers.
- Unsustainable supply of inputs, particularly of jiggat and charcoal, could threaten producer livelihoods.
- Poor quality of rolled incense sticks leads to high rejection rates and lower incomes; poor rolling techniques were also associated with certain health issues such as back ache (from squatting on the floor) and respiratory problems (from masala powder).
- The policy and regulatory framework constrained the incense stick trade in Tripura in a number of unintended ways, ranging from restrictions on jiggat harvesting and restricted movement of bamboo resources within the state to arbitrary levels of taxation and the lack of protection for producers.

Table 3.1 below outlines the approach which the project took to addressing these issues. With separate funding, INBAR and TRIBAC also addressed two other critical issues: the lack of credit to provide working capital to increase the volume of production, leading INBAR to work on setting up a micro-finance institution with financing from the Small Industries Development Bank of India; and the serious problem of transport for the fragile rolled batti, leading TRIBAC to invest in scenting and packaging the final product at its own centre.

Impact of project on value chain

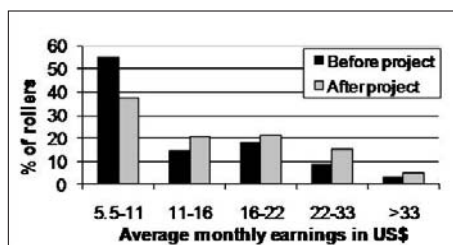
Incomes

Incomes of the 125 surveyed women rollers increased over the project's implementation period, from an average of US\$1.65 per week to nearly US\$3.3 per week, with the proportion BPL falling from 66.4 to 35.6 per cent. Figure 3.2 shows the increase in monthly income of the surveyed women. The small number earning over US\$33 per month are those who have taken on new functions, moving beyond incense stick rolling to organizing masala production, managing production hubs, packaging and scenting.

The importance of the incense stick income is indicated in Figure 3.3, which shows the main sources of cash income for the households of the 125 surveyed rollers after the project interventions.

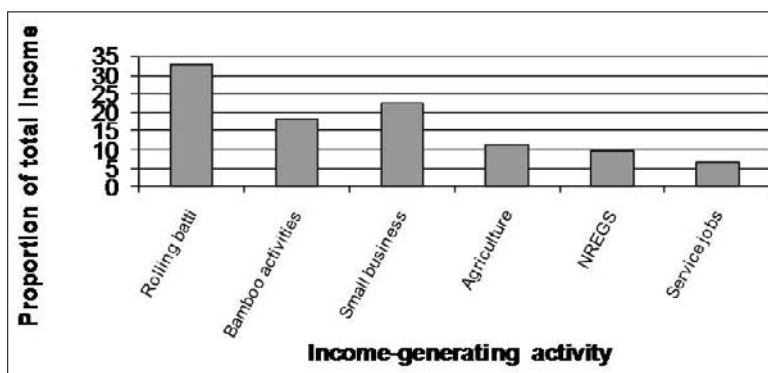
About 20 per cent of the increase in stick rolling income is attributed to improved quality of the incense sticks, with rejection rates declining from 18 per cent before the project to 0–3 per cent after the project and incomes per kg of rolled batti rising from US\$0.23 to US\$0.33. The improved quality of the incense sticks was due to process and product upgrading at various points in the value chain:

- Introduction of cylinder cutting machines to produce standard length raw sticks. These machines allowed CECs to convert 125–130 bamboo poles per day compared with just 25–30 culms per day using traditional methods, and reduce stick rejection rates from 25–30 per cent to 5 per cent. Following the success of the first cylinder cutting machine, three more



Source: INBAR (2010)

Figure 3.2 *Monthly earnings of stick rollers (n=125) before and after implementation of the incense stick project*



Source: INBAR (2010)

Figure 3.3 *Cash income sources for 125 incense stick roller households*

have been introduced on a 50:50 cost-sharing basis between TRIBAC and communities. The result has been that machine-cut bamboo cylinders have become a new commodity in the value chain.

- Training of stick makers to produce polished and well-dried sticks. Together with the standardized lengths achieved through the use of the cutting machines, this has raised earnings from US\$0.18 to US\$0.26 per kg of raw sticks.
- Better quality masala, produced at the TRIBAC Gandhigram facility using a machine to powder charcoal and jigat followed by a pulverizing machine to mix the masala. A similar masala production facility was established for a TRIBAC-supported entrepreneur in Jirania village, enabling rolled incense stick production to double to 2MT per month. Three other villages have purchased the necessary equipment and approached TRIBAC for support in installation and operation.
- Better rolling practices: training in ‘dip and roll’ methods enabled even new entrants to the value chain to achieve rejection rates of just 0–3 per cent. Introduction of rolling desks further improved quality and raised productivity.

Table 3.1 *Summary of critical issues, upgrading strategies and activities undertaken by the Incense Stick project*

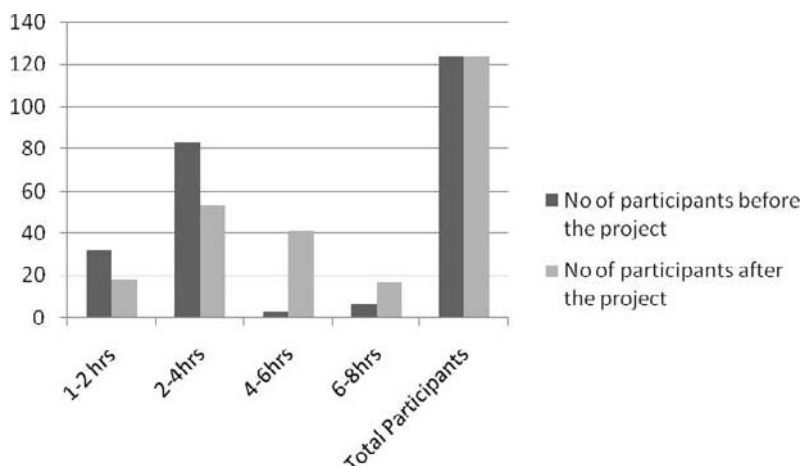
<i>Critical issues</i>	<i>Upgrading strategy</i>	<i>Action points</i>	<i>Activities</i>	<i>Outputs</i>
Low production volume of rolled <i>batti</i>	Process upgrading; Product upgrading; Horizontal and Vertical coordination: To enable increased production volumes of rolled <i>batti</i> to realize greater value and market share	Producer groups; Intermediary and Private Commercial agencies	1 Train new women producers to roll <i>battis</i> 2 Train 10 existing women CECs (over 1000 women) to enhance production of rolled/raw <i>batti</i> 3 Develop a rural production and marketing network based on CECs 4 Develop mobile phone communication network for greater production and marketing coordination 5 Develop models for purchase contracts	1 Of 560 new women trained, 292 regularly engaged in rolling 2 Skill development of existing 10 CECs 3 15 CECs networked to the market 4 10 CECs networked with mobile phones 5 CECs benefit from formal arrangements, which guarantee order volumes and prices
Sustainability of input supply	Vertical coordination and Process upgrading: To organize sustainable production of jiggat and charcoal inputs in the required quantities	JFMCs; Charcoal from midday meal scheme; Household producers of charcoal	1 Develop JFMCs & target groups linkages: (a) identification of JFMCs with availability of jiggat (b) train JFMCs on sustainable harvesting of jiggat (c) authorization of JFMCs to supply jiggat 2 Pilot homestead plantation of jiggat 3 Develop a model for charcoal supply from households and midday meal scheme 4 Develop a model for charcoal production using bamboo waste	1 Two JFMCs identified and trained in sustainable harvesting of jiggat. A legal mechanism established enabling JFMCs to supply jiggat to target groups. 2 500 jiggat trees planted in homesteads 3 Two models developed for charcoal collection 4 One model developed for bamboo charcoal production

Table 3.1 (Continued)

<i>Critical issues</i>	<i>Upgrading strategy</i>	<i>Action points</i>	<i>Activities</i>	<i>Outputs</i>
Poor quality of <i>battis</i> and lack of awareness of possible health hazards	Product upgrading and Functional upgrading: To improve production quality & standards for inputs/final product linked to quality masala production by target groups; meeting market demands, while minimizing negative impacts on health	Producer groups; Technical support agencies	1 Develop a model for production of standardized internode cylinders and bamboo stick polishing 2 Pilot of 100 stick producers to use metal rods to measure stick length 3 Improve masala characteristics 4 Centralized masala production for consistent quality; 5 Community sensitization and awareness raising on safety and health issues.	1 Standardized and polished bamboo stick produced 2 Standardized bamboo sticks produced 3 Masala testing lab 4 Quality masala made available 5 Training and awareness camps carried out on health and safety standards related to incense stick production.
Policy and regulatory constraints	Improved external governance of the value chain: To create a more favorable policy environment for the agarbatti sector in Tripura	CEC groups, government and other stakeholders	1 Identify policy constraints and possible interventions 2 Collect statistical data to justify policy changes 3 Conduct inception and final workshops for policy-makers, private buyers and other key stakeholders 4 Collaborate with key stakeholders and lobby with concerned government agencies 5 Undertake advocacy and awareness raising	1 Draft policy briefs produced & disseminated to key policy-makers 2 Statistical data available on state agarbatti sector 3 Two workshops held 4 Three meetings held with policy-makers 5 Heightened public awareness of the potential and needs of the sector

Source: INBAR (2010)

JFMC: Joint Forest Management Committees



Source: INBAR, 2010

Figure 3.4 *The change in number of hours invested each day by 125 rollers surveyed before and after the project intervention*

The other 80 per cent of the income increase is attributed to increased quantity of production from an average of 1kg per day before the project to a minimum of 2kg per day after the project. If the new pedal-operated rolling machines being trialled at the end of the project are widely distributed then productivity rates could increase from 0.5kg to 6kg of incense sticks per hour.⁴ Without these, the main reason for the increased quantity of incense sticks was that women invested more time in the activity leading to greater volumes available for sale (Figure 3.4).

Several factors are likely to have contributed to women spending more time on rolling incense sticks:

- more efficient systems for sourcing inputs (mobile phones allowed CECs to place orders in a timely manner);
- better quality inputs combined with better processing techniques leading to lower rejection rates and better incomes;
- easier and more pleasant work (use of rolling desks allowing women to sit upright instead of squatting on the floor increased productivity by 20–25 per cent).

Calculated on a full-time basis, women could therefore earn US\$1.65 per day. The potential for this regular and predictable income from an activity carried out from home is preferred by some rollers to the higher (US\$2.20 per day) but unpredictable and unknown work available through the NREGA programme. Nevertheless, the guaranteed remuneration offered by the NREGA programme was a challenge to the project, particularly when trying to ensure women's attendance at 3–6 day training courses.

The number of women involved in CECs rose from 1000 to over 1500 over the 18 months of the project. Over the course of the project, the overall volume of rolled incense sticks produced by CECs in the state rose from 3.7 to 6.3MT per month of which TRIBAC's existing producers were responsible for an increase from 2.5 to 4.7MT. The knock-on effect of the increased trade may be significant – for every person employed to scent sticks, the supply chain involves one stick-maker, one charcoal producer, three jigga producers and seven rollers. The potential importance of the sector to Tripura's economy was made clear to policy makers through the use of meetings, policy-briefings and electronic media. Among other things, this resulted in a relaxation of value added tax (VAT) and central sales tax (CST) on bamboo sticks made within the state thus encouraging the stick-making sector. Similar action is being sought for the rolled incense sticks. Other regulatory changes facilitated the supply of local (and cheaper) jigga.

A critical issue for an NGO like TRIBAC that takes on the role of market intermediary in the value chain is how to support associated businesses in becoming independent. The greater availability of trained rollers in the state resulting from the project's activities has attracted some of the main incense stick companies from southern India to open outlets in Tripura. TRIBAC established market linkages between several of its CECs and these companies with the result that three CECs (representing 575 rollers) now consistently supply rolled incense sticks direct to industry with one doing so on an occasional basis. As the companies provide prompt payments, those CECs who can afford to source their own raw materials (rather than obtaining it from TRIBAC) now deal with these companies directly. Over a six-month period, SHGs now supply TRIBAC with around 4.25MT of rolled incense sticks compared with 14.75MT being supplied direct to companies. As part of this process, TRIBAC has helped to draft model contracts in English and Bengali to ensure fair business transactions between private enterprises and CECs. One CEC also entered into a formal contract with TRIBAC – its positive experience of easier negotiations and greater business confidence is expected to lead to an increase in contract-based collaboration.

An indication of TRIBAC's success is that the state Tripura Bamboo Mission is replicating TRIBAC's model of operation by setting up 50 community production centres with the assistance of two companies, Infrastructure Leasing and Financial Services Ltd (ILFS) and Agro Forest Products (procuring products on behalf of community members).

Environment

Two environmental issues were tackled by the project. The first was the sustainable production of jigga, previously imported at US\$0.88 per kg. Lobbying by TRIBAC and other stakeholders resulted in the initially resistant Forest Department allowing five joint forest management committees (JFMCs) to harvest jigga in their forests on a trial basis to supply jigga needs within the state. The JFMCs were trained in sustainable harvesting (debarking in vertical alternate strips rather than debarking the whole circumference of the tree) and

proper drying practices, and supply agreements were established with specific CECs. This reduced the cost of jigat for CECs to just US\$0.4 per kg while at the same time providing the JFMCs with a new source of income. With a view to providing sufficient jigat for longer term increases in incense stick production, the project also established jigat nurseries and distributed seedlings for homestead plantings as well as trialling two 1-hectare plantations.

The second key resource imported from outside Tripura was wood-based charcoal. To reduce costs and increase sustainability, the project pioneered a system in which 2000kg of waste charcoal (produced from cooking with firewood) per month were collected from households (providing them a monthly income of US\$2.20) and from school-meal programmes. Furthermore, drum kilns were trialled at community level to make charcoal from the bamboo waste remaining after cylinder cutting. These have proved very popular, with 22 operating by the end of the project period. For those communities unable to convert waste at household level, TRIBAC collects the bamboo waste and converts it in its own brick kiln, which has a capacity of almost 800kg in 22 hours, providing more than enough charcoal to meet the incense stick sector's needs. Charcoal needs for the 7MT of rolled incense sticks currently produced per month in Tripura amount to 2.3MT, which amounts to 5.75MT of biomass or one hectare of timber if sustainably produced.

Gender

Women's increased income has enabled them to spend money on their children's education, sending them to better schools, on recreational activities and to treat minor illnesses. They have also spent money on women's personal effects, with a considerable improvement in the quality of their dress – more colourful clothes, painting their toe and finger nails, wearing jewellery, sandals and so on. There are now several examples where women have established incense stick marketing businesses, linked directly to commercial buyers, and are employing their husbands as workers. While tribal women already had a strong say in decision making at household level, the new income has also given them a stronger say at community level on issues that are often decided by men. The women of Jiriana village, for example, approached the village head to take up the issue of setting up a village tube-well to take care of household water needs. Many women are now confident enough to engage in public discussions at community- and state-level on how to enhance the incense sticks sector. Over the duration of the project, the number of women entrepreneurs running their own business as heads of CECs rose from 10 to 15, with four dealing directly with the market with no or limited intervention from TRIBAC.

Feedback from women on the introduction of wooden rolling desks (with rolling pins), built locally – based on a Vietnamese model and used by 28 per cent of women by the end of the project – has been very positive. Women highlighted both the reduction in back-pain, enabling longer working hours, and the social impact of working in a seated position rather than squatting on the floor with one woman stating 'rolling on the desk makes me feel like I am doing a

dignified job'. Other health improvements include the use of home-made face-masks by almost a quarter of rollers to reduce the inhalation of charcoal and jiggat dust, following distribution of 100 masks by the research team.

In general, feedback from women participants in the project suggests that the men in their households have been very supportive of their new or increased investment of time in incense stick production and have even assisted them by fetching water or carrying out household chores. While relatively few men contributed to the stick-making and rolling part of the value chain, their participation has increased with the introduction of bamboo cylinder cutting machines. To ensure that men do not – as often happens – take over an activity once it becomes mechanized and more lucrative, strategies such as a continued focus on all women CECs and targeted micro-finance may be necessary.

Key findings

This study illustrates the importance of a proper analysis of the overall value chain, including input supply chains, to identify the range of action points and upgrading strategies, which, in combination, can significantly increase the earnings of a specific target group. Thus process upgrading for the batti rollers depended on also improving the quality of the raw sticks and masala inputs. Similarly, the increased volume of incense sticks produced would not be sustainable in the long term without action to ensure sustainable supplies of jiggat and charcoal, which required action at policy level as well as with the resource producers themselves.

This project illustrates the potential of enterprise to positively contribute to the livelihoods of the poor in a lagging rural area. NREGA in India is one of the most successful social protection programmes in the world. It is a long-standing policy and costs about 1 per cent of India's dynamically growing GDP. In the vast majority of lagging regions in Africa and Asia, it would not be feasible to set up, administer or finance a social protection scheme such as NREGA. However, even in Tripura, the potential of small business and incense stick production to raise the incomes of the poorest households above the level provided by social protection and traditional agriculture, is striking. By the end of the project, NREGA and agriculture were each contributing about 10 per cent of total household income. Rolling incense sticks, small business and bamboo were contributing 33 per cent, 22 per cent and 18 per cent respectively. There is some discussion at present as to whether the NREGA programme could incorporate incense stick activities under its 100-day employment guarantee scheme.

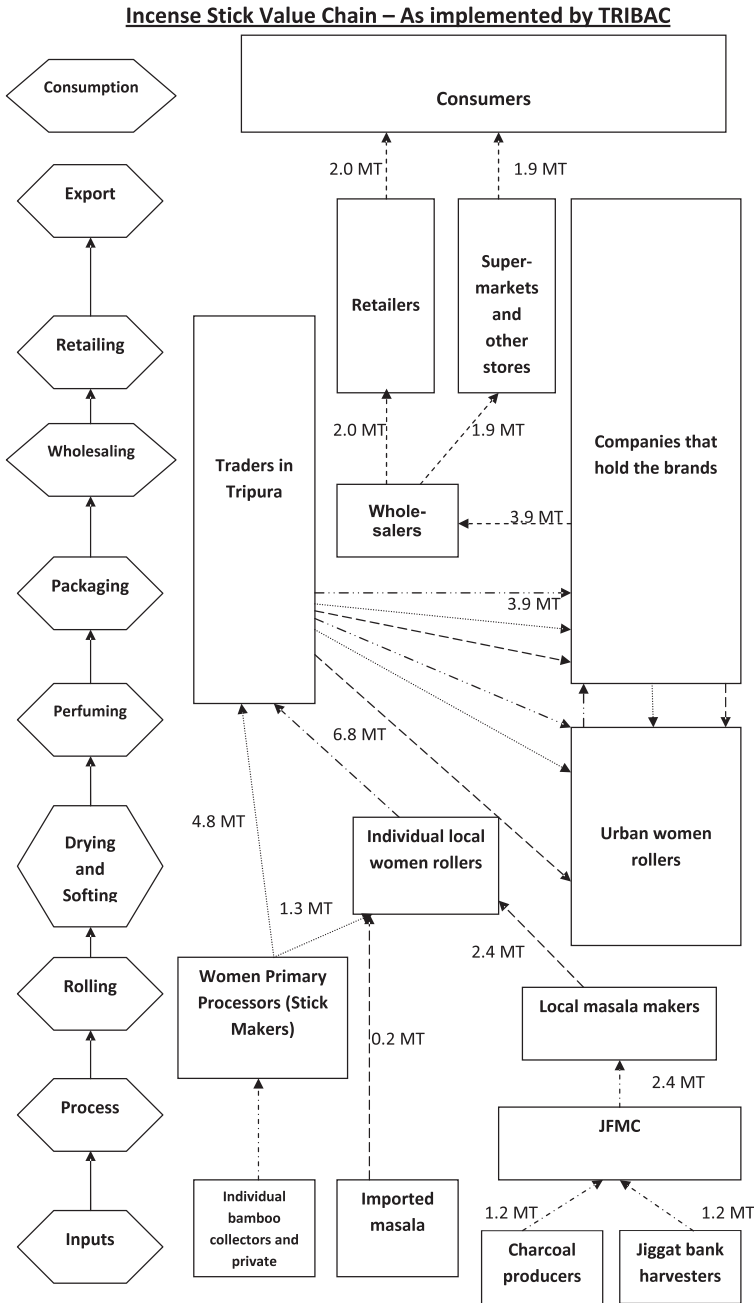
Underlying the success of many of its upgrading strategies was TRIBAC's well-structured and coordinated institutional system, suggesting that this horizontal coordination is an important precursor to achieving further improvements. Although the project helped to establish additional SHGs, the basic SHG and CEC structure had already been built up by TRIBAC in the five years preceding the project's intervention. TRIBAC was able to communicate with producers through the CECs and to use its network of community-based extension workers to provide training and support on the new methods.

The case illustrates the positive impact of a socially minded market intermediary and feeds into a bigger discussion about the extent to which a facilitating NGO should take on these functions. In the absence of other intermediaries, TRIBAC decided to provide not just market information, skills training and policy advocacy, but also to source raw materials and sell finished products for associated CECs and SHGs. Its rationale was that having ‘internal’ entrepreneurs is a strategic means to translate research and development applications into action and to build livelihood development capacity among staff and community members, thus seeding vibrant social enterprises. This was an apparently successful tactic, raising standards and prices for its own and other incense stick rollers and encouraging new entrants into the sector. A concern with this approach is that fledgling businesses supported in this way will not be able to operate independently in a potentially harsher business environment. However, the fact that some of TRIBAC’s CECs (and about 78 per cent of the output of rollers) have managed this transition within a relatively short space of time suggests that they are being provided with adequate capacity to do so and that TRIBAC’s activities at policy level have perhaps also made the external environment more conducive to smaller players (e.g. through easier access to good quality inputs, lower taxation, greater state support). Nevertheless, limitations imposed by TRIBAC’s not-for-profit status (particularly with respect to raising credit and setting the community enterprises on a properly commercial footing) have led, at the end of the project, to the setting up of ‘NATIVE Bamboo Rural’ a for-profit social enterprise.

Good leadership is an important asset in implementing effective upgrading strategies, as demonstrated by the director of TRIBAC, a dynamic and highly motivational individual able to communicate effectively with producers and government players alike. The importance of relationships of trust among key individuals is highlighted by the instrumental role played by the project advisor (an ex-forester who had previously worked at senior level in Tripura) in achieving the project’s policy objectives.

The incense stick value chain illustrates that improvements in income are very dependent on individual capacity, specifically in relation to skills (e.g. leadership capacity) and time invested – which, in turn, depends on how the activity fits in with other household and income-generating activities. Thus the head of Uttar Ramnagar CEC, a single woman with a dependent mother, invested more time in organizing and encouraging rollers in her community and earned US\$44–55 per month. For the head of Narsinghar CEC, incense stick income was supplementary to that provided by her three adult sons, and she only earned US\$33 per month. Many poor people, and particularly women, have only limited time to invest – the attraction of the incense stick value chain is that it allows for more and less part-time participation and is flexible enough for new entrants to start small and gradually increase their levels of productivity as their circumstances allow.

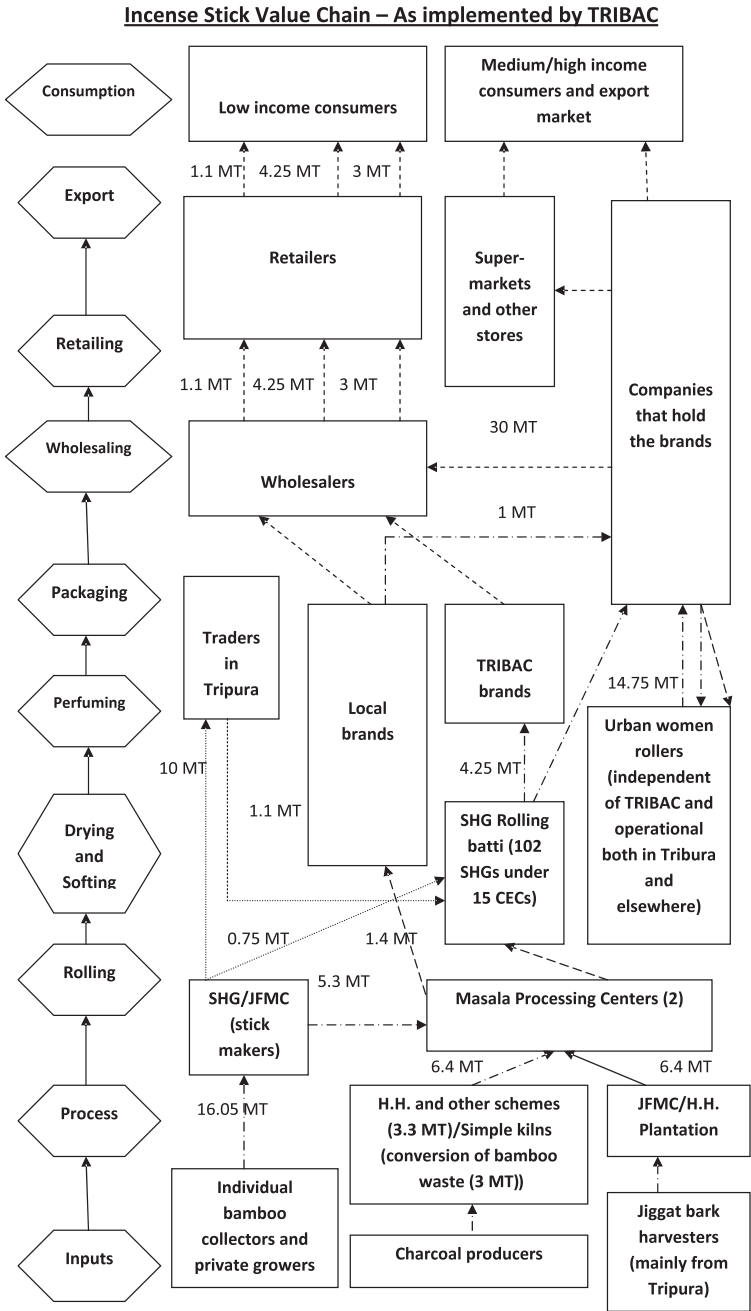
Exposure to better practices, in this case in Vietnam, turned out to be a highly successful strategy, enabling the project to introduce a range of machines to improve processing.



1. Raw sticks to the trader.
2. Rolled sticks procured and marketed by SHG's under their own brand.
3. Rolled sticks procured from SHG's and marketed by TRIBAC.
4. Rolled Sticks supplied to Industry.

Source: INBAR (2010)

Figure 3.5 *Incense stick project – Initial value chain map*



1. Raw sticks to the trader. 2. Rolled sticks procured and marketed by SHG's under their own brand.
3. Rolled sticks procured from SHG's and marketed by TRIBAC. 4. Rolled Sticks supplied to Industry.

Source: INBAR (2010)

Figure 3.6 Post-upgrading value chain map

The introduction of rolling desks and – at the very end of the project – rolling machines has been very successful and suggests productivity could potentially increase greatly (early estimates suggest that a locally sourced rolling machine made under licence would cost about US\$100 – equivalent to about one year of individual income for a person on the locally defined poverty line). However, this has also changed the rolling activity from one that had very few barriers to entry (some skills required but little capital outlay) to one that will require credit to purchase desks and minimum levels of productivity. Longer-term monitoring will be needed to see whether these barriers exclude the poorest women from participation or whether the rural labour market tightens as women are hired to work on technology owned by others able to afford the investment. It will also be important to monitor the effectiveness of TRIBAC to support this step change in production technology and the ability of the ‘green’ supply chain innovations to avoid a transformational increase in production damaging the resource base of the state

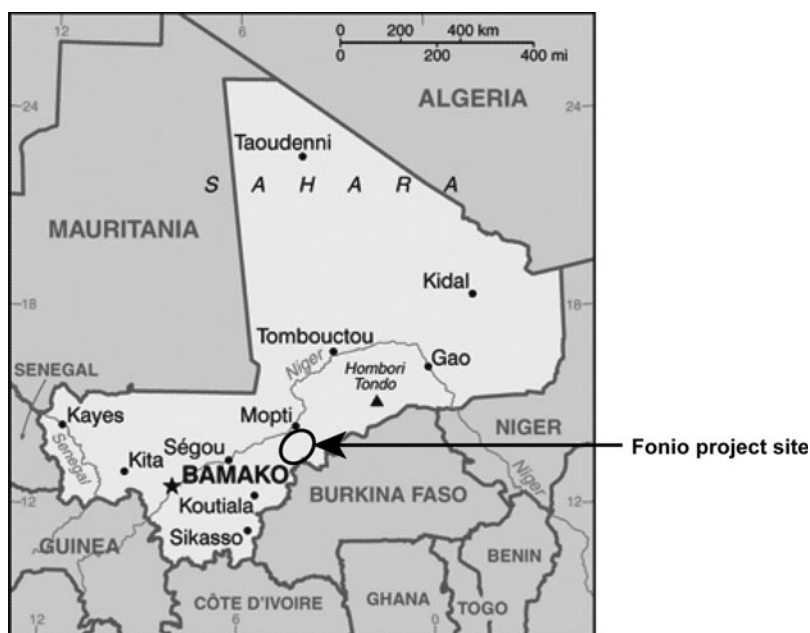
Finally, the case illustrates the advantages of a product with a very short cycle – not dependent on the vagaries of annual production – allowing processing improvements to be trialled and integrated very quickly. For instance, the project initially sought to standardize stick length by introducing metal measuring rods. Although these made a positive difference, they were difficult to work with. Cylinder cutting machines were then trialled and proved very successful, creating a new commodity of bamboo cylinders in the supply chain. Similarly, it was possible to trial three different improvements at the rolling stage all within 18 months.

‘Enriching collective action – the fonio value chain in Mali’ (or ‘the fonio project’)

*Bougouna Sogoba, Alpha Kergna, Jodie Keane and
Jonathan Mitchell*

Location and general livelihood context

Fonio, the smallest of the millet species, is an early-maturing crop grown by farmers in West Africa as a hunger crop. It is typically harvested in September at around the same time as traditional food stocks are finished and before the maturity of other grains grown in the Sahel region of West Africa. Fonio is well suited to poor soils, drought and pests because of its biological characteristics and root system; white fonio (*Digitaria exilis*) is an annual grass (50 to 80cm high). It is grown on sandy or marginal lands and does not require fertilizer or pesticides. It is a minor cereal in terms of the total area cultivated, but is economically important in some regions of West Africa. Fonio is cultivated widely in Guinea (Fouta Djallon), Mali, Burkina Faso, Senegal, Côte d’Ivoire, Niger and Nigeria. Long considered a marginal cereal, fonio is now garnering interest from urban consumers because of its taste and nutritional quality (regarded by some as a form of African couscous).



Source: Bougouna and Alpha (2010)

Figure 3.7 *Fonio value chain project area*

The aim of this project is to improve the livelihoods of households in Tominion district by developing the fonio value chain, while minimizing any negative impacts on the environment and women, and not compromising food security. The climate of Tominion is characterized by low rainfall which limits agricultural activities. Average rainfall is around 737.7mm per year. Soils are sandy to loam and may be easily eroded by wind and water.

Agriculture and animal husbandry are the main economic activities for households in the district. Sorghum, millet, maize, beans and fonio are grown as food crops; cash crops include groundnuts, sesame and fonio. Fonio production therefore serves a dual purpose in the region as food security and as a cash crop. Trade in agricultural produce is carried out on a small scale and concerns mainly cereal grains and processed products such as sorghum beer, precooked fonio, djouka and soumbala. Households in Tominian and their members do not inherit land individually, but instead land use is based on the principle of usufruct and belongs to the community; use of family labour is the norm and decisions regarding land use and planning are typically undertaken by the family head.

Prior to the project interventions, producers in the area were not well-organized for fonio marketing and, as a consequence, faced obstacles obtaining a substantial income from their production – in spite of growing demand in urban areas such as Bamako. The sale of fonio by individual producers was

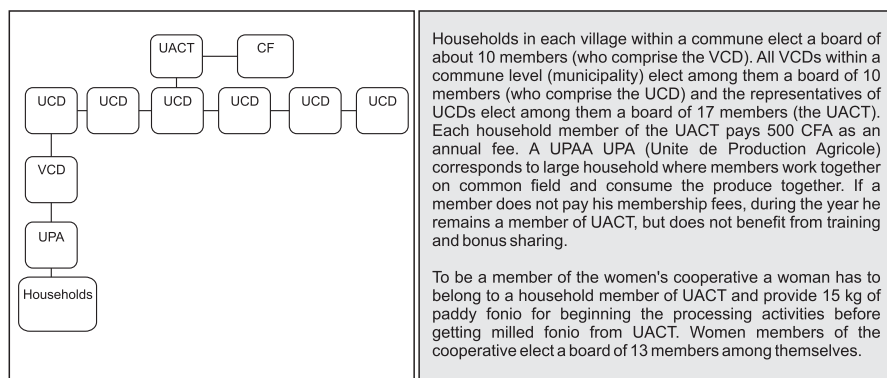
perceived to be more profitable for buyers than producers; consequently, men and women at the node of production were considered at risk of becoming the victims of a localized economic system, which was arguably serving to increase the communities' poverty.

This project was one of the more successful projects in sub-Saharan Africa. The local partner is an NGO which is strongly committed to local development. The level of technical support required from ODI was significant and probably underestimated – particularly in areas such as value chain analysis and monitoring and evaluation. An innovative marketing channel for fonio was developed and some development impacts were observed, which is a real achievement for a rain-fed annual crop within the short project timescale. However, as a result of the focus on output sold through the UACT marketing channel only, we have little information about the impact of most of the fonio produced by the target group. In addition, a lack of data on household level livelihood outcomes (in common with most other projects) limited what we could say about poverty outcomes beyond the target value chain.

Value chain description and target group

Fonio sowing takes place on lightly ploughed soil at the beginning of the rainy season. Sowing is usually undertaken by the head of household and family labour, but weeding is done mostly by household women or external workers. Fonio harvesting is done by men in the household and the cut straws collected by women and stored. Harvesting requires approximately 10 to 15 man days per hectare. Fonio is harvested with sickle, gathered into sheaves and then threshed to separate the paddy grains from the straw; unthreshed fonio is known as paddy fonio. These activities are usually undertaken by men, while the milling of the grain is typically undertaken by women using a pestle and mortar. The milled grain is usually washed before being prepared for food to remove impurities. Grain fonio is then processed into different forms to be sold directly to consumers or retailers, such as: white and washed, precooked and flavoured prepared fonio called djouka.⁵

The six communes (or UCDs) in Tominion district have a total population of 87,500 people who live in 60 villages (each with a village development committee or VDC) and 4501 extended household production units (or agricultural production units (UPAs)). Two-thirds of these extended households (2983) produce fonio and just over one-third of these fonio-producing households are members of the UACT (the Union des Agriculteurs de Cercle de Tominian – or farmers union). These 1146 extended households (UPAs) are the target group for this project. The total number of UPAs or extended households involved in fonio production and members of the UACT was fairly low prior to the project interventions. The total area cultivated in the UACT zone is approximately 30,408ha distributed between 4501 household production units (UPAs). The total area cultivated under fonio was estimated to be 5777ha, or 19 per cent of the Tominion districts total cultivated land, of which UACT members cultivated approximately 1500ha.



Source: Bougouna and Alpha (2010)

Figure 3.8 *The governance structure of the UACT*

The average extended household size (UPA) in the Tominian district is 19 persons (of which three to four members typically contribute their labour) compared to the average for Mali of 12 persons. Based on an average cultivated land area of 6.75ha per extended household, the average amount of land used for fonio production is approximately 1.3ha, with an average yield of between 300 and 450kg/ha.

The population in Tominian district is very poor, even within the context of Mali (which, with gross national income of \$500 per head in 2007 is ranked 183rd in terms of income per person). Almost the entire population of the district fall below the national poverty line, which equates to about US\$150 a year per person;⁶ two-thirds of the population are unable to produce enough food for their own consumption. The average extended household earned US\$360⁷ from agriculture, equating to just US\$20 per person per year.

Producers that sold threshed or paddy fonio directly to the UACT, as opposed to other intermediaries, receive the market price of fonio plus a bonus of 3 cents US per kg. The UACT subsequently further processes the fonio purchased and sells part of it to a women's processing group – created for the female members of UACT – and the rest to traders and processors coming from Bamako or Ségou. From its sales the UACT keeps 20 per cent of the net benefit for functioning of its membership board and 80 per cent of the profit it makes from sales is channelled back to fonio producers according to the quantity of fonio sold to the UACT (see Figure 3.8 for an overview of UACT governance). Prior to the project, the level of fonio purchased by the UACT from its members was low and generally relations between these nodes of the fonio value chain were weak and uncoordinated. Based on levels of production in 2007, the total marketable surplus of fonio that could be sold via the UACT marketing channel was estimated to be just over 108MT; however, only 12MT were sold through the UACT in 2007, just over 10 per cent.

Prior to project interventions, the total quantity of fonio sold by the UACT in 2007 was about 12MT, of which 1.5MT were sold as paddy fonio and 7.2MT were sold as dehulled fonio; around 3.4MT of fonio were lost during the processing process, most of which was undertaken by hand. It is estimated that around 589 households supplied fonio to the UACT in 2007, but in a highly uncoordinated way. As shown by Table 3.2, which breaks down gross margins across the fonio value chain and its respective nodes, the precooked and djouka processing nodes controlled by the women's processors group are the most lucrative nodes within Tominiou district: the profits redistributed to members of the female processors group are high compared to those distributed to UPAs by the UACT. Although there was some profit redistribution during 2007, by the UACT to UPAs prior to the projects intervention, levels were generally low.

The target group of the project were the household producers, UPAs and female processors of milled, precooked and djouka fonio. The improvement of their lot was to be undertaken through a number of activities and series of investments designed to: increase volumes produced by UACT members; the amount of paddy fonio purchased by the UACT from UPAs; the amount of milled fonio

Table 3.2 *Profitability of the chain nodes before the project intervention in 2007*

	<i>Total marketable surplus by UCDs</i>	<i>Fonio paddy sold by UACT</i>	<i>Dehulled fonio sold by UACT</i>	<i>Precooked fonio (local and urban market)</i>	<i>Djouka (local and urban market)</i>
Percentage of the marketable product	100%	12%	88%	9%	11%
Volume in ton	12	1450	7174	650	850
Price (CFA/kg)	165	250	300	650	1000
Total value (CFA)	1,980,000	362,500	2,152,500	422,500	850,000
Cost (CFA)	864,000	239,250	1,467,083	199,875	431,375
Gross margin/ total profit (CFA)	1,116,000*	123,250	685,117	222,625	418,625
Average profit redistributed by the UACT (CFA)	—	**1098 (US\$2.10)		***3534 (US\$6.7)	***6645 (US\$12.6)

*Excludes the cost of household labour and calculated on the basis of a 72CFA/kg unit cost.

**Average income redistribution to households (approx 589 in 2007), includes 20% retained by UACT for its functions.

*** Average income redistribution to female members of the women's processing group (63 women in 2007).

Note: US\$1.00 = CFA521 as of 22 July 2010

Source: Bougouna and Alpha (2010)

sold by the UACT; and volumes of processed fonio sold by the female processing group. The gross margins received by all value chain nodes within the Tominion district were expected to increase as a result of these interventions.

Critical issues

The critical issues identified by the action research team were thus defined as follows: low incomes for fonio producers and UPAs; weak relations between Tominian UPAs and UACT; and individual farmers unable to access high-value fonio market. The upgrading strategies which sought to address these issues are presented in Table 3.3. The project aimed at increasing the quantity and quality of fonio sold collectively by UPAs and marketed by the UACT on their behalf. This could be achieved partly through strengthening contractual relations between households groups within the UACT on the one hand – horizontal coordination – and developing closer relations between the UACT and fonio traders, processors and retailers, on the other – vertical coordination.

In addition to strengthening coordination between producers and the UACT, the project intended to make a series of capital investments in order to upgrade processes and fonio products; these included the introduction of two threshing machines and a milling machine intended to both increase volumes processed and the quality of fonio produced by UPAs and the UACT – the end result of which was expected to be increased volumes of milled fonio made available to the women's processing group and therefore the sale of higher-value processed fonio (precooked fonio and djouka) to processors from urban areas, supermarkets and export markets. Thus, the project aimed at optimizing the integration of poor producers into the fonio value chain, while minimizing

Gender in Fonio Production



The project area is characterized by a social diversity – ethnicity, social class and religion – these considerations determinate participation in decision making and access to resources. In Tominian, fonio production is controlled by men and the role of women is generally limited to the processing and sale of fonio produced by male farmers.

Source: Bougouna and Alpha (2010)

Figure 3.9 *Gender in fonio production*

Table 3.3 *Critical issues and upgrading strategies*

<i>Critical issues (1)</i>	<i>Upgrading strategies (2)</i>	<i>Action points (3)</i>	<i>Activities (4)</i>	<i>Outputs (5)</i>
Low incomes for fonio producers in Tominian PMG	Process/product/ volume upgrading: Increase quality and quantity of paddy and milled fonio produced by Tominian PMG and marketed through UACT	Tominian PMG and UCAT	Purchase of high yielding fonio varieties; Introduction of threshing machine; Introduction of milling machine.	Increase the quantity of paddy fonio produced by Tominian PMG from 12t to 83t.
			Training of UACT women group on use and men on maintenance of new machinery.	Increase the quantity of milled fonio produced by the UACT by 15%: current level 10.5t].
			Raising awareness of new technology and opportunities for selling at the PMG level. UACT members promote best farming practices (organic) and discourage additional land clearance.	Reduce costs of production/prices of fonio paddy and milled fonio.
Weak relations between Tominian PMG and UACT.	Horizontal contractualization: Increase quality and quantity of fonio produced by Tominian PMG and marketed through UACT	Tominian PMG and UCAT	Raise awareness at PMG level of benefits of selling through the UACT through meeting with agents from each village.	504 individual contracts signed with individual for the 2008 harvest producers (zero contracts before).
			Establish production levels of members of the PMG [base line data]. Establish income levels of members of PMG and benefits of selling through different markets [base line data].	Increased quantity of fonio sold collectively by the PMGs to UCAT and stored (at least 20% of fonio production will be stored to ensure food security).
			Develop contracts between UACT and PMG Tominian, household level, 1 contract: local market price +15CFA, product delivered to village level; payment on delivery; quantity and quality defined. Establish transparent mechanisms for transferring the benefits of selling higher value products [profit sharing mechanism].	Increased incomes for PMG members through improved contractual relations (+15CFA above market price) and increased sales of higher value fonio.

Table 3.3 (Continued)

<i>Critical issues (1)</i>	<i>Upgrading strategies (2)</i>	<i>Action points (3)</i>	<i>Activities (4)</i>	<i>Outputs (5)</i>
			Obtain credit facility from Agric Dev Bank to ensure timely payments to PMG for delivery of crops. Contracts with farmers reviewed in May of each year, production levels evaluated. Establish mechanisms to recorded amount of fonio collected and payments disbursed.	
Individual farmer unable to access high-value fonio market	Vertical contractualization: Increase volume of milled fonio sold to processors. Increased price of milled fonio; Increase volume of milled fonio processed by women's group into precooked and djouga fonio.	UCAT, women's group of processors and retailers.	<p>Contracts organized on a annual basis with the buyer that offers the highest quantity, price, delivery/collection.</p> <p>Collect information on the requirements of supermarkets and their specification. Meet with interested supermarkets and provide trial products. Develop improved packaging for precooked and djouga. Develop a label for the product from UACT: name, characteristics, traceability, promoting 'best farming practices'. Contract designed and signed with at least one retailer.</p> <p>Meet with intersted international traders [Burkino Faso and Guinea]. Training on producing according to international trader specifications.</p>	<p>Value chain analysis and presentation of prices for fonio in different product forms across different markets.</p> <p>Increased price received by Tominian PMG for sales of processed (Djouga and precooked fonio) to urban supermarkets. Increased wages for female processors.</p> <p>Improved product design, label, package.</p>

Source: Bougouna and Alpha (2010)

Note: PMG Product marketing group

any negative impacts on the environment and improving the relative position of women and ensuring food security.

Impact of project on value chain

Out of the 1146 households producing fonio within the project area 540 signed a contract with the UACT to supply it with paddy fonio in 2008, for an expected 83MT in total. However, only 26MT were purchased in 2008 due to difficulties in obtaining a loan from a local agricultural bank. The UACT did not have the resources to purchase all fonio contracted, since it relies on its sales to intermediaries in order to pay producers. The UACT therefore needed to secure a source of credit in order to bridge this financing gap. Even though training had already been carried out, the UACT was late in applying for US\$18,400 with a local agricultural bank. These problems were rectified in time for the 2009 harvest. Contracts were signed with 760 households for 75MT of paddy fonio. Procedures to apply for a loan with a local bank began early and in 2009 the UACT obtained a US\$18,400 loan. As a result the UACT was able to purchase 75MT of paddy fonio in 2009 compared to just 26MT in 2008.⁸

The unit costs of production were calculated for UPAs and it was found that production costs could be reduced and gross margins increased through the use of improved seed varieties and the introduction of a threshing machine. Excluding the cost of family labour, the introduction of new seed varieties reduced unit production costs from US\$0.14/kg to US\$0.13/kg in 2009. Average fonio yields increased from 300 to 617kg/ha. At the processing level, the milling machine reduced costs: to mill 1kg of fonio in 2007 including the cost of labour was around US\$0.33, while it cost US\$0.18 in 2009. In addition to increasing gross margins, the average profit redistributed across households and the members of the female processing group increased substantially, as shown by Table 3.4.

Incomes

For UPAs, the average profit redistributed by the UACT increased from US\$2.10 in 2007 to US\$12.2 in 2009. This change has resulted mainly from the greater volumes marketed through the UACT and interventions made which have increased gross margins for UPAs. See Figures 3.10 and 3.11 for a depiction of how the fonio value chain has changed and with it, gross margins for each node located within the Tominion district.⁹ Based on these results and the average household earnings for the Tominion district prior to project interventions of US\$345), it is estimated that as a direct result of interventions, fonio marketed through the UACT has been able to increase its share of total agricultural cash earnings. For the average UPA these earnings have increased from approximately 1 per cent to 3.5 per cent (assuming all other production levels remain constant). This result demonstrates two key findings. First, the impact of the project is relatively limited (with only a marginal increase in cash income spread over a large number of extremely low-income households). Second, the failure of the project to assess what income (or other benefit if

Table 3.4 *Profitability of value chain nodes in 2009*

	<i>Total marketable surplus by UCDs</i>	<i>Fonio paddy sold by UACT</i>	<i>Dehulled fonio sold by UACT</i>	<i>Precooked fonio (local and urban market)</i>	<i>Djouka (local and urban market)</i>
	100%	0%	100%	2%	3%
Volume in ton	75	0	51	1.2	1.6
Price (kg)	165	250	300	650	1000
Value	12,375,000	0	15,300,000	780,000	1,600,000
Cost	5,156,250	0	9,256,500	341,400	775,200
Gross margin/ total profit	7,218,750*	0	6,043,500	438,600	824,800
Average profit redistribution	–	**6361.6 (US\$12.2)		***2436.7 (US\$4.7)	***4582.2 (US\$8.8)

* Excludes the cost of household labour and calculated on the basis of a 68.75CFA/kg unit cost.

**Average profit redistributed to households (760 UPAs in 2009), includes 20% retained by UACT for its functions.

*** Average income redistribution to female members of the women's processing group (180 in 2009).

Note: US\$1.00 = CFA521 as of 22 July 2010

Source: Bougouna and Alpha (2010)

the fonio was not traded) was earned from the fonio produced in 2009 that was not sold to via the UACT marketing channel is a serious deficiency and may significantly understate the impact of the project. We calculate that, by focusing on the 75MT of fonio sold to the UACT, the project only monitored about 13 per cent of total fonio production by target households.

Gender

The number of women participating in processing and benefiting from it has increased; there were 63 female members of the processing group in 2007, compared to 155 in 2008 and 180 in 2009. The women's processing group were able to increase volumes of precooked fonio and djouka sold, from 650kg of precooked and 850kg of djouka to 1200kg and 1600kg in 2009. As a result of project interventions, gross margins on precooked fonio and djouka respectively from US\$0.65/kg and US\$0.94/kg in 2007 to US\$0.85/kg and US\$1.14/kg in 2009.

The project has managed to improve the lot of female processors by increasing their income earning opportunities. However, because a larger number of women became involved with processing activities (from 63 in 2007 to 180 in 2009) average profit redistributed has decreased because volumes of processed fonio sold have not kept pace with this process of enlargement: from a profit of US\$21.44 redistributed to each of the 63 participating women in 2007 to the profit per woman reduced to US\$13.41 in 2009 among 180 women.¹⁰ It is reported that the income earned by members of the female processing group has

been used for school fees and other household expenditures. However, evidence on this, in addition to descriptive analysis as to who really has control over financial resources within the household, is generally unclear.

Environment

Although the data is not available to prove that the area cropped in fonio has not used new land (by deforestation), it is known that poor and marginal lands are usually ploughed for growing fonio. Fertilizers and pesticides are not used for fonio production. If there is therefore any negative impact on the environment as a result of the project, it is due to the increased energy used in threshing and milling further to the mechanization of these processes.

Key findings

This study started off with ambitious aims, which included the production of fonio by the Tominion district for export. It became clear as the project evolved that this objective would not be met. The team was not able to create any direct links between the UACT and female processors group with buyers abroad: these kinds of relationships are built up over time between producers that are able to produce on demand and to a high level of quality, consistently. Following visits to Conakry (Guinea) and Ouagadougou (Burkina Faso), no agreements with buyers were obtained: the prices offered in these markets were comparable to those available in Mali, *excluding* transportation costs.

Vertical links between the UACT and women's group with domestic buyers were not formalized to as great an extent as expected: the sale price of precooked and djouka fonio in Ségou and Bamako was similar to that of the women's group. Hence, contrary to expectations the women's processing group was producing for a fairly profitable market niche within the local vicinity. These results serve to underscore the importance of market analysis as an integral part of value chain analysis; moreover, they highlight how a tendency to focus solely on supply-side limitations may result in interventions being underpinned by unrealistic expectations of what the market will actually bear.

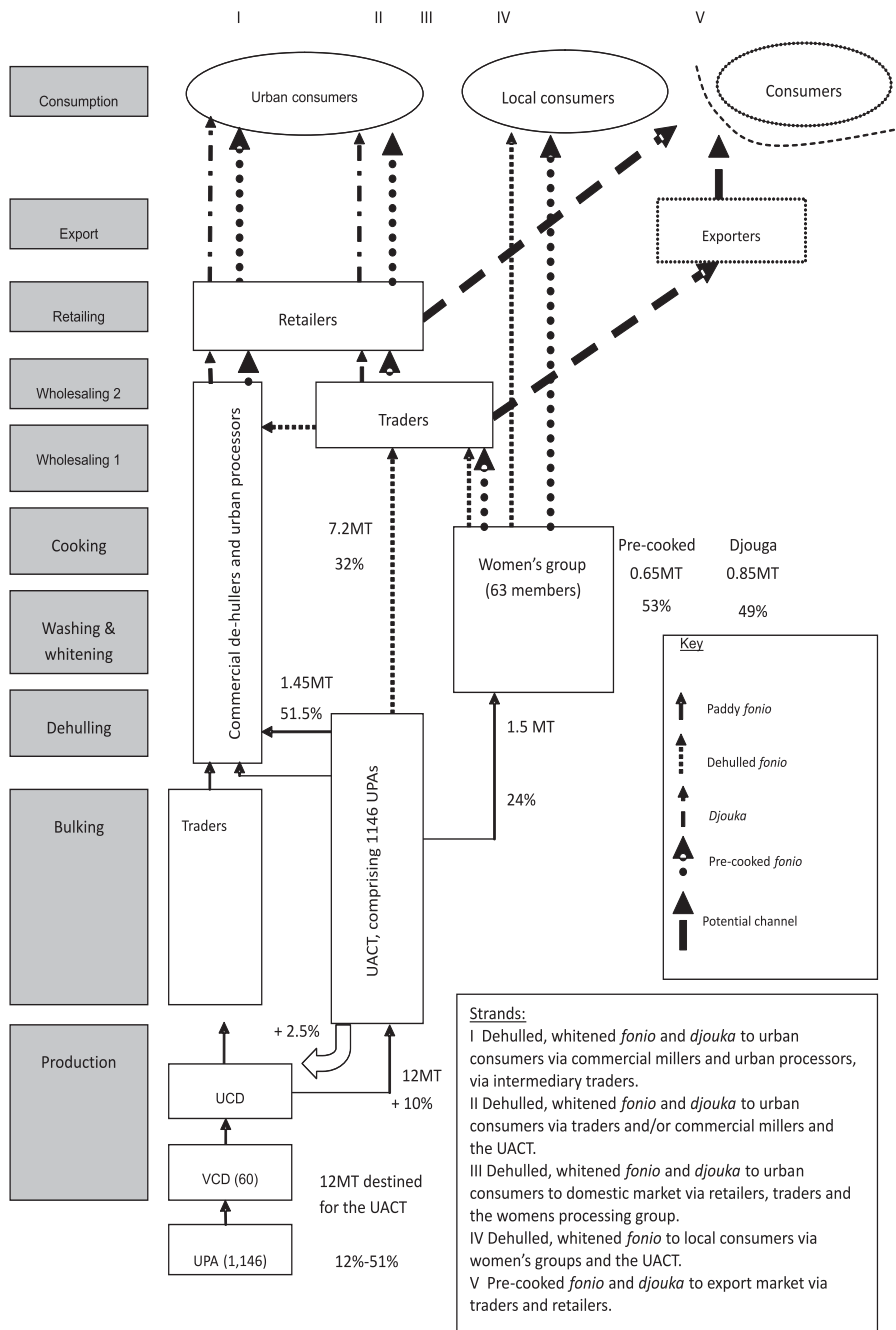
The project was not able to reduce the role played by intermediaries in the area for several reasons. The UACT does not have a ready supply of cash to directly pay farmers who are in need, before harvest time. Even though the UACT pays a premium in order to attract members, it is not enough to attract all fonio growers in the Tominion district. Furthermore, the capacity of the UACT to manage a greater number of producers needs to be built up incrementally, as the experience with difficulties in obtaining a loan from the agricultural bank has shown, which is reported to have impacted the confidence of UPAs in the UACT to manage the timely purchase and sale of their produce.

There is anecdotal evidence which suggests that, as opposed to traders and urban processors dictating the price of paddy and milled fonio, the UACT is much more actively involved in setting prices, based on production costs and related fees. This suggests that the project's intervention and efforts to strengthen relations between producers and the UACT through horizontal

coordination have helped make the fonio value chain more producer as opposed to buyer-driven. However, this would be misleading to some extent: it depends on who is defined as the producer and buyer. The project's interventions have strengthened the bargaining position of the UACT compared to other buyers; however, the UACT has also been strengthened as a buyer, vis-à-vis the UPAs. Although the team achieved their objective of increasing the volumes and quality produced by UPAs and marketed on their behalf by the UACT, we do not know how the price producers receive from the UACT actually compares to that sold to other intermediaries. This is a key knowledge gap which raises methodological concerns, such as the collection of robust baseline data in addition to the clear establishment of a counterfactual scenario.

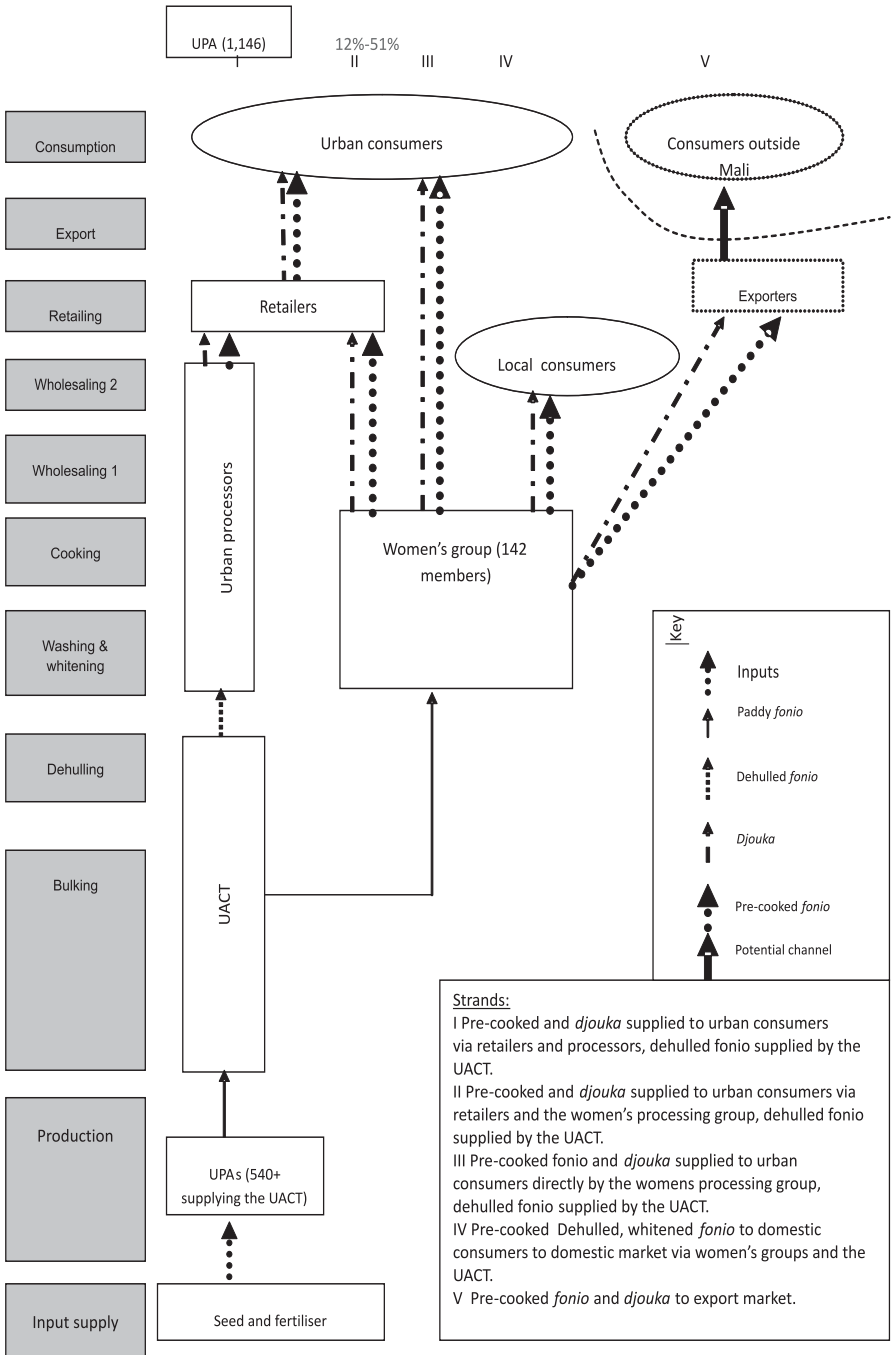
There are a number of unanswered questions in relation to the tangible results of this project and its interventions. The failure in monitoring and evaluation of this project occurred despite having a committed local project partner and significant monitoring and mentoring from ODI (two training workshops outside Mali and two field visits from Institute staff during the two year implementation period). This failure reflects a number of issues: the ambitious size of the target population; limited experience of value chain analysis and rigorous monitoring and evaluation (M&E) in the local partner organization and many other projects competing for attention (a recurrent theme working with competent indigenous organizations in heavily aided African contexts); and an underestimate of the extent of external support required by ODI and IDRC and less extensive Institute experience and networks in Mali than in many other sub-Saharan countries.

Value chain analysis typically consists of a snapshot of the distribution of margins across value chain nodes, as opposed to a large-scale household survey and analysis of changes over time. The target group was not only distributed over a relatively large geographical area, but was also numerous: 1146 extended households, of which 760 signed a contract with the UACT in 2009 – approximately 14,440 individuals. Although the total area of fonio production has remained stable, average productivity for those UPAs that signed a contract with the UACT in 2008, and 2009, is posited to have increased from approximately 300kg/ha to 617kg/ha, with resultant implications for the amount of marketable surplus made available (assuming household demand has remained stable). Although we know 75MT of the marketable surplus¹¹ was purchased from 760 UPAs in 2009 – almost 13 per cent of total estimated production¹² – we don't know anything about the use to which the fonio *not* sold to the UACT has been put. This could include fonio sold to other intermediaries, consumed, stored, used as animal fodder and/or building material and so on. This knowledge gap applies equally to the impact that capital investments, such as the use of the threshing machine may have made on the use of household labour (female and male).



Source: Bougouna and Alpha (2010)

Figure 3.10 The fonio value chain in Tominion Commune, 2007, prior to intervention



Source: Bougouna and Alpha (2010)

Figure 3.11 The fonio value chain in 2009 (after intervention)

'Upgrading, downgrading and out-grading smallholders in the Vietnamese *pangasius* catfish value chain' (or 'the pangasius project')

Nguyen Tri Khiem, Simon R. Bush and Christopher Coles

This project was highly successful as an action research initiative, albeit that its development impact was limited. The committed and able research team collected sufficient data for us to analyse where and how the producers succeeded and failed to meet the upgrading objectives, making this one of the most instructive initiatives in the programme. One of the enabling factors of its achievements was the personality and influence of Professor Khiem, the project leader, underlining the importance of relationships in value chain development while reminding us how context-specific the process can be.

Introduction to pangasius in Vietnam

Pangasius catfish are reared intensively in the Mekong Delta. The Vietnamese Ministry of Agriculture and Rural Development estimates that in 2010 there are 13,000ha of ponds containing 2 million MT of fish with a value of US\$2bn. Most (90 per cent) of the fish is exported as frozen fillets. There is also a variety of derivative 'value added' products and a lower value domestic market. The industry has grown at around 25 per cent per year since 2003; 30–40 per cent of this market is in the EU (see also Figure 5.1, Chapter 5).

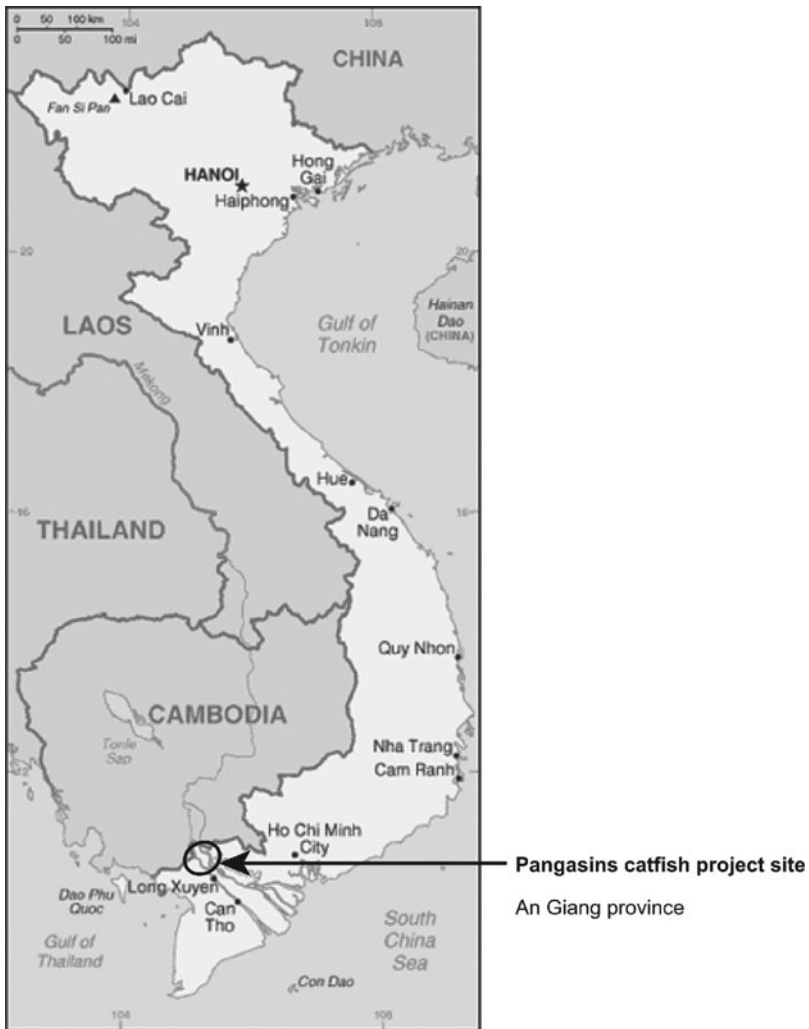
As import requirements have become progressively more stringent, economic, regulatory and environmental changes have impacted smallholders, causing many to leave the sector. This study set out to investigate different strategies for linking smaller-scale producers to this dynamic global market in ways that reduce their vulnerability and improve the environmental performance of production.

Location and general livelihood context

Two communes, Vinh Thanh Trung in Chau Phu district and Hoa Lac commune in Phu Tan district, both in An Giang province (Figure 3.12), were selected through negotiations with the Provincial Department of Agriculture and Rural Development (DARD). They were identified as being typical in their large number of family-scale farmers and are located within a new pangasius zoning area established by the DARD and the Provincial People's Committee.

Vinh Thanh Trung was also selected on the basis of its previous relationship with An Giang University, the project implementing agency. In the context of the action research project, rice farming-based livelihood data existed for the community and there was a high degree of trust between researchers and the community.

Vinh Thanh Trung and Hoa Lac are located approximately 40km north of Long Xuyen, the provincial capital. Both communes are the sites of the relatively early adoption of pangasius pond aquaculture in the mid to late



Source: Khiem et al (2010)

Figure 3.12 *Location of study areas in An Giang province, Southern Vietnam*

1990s. The target groups of family-scale grow-out farmers in both communes had farmed the species for between 10 and 12 years. The size, number, location and experience of producers in the area of these two communes provided a relatively representative example of family-scale pangasius farming in the Mekong Delta (Table 3.5). An important difference is that farmers in Vinh Thanh Trung have no income from rice, having converted all of their fields to pangasius production, while the Hoa Lac target group had an average income from rice of approximately US\$938¹³ in 2008.

Table 3.5 *Comparison of livelihoods of participating grow-out farmers in Vinh Thanh Trung and Hoa Lac communes, An Giang province*

<i>Statistic</i>	<i>Hoa Lac</i>	<i>Vinh Thanh Trung</i>	<i>Mekong Delta Average</i>
<i>Farming system</i>			
Average land holding (ha)	2.95	3.02	1.20
Average rice area (ha)	2.3	0.87	1.02
Average total pond area (ha)	0.62	2.1	–
Average number ponds	1.9	2.5	–
Fish crops per year	1.5	1.7	–
<i>Human capital</i>			
Education (no. of years)	7	11	7
Previous SQF ¹⁴ training (%)	72	85	–
Household size	4,5	4.5	4.3
Adult male family members	2	1	1
Adult female family members	1	1	1
<i>Cash income (US\$)</i>			
Pangasius	5213	20140	11621
Aquaculture (general)			663
Rice	938	–	1231
Other	99	–	2841
Total	6250	20140	4735
Per capita	1388	4475	1101

Source: Hoa Lac and Vinh Thanh Trung data from project survey of pangasius farmers, Mekong Delta survey VLSS (2008) and Loc et al (2010)

Note: SQF Safe Quality Food Programme

Value chain description and target groups

In 2008, Vietnam exported around 640,800MT of pangasius with a total value of US\$1.45 billion to more than 62 countries. Its competitive price in export markets is achieved through highly intensive, high-volume production techniques in addition to relatively low overhead costs.

Specialist farmers produce fry and supply fingerling farmers who in turn sell their output to grow-out farmers (who buy fingerlings and grow them for sale to the processors and final consumers). The crop is ready for harvest and transfer to a processing factory after around six months when fish reach a weight of 1kg.

Four of Vietnam's ten largest exporters are located in An Giang province in the southern Mekong Delta. Typically, these processors source around 30–40 per cent of their requirements from large producers who are shareholders and

perhaps up to 40 per cent from their own production facilities, leaving around 20 per cent to be sourced from smaller producers. Full contracting is unattractive to processors due to the risk of oversupply.

In 2008, one company alone processed 24,000MT of fresh pangasius, meaning that it sourced approximately 4800MT from smaller producers, representing a value of around US\$4.5m at prevailing exchange rates. To supply the EU market, producers must meet certification requirements. The action research project adopted an entry level food safety certification (as the only one available to smallholders at the project's inception), SQF1000. This requires all inputs (feed and fingerlings) to be acquired from certified sources and adherence to strict water management, stocking and harvesting procedures.

This process incurs costs that cannot be met by the smallest (micro) producers but aiming for the export market puts producers in the position of potentially being able to generate good returns when prices are high. As feed costs are high (representing 84–94 per cent of variable costs and margins are small, producers rely upon high output volumes for good incomes. Micro-producers (owning pond areas of less than 0.1ha) fall below the Vietnam poverty line of around \$18/month/head, and small- and medium-scale producers (owning less than one hectare of pond area) earn around \$49 and \$100/month/head, respectively.

The industry is locked into a boom–bust cycle where small producers respond to the low prices that accompany a glut of production by either downgrading to fingerling production or leaving the value chain altogether and cultivating rice. When output drops and prices rise they flood back into production (see also Box 4.4, Chapter 4 and Box 6.4, Chapter 6).

Smaller (family) and medium-scale commercial pangasius grow-out farmers are not necessarily poor. They are vulnerable, however, and their spending power in local economies and heavy demand for credit services, labour, feed and chemical and seed inputs represent major financial flows into poor rural communities.

They use assets such as their fish ponds and rice paddies to secure bank loans with which they finance production and risk losing their livelihood if they default. Should they fall out of the industry, there will be adverse micro-economic effects on their communities.

The response of processors to this price volatility and unpredictability of supply, as well as ever more stringent standards as importing countries seek to protect their own fishing industries, is a move towards vertical integration, allowing them to gain control of the quantity, quality and costs of production. One processor has switched its ponds over from organic production to GlobalGAP standards and will market the product as niche 'high value pangasius'.

The project worked with three separate target groups:

- Seventeen family-scale grow-out farmers spread across Vinh Thanh Trung and Hoa Lac communes (see Table 3.6). Although 32 farmers were horizontally coordinated in the Tan Phu Clean Pangasius Producers Club, only 14 and 9 respectively completed the two cycles of further upgrading

activities undertaken with the group due to difficulties in selling their output, obtaining credit and with processing companies not honouring contractual arrangements (see also Box 4.1, Chapter 4).

- Seven nursing farmers, who had already downgraded from grow-out production between one and three years ago. Some had moved in and out of grow-out farming over a longer period of up to five years. Their most recent move back to nursing occurred in response to the uncertainty and high losses in recent years. Two nursing farmers had a pond area of 1ha, while five had a total pond area of less than 0.5ha, and individual ponds of approximately 0.1ha. Only around 10 per cent of nursing farmers, including the seven in the target group, have either oral or written contracts with hatcheries.
- Eight micro-scale fish farmers, of whom four had previous experience of pangasius culture and were supported to change their production to snake-head and snakeskin *gourami* species (inter-chain upgrading). The remaining four households were the poorest with little or no land for pond construction. These farmers were supported to produce eels and frogs in pens.

Table 3.6 provides an indication of the relative costs and income from hatching, nursing and grow-out farming activities. The high costs and high variability of grow-out production make it a risky venture. This is particularly true for less efficient small farmers (ponds <0.5ha) who had negative returns on investment of -6.3 per cent in 2008 compared with larger farmers (ponds >0.5ha) whose returns were over 16 per cent (DARD and DoS, 2008).

Table 3.6 *Estimated annual costs and net income for activities in the pangasius value chain in 2007*

Description	Hatcheries	Nurseries	Grow-out farmers
Sample size	28	53	62
<i>Total costs/year (US\$)</i>			
Mean	250,649	178,717	462,768
Std deviation	597,108	477,648	593,893
<i>Total net income/year (US\$)</i>			
Mean	27,380	21,072	10,208
Std deviation	28,956	30,384	42,337
<i>Net income per capital/year (US\$)</i>			
Mean	6416	4783	2676
Std deviation	7462	7034	10,561

Source: Loc et al (2010)

Critical issues

The issues that this project aimed to address were as follows:

- Producers' lack of access to land (small production area) limits their ability to secure financial capital and leads to small-scale production, which limits their bargaining power with buyers, and limited capital to invest in improved management practices.
- An absence of coordination for input suppliers and family scale grow-out farmers leads to poor market coordination and periodic oversupply with low unit prices and consequent downgrading or exit from the sector.
- Limited skill and knowledge of producers and input suppliers leads to poor environmental and management practices and poor quality inputs resulting in low productivity, high production costs and environmental damage.
- A lack of technical knowledge by household scale pangasius producers for the local market limits their productivity and income.

Table 3.7 outlines how critical issues were built into the project framework.

Value chain level impacts

The project team negotiated contracts between household-scale grow-out farmers and a processing company. That these negotiations resulted in any agreement at all may have been largely due to the determined efforts of the project leader, whose charisma and drive were a key persuasive influence, underlining the personal nature of value chain development. However, while there were some token farm-gate price rises, these represented the influence of the project rather than a structural change.

Contracts did not generally result in a price premium because processors were not willing to pay more for a standard (SQF1000 certification) that has been superseded by more exacting ones. However, the efficiency savings derived from the certification process may be regarded as an 'implicit premium' – for example, incomes from the value chain increased because higher proportions of fish in higher quality grades sold, improved timing of payments, reduced interest costs, improved purchasing power, improved negotiation of credit arrangements and increased efficiency in feeding and water pumping created cost savings. Total unit costs dropped by 6 per cent from the start to the end of the project (see Figure 4.1, Chapter 4). The bulk of this decrease is due to a real drop in input prices after oil prices peaked in July 2008. Nonetheless, efficiencies in production were seen between the upgrading cycles. In 'normal' years, costs are relatively stable at an average of around US\$0.9/kg.

Despite these gains, many farmers are not convinced that there are benefits to certification that outweigh its costs – farmers often see little or no benefit in compliance. The lack of a clear economic incentive or reward structure for upgrading was a major deterrent for the 16 farmers who originally joined the project and remained members of the collective group but did not engage in any further upgrading activities. Certification was made on a group basis,

Table 3.7 *Framework for the Vietnamese pangasius action research project*

<i>Critical issues</i>	<i>Upgrading strategies</i>	<i>Action points</i>	<i>Activities</i>	<i>Outputs</i>
Producers' lack of access to land (small production area) limits their ability to secure financial capital and leads to small scale production, which limits their bargaining power with buyers, and limited capital to invest in improved management practices	Horizontal coordination (clustering)	Small-scale grow-out farmers (with pond areas of around 0.5ha)	Establish 4 farmer groups and provide organizational support	Legal status provides full recognition by commune and legal resort to enforce contracts Information sharing contributes to shift to industrial feed, more effective drug use and collective water quality management through sedimentation ponds Production is bulked to a feasible economic scale to supply processors and farmers have improved access to capital
An absence of coordination for input suppliers and smaller scale grow-out farmers leads to poor market coordination and periodic oversupply with low unit prices and consequent downgrading or exit from the sector	Vertical coordination	Small-scale grow-out farmers, fingerling farmers, fry farmers, breeders, processors	Identify farmers willing to upgrade Negotiate written contract with the processing companies: Agifish, Thuan An and Viet An Establish and develop AFA's role in project Negotiate with An Giang Seed Centre to provide support and branding	Coordinated marketing with supply matched to demand along three value chain strands; peaks and troughs of supply smoothed out and price fluctuates less Producers less dependent upon financing from bank credit Two grow-out farmers approached for production contracts with processor
Limited skill and knowledge of producers and input suppliers leads to poor environmental and management practices and poor quality inputs resulting in low productivity, high production costs and environmental damage	Process product	Small-scale grow-out farmers, fingerling farmers, fry farmers, breeders	Certification audit and action planning Compliance training and development AFA members trained in food Q&S testing and upgrading Monitoring and evaluation	Product satisfied quality & safety standards Production process meeting environmental standards Process reporting led to efficiencies in production

Table 3.7 (Continued)

<i>Critical issues</i>	<i>Upgrading strategies</i>	<i>Action points</i>	<i>Activities</i>	<i>Outputs</i>
A lack of technical knowledge by micro-producers of <i>Pangasius</i> for the local market limits their productivity and income	Process inter-chain	Household-scale micro-producers (with pond areas of less than 0.1ha)	Training sessions on management techniques, input use, stock health care of <i>Pangasius</i> and other species for the local market Introduction of new stock (additional species) and supervisory follow up through farmer field school sessions	Micro-producers have increased income from commercial sales to local markets and increased household fish protein intake SQF M&E skills transferable to forthcoming GlobalGAP and ASC standards

Source: Khiem et al (2010)

Note: AFA An Giang Fisheries Association

ASC Aquaculture Stewardship Council

Q&S quality and safety

raising the possibility that non-compliant members were ‘free riding’ on those who completed the process (see also Figure 4.1).

The nine farmers who completed the second grow-out cycle had a more positive opinion about upgrading. These farmers believed that their only means of staying in the industry was to continue to reduce costs and to be certified. They agreed that the SQF standards provided little incentive to upgrade but argued that through the reporting process they were better able to monitor and economize their inputs.

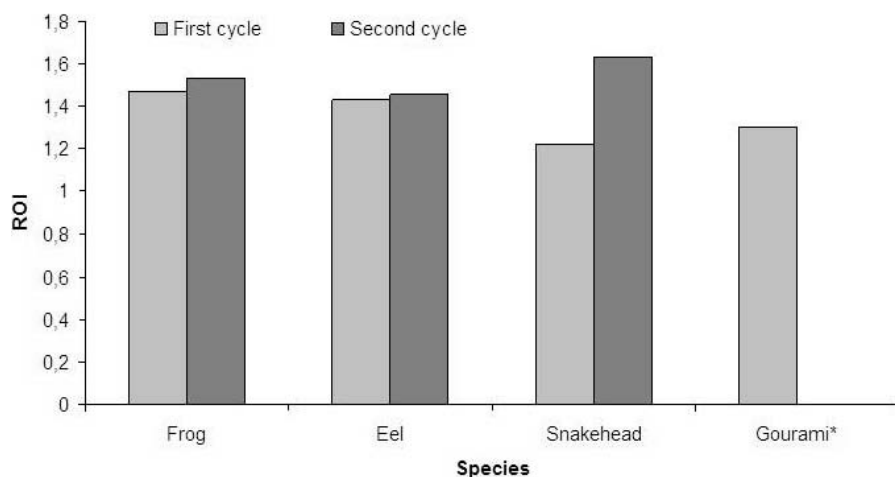
Some members were also aware of the range of other standards currently entering the industry and acknowledged the even higher investment in upgrading production they represent. Although farmers are unaware of the detailed content of new and emerging standards, they believe that SQF1000 has provided a stepping stone to higher levels of compliance (see also Box 7.1, Chapter 7).

Despite the overall industry trend towards consolidation and vertical integration, innovative ways of including family-scale grow-out farmers continue to emerge from the private sector. At the end of the project, three of the project farmers from the Hoa Lac were approached by Thuan An, one of the companies that does not have their own production nor an association of producers, to sign a production contract. The company has agreed to provide the necessary inputs and has guaranteed a US\$0.06/kg profit margin. This indicates that processing companies are interested in contracting smallholders who demonstrate adequate ability. In addition, it reflects the continued pendulum of innovation in production management, this time away from collective groups and back to individual farming. Notably, two of the three selected farmers had personal contact with the company, again reiterating the social nature of business transactions (see also Box 5.4).

Nursing farmers specialized in the production of 40-day fry maximized output while minimizing feeding costs, which increase by 36 per cent when raising fry to 80-day fingerlings. One of the key improvements in decreasing economic risk was to fry survival rate. A rate of 20 per cent is achievable based on full compliance with water quality, sanitation, and drug and feed management. In the first upgrading cycle farmers had an average survival rate of 16 per cent, a considerable improvement given that some farmers had previously recorded survival rates of 10 per cent. The target 20 per cent level represents an average income increase of 23 per cent or US\$190. Each percentage point increase in survival brings a US\$48 increase in gross profit.

The cost and profit structure of fry nursing is relatively modest compared to fingerling nursing. On average, project farmers made US\$327 for the first cycle (based on one 0.1ha pond). They experienced marginal increases in unit production cost as a result of upgrading as the price of larvae remained constant and water management costs increased (see also Box 5.2).

Household-scale farmers of snakeheads improved their returns in successive cycles as a result of reduced feeding costs (Figure 3.13). A hike in the price of marine fish during the upgrading cycle caused a switch to golden snails for feed, which are US\$0.25/kg cheaper. This shift also addresses one of the key environmental concerns of the project – the use of marine feed – albeit by default.



* The gourami farmers had not completed the second cycle by the end of the project

Source: Khiem et al (2010)

Figure 3.13 *Comparison of return on investment (ROI) between cycles for household scale farmers*

This is the third shift in production the two gourami farmers have undergone since leaving pangasius grow-out farming. They tried and failed at nursing because of poor water quality and high mortality rates, and at snakehead production due to the high feed costs. Although only one grow-out cycle was completed during the project due to the longer grow-out period, the farmers were able to turn their previous losses into 30 per cent profit. However, the eight to nine month grow-out period means farmers make an average only of US\$403 per year.

Frog and eel farming appear to be more consistent, lower risk forms of production with relatively low production costs and strong farm gate prices. Frog production can be staggered, giving a constant source of income throughout the grow-out cycle. In addition, the short production cycle earned target farmers an average of US\$1138 for the two cycles they completed. Although modest, this income is only 3 per cent less than the snakehead farmers while total investment is 80 per cent less.

Eel was the most experimental of the production systems but also the most successful. Farmers who adopted it made an average ROI of 94 per cent in the first cycle and 116 per cent in the second, equating to US\$1979 per year, or US\$359 per capita. Costs are kept low due to the relatively small feed requirement and, like other systems, the use of golden snail in place of marine fish. The price of eel at around US\$4.45/kg is more than double that of other species (see also Figures 8.1 and 8.2).

While returns on investment of individual farmers were improved as a result of project activities, these returns in terms of the investment of the

project itself were far more modest over its relatively short lifetime. Ideally, a longer monitoring period with more upgrading cycles would have been used.

Poverty outcomes

The household income of grow-out farmers is heavily dependent on pangasius aquaculture (Table 3.8) and in the second upgrading cycle it increased by US\$6363; 90 per cent of this rise was attributable to pangasius. However, farmers made a cumulative profit from pangasius of only US\$2480. Two consecutive ‘boom’ cycles, such as that of 2010, would be required for producers to enjoy the best returns.

The cyclic nature of pangasius income means that the spectacular gains when there is scarcity and prices are high only just compensate for the periods of glut when prices are low and large losses are made. Rice and other cash crops are much less volatile over time and – over a two-year time horizon – actually generate larger returns for grow-out farmers.

Although nursing 40-day fry returns modest incomes of only US\$327 per crop these farmers were able to earn nearly five times the income of their grow-out farming counterparts over the course of the project.

In the case of the household farmers, the project achieved its objective to decrease their vulnerability to market volatility. The collective latent capacity (aquaculture lock-in through the unsuitability of ponds for other activities) of household- and family-scale farmers compels them to continue to evaluate the trade-offs between the potentially high returns from pangasius farming with the lower, more stable income derived from farming alternative species.

Table 3.8 *Contribution of pangasius to household income of targeted grow-out farmers*

Income source	Pre-upgrading 1		Pre-upgrading 2		Upgrading cycle 1		Upgrading cycle 2	
	July–Dec 2008		Jan–June 2009*		June–Dec 2009		Dec–Apr 2010	
	US\$	%	US\$	%	US\$	%	US\$	%
Pangasius	–12900	134	–4920	294	1090	61	19210	68
Rice and cash crops	2437	–25	2437	–146	3938	32	5073	25
Trading	593	–6	593	–35	500	4	650	3
Salary and remittances	31	0	31	–2	31	0	72	0
Other sources	187	–2	187	–11	344	3	450	2
Total	–9650	100	–1672	100	5903	100	25455	100

* livelihood data for 2008 and the first half of 2009 was estimated during recall surveys which took place during the first upgrading cycle in the latter part of 2009

Source: Khiem et al (2010)

Environment outcomes

The major success of collective group formation was the formulation and negotiation of collective water management. The use of the rice fields as an artificial wetland implemented what government and NGOs have been advocating for both pangasius and shrimp production in Vietnam and internationally.

The use of community-based arrangements in Hoa Lac and Vinh Thanh Trung to establish both the physical and social infrastructure necessary to deal with waste water demonstrates the possibility for increasing compliance of farmers with state and non-state standards. It also represents improved negotiation among farmers. The support given to the collective groups by the commune level office also illustrates potential for improving the legal status of smallholder pangasius farmers elevating their position in the community.

The environmental outcomes of 'outgrading' (inter-chain upgrading) household farmers to alternative species were ambiguous. The chosen species were not herbivorous or artificially spawned, limiting the potential for reduced forage fish consumption and improved water quality. Although farmers did shift away from marine fish feed on an economic basis the reliance on home-made feed remains a central environmental concern.

The choice of species does also not lend itself to sustainability – snakehead, for example, has a feed conversion ratio of between 3 and 8. For real environmental gains to be made, herbivorous species, such as tilapia or carp, would have to be grown. The reason that these species were not selected is instructive – they are of lower value and only likely to provide adequate replacement incomes to pangasius if grown at high densities or in large ponds. Eel seed is collected from wild stocks that are in decline in the Mekong Delta.

Unfortunately, many of the water quality parameters applied to grow-out farms were not replicated in household farms, making comparison of these environmental impacts between these groups difficult. However, nutrient enrichment fell below national limits and was only a fraction of that found in pangasius ponds and fall under national standards.

Gender outcomes

This project did not seek to identify or impact any gender-specific issues in the value chain. However, the role of women in Vietnamese rural households is that of financial manager and therefore the (non) participation of women in pangasius (and other fish species) is irrelevant to their status.

Key findings

There are three fundamental difficulties which small farmers face in accessing the global pangasius value chain on advantageous terms. First, prices paid for pangasius meat are volatile and small farmers are least able to operate with this level of risk. Second, pangasius production has significant economies of scale from which smaller-scale farmers cannot benefit. Third, standards in pangasius production are rising fast and smaller-scale farmers have limited

capacity to make the investments necessary to achieve the standards that carry a price premium with processors.

For small producers, more reliable income can be earned either in upstream activities (pangasius fry rearing) or in different value chains supplying the domestic market, which is not subject to the same volatility and rising standards.

For grow-out farmers, the SQF1000 certification process led to production efficiencies but no structural price premium, leading many participants to stop upgrading because of their perception that benefits did not justify the costs. This basic upgrading process readies producers for engaging in more demanding schemes that do carry price premia and confers transferable skills and learning gains.

Although changes in vertical relationships between grow-out farmers and processing firms did not alter pricing structures, they did improve terms of business (faster payments), leading to increased income from the value chain through cost savings. This pangasius-based income represented a larger share of total household income, which increased through successive upgrading cycles.

The contracting of three individual grow-out farmers by a processing company (with no internal production capacity of its own) confirms that at least some buyers see a business case for including smaller-scale farmers in their production base on a guaranteed, if modest, margin.

There were environmental benefits of the switch by upgrading grow-out farmers to industrially prepared fish feed and collective water management through sedimentation ponds. For nursing farmers, the environmental benefits of better water management were reinforced by higher survival rates of fry and fingerlings, thus increasing income.

The costs of upgrading for nursing farmers forced the smallest out of production, representing a barrier to entry. In addition, the group contracting system failed because the lead farmers could find better contracting terms individually.

Micro-scale farmers reduced their vulnerability by stabilizing their income, avoiding the boom–bust cycles inherent to pangasius grow-out production. Their shift from wild-caught marine fish-based feed to paddy snails improved the environmental sustainability of their operations.

Horizontal coordination had very different outcomes when applied to the different target groups. Overall, the grow-out farmers were successful in forming a functioning cooperative group whereas the nursing group was less successful. The lesson appears to be that if all of the farmers have the same objective, and roughly the same starting point, there is more likelihood of coming to a common set of objectives as well as rules for incorporation. The first version of the nursing group failed because one of the farmers was too powerful and the other farmers too dependent on her inclusion.

The failure of the farmers to change their provisioning practices in response to changing conditions of certification shows a central risk strategy of farmers. They all wish to reduce their costs associated with production, but do not wish to create social (horizontal) dependencies that lock them in to a longer term arrangement.

A broader governance challenge in the industry is to ensure that the linkages between producers and processing companies are also governed. Although AFA was developed to fulfil this role, they currently do not play any substantial role in supporting or negotiating on behalf of small-scale producers. The third objective of the project did set out to support the development of this role, but no substantial changes were made other than registering the first smallholder group membership to AFA for both nursing and grow-out farmers. The access to market and technical information this membership brings is welcomed by the farmers, but assistance with contract enforcement would be more appreciated.

'Unlocking market opportunities for small scale cassava farmers in Tanzania' (or 'the cassava project')

*Ntengua Mdoe, Khamaldin Mutabazi and Benadette Ndabikunze and
Christopher Coles*

This project was among the least successful in the programme, both as a research and as a development exercise. The academic implementing team was relatively inexperienced at working on value chain upgrading interventions, particularly with private sector actors. This affected the scope of the analysis and the way the project engaged with actors on the demand side. This in turn led to inertia within the target group, who were not convinced that there would be a pay-off for investment in the project in terms of a ready market for their outputs. Key milestones, such as planting dates for upgraded crops, were missed and results were limited to the impacts of changes in marketing practices of existing crops. This underlines the difficulties of remote support and monitoring of Southern projects from a Northern base, and of local human resource capacity. In addition, the large allocation of project funds to personnel and allowances versus capital inputs and the short project timescale both placed limitations on what could be achieved in this particular cultural context.

Introduction to cassava in Tanzania

Cassava is a staple crop in Tanzania, grown largely to enhance household food security with the surplus traded locally and in major urban centres. Much of the production is consumed unprocessed and the rest is dried and milled into low-grade flour to form the basis of porridge and meal. However, the potential exists for the development of high quality cassava flour (HQCF) products; indeed the Tanzanian government are discussing legislation to mandate partial substitution of cassava flour for wheat flour. The key issue underlying this project – and the cassava sector in Tanzania – is how to connect poor, smallholder farmers to existing and latent markets while sustaining food security.

Location and general livelihood context

Cassava is grown in almost all regions of Tanzania by almost 25 per cent of the country's crop growing households. Official government statistics showed an



Source: Mdoe et al (2010)

Figure 3.14 Action area locations: a) Mkuranga district and b) Morogoro rural district

annual production increase from 3,420,600MT in 2001/02 to 4,205,989MT in 2008/09. The action research was conducted in Mkuranga district, on the coast and Morogoro rural district, located approximately 70 and 200km from Dar-es-Salaam, respectively (Figure 3.14). The capital is a major market for most food products, including cassava. These regions are not major producers of cassava but were selected according to the cost implications of their proximity to the major market and the research base of Sokoine University of Agriculture in Morogoro. However, they are reasonably representative of rural regions of Tanzania.

Value chain description and target group

The main marketing channels for cassava are cross-border (to Zambia, Mozambique, Uganda and Malawi) trade in fresh roots, direct consumption of wet cassava or processing (into high or low quality flour and fried crisps) in urban areas. However, there is a very large latent market for HQCF for use in bakeries and other applications of wheat flour substitution, and for cassava-based animal feeds, which perform particularly well in piggeries. HQCF is packaged and retailed in supermarkets and its lower quality equivalent is sold by loose weight at milling stations and local markets.

The baseline survey involved a stratified random sample of 300 producer households (150 from three villages in Mkuranga and 150 from three villages

in Morogoro). This comprised 178 participating households and 122 non-project households selected from lists of household heads in village registers. The evaluation survey involved a total of 180 farmers (90 target farmers and 90 non-target farmers) selected at random from the target and non-target farmers interviewed during the baseline survey.

Government statistics estimated district production in 2008/09 at 229,000 and 61,000 MT/annum in Mkuranga and Morogoro, respectively. In both districts, cassava is produced by smallholder farmers, with women providing the majority of the labour. Cassava yields are low so marketable surpluses are small. The 2009 baseline survey estimated that farmers in Morogoro realized relatively higher average yields of 4.7MT/ha than their counterparts in Mkuranga at 4.2MT/ha. Both figures are extremely low in comparison with yields of more than 15MT/ha obtained under smallholder conditions in West African countries, where farmers grow improved disease-resistant varieties.

Low Tanzanian productivity is due to limited access to, and limited adoption of, improved planting materials, poor husbandry practices and a limited area under cassava cultivation. Furthermore, even where there is a marketable surplus, individual smallholder cassava farmers often have difficulties accessing sources of demand in urban markets due partly to their scattered nature and low individual output. Poor rural infrastructure creates high transaction costs for buyers, and traders restrict their interest, limiting competition for supply and depressing farm gate prices.

HQCF processors demand high quality inputs that are not usually exhibited by locally processed products. In addition, to make switching to cassava-based raw materials economically viable, all potentially major cassava buyers require regular, reliable supplies of relatively large volumes.

There are an average of five people in each rural Tanzanian household.¹⁵ Cassava forms a relatively larger proportion of total household and crop incomes in Mkuranga than Morogoro, where incomes tend to be higher (Table 3.9).

Table 3.9 *Mean annual income earned from cassava (US\$) for households in Mkuranga and Morogoro study areas*

	Mkuranga		Morogoro	
	Target	Non-target	Target	Non-target
Mean annual cassava income	217.50	208.86	88.87	86.09
% total household income	58	52	17	13
% total crop income	66	71	24	29
Estimated total household income	375.00	401.65	522.76	662.23
Estimated total household crop income	329.54	294.17	370.29	296.86

Note: Proportions of total household and crop income derived from survey data were used to estimate total household and crop income

Source: Mdoe et al (2010)

Critical issues

The issues that this project aimed to address were:

- weak farmer organization with low individual output and a lack of market intelligence;
- supply–demand mismatch and inertia from potential buyers to switch to cassava-based inputs due to their unreliability – agronomic practices are poor, and the use of improved varieties and the area under cassava cultivation are limited;
- poor-quality artisanal processing that does not meet the requirements of higher quality markets for human consumption;
- food security crops are governed by policies and legislation that potentially impose restrictions upon commercialization.

Table 3.10 outlines how critical issues were built into the project framework.

Value chain level impacts

Prices for raw cassava increased for both target and non-target farmers during the study (Table 3.11). During this period, cassava prices increased across Tanzania due to high food price inflation, reaching an annual rate of 16.8 per cent in August 2009. The differential effect in the two study areas may be due to higher transport costs in Morogoro.

Therefore, in real terms, the price of cassava fell sharply in Mkuranga and rose much more modestly in Morogoro. The fact that non-target group participants gained almost as large a price effect in Morogoro suggests that very little of this increase can be attributed to the project.

Most participating farmers increased the area of cassava they cultivated in addition to their productivity (Table 3.12). Again, the fact that trends were largely similar for treatment and control groups could be due to cross-influences or all farmers responding to an important independent variable, such as food price inflation and food scarcity, or simply to statistical relics of the sampling process itself.

Higher prices and increased output translated into higher net incomes from cassava (Table 3.13). However, it would seem likely that increased output was the most important factor. Among the target group in Mkuranga, average output increased from 5.9MT to 10.1MT (a 71 per cent rise). But net income only rose 46 per cent. This suggests that, in a context of cassava price increases equivalent to only US cents 0.4–2.6/kg, the increase in net income was driven almost entirely by higher output – but that income did not increase in proportion to output because of production costs increases.

In Morogoro, output increased by 57 per cent and net incomes by 59 per cent, suggesting that the cassava price increase was almost totally absorbed by higher production costs. Unsurprisingly perhaps, if farmers grow more cassava their income from the crop increases.

Table 3.10 *Framework for the Tanzanian cassava commercialization action research project*

<i>Critical issues</i>	<i>Upgrading strategies</i>	<i>Action points</i>	<i>Activities</i>	<i>Outputs</i>
Farmers' organizations are weak and badly organized, resulting in low negotiating power and a lack of market intelligence for growers and high transaction costs that limit profitability for both producers and buyers	Horizontal coordination	Farmer groups	<p>Conduct situational analysis (assess what groups exist)</p> <p>Conduct training on group organization and management</p> <p>Register groups officially (with District councils or Network of Farmers Groups in Tanzania – MVIWATA)</p> <p>Develop cassava processing and marketing model of the groups</p>	<p>At least one cassava farmer group in each village with women members formed (3 groups in each district)</p> <p>Six cassava groups strengthened in organization and management</p> <p>At least 30 households per village (180 in 6 villages) equipped with business and marketing skills</p>
Although there is a large actual and latent demand for processed cassava products, the standards and requirements are largely unknown and there has been no sign of the supply-side response that would persuade buyers to switch to cassava based materials; this limits marketing options	Vertical coordination	Farmer groups Buyers	<p>Conduct detailed VCA including market analysis to understand demand for cassava products and buyers requirements</p> <p>Identify potential buyers and their requirements</p> <p>Organize meetings between group representatives and buyers</p> <p>Promote appropriate mechanisms for groups to communicate with buyers</p> <p>Train groups on group marketing, negotiation skills with buyers and transporters, and product handling (harvesting, loading, labelling)</p> <p>Facilitate establishment of informal contractual agreements based on mutual trust between farmer groups and buyers (including possible backward integration)</p>	<p>Detailed VCA and mapping information</p> <p>At least two meetings per group with a buyer (at least two buyers in total)</p> <p>Communication strategy developed</p> <p>180 farmers trained in negotiation skills and product handling</p> <p>At least two informal contractual agreements established for upgraded strands</p>

Table 3.10 (Continued)

<i>Critical issues</i>	<i>Upgrading strategies</i>	<i>Action points</i>	<i>Activities</i>	<i>Outputs</i>
Poor quality of cassava products that do not meet the standards required for human consumption limits smallholder market access	Functional Product process	Farmers groups	Purchase and install appropriate processing and drying equipment Improve processing premises to meet TFDA minimum standards Train groups on processing, quality control and waste disposal methods Facilitate process of obtaining TBS (quality assurance) mark Link young group members to manufacturers to learn how to run and service machines Facilitate preparation of business plan for processing	6 processing premises improved and 6 cassava chippers procured and installed Initial water storage facilities procured for each group (6 water tanks) 180 farmers trained on processing, quality control methods and compliance requirements, and waste disposal methods 2 training sessions organized to link young group members and manufacturers (one per district) 6 business plans for processing prepared (one per village) 600 copies of a knowledge sharing pack produced and disseminated
Low yields of cassava due to poor agronomic practices, limited area under cultivation and use of unimproved planting materials limit saleable surpluses and, hence, producers' incomes	Product Volume process	Farmer groups Input suppliers	Conduct training on best agronomic practices for increased productivity and environmental conservation Organize exchange visits to learn best practices Provide start pack for increased productivity (planting material, tools and other critical inputs) Conduct follow up training/visits for the uptake	6 training sessions completed (one per group on agronomy and record keeping) 6 exchange visits to learn best practices organized 600 copies of a knowledge sharing pack produced and disseminated At least 2 follow up sessions per season on training and exchange visits

Table 3.10 (Continued)

<i>Critical issues</i>	<i>Upgrading strategies</i>	<i>Action points</i>	<i>Activities</i>	<i>Outputs</i>
Policies and regulations pertaining to food security crops act against commercialization initiatives by imposing restrictions and taxes on sales	Lobbying and advocacy (not an upgrading strategy)	Communities Local government Non-governmental organizations	<p>Review local government position on cassava as a commercial crop, including policy constraints, opportunities and possible interventions</p> <p>Organize forums with policy makers to convey current policy position and regulatory framework</p> <p>Conduct workshop with policymakers, buyers, other stakeholders and the media</p> <p>Raise awareness about, lobby and advocate for cassava as a commercial crop (without compromising food security), national quality standards, and fair trading practices (especially weights)</p>	<p>Policy briefs on three issues (cassava as a commercial crop, national quality standards and fair trading practices) produced and disseminated to key stakeholders</p> <p>1 forum organized to convey the current policy position and regulatory framework</p> <p>1 workshop conducted before end of the project to share findings and propose changes to the policy and regulatory framework</p> <p>2 articles published in Pambazuko (MVIWATA newsletter)</p> <p>1 radio programme broadcast each quarter (aimed at farmers and the public)</p> <p>1 TV programme 'Cassava Life' aired each quarter: opportunities and risks of commercial cassava production (aimed at policy makers and the business community)</p>

Source: Mdoe et al (2010)

Note: VCA value chain analysis

Table 3.11 *Average raw cassava farm gate prices in TSh (US\$)/kg for target and non-target group farmers in 2008/09 and 2009/10*

Study area	Target group			Non-target group		
	2008/09	2009/10	Change	2008/09	2009/10	Change
Mkuranga	152.5 (0.10)	158 (0.10)	+5.5	152 (0.10)	173 (0.12)	+21
Morogoro	124.7 (0.08)	163 (0.11)	+38.3	126.2 (0.08)	161 (0.11)	+34.8

Table 3.12 *Area cultivated under cassava and yield for target and non-target group farmers in 2008/09 and 2009/10*

Measure	Study area	Target group			Non-target group		
		2008/09	2009/10	Change	2008/09	2009/10	Change
Acreage	Mkuranga	1.4	2.3	+0.9	1.6	1.8	+0.2
	Morogoro	0.7	0.9	+0.2	0.6	0.6	0
Yield, MT/ha	Mkuranga	4.2	4.4	+0.2	3.9	4.2	+0.3
	Morogoro	4.0	4.9	+0.9	4.3	4.4	+0.1

Source: Mdoe et al (2010)

Table 3.13 *Net incomes from raw cassava (TSh) for target and non-target group farmers in 2008/09 and 2009/10*

Study area	Target group			Non-target group		
	2008/09	2009/10	Change	2008/09	2009/10	Change
Mkuranga	217.50	317.55	+100.05	208.86	250.63	+41.77
Morogoro	88.87	142.19	+53.32	86.09	113.64	+27.55

Source: Mdoe et al (2010)

There were some agronomic improvements that resulted in lower rejection rates and incidence of broken tubers left in the ground. These producers do not use chemical inputs and, therefore, the implications of lower wastage rates are economic as opposed to environmental. There was a slight decrease in the proportion of both target and non-target farmers using burning to clear an area for cultivation.

The percentage of households in which only men marketed cassava and controlled the resulting income decreased across all groups (Table 3.14). It is not clear why this was the case but the similar (if of a lower magnitude) result for control groups suggests either a project spillover effect or non-project related factors acting across all groups.

Table 3.14 *Proportion (%) of cassava marketing performed solely by men in Mkuranga and Morogoro study areas in 2008/09 and 2009/10*

Study area	Target group			Non-target group		
	2008/09	2009/10	Change	2009/10	2008/09	Change
Mkuranga	60	40	–20	59	53	–6
Morogoro	43	18	–25	44	37	–7

Source: Mdoe et al (2010)

Poverty outcomes

Although there were increases in income from sales of wet cassava at the value chain level, outcome data on the change in incomes from other livelihood activities varied between the two study sites – control group incomes decreased while target group incomes increased in Mkuranga but vice versa in Morogoro. Therefore, we can make no firm conclusion about the interaction of increased resources allocated to cassava with other household livelihoods and, ultimately, whether value chain level increases in net income from cassava translated into poverty reduction at this level.

Measurements of household food security were similarly ambiguous – the number of months per year a household was able to feed itself declined in each case (target and non-target farmers in the two study areas) while the proportion of households that could certainly feed itself increased in all cases. In any case, these perceived changes are not attributable to project activities because outcomes were similar for both beneficiaries and non-beneficiaries. Moreover, cassava sales from target households increased by such a small amount (less than US\$1 per household per year), and at the cost of a significant increase in female labour, that any benefits would seem to be very marginal.

Environment outcomes

It was not clear from the data presented what impact, if any, the observed value chain level this had on environmental parameters. The increase in the area planted with cassava may have simply been balanced by a decrease for other crops.

Similarly, we do not know what the ultimate environmental outcome of reduced proportions of farmers using burning to clear land was, if any, nor the extent to which the practice was associated specifically with cassava as opposed to other crops. The team suggests that while burning causes soil damage it reduces labour costs and increases the amount of phosphorus and nitrogen available to crops.

Gender outcomes

No information was presented to link gender-related changes at value chain level, such as more women in administrative roles or increased female

control of income, to any broader household or community-level outcomes in gender dynamics.

Key findings

This project demonstrates the importance of both understanding the value chain in which an intervention is taking place and implementing strategies effectively in order to deliver to resource-poor, rural people. At a cost of ≈US\$100,000 about \$160 of benefit was received by 178 target households as a result of this intervention (with some suggestion of positive spillover effects of local extension authorities adopting higher yielding planting materials). Unfortunately, this project is not atypical in rural sub-Saharan Africa.

By increasing the area of cassava under cultivation and improving agronomic practices (process upgrading) producers increased their marginal income from cassava by a very small increment. However, data collected during project evaluation were equivocal as to whether this value-chain level effect translated into household level poverty reduction.

One of the project's main objectives, to create a marketing and processing model to supply buyers of cassava for high quality flour and animal feed production, was not achieved. This highlighted the importance of the capacity of the implementing team and the long-term nature of commitment required for successful value chain development.

A slight reduction in the proportion of farmers using burning for land clearance may reflect the project partners influence to reduce (what they consider to be) an adverse environmental impact of increasing the cultivated area. However, the fact that there remained a relatively high percentage of growers employing this technique may have been due to cost and fertility benefits that balance damage to topsoil from burning.

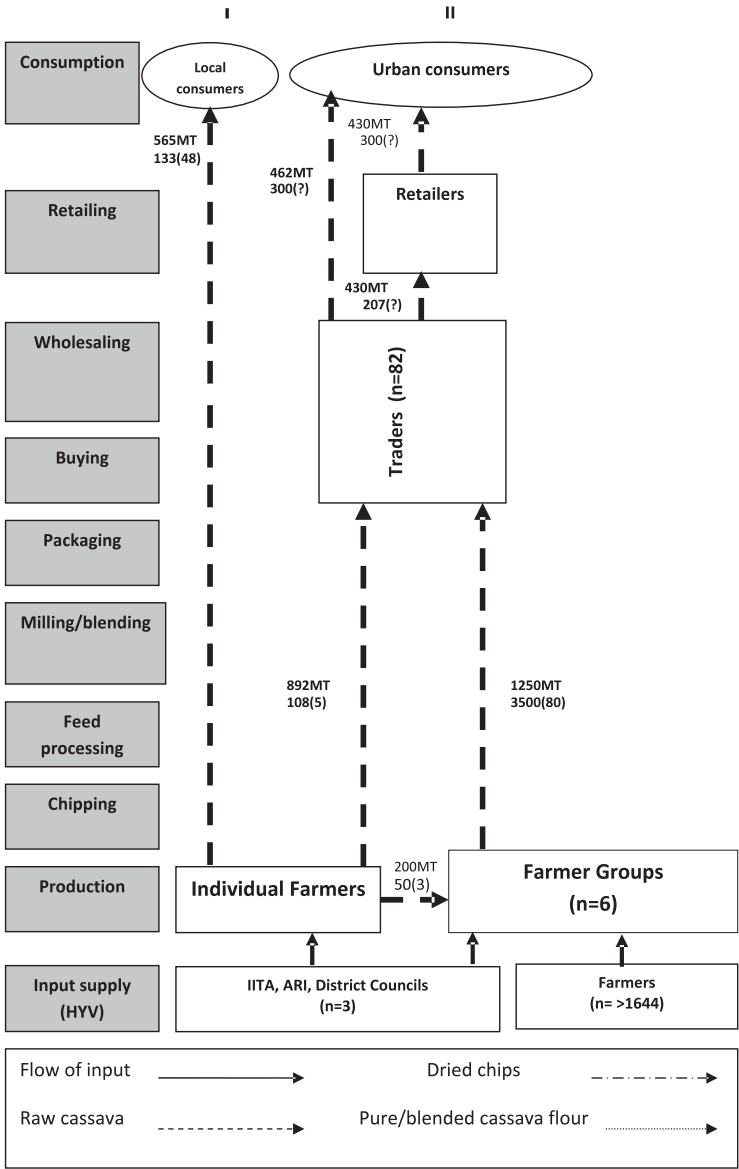
There remains a question of how an enormous latent demand may be exploited as a realized opportunity for producers when the supply side remains weak, erratic and of poor quality. Producer organization remained poor and a lack of accurate market intelligence was a continuing issue. Widely employed models of group 'sensitization' and 'mobilization' followed by training in organizational issues would seem to be seriously lacking in producing real outputs and emphasize the need to evaluate programmes on outcomes rather than procedural indicators based upon the completion of project activities.

Many value chain development practitioners are far more comfortable in dealing with producers than downstream actors such as processors and retailers. In this case the failure of the team to include a major potential buyer of processed cassava in the value chain analysis resulted in adopting an inappropriate processing model, which, had they succeeded in implementing it, would not have consistently delivered a product of the quality required.

In addition, this project demonstrated some of the difficulties of remote project oversight. Often, by the time that the international team was aware of an exception to the agreed action plan it was too late to take remedial action.

Female participation in the value chain increased, both in terms of economic activities and coordination functions such as committee membership.

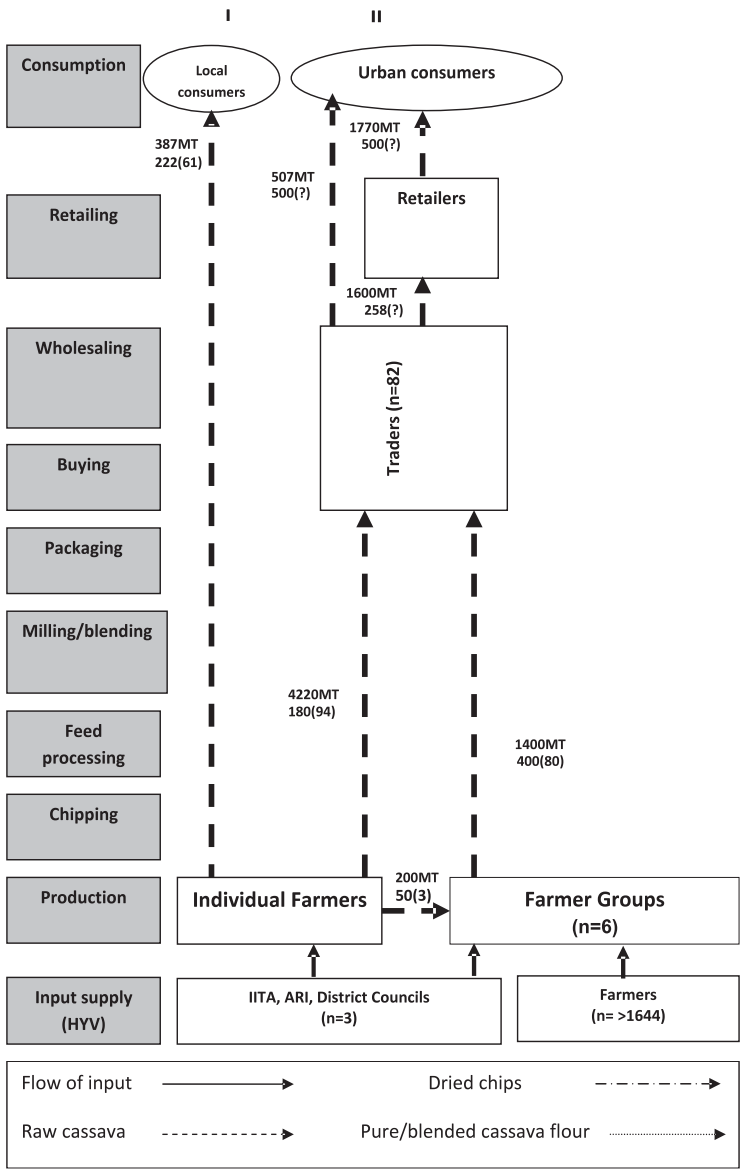
Cassava value chain map before upgrading



Source: Mdoe et al (2010)

Figure 3.15 Cassava project – Initial value chain map

Status of cassava value chain at the end of the project



Source: Mdoe et al (2010)

Figure 3.16 Cassava project – Final value chain map

However, the study was not able to evaluate whether this resulted in corresponding changes to gender dynamics within households and communities or to benefits derived by men, women and children.

Similarly, it was not clear how a slight reduction in the proportion of farmers (both beneficiaries and control groups) translated into wider environmental and economic impacts.

'Developing entrepreneurship in value chains of cinnamomum tamala bay leaf: Linking poor producers to markets of essential oils and spices' (or 'the bay leaf project')

Dyutiman Choudhary, Brigitte Hoermann, Michael Kollmair and Jonathan Mitchell

Location and general livelihood context

The dried leaves of the Indian bay leaf (*cinnamomum tamala*), a form of aromatic laurel, are widely used as a culinary spice and its essential oil is used in the food processing industry. Bay leaf trees grow on poor and degraded soils in the Himalayan foothills where the leaves are harvested by hand, dried and sold on to traders. The aim of the project was to increase the economic benefits to poor rural producers in Nepal and India from the bay leaf value chain within the context of a sustainable resource base. The project was undertaken by a regional intergovernmental organization, the International Centre for Integrated Mountain Development (ICIMOD) together with an NGO, the Himalayan Action Research Programme (HARC) in India. In Nepal, the Udayapur district chapter of the Federation of Community Forestry User Groups of Nepal (FECOFUN) was the direct partner with a close association with a private trader, Thapa Herbals.

This was a successful action research project, with a good understanding of the local context and communities, close links with private and public sector decision makers, strong monitoring and significant impacts at the value chain level. The project benefited from a local team which included both local and national representation. Comparative research possibilities were exploited through the choice of two study areas with such strikingly different characteristics and issues. However, the lack of a control group and insufficient understanding of the downstream nodes of the value chain limited our ability to make strong conclusions about broader level impacts (beyond the target group and focal value chain) in addition to making it difficult to evaluate whether market requirements had been properly addressed in the longer term.

The bay leaf project was implemented in Udayapur district of Nepal and Chamoli district of Uttarakhand in India. Both areas are mountainous, low-income, rural areas. The average annual household income for the target group in 2008 in Nepal was US\$397¹⁶ and US\$59 per head and an 85 per cent poverty rate (the national poverty line is US\$480 per year). In India average annual household income was US\$863¹⁷ and US\$166 per head.¹⁸ In addition to being very peripheral, rural locations with extremely high levels of poverty,



Bay leaf project site

Udayapur district



Bay leaf project site

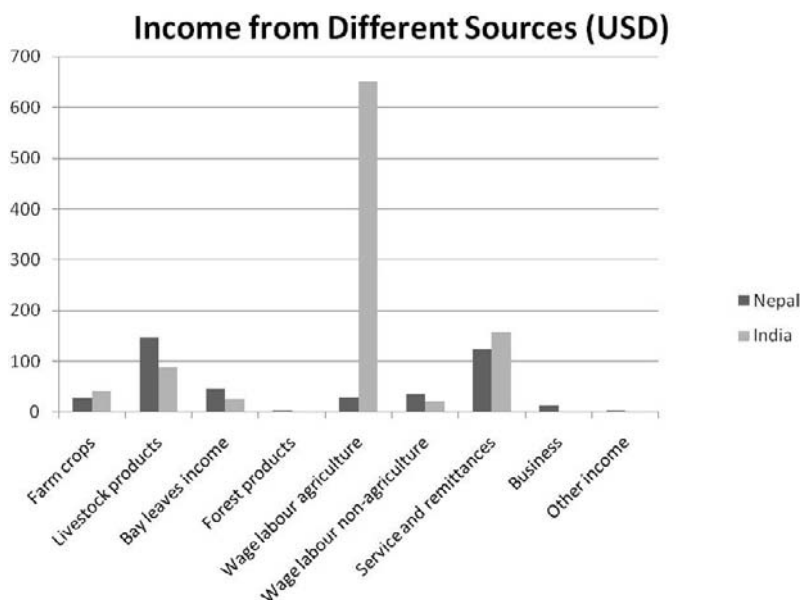
Chamoli district, Uttarakhand state

Source: ICIMOD (2010)

Figure 3.17 Bay leaf project action area locations

the Nepal case study is also characterized by high levels of political uncertainty in a post-conflict situation.

In the study areas, people have a diverse range of non-agricultural livelihoods including wage labour, services, remittances and business. In India, wage labour from the public works programme established under NREGA plays an increasingly important role since 2006.



Source: ICIMOD (2010)

Figure 3.18 *Comparison of cash incomes (US\$) from different sources at the study sites in 2008*

The Nepal case is more agriculturally dependent than India, with half the households in the study area being food self-sufficient for six months and the other half being self-sufficient for up to a year. In the Indian study area the rural non-farm economy is much more important, with half of households entirely dependent on off-farm income for food. Income from bay leaves comprised 10 per cent and 2 per cent of total household income in Nepal and India respectively. However, this income comes at a critical time in January–February, when there are few alternative income-generating opportunities.

In Nepal, bay leaf trees are almost exclusively in private small-holdings, whereas in India most bay leaf trees are found within government-owned forests where access is strictly regulated by the Forests Department.

Value chain description and target group

The bay leaf value chain, like those of many non-timber forest products (NTFPs) and medicinal and aromatic plants (MAPs), is disorganized, inequitable and secretive. The leaves, and sometimes the bark, are used as a spice in local and regional cooking and can be processed to produce essential oil which is used in the food and pharmaceutical industry. Demand for bay leaf products is buoyant and growing rapidly.

The target group comprised 64 households in India and 218 households in Nepal. Households were selected on criteria including the availability of bay

leaf trees, a high proportion of low-income indigenous and scheduled caste population, enthusiasm and potential for empowerment through value chain development and access to market centres. In Nepal 83 per cent of the target households were predominantly indigenous groups (mainly Magar). In India, all target households were from the (scheduled) Dalit caste.

In Nepal, six village women's bay leaf groups were established and formally federated into a cooperative. In India, six new bay leaf self help groups (SHGs) were incorporated into an existing district-level agricultural cooperative.

In Nepal, villagers harvested the leaves from their trees in their own land, dried the leaves and then carried a back load of close to 30kg to the road head for sale to village traders at US\$0.10 to 0.15/kg, equivalent to about US\$3.75 per tree. Bay leaves traded in the capital or at the Nepal-India border achieved a price of US\$0.22/kg but incurred considerable costs for storage, transportation and bribes. Bay leaf oil can be sold for US\$44 per litre but production is narrow because of the limited demand, the amount of firewood needed and the lack of skilled labour. Bay leaf oil is mainly sold in Kathmandu to a herbal products manufacturing company.

In India, collectors' experienced real difficulties accessing the bay leaf trees in state forests. The state Forest Department opened up areas for bay leaf collection on a five-year rotation, allocating permits to traders who hired village contractors to manage village-level collection. Prices were set by the traders at US\$0.17–0.22/kg for village collectors and US\$0.27/kg for village contractors and thence to wholesalers for US\$0.40–0.44/kg. Bay leaves collected from government land can only be sold through the Uttarakhand Forest Development Corporation *mandis* (Government facilitated markets), where wholesalers paid approximately US\$0.40–0.44/kg. Only bay leaves from private land can be sold directly to local and district traders. Because of the secrecy of the value chain, it was not possible to map the chain beyond the wholesaler node for bay leaves (see Figures 3.21 and 3.22).

Critical issues

The objective of the project was to increase the economic benefits to poor rural producers from the bay leaf value chain, within the context of a sustainable resource base. The critical issues, constraining the achievement of this objective were: the lack of knowledge about the value chain by the target group; the poorly organized production; poor harvest and post-harvest techniques compounded by policy and regulatory constraints. Table 3.15 below outlines the approach that the project took to addressing these issues.

Impact of project on value chain

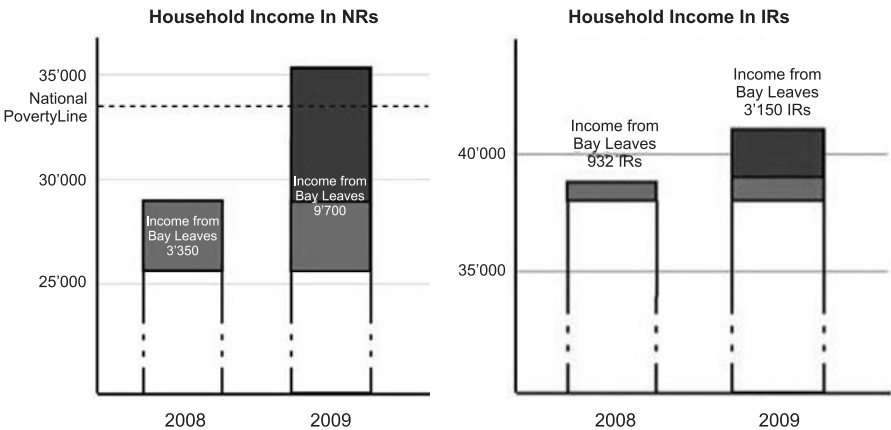
Incomes

The project resulted in significant increases in revenue from bay leaf sales (see Figures 3.23 and 3.24). In Nepal, unit prices for bay leaves increased from US\$0.12 to 0.15/kg before the project in 2008 to US\$0.28/kg in 2009 for the best quality leaves. Expressed per backload of 28kg of leaves this equates

to US\$4.10 per load before the project and US\$7.70 per load in 2009 for average quality leaves. The labour input required to achieve this increase in sales revenue for all activities ranging from harvesting to grading, sorting, packaging and carrying the backload increased from three to four days per load. Producer margins increased from 10 per cent to 64 per cent during the project. Although bay leaf sales clearly increased, the impact on total household income is more muted because bay leaves represent just one of multiple livelihood strategies. However, the average household in the target group saw an increase of US\$87, which was sufficient – on average – to take households over the Nepalese national poverty line.

In India, the increase in incomes was more muted because – as a result of procedural delays which meant that the collection permit arrived just as the end of the collection season was signalled by the formation of new leaves – collectors were able to harvest only 7.5ton of the 30ton quota they were allocated. However, the unit price received by collectors increased from US\$0.25/kg in 2002/3 (when the target group had previously had access to bay leaf trees) to US\$0.47/kg in 2009. Collector margins were estimated to have increased from 10 per cent to 57 per cent at the end of the project.

The reasons for the increases in sales revenue for bay leaf collectors and producers are interesting because they are so sharply contrasting in the two neighbouring regions in Nepal and India. In Nepal, the revenue producers received for bay increased during the project for four clear reasons. First, the quality of the bay leaves delivered to traders increased as a result of basic interventions, such as training, access to market information, better drying of the leaves (in shade) and a system of grading and sorting the leaves and having the quality certified by a village supervisor. Post-harvest losses halved from 8 per cent before the project.



Source: ICIMOD (2010)

Figure 3.19 Average income per household before and after upgrading the bay leaf value chain analysis in Nepal

Table 3.15 *Bay leaves project – Summary of critical issues and upgrading strategies*

<i>Critical issues</i>	<i>Upgrading strategies</i>	<i>Action points</i>	<i>Activities</i>	<i>Outputs</i>
Lack of understanding of value chain and inability to negotiate fair prices by target groups	Horizontal and vertical coordination: to facilitate market access	Strengthen producer groups; develop links with local traders and work with government and private agencies	Detailed value chain analysis (VCA) to understand market demand and quality issues as basis for VC development Enable exchange of market information between target group producers, traders and support agencies Develop models for seasonal (six month) purchase contracts between collectors and traders in Nepal	Detailed information, sufficient to understand retail and wholesale markets and select appropriate strands Regular communication between chain actors on price and quality grades Purchase contracts signed and implemented
Disorganized production	Horizontal coordination and process upgrading: strengthen producer groups to improve quality of output and coordination of production and trading	Work with collectors in India and cultivators in Nepal	Establish SHGs in India and producer groups in Nepal and provide groups with training in nursery establishment, organization of harvesting, drying, grading, packaging, marketing and labelling Establish producer-group managed bay leaf collection centres in India	4 SHGs established in India and 5 producer groups established in Nepal All groups have developed and used nursery management and business plans Local bay leaf collection centres established in India support holding of local auctions
Poor harvest and post-harvest techniques	Product upgrading: improve harvesting and post-harvest management to raise leaf quality and minimize environmental impacts	Strengthen producer groups and technical support agencies	Prepare guidelines for sustainable production, harvesting and post-harvest handling Train SHGs, producer groups and private producers in sustainable production, harvesting and post-harvest handling	Harvesting guidelines produced in Hindi, Nepali and English with a cadre of trainers available Members of SHGs and producer groups and private producers trained and peer-monitoring processes established Improved farm gate prices for target group

Table 3.15 (Continued)

<i>Critical issues</i>	<i>Upgrading strategies</i>	<i>Action points</i>	<i>Activities</i>	<i>Outputs</i>
Policy and regulatory constraints – particularly land tenure and transit permits	Improved external governance of the value chain: by developing a more favourable policy and institutional environment for bay leaf production	Government and other stakeholders	Understand policy environment and discuss challenges, produce policy briefs for dissemination Engage with key policy actors to raise their awareness and gain commitment to policy change Conduct familiarization and results-sharing workshops involving policy makers, private buyers and others	Nepal – CFUG lands leased to landless growers Collectors and producers receive collection and transit permits more easily India – piloting of locally held auctions Project results are disseminated to key policy makers in Nepal and India Increased public awareness through the media

Source: ICIMOD (2010)

Second, the volume of bay leaves delivered to traders increased. This in part reflects the doubling of unit prices received for the crop which strengthened the financial incentive to harvest the leaves and carry the backloads to market. It also reflects the aggregation of products at the producer level and the improved yields as a result of hand-picking the leaves (where yields of 6MT/ha compare with 2.8MT/ha with sickle harvesting).

Third, the cooperative negotiated a 100MT, six-month, contract with a trader, Thapa Herbs Private Limited on behalf of the producers. This contract had two important positive elements. One was that the cooperative negotiated higher prices for the bay leaf producers (in 2009, the price for good quality leaves was negotiated up from the trader's initial offer of USD\$0.26/kg to USD\$0.28/kg on the basis of better quality market information). The second benefit was that producers had a guaranteed market and, through the grading by the village supervisor, knew the price they would receive for their output before leaving the village.

Fourthly, through working with the FECOFUN, the project did manage to improve the rate at which private bay leaf trees were registered, which has historically been very slow. The reason this is important is that bay leaves harvested from private sources (some 91 per cent of total production) are exempt from a USD\$0.03/kg 'royalty' charge which is levied on leaves collected from forest land and accrues to personnel in the District Forestry Office.

In addition to these improvements for the main target group of poor producers, the project managed to negotiate improvements for a small group of landless poor, promoting sharecropping arrangements in which they obtained 60 per cent of the yield and encouraging community forestry user groups (CFUGs) to lease forest land to the poorest for bay leaf cultivation.

In India, the non-timber forestry product sector is dominated by government regulations to a remarkable extent. Over two-thirds of production is from government forests and the state controls all aspects of the upstream value chain, from access to the bay leaf trees (who can collect how much from what trees and when) to the marketing channel (leaves can only be sold through government controlled public auctions or mandis). Although harvesting regulations were intended to protect the resource from overexploitation and the mandi system was intended to protect village-level collectors from exploitation by unscrupulous traders, the net effect has been unintentionally discouraging villager involvement in resource management and use.

In India, therefore, the key action to increasing collector incomes was through negotiating a pilot relaxation of the disabling regulatory environment. This was achieved through intensive discussions between HARC, ICIMOD and the Principal Chief Conservator of Forests in Uttarakhand. The success of these negotiations and the very significant regulatory concessions achieved, reflected the trust established between the Principal Chief Conservator and project partners.

The regulatory changes which benefited the target group were as follows:

- Improved access to bay leaf resources following the waiving of the five-year rotation of bay leaf harvesting areas (based upon joint mapping and regular monitoring of the available resources).
- Issuing bay leaf collection permits directly to the *van panchayats* (village forest councils) rather than to local traders.
- Bringing the mandi public auction closer to the target group (previously the closest mandi was 190km away which imposed significant transport and ‘hidden’ payment costs on collectors) and encouraging the participation of traders from outside the state (who broke up the collusion between traders from within the state to hold prices down).

In addition to these important regulatory changes, the collectors themselves improved the quality of their output (through improvements to harvesting, grading, sorting, packaging and storage). Collectors also established an ‘informal’ purchaser agreement (in statute, bay leaves can only be sold through government channels) with an exporter of organic products based in New Delhi. However, the main constraints on the bay leaf incomes to Indian collectors (lack of access to the resource and exploitative markets) were overcome by policy changes and these are what caused the doubling of unit prices for bay leaf collectors.

Environment

Although the project led to an increase in bay leaf production in Nepal, and access to previously inaccessible trees in India, the environmental impact was benign. Training on sustainable harvesting techniques significantly reduced damage to trees through breaking branches to get to inaccessible leaves. Joint mapping and monitoring of the resource base was established. It contributes to environmental sustainability and improved mutual trust.

Project staff were able to convince Forestry Department staff in India that waiving the five-year rotation term was not damaging to the natural resource by showing evidence that annual harvesting in Nepal did not damage the trees. Also, by demonstrating a community-based approach rather than the auctioning of ranges the destructive and unsustainable practices were controlled. The nursery in India provided bay leaf trees for collectors to cultivate on their own land to allow better access for collectors in the future.

Gender

Two-thirds of the time spent on bay leaf activities is by women. There is qualitative evidence that women and children have disproportionately benefited from the project. This is because women generally control the cash from bay leaf activities and their spending patterns are significantly different from male producers and collectors. Whereas men tend to spend the proceeds of bay leaf sales on livestock and repaying debt, women are more likely to buy clothes, school books and pay school fees.



Source: ICIMOD (2010)

Figure 3.20 *A woman collecting cash at collection point in Nepal*

Key findings

This study illustrates that, through a combination of upgrading strategies, it is possible to significantly increase the financial earnings of very poor people in remote, rural, unstable locations through the development of a NTFP value chain.

There is evidence that the gains of the target group have benefited a broader group of residents. In Nepal, communication with local stakeholders suggests

that the higher prices negotiated by the target group have ‘pulled up’ prices by bay leaf producers outside the project area and the initiative to speed up the registration of private trees could benefit many. In India, the significant regulatory reforms negotiated for bay leaf collectors in the project area could have a very large impact if continued and expanded to cover a broader range of NTFPs.

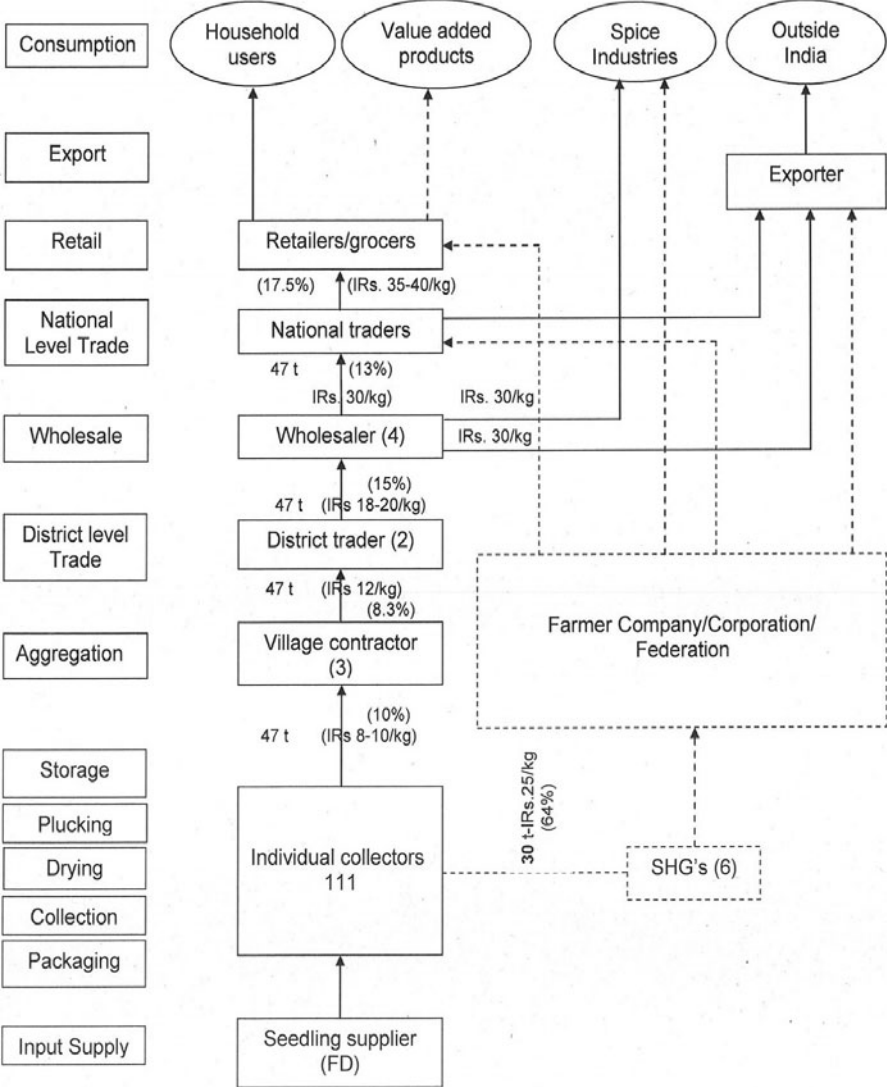
The cross-country comparisons show the great importance of government policy and practice on the benefits of the value chain accruing to poor people, particularly where they do not own the productive assets themselves. In Nepal, because most bay leaf trees are privately owned, the negative impact of unfavourable policies is limited to the dysfunctional private tree registration process and bribes to civil servants to facilitate the transport of bay leaves to market. In India, government has complete control of the upstream part of the value chain from production to collection and sale to traders, with sometimes adverse consequences on the livelihoods of the poor. This study shows that progressive reform of this disabling environment can quickly translate into significant benefit flows to poor collectors.

The livelihood assessment illustrates the fact that the target groups have a broad range of livelihood strategies – into which the bay leaf value chain fits. It is therefore critical, when cash incomes from one livelihood activity increase, to ensure that this is not having a negative impact on other sources of livelihood. Increases in income from bay leaves were not associated with reductions in other livelihoods – primarily because of the small and highly seasonal contribution of bay leaves to total household income in the target group. The significance of remittances, wage labour and, in India, social protection payments to the target group are striking.

The success of the Nepal project was dependent upon the existence of a progressive local trader, who has known the bay leaf producers for many years. In India, the critical changes to the enabling environment were due to the boldness of an individual public servant and on the trust and shared history between individuals working in a regional research organization – ICIMOD; an NGO – HARC; and the Uttarakhand Forestry Department. The extent to which this model is replicable elsewhere is moot. On the one hand, the lessons are being upscaled throughout Uttarakhand during the post-project phase. Also the general point, that divergent interest groups can be brought together to make pragmatic agreements if they are convened by a ‘neutral’ and respected entity and follow a transparent process is replicable. However, the close personal links between the participants may be less so.

The absence of a control group in either project area means that attributing all the increase in bay leaf prices to the activities of the project is ill-advised. In Nepal, the doubling of project bay leaf prices during a short period of time (from 2008 to 2009) does suggest an important real change in the value change (bay leaf prices in Nepal generally increased only 20 per cent from 2008 to 2010). However, rupee-based inflation in the bay leaf wholesale markets in India between 2003 and 2007 has been at a rate of 62 per cent (and about 47 per cent when denominated in US\$). Therefore, inflation accounts for at least half of the increase in the price of bay leaves reported in India

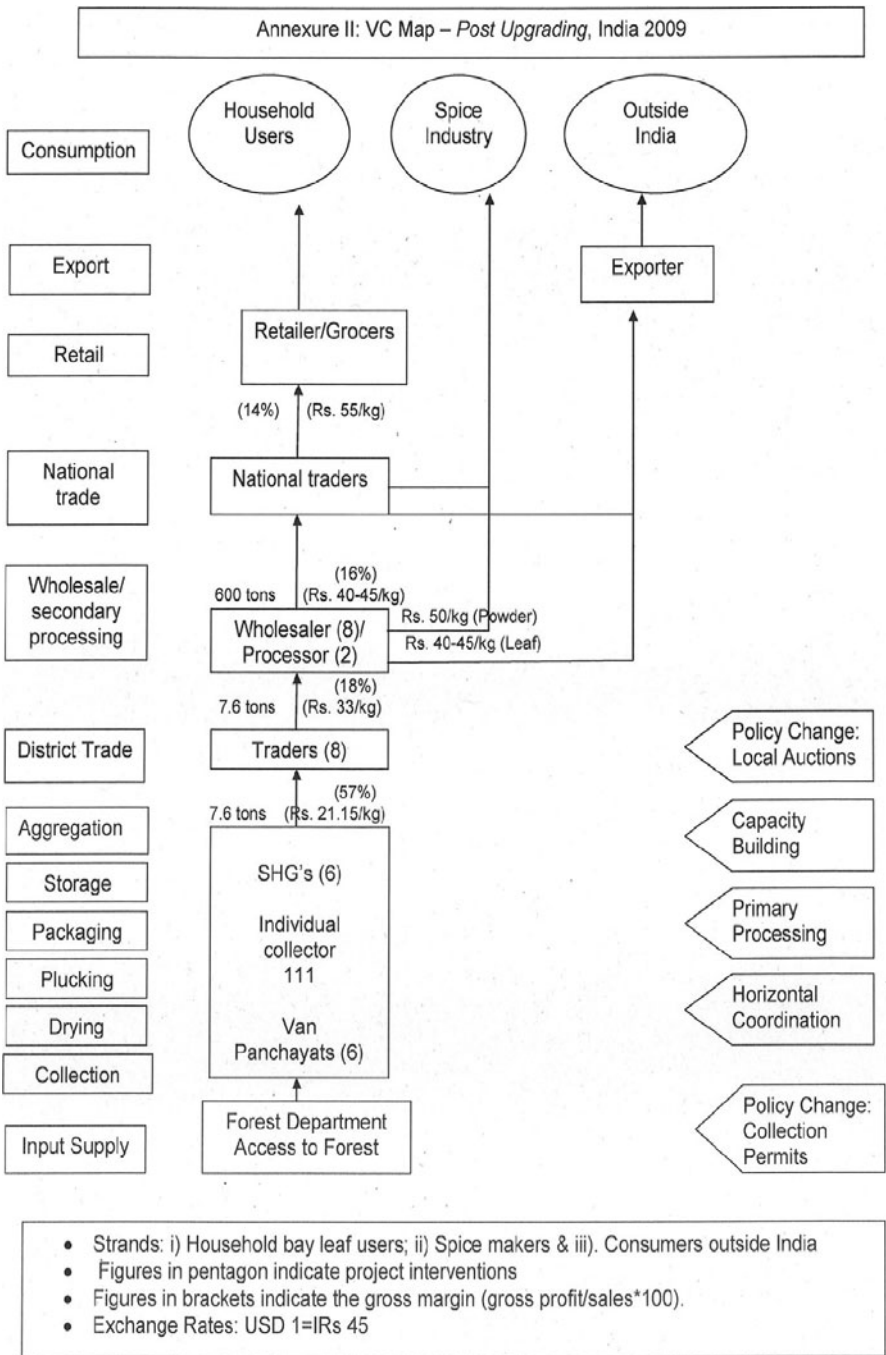
Annex I: VC Map – Initial and Intended Scenario, India, 2002-03



- Strands – i) Raw Bay leaves ; ii) Value added products like tea, potions etc; iii) Spice industries & iv) Export market for leaves
- Dotted lines indicate intended scenario post upgrading
- Figures in brackets indicate the gross margin (gross profit/sales*100).
- Exchange Rates: USD 1=IRs 40

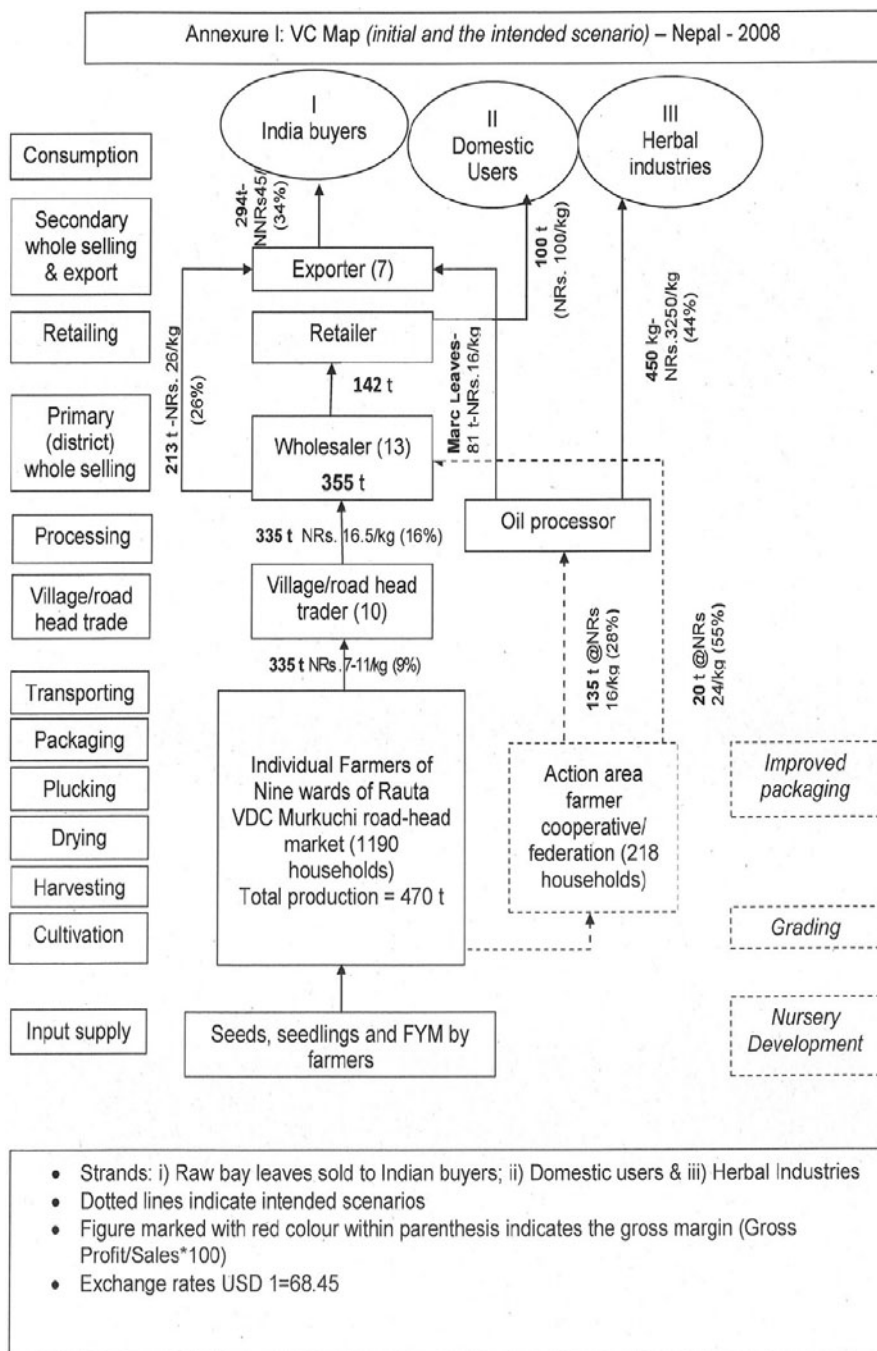
Source: ICIMOD (2010)

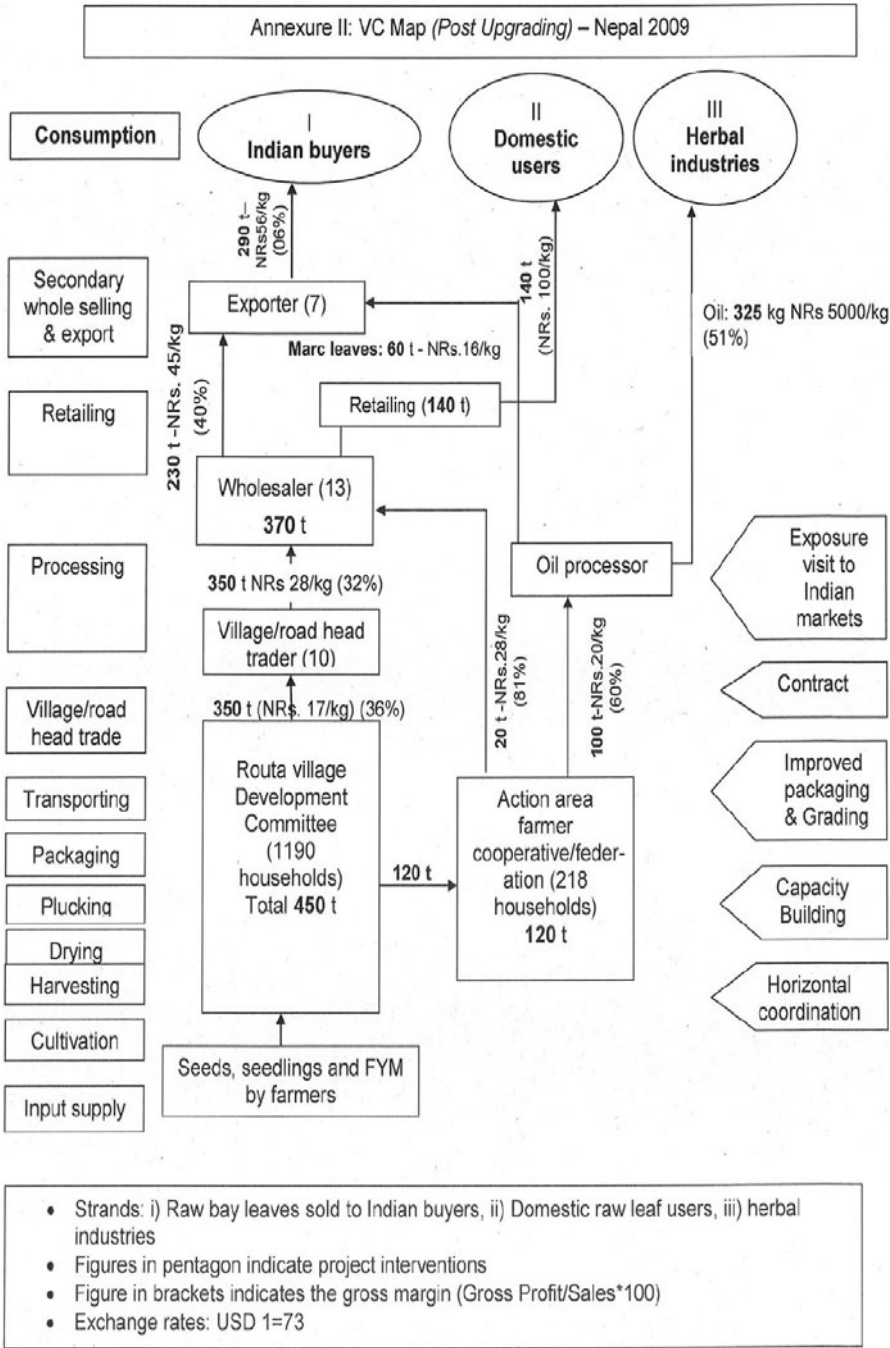
Figure 3.21 Initial value chain map, India



Source: ICIMOD (2010)

Figure 3.22 Post upgrading value chain map, India





Source: ICIMOD (2010)

Figure 3.24 Post-upgrading value chain map, Nepal

between 2003/4 and 2009 (and the actions of the project account for the rest of the price increase).

The difficulty in tracing the bay leaf value chain beyond the point of sale from producers/collectors to traders through to the end market does diminish the value of the exercise. There may, for instance, be viable opportunities for producers in Nepal to link up with traders supplying a different end market – which could not be explored with an exclusive focus on the upstream end of the value chain.

‘Analysing the octopus value chain and the implications of certification schemes in the area of Mbour: A case study of Nianing and Pointe Sarene’ (or ‘the octopus project’)

Papa Gora Ndiaye, Moustapha Kebe and Jonathan Mitchell

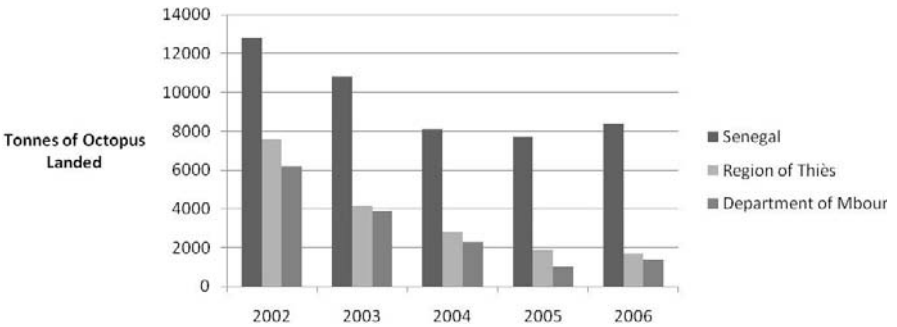
Almost all the octopus (*Octopus vulgaris*) caught in Senegal are flash frozen and exported: to Italy (60 per cent by weight), Japan (15 per cent), Spain (9 per cent) and Greece (6 per cent) by large processing companies based in-country. Octopus is a high-value global product with an average price of US\$5/kg in importing countries (with the price generally increasing with the size of the fish, up to US\$19/kg for the largest sizes). The aim of this study was to promote the sustainable management of the octopus resource, improve quality management and increase returns for fishermen. The research was undertaken by ENDA/REPAO (a Dakar-based fishery research organization) and MRAG (a UK-based marine research and fisheries consultancy).

The octopus project was one of the least successful projects in this programme. The baseline analysis was poor; planning activities during the inception period were weak; implementation was patchy and the only monitoring of project results was undertaken by a consultant external to the project team (Reuben Kadigi). The fundamental weakness of the project was the failure to analyse the reasons why improving octopus quality was not reflected in higher prices for fishers from processing factories. This apparent price–quality disconnect undermined the rationale of the project, which was to catch fewer, more valuable octopus, thereby allowing fishers to maintain their incomes while minimizing resource exploitation.

The weakness of this project, despite having a strong analytical team and a comprehensive package of support, may reflect the heavy commitment of the local partner organization to competing projects. The acceptance of low-quality work by the development sector simply acerbates this tendency.

Senegal has the third largest octopus catch in Africa (after Mauritania and Morocco). The most recent statistics (2006) indicate that the Senegal octopus catch was 8800MT and the 6030MT exported had a commercial value of US\$21m in 2006. The octopus catch varies significantly each year and there is a general perception that the resource is being overfished.

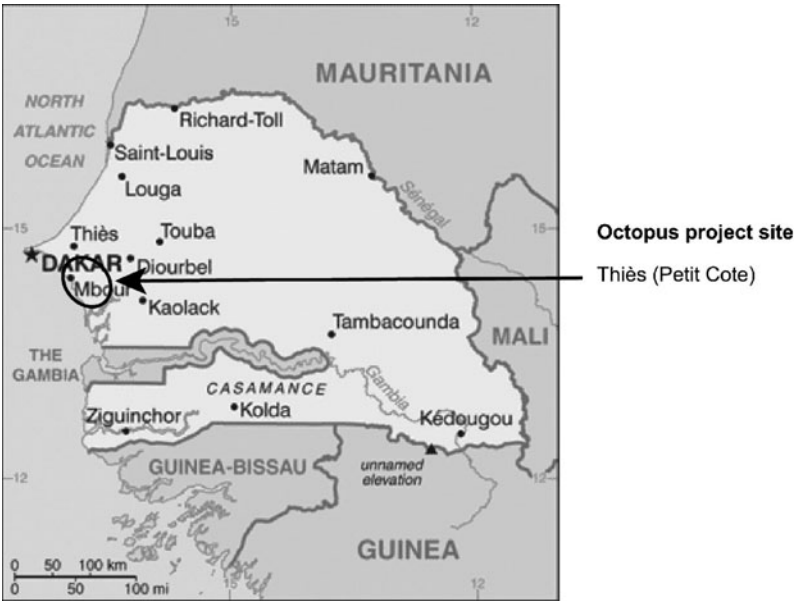
The octopus project was implemented in two locations (Nianing and Pointe Sarène) in the Department of Mbour, about 150km south of Dakar



Source: Ndiaye and Kebe (2010)

Figure 3.25 Tonnes of octopus landed

– the capital of Senegal in West Africa. These choices of location were justified on the basis that they maintain well-organized local fishery organizations, having benefited from significant support granted by the Japanese bilateral aid programme. Almost all the octopus caught in Senegal is from the Dakar and Thiès regions which together account for 86 per cent of the motorized pirogues (fishing canoe with an outboard engine) in Senegal. The study areas are not, therefore, necessarily representative of rural fishing communities in



Source: Ndiaye and Kebe (2010)

Figure 3.26 Cassava project – Map of the study area

Senegal. Nianing and Pointe Sarène are characterized by artisanal fishers, who fish from open pirogues and jig for octopus. The fresh molluscs are landed and sold to fishmongers, who then take the catch to the processing factory of Ikagel Ltd. Some 40–50 per cent of fisher incomes are derived from octopus, the remainder consisting of pelagic species.

We have no credible baseline information about the socio-economic conditions of the target group. The baseline study indicated that there are 1360 fishermen in the two study areas, although the monitoring indicators indicate that in 2009, there were in fact only 800 fishermen.

Value chain description and target group

In both study areas the fishers are organized into local CGRHs (local marine resource management committees). There is some evidence of conservation measures being taken by the local committees. These committees have organized the donor-financed earthenware vases (like flower pots) to be immersed onto the seabed to encourage octopus to lay eggs and stricter enforcement of the ban on fishing activity during the biological rest period during the October breeding season.

The motorized pirogue owners divide the total value of the daily catch into three equal shares: boat owner; engine owners; and the crew.



Source: Mitchell (2009)

Figure 3.27 *A pirogue*

Table 3.16 *Average selling prices for octopus in the Nianing and Pointe Sarène (US\$/kg), 2009*

<i>Grade</i>	<i>Fishers (US\$/kg)</i>	<i>Fishmongers (US\$/kg)</i>
PP: (< 0.5 kg)	\$0.75	\$1.13
P: (between 0.5 and 1.0 kg)	\$1.92	\$2.24
M: (between 1.0 and 2.0 kg)	\$2.63	\$3.03
G: (between 2.0 and 3.0 kg)	\$3.47	\$4.54
GG: (> 3.0 kg)	\$4.64	\$5.98

Source: Ndiaye and Kebe (2010)

This is a division of catch revenue common to many fishing communities. The average daily net revenue for the total crew (of normally six members) in 2009 is estimated to be US\$52). The monitoring data suggest that the daily net revenue earned by crews increased significantly, some 64 per cent – from 2008 to 2009 (from about US\$31 to US\$52). The determinant of the increased revenue is unclear as neither the physical catch nor the unit prices received by the fishers increased. Assuming the crew revenue figures are correct (and the price data and catch totals), a sharp reduction in fishing trips in 2009 (fewer trips but with stable income implies rise in income per trip) could explain this finding. Or the evidence presented in Figure 3.25, that the size of octopus caught has increased (so the same catch weight will yield higher prices due to the higher unit price of larger octopus).

The octopus value chain is primarily andocentric with men holding roles as pirogue owners, fishers and the larger-scale fishmongers. Thus the role of women is confined to processing pelagic fish and some microprocessing of octopus.

It is not entirely clear what prices were achieved by fishers for octopus sold in 2009. In the final report figures are presented that are significantly higher than those presented in the table above.

Applying the most cautious estimate of unit prices for octopus (i.e. those from Table 3.18) to our approximations of the catch in 2009, suggests that the gross revenue for the artisanal fishers was some US\$60,000. The average sized octopus caught in 2009 was 1.5kg and was worth just under US\$4 to the fishers. Applying the highest estimate of unit prices for octopus, suggests gross revenue for the artisanal fishers was some US\$93,000 and the average 1.5kg octopus was worth just under US\$6 to the fishers – a significant difference.

However, even if we accept the higher price figures and divide the estimated total fisher revenue of US\$93,000 by the baseline figure of 1360 fishers in the target group – this equates to only US\$68 per fisher per year (or US\$116 if there are 800 fishers) which suggests either that the daily catch earnings of US\$52, or the number of fishers, are incorrect. If fishers receive half their income from octopus (as reported in post-project monitoring) this implies an average total income of US\$137 for fishers (or US\$232 if there are 800

fishers). Assuming the figures reported are correct, this suggests extremely low per capita income levels among fisher households.

Looking at the physical data on total catch (23,787kg in 2009) this suggests a very low level of productivity for the fishermen (or very large numbers of fishers, each spending very little time fishing). If 1360 fishers made this annual catch, each fisher only accounted for 17kg of octopus a year. Even if there were only 800 fishers, the catch per fisher in 2009 was only 29kg. With an average sized octopus being 1.5kg, this implies that the average fisher only catches 11 to 19 octopuses a year (depending upon whether the study area comprises of 1362 or 800 fishers). These figures are inaccurate. The problem with lacking confidence in the most basic information (i.e. numbers of fishers and what they catch) is that it is not possible to design an effective project which addresses the real constraints on rural livelihoods nor to understand whether the project is having any impact if the starting point is unclear.

Table 3.17 *Octopus production by grades, 2007–2009*

Year	Nianing			Pointe Sarène		Total	
	Grade	Quantity (kg)	%	Quantity (kg)	%	Quantity (kg)	%
2007	PP	12,578	59.6	10,310	37.9	22,888	47.4
	P	5173	24.5	9163	33.7	14,336	29.7
	M	3041	14.4	6588	24.2	9629	19.9
	G	292	1.4	745	2.7	1037	2.1
	GG	20	0.1	421	1.5	441	0.9
	Total	21,104	100.0	27,227	100.0	48,331	100.0
2008	PP	21	7.2	5872	23.9	5893	23.8
	P	133	45.9	7996	32.6	8129	32.8
	M	84	29.0	5157	21.0	5241	21.1
	G	52	17.9	5148	21.0	5200	21.0
	GG	0	0.0	349	1.4	349	1.4
	Total	290	100.0	24,522	100.0	24,812	100.0
2009	PP	41	1.1	3005	15.0	3046	12.8
	P	1839	48.9	4005	20.0	5844	24.6
	M	1129	30.0	8010	40.0	9139	38.4
	G	376	10.0	3003	15.0	3379	14.2
	GG	377	10.0	2002	10.0	2379	10.0
	Total	3762	100.0	20,025	100.0	23,787	100.0

Source: Ndiaye and Kebe (2010)

Table 3.18 *Octopus prices at different nodes of the value chain in Senegal*

Grade	Fishing		Fishmongers		Processing company	
	US\$/kg	FCFA/kg	US\$/kg	FCFA/kg	US\$/kg	FCFA/kg
P	\$3.34	1700	\$3.93	2000	\$4.92	2500
M	\$4.52	2300	\$4.72	2400	\$5.91	3000
G	\$5.11	2600	\$5.90	3000	\$7.28	3700
GG	\$5.51	2800	\$6.89	3500	\$7.87	4000

Source: Ndiaye and Kebe (2010)

We have no information about the fishery effort (i.e. number of pirogue trips or days fishing per fisherman) required to catch this number of octopus. However, if fishing crews earn an average of US\$52 per trip (one-third of a total boat revenue of US\$156), this implies less than 600 octopus fishing trips per year in both study areas – even at the higher gross revenue estimate of US\$93,000 per year for the two study areas (the lower gross revenue estimate of US\$60,000 implies just 380 octopus fishing trips in 2009). These figures are clearly inaccurate and seriously underestimate the extent of fishing effort in the study area. This is an important variable to monitor to understand the extent of overfishing in a marine resource.

Octopus is sold by the fishers, to fishmongers, of whom there are two categories: micro fishmongers (without factory quotas) or large traders (wholesalers with factory quotas). Octopus sold to micro fishmongers is then resold to larger-scale traders who then sell the product to the Ikagel fish processing factory. In the study area some 99 per cent of octopus is sold to Ikagel for export. Ikagel proceed to clean, sort, freeze, package, market and export the octopus to the overseas markets.

What is striking about the value chain is that – after operating costs have been deducted – the fishers and boat owners operate at high gross margins – about 45 per cent (Ndiaye and Kebe, 2010). Despite the fact that Ikagel have a captive supplier base with several thousand artisanal fishers supplying octopus and presence of one factory with sophisticated processing machinery and a highly perishable product, their gross margins are estimated to be lower, at about 31 per cent. The processing factory is the key link between artisanal fishers and a very sophisticated global market.

Critical issues

The objective of the project is to promote sustainable management of the octopus resource, improve quality management and increase returns for fishers in the study area. The critical issues required to achieve objective were: the overexploitation of octopus; the need to locate and support access to more lucrative octopus supply chains; and low quality of octopus caused by inadequate handling of the catch.

One of the reasons this project failed to have development impact could have been the misidentification of the critical issues. For example, the evidence from the project that higher quality fish do not achieve higher prices suggests that the quality of octopus is not a critical issue. Similarly, the increasing health of the octopus stock (evidenced by the larger size of octopus caught in recent years) suggests that claims of the overexploitation of the resource may be exaggerated. Often the least effective development projects are those that address problems which do not exist. This is why it is so important to fully understand the local context and the value chain before designing and implementing a project.

Table 3.19 overleaf outlines the horizontal and process and product upgrading strategies which the study intended to follow (as the final report outlines, a significant proportion of these activities were not implemented during the project period).

Impact of project on the value chain

Chain-level impacts

The project had very limited impact on the value chain. The volume of octopus landed hardly changed and neither did the unit price. More lucrative marketing outlets than the Ikagel factory were not identified, so no alternative marketing channel was proposed. There is limited evidence that the quality of the octopus increased marginally (rejection rate reduced from an already marginal level 0.5 per cent to 0.1 per cent); however some data suggested that larger octopus were caught (the modal octopus size class increased from 0.5–1.0kg in 2008 to 1.0–2.0kg in 2009, which is a good sign for the status of the octopus stock).

Household level impacts

There is inconclusive evidence of project impact on fishers' household incomes. On the one hand, a similar volume of octopus was caught (although with a slightly greater share of larger specimens) and sold for the same unit price to the same factory – so no grounds to expect fishers incomes to be positively affected. On the other hand, the final report indicates that 5 per cent of fisher households increased their living standards in 2009 accompanied by a sharp increase in the net revenue of boat owners and crews. This apparently contradictory data could only be explained if the number of fishers had indeed reduced significantly from 1360 in 2008 to 800 in 2009. Forty per cent of fishers exiting the octopus value chain and the catch remaining constant would, indeed, lead to sharply increasing fisher incomes for those continuing to participate in the chain – off-set, of course, by reduced incomes for fishers leaving the chain unless alternative livelihoods were more lucrative.

This particular project demonstrates the importance of having robust monitoring data because, without it, assessing project impacts becomes a process of conjecture.

Table 3.19 *Octopus project – Summary of the intervention*

<i>Critical issues</i>	<i>Upgrading strategies (2)</i>	<i>Action points (3)</i>	<i>Activities (4)</i>	<i>Outputs (5)</i>
Over-exploitation of octopus resource	Through horizontal coordination, improve the conservation of octopus and increase the size (and value) of the octopus landed. Process upgrading through preparation for certification against Marine Stewardship Council eco-label	CGRH (Fisheries Resource Management Committee)	Workshops to disseminate ‘best practice’ on sustainable management of the resource (rest periods, repopulation vases, etc.). Disseminate the objectives, process and possible outcomes of eco-label. Establish regulatory framework for environmental management in Department of Mbour	Monitor implementation of rest period and 2000 repopulation vases in study area. Collaboration with fishers and processors to progress towards MSC eco-label certification. Establish and implement a participatory resource management plan including appropriate mobilization, regulations, surveillance and enforcement
Locate and support actors in Senegal to access a more lucrative octopus value chain	Horizontal cooperation to improve bargaining power of fishers and market analysis to identify new markets	CGRH (Fisheries Resource Management Committee)	Strengthen CGRHs, through remobilization of members in accountable management structures. Organize training on financial management, commercialization, IT and marketing to support the transformation of the CGRH to a commercial entity. Identify higher value export markets for traceable, sustainable, ‘fairer’ and high quality Octopus. Distribute up-to-date information on Octopus prices at all nodes of the value chain. Support CGRH in setting up of a revolving fund for the purchase of octopus and collective sales	More representative CGRHs with strengthened fishery resource management and internal managerial and financial competences. CGRH buys octopus from its members and organizes transactions with processing plants. Higher value markets for their Octopus from the case study areas identified and price information disseminated
Low quality of octopus and inadequate hygienic handling	Product and process upgrading: improve quality management of octopus from sea to sale to factory and quality of octopus sold to processor factories	CGRH (Fisheries Resource Management Committee)	Fishers receive training on hygienic handling, quality management and traceability of octopus (including writing of a manual). Insulated tanks installed in each site and independent ice delivery organized so that fishers can store their octopus if necessary	More hygienic and better quality of octopus sold by fishers resulting in higher prices for octopus. Manual of standard procedures for hygienic handling available to, and implemented by, fishers

Source: Ndiaye and Kebe (2010)

Environmental impacts

The final report suggests that some modest environmental actions were taken, such as the sinking of 1650 vases for egg laying and a reduction of the violation of fishing during the biological rest period (from six to three days during the month-long rest period in October) as well as training of fishers in sustainable marine management. One would not necessarily expect to observe the impact of these activities clearly within the comparatively short project time frame. However, the capture of larger octopus in 2009 and the apparently sharp increase in fisher incomes are consistent with the improved management of the resource.

Gender impacts

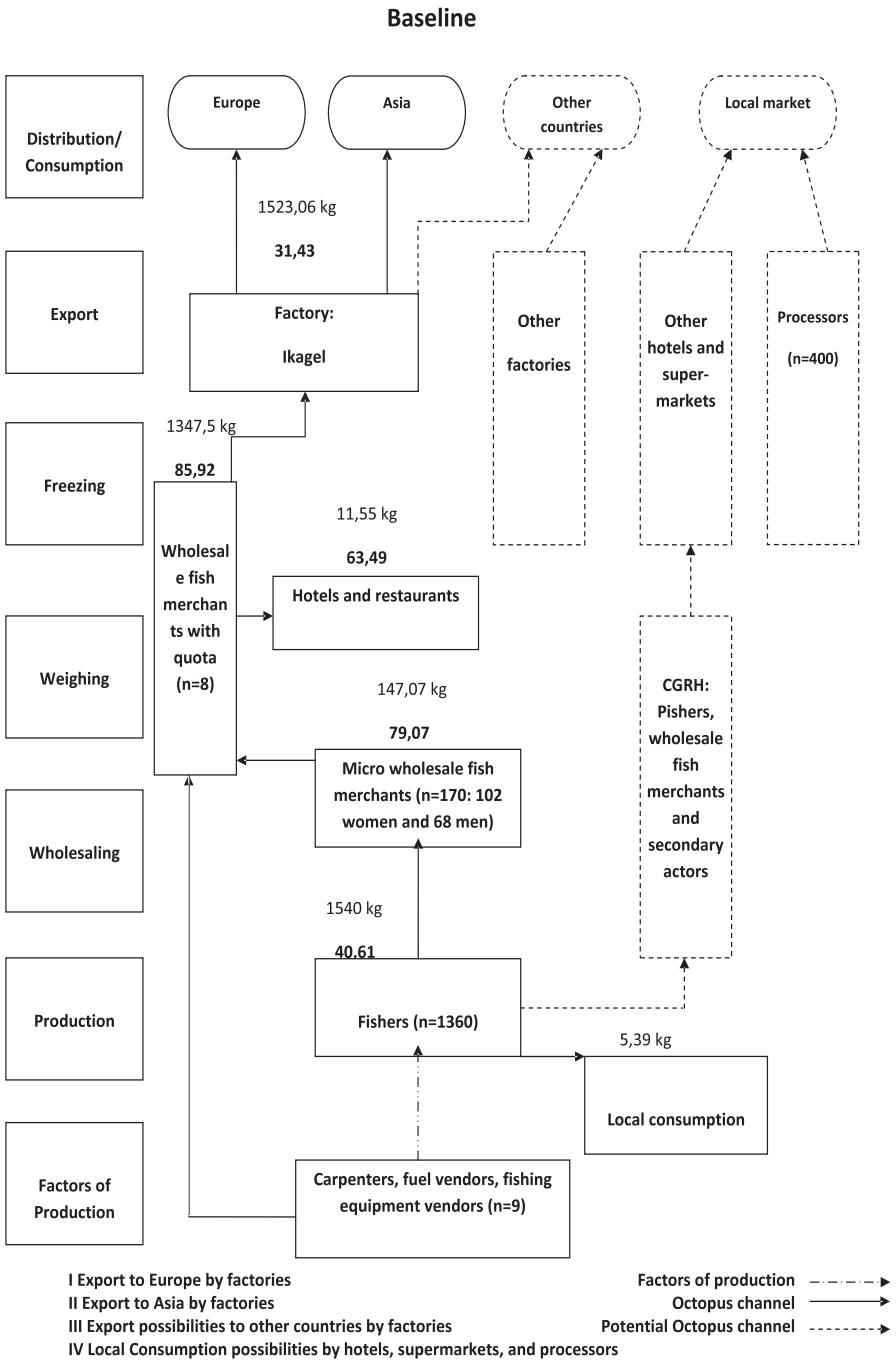
Women are almost entirely excluded from the octopus value chain – their only role being as micro-traders of octopus, which accounted for merely 2 per cent of their time (in contrast with pelagic fish where women control the processing and marketing of all fish). The final report provides no evidence of the implications incurred on gender relations by changes to microprocessor incomes or the apparently large increase in fishers' incomes during the project. Female membership in CGRH activities was significant (240 women members and 11 of 35 steering committee members; however, the impact of this increased level of participation is not clear).

Key findings

This study illustrates how large numbers of low-income fishers can access a high-value globally traded product with comparatively low barriers to entry. The revenue generated from octopus sales constitutes an important livelihood for fishers.

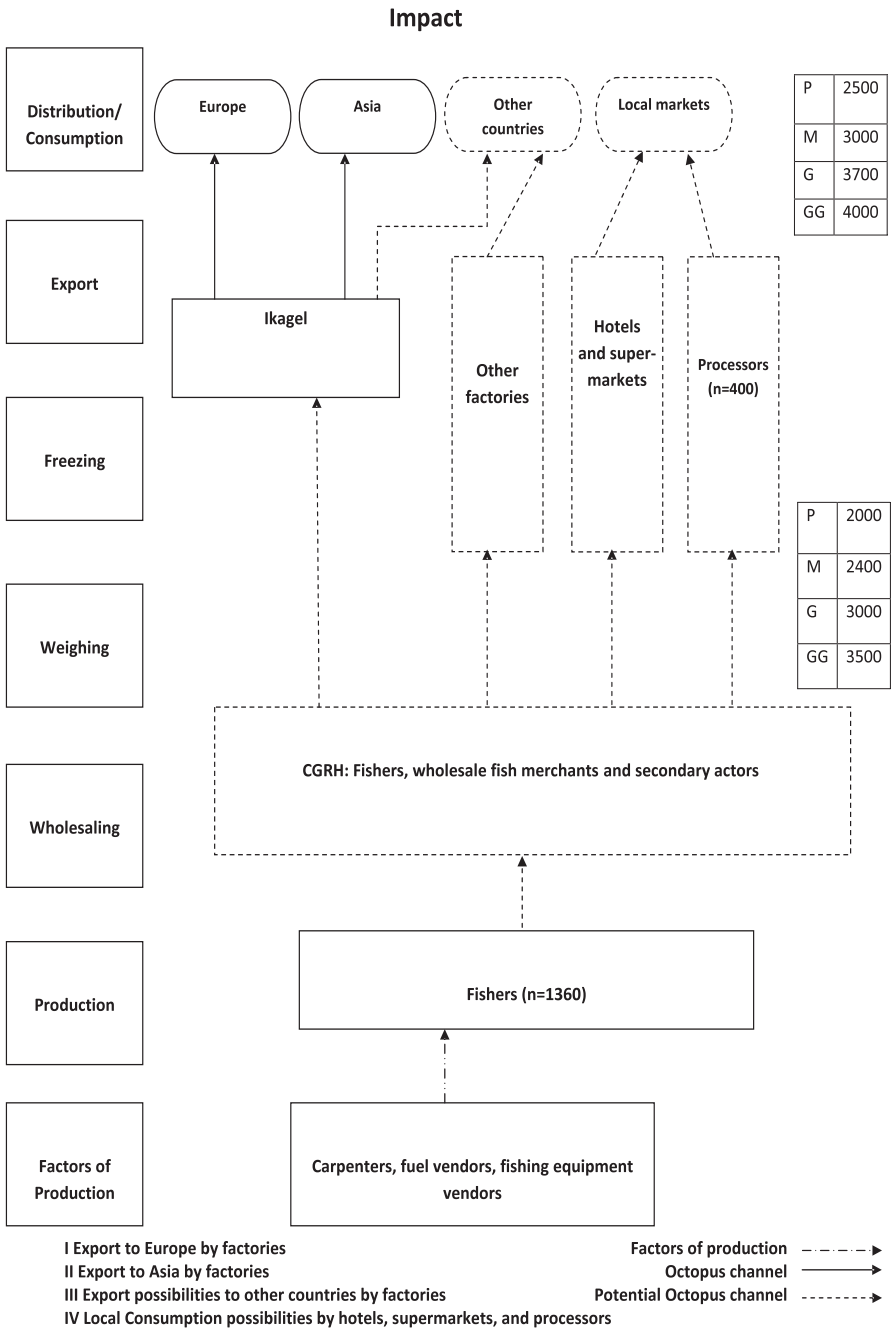
The octopus is a common-pool resource which attracts a high price (US\$4 to US\$6 per octopus, depending upon which unit revenue data are used) and for which there is virtually no government restraint on exploitation in practice. In this context, one would expect the resource to be overexploited to the point that the scarcity of octopus made fishing unfeasible. There is some evidence of overexploitation of octopus. For instance, the decline in the aggregate catch in recent years, the capture of small and immature octopus, and the low catch rate per unit of fishing effort are evidence of overfishing. However, the quite rapid increase in the size of octopus landed in recent years, together with the sharp increase in fishers' incomes and the evidence that some conservation measures are being implemented by local community structures should at least question the assumption that the octopus population is exploited beyond the sustainable rate of extraction. Unfortunately we do not have data on the maximum sustainable yield for octopus.

This study highlights the importance of having accurate baseline information. We do not know with any confidence: the number of fishers, their income, the price they receive for octopus or their catch. With data of this quality, it is not possible to assess the impact of any upgrading strategy.



Source: Ndiaye and Kebe (2010)

Figure 3.28 Octopus value chain diagram – Initial scenario



Source: Ndiaye and Kebe (2010)

Figure 3.29 *Octopus value chain diagram – Intended scenario post-upgrading*

A related issue is the importance that the analysis is led by the empirical data rather than assumptions. For example, this project was formulated on the assumption that fishers are exploited by the monopsony buyer (the processing factory) and that the quality of octopus was a critical issue. Notwithstanding all the caveats about data, it appears that the fishers and boat owners are capturing a reasonable price for octopus landed (US\$4 to US\$6 per octopus on average). The finding that only 0.5 per cent of the octopus catch was rejected on quality groups in 2008 strongly suggests that the post-capture handling of octopus is not regarded as a problem by the market. This suggests that a strategy based on extracting higher octopus prices for fishers from better quality stock is unlikely to succeed. In addition to serious project implementation issues, the limited impact of this project could reflect the fact that several of the three critical issues do not, in fact, exist.

The project illustrates the weakness of focusing the analysis and value chain development on the upstream (production end) of the value chain to the exclusion of the market. The consequence of this traditional, supply-side preoccupation with producers is that fishers invest time and resources in upgrading themselves, but without the reward of access to new more advantageous markets. To the extent that upgrading absorbs resources, such an approach risks increasing poverty among producers (by increasing cost without increasing revenue) – not reducing it.

The development sector often confuses the participation of women with their gain from value chain upgrading. The focus of this project on achieving heightened female participation in the steering committee structures of the fishery resource management committee came at the exclusion of understanding the degree to which women hold any control over the resources earned by men from the chain, thus illustrating this weakness well. If women can control the resources earned by men from octopus, then the project can have positive gender impacts irrespective of who participates in local management structures. However, if men control the resources generated by octopus and spend the proceeds in a way which does not benefit the household, the potentially adverse gender impacts of developing this chain are not reversed by the presence of women co-opted onto management structures.

‘Enhancing participation of small-scale producers and labourers in high-value kalamansi chain’ (or ‘the kalamansi project’)

Larry Digal, Pedro Tuason and Christopher Coles

This project was among the most successful in the programme in achieving both development and research goals. This was facilitated by a highly rigorous monitoring approach by the project team, in addition to their flexibility in reacting to a highly dynamic (and politically volatile) situation, in addition to challenges brought about by natural disasters. Importantly, the team responded to changing circumstances and failed initiatives by re-evaluation

and replanning; they were creative in seeking new opportunities and leveraging external (particularly political) support and pragmatic in accepting failures. Their economic analysis of the target value chain was very thorough, giving us a very good understanding of how it functions. The project was weaker, however, in relating the target value chain to other livelihood activities at the household and community levels, limiting what we could conclude regarding broader-scale poverty and environmental issues.

Introduction to kalamansi in The Philippines

The Philippines is the world's sole commercial producer and exporter of kalamansi, a small lime-like citrus tree fruit. It is used in its fresh form as a condiment or processed for use as a flavouring or to make juice and juice concentrate for domestic and export markets. The main domestic demand is in the wholesale and retail markets of Metro Manila in the northern island of Luzon, about 1000km north of the study area. The main challenges within the sector are to maintain consistent, year-round, high quality supply in the context of disparate, and sometimes remote, production areas.

Location and general livelihood context

Kalamansi was chosen by the municipality of Siay, Zamboanga Sibugay, Philippines (Figure 3.30) as its product in the One Town One Product (OTOP) scheme. OTOP is a national government programme (supported by the Japanese bilateral aid programme – JICA) geared towards focusing economic development efforts on a single product where the municipality has comparative and competitive advantage.

The Zamboanga Peninsula is the fastest growing kalamansi producing region in the Philippines, its output increasing at 18 per cent per annum (with the area under cultivation growing by 14 per cent) from 2001 to 2006, during which period national growth averaged 2 per cent. In addition, in Siay, kalamansi produces fruits all year round thanks to flood-borne nutrients. It is more flood resistant than other crops, such as rice.

Approximately 34 per cent of Siay's households fell below the poverty threshold income, which was estimated at US\$10¹⁹ per day for a five-member household in 2006. Poverty levels in Siay are seven percentage points higher than the national average. Before the project, the average per-hectare income of kalamansi growers was US\$45.46 per month (US\$1.5 per day). With an average farm size of 2ha this translates to a typical net income from kalamansi of around US\$92.43 per month or US\$1.50 per day.

Farm labourers earned around US\$43.26 per month or US\$1.46 per day. Thus, the income of both growers and labourers was a very long way below the poverty threshold level even if both husband and wife work as growers and labourers simultaneously.

In many cases, women handle household income and budgeting. Labourers, particularly harvesters, are mostly women. At the beginning of the study informants indicated that their meticulous and patient work produced high



Source: Digal and Tuason (2010)

Figure 3.30 *Action area location: The municipality of Siay in Zamboanga Sibugay province, Mindanao Island, The Philippines*

quality fruit but the men were able to harvest greater volumes in a given period. Payments to pickers are volume not quality based.

Siay's growers widely use chemical fertilizers, pesticides and insecticides. Catholic Relief Services (CRS) staff introduced a natural farming technology system (NFTS) to the cooperative. Members' uptake of this new technology had been relatively low, perhaps due to falling yields during the transition period.

Deforestation is a major issue in the study area. Some of the wooden crates used in marketing kalamansi were sourced from suppliers who operate without government permits. In addition, a lack of crates has at times been the limiting factor in whether kalamansi producers can fulfil buyers' volume requirements. CRS and the cooperative initiated tree nursery systems to address this input supply and environmental degradation issue.

The study area is located in a region that has seen decades of insurgency with complex causes but most directly related to the campaign for self-determination of the Moro people (an ethnic group). There is, however, a debate surrounding whether the conflict is a symptom or a cause of the ongoing poverty, poor governance and underdevelopment.

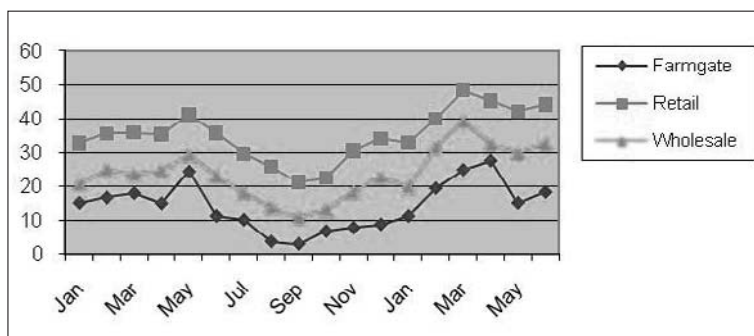
Value chain description and target group

Thirty-seven of the initial 84-member target producer group, and more than 33 per cent of cluster leaders, were women. Both husbands and wives participate in household kalamansi growing activities with women commonly involved in picking, sorting and, sometimes, hauling smaller loads of the harvested fruits for sorting. Some women are also involved in spraying trees. Men are most heavily involved in hauling harvested fruits, pruning and spraying trees. Family individuals' labour inputs are not remunerated directly because farm income is family income.

Fresh kalamansi or unprocessed markets (wholesalers and dicers) for kalamansi are both local and national. Despite their comparative advantage in being able to produce year-round, Siay's kalamansi producers are disadvantaged by their high marketing costs attributable to poor road infrastructure and remoteness from Metro Manila markets. Therefore, they are only price competitive in the metropolitan markets for seven months of the year (when producers in other regions do not produce sufficient volumes to meet market requirements).

Among the outlets for fresh kalamansi are restaurant chains that use the fruit as a garnish for meals. One such firm based in Metro Manila is a fast food chain, which supported Siay producers to experiment with modified atmospheric packaging (MAP) through its CSR trust fund in order that they may meet its quality requirements despite long shipments by sea. However, although the offer of a year-round contract was attractive the buying price offered little or no profit due to the high packaging and shipping costs, and contract negotiations ended.

Processed purees and juice concentrates are retailed in domestic supermarkets and are also in demand internationally. Following the failure of some unprocessed fruit buyers in Manila, the project began to support a cooperative in producing packaged concentrate. It worked with a local exporter of goods to Canada to solve initial spoilage issues and gained an export contract. As part of the re-strategization process the cooperative also evaluated other sales opportunities including processed kalamansi products for local markets such as juice dispensers in public sector outlets (see also Box 6.1, Chapter 6).



Source: Digal and Tuason (2010)

Figure 3.31 Aggregated monthly unprocessed kalamansi prices (PhP/kg) at farm gate, wholesale and retail nodes in the Philippines 2007/08

The kalamansi market is highly dynamic with high price volatility according to fluctuating production levels and demand. The cooperative experienced a high degree of ‘pole-vaulting’ (i.e. members of the cooperative, committed to selling produce to meet a contractual obligation, actually selling kalamansi on the spot market when prices are more favourable), because its overhead costs meant that it could not compete with spot market prices offered by private wholesalers locally. Figure 3.31 illustrates the level of price volatility in the wet kalamansi market.

Critical issues

The issues that this project aimed to address were as follows:

- Siay producers are not price competitive in Metro Manila market for the five months of the year, when other production areas are marketing fruit because the production and marketing costs of the target group are high, sometimes exceeding market prices).
- Low quality kalamansi (short shelf life and scabbing) does not meet fast food buyer standards and limits the price in other fresh markets.
- The demand for wood for packaging creates sometimes exceeds supply.

Table 3.20 outlines how critical issues were built into the project framework.

Value chain level impacts

Figures 3.32 and 3.33 depict key parameters of the value chain before and after project interventions. The cooperative sold around 96MT of wet kalamansi to wholesalers and processors from November 2008 to April 2009 with an average price of US\$10.30/crate or US\$0.45/kg, which is about 18 per cent higher than average price received during the same period the year before

Table 3.20 *Framework for the Philippines kalamansi action research project*

<i>Critical issues</i>	<i>Upgrading strategies</i>	<i>Action points</i>	<i>Activities</i>	<i>Outputs</i>
Not price competitive in Metro Manila market five months in a year	Functional upgrading (create new strand-processing) Vertical coordination	Siay cooperative Department of Science & Technology (DOST) Department of Trade & Industry (DTI) Bureau of Food & Drug Administration (BFAD) Local government unit (LGU) Western Mindanao Agicultural Research Center (WESMIARC)	Conduct market study on processed <i>kalamansi</i> concentrate Product and distribution channel development with DOST Establishment of processing facilities Seek government assistance in: Registration – BFAD Bar-coding – DTI Nutrition Labelling – DOST & BFAD Linkage development for OTOP kalamansi Market promotion through Mindanao Display Center Mentoring the cooperative Board of Directors on market negotiations	Market study completed Processing plant established, <i>kalamansi</i> concentrate formulation and processing standardized, plant personnel trained. Company and processing plant registered with BFAD Product labels with bar code and conforming to nutrition labelling requirements Farmers increase their sales of kalamansi for concentrate processing to the Siay coop Siay cooperative starts producing kalamansi concentrate Siay cooperative sells juice concentrate to exporters and retailers in Metro Manila and other cities, with high proportion of repeat sales to same buyers
Price fluctuations in main markets going below production and marketing costs	Vertical coordination	Siay cooperative Wholesale buyers	Cooperative to identify and negotiate with wholesale buyers	Increased sales of fresh <i>kalamansi</i> fruits to other wholesale buyers
Low quality kalamansi (short shelf life and scabbing) does not meet Jollibee standards and reduces the price in other fresh markets	Product upgrading	Siay cooperative and the clusters	Farmers training on NFTS (Oriental Herbal Nutrients) Farmer-managed demo establishment on NFTS application for each cluster Cooperative to source NFTS materials and provide to each cluster	122 producers trained and coached on NFTS 11 farmer demo areas (1 for each cluster) NFTS materials sourced by coop and credit in kind provided to 11 clusters

Table 3.20 (Continued)

<i>Critical issues</i>	<i>Upgrading strategies</i>	<i>Action points</i>	<i>Activities</i>	<i>Outputs</i>
High production cost	Process upgrading Functional Process	Siy cooperative and clusters Siy cooperative and clusters BLGU, MLGU, PLGU CRS-SFMP	NFTS training as above.	122 producers trained and coached on NFTS 11 farmer demo areas (1 for each cluster) NFTS materials sourced by coop and credit in kind provided to 11 clusters.
High marketing cost	Process upgrading	BLGU, MLGU, PLGU Siy cooperative CRS-SFMP	Meetings with BLGU, MLGU, PLGU to discuss road improvement and loan of grader	Meetings with BLGU, MLGU, PLGU conducted and grader provided Gasoline for the grader from CRS-SFMP provided
Increased use of wooden crates increases demand for forest-sourced wood	Functional Process	Siy cooperative farmers and clusters CRS	Provision of seedlings to kalamansi growers through the 'trees for crates' programme. Establish nursery for <i>Falcata</i> seedlings	Seedlings planted by farmers <i>Falcata</i> nursery established Farmers source more crates from the cooperative

Abbreviations: BLGU – Barangay local government unit; MLGU – municipal local government unit; PLGU – provincial local government unit; CRS-SFMP – Catholic Relief Service-Small Farmers Marketing Program

Source: Digal and Tuason (2010)

(November 2007 to April 2008). Non-cooperative members enjoyed a higher average price increase of 37 per cent although members still received higher absolute prices.

While factors that contribute to increased prices include quality improvements, differences in market targeted, inflation and undersupply, there was some evidence that exploring alternative markets to local traders enhances bargaining position of producers. Large local traders' ability to control the market has weakened since producers have marketed their product directly in main markets such as Metro Manila. The 18 per cent price increase received by the cooperative is higher than the national increase in wholesale price of 15 per cent as well as the inflation rate of 7 per cent during the same period. Price increases were one of the contributory factors to a 37 per cent rise in average net income from kalamansi per hectare over the project's lifetime. Other factors included a reduction in production and marketing costs.

Cooperative members sold a relatively high proportion of their output to higher value markets in Manila and other cities outside Siay. They incurred higher marketing costs, sold lower volumes and had lower profits than non-members, who sold mainly to traders or dicers at the farm gate.

The cooperative has a limited market, which is reflected in the relatively low volume of fruit it buys from its members. In addition, it was affected by 'pole-vaulting', where members wanting fast cash or to avoid paying the cooperative levy for its services sell to other buyers, who can often offer more competitive prices because they have lower overhead costs (see also Box 4.2, Chapter 4).

Partial adoption of NFTS by members decreased their yields (whereas full implementation resulted in increased productivity after the transition period on demonstration farms). Other limiting factors for yields affecting all farmers included poor weather (flooding), suboptimal spacing of trees, high incidence of pests and variability in soil quality and the practice of leaving fruit unharvested to spoil when the market prices are lower than harvesting and marketing costs.

An econometric analysis for all growers in the evaluation survey identified price as a significant determinant of net income from kalamansi. For every one peso price increase, income increased by about US\$93.52 at the beginning of the project and US\$122.96 at the end.

Provision of raw materials for NFTS made the scheme more accessible by proving credit-in-kind. The initiative reduced the incidence of scabbing and decreased production costs. In addition, marketing costs were lowered through the improvement of access roads within the production area (see also Figure 9.1, Chapter 9).

Poverty outcomes

The study provides compelling evidence for increasing incomes from the target value chain but provides little means of examining these impacts in the context of other household activities. Although the post-project share of total income from kalamansi had increased by 18 per cent (from 38 per cent to 45 per cent of

Table 3.21 *Average daily income of cooperative members and non-members (US\$) before and after the kalamansi project's interventions*

Group	Baseline	Impact	Change
Members	2.33	3.12	+0.79
Non-members	2.81	3.98	+1.17

Source: Digal and Tuason (2010)

total income) it still only accounted for less than half of the target group's total income. Furthermore, non-target group farmers' outcomes were often better than those for the target group, calling into question exactly what impacts the project's interventions had (Table 3.21).

Labourers' total income increased significantly even while growers decreased their total expenditure on hired labour. These increases may have been derived from working with other growers not covered by the survey or from the other sources of income such as carpentry, masonry and trading that constitute around 50 per cent of income.

Assuming that the increased income from kalamansi was indeed additional and not substituting for that from other activities, there was a suggestion that it was invested in assets and savings rather than in increased food intake. There was a decline in borrowing, which would seem to support this assertion.

Environment outcomes

The environmental gain of sourcing wood for fruit crates from certified sources (rather than unregulated forests) depends upon the credibility of the certification scheme. It is not clear how significant an environmental issue supplying the demand for wooden crates from uncertified sources is.

Adoption rates of NFTS were lower than the team had hoped. In addition to reduced yields, compared with those associated with chemical-based production, the longer-term environmental (and, therefore, agronomic) benefits derived from the organic growing process are rather intangible to producers and many remained unconvinced by such arguments. Caveats to conclusions about the negative impact on productivity of NFTS are that the impacts are being measured in the short term and that not all adopters implemented the system in full. The wider environmental impacts of NFTS were not clear but would have been diluted by its partial implementation by a limited subset of the producer community.

Gender outcomes

With women already having an active role in decision making and financial control in the Philippines the productivity and income gains they made from technological innovations in harvesting technology benefit the entire household. For the same reasons, although women's relative contribution to the household economy has increased this has not altered intra-household gender dynamics.

Key findings

This project illustrates that it is possible to increase producer and labourer incomes, even in very poor, remote and unstable rural regions, by simultaneously reducing costs and exploring alternative (mainly domestic) markets. Improving the viability of kalamansi production does feed through into the labour market rates for day labourers and does not reduce household food security or crowd out other livelihood strategies.

Despite support from the large fast food chain, the costs of meeting their quality requirements (necessitating the use of specialized packaging systems) with long-distance road and sea transport rendered the Siay cooperative uncompetitive (see also Box 5.3, Chapter 5).

The benefits of organic production may only be realizable if producers are able to take a longer-term view and to implement the system fully. Partial implementation over the short term resulted in lower yields without the accompanying environmental and agronomic benefits.

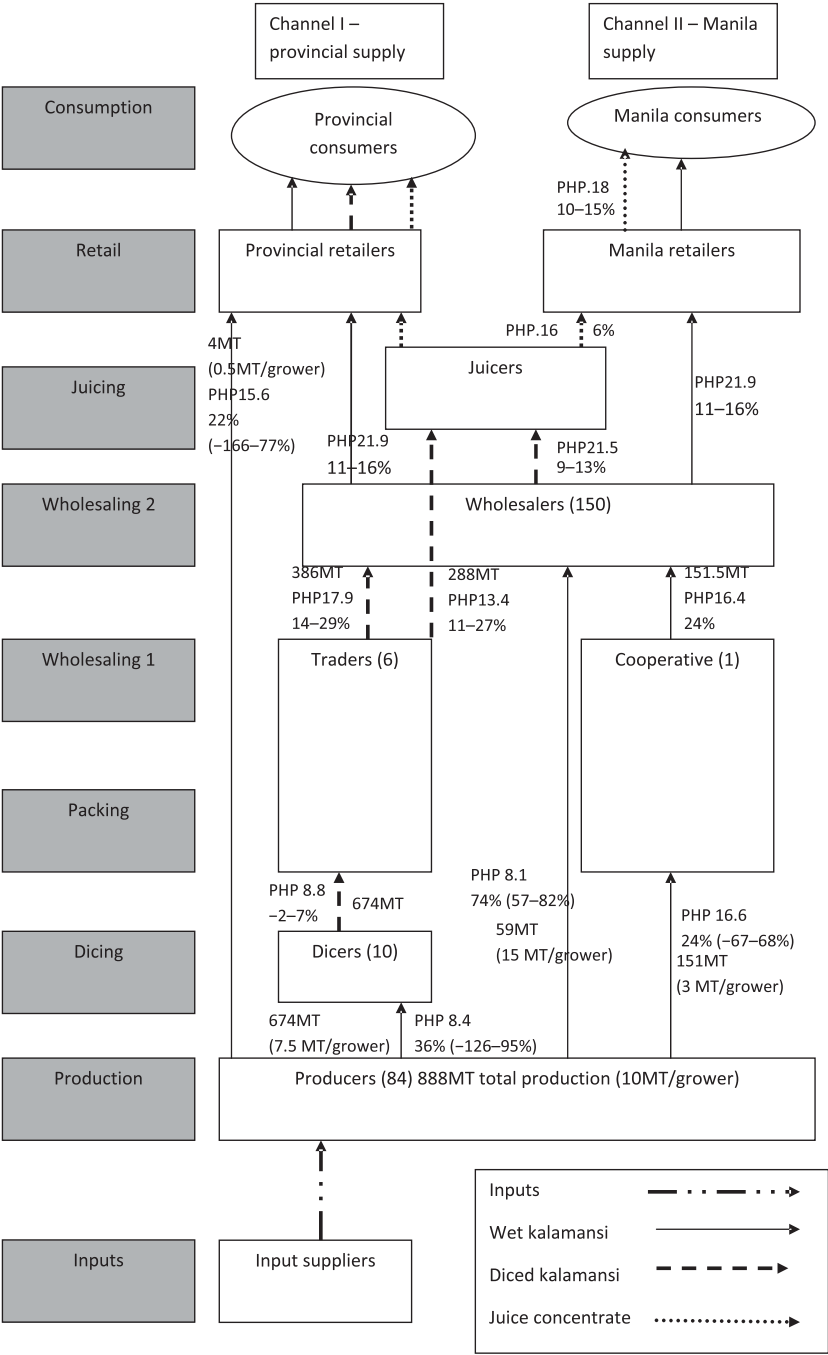
Although still under development when the project closed, the concentrate processing strategy has the potential to improve incomes by smoothing supply, adding value and ‘levelling the playing field’ in terms of reducing the impediment of the growing area’s remote location.

Without the right incentive structures it is difficult for cooperatives, with the overhead costs associated with their services, to compete with private buyers operating in spot markets. This was manifested by the phenomenon of ‘pole-vaulting’, exacerbated by the cooperative’s relatively low and falling sales volumes. The issues raised by the cooperative’s performance include:

- Is there something inherently problematic in the cooperative, perhaps in the form of high overhead costs?
- Does the project show that the vertical upgrading strategy was incorrect in binding growers into supply contracts which are less viable than selling to traders at the farm gate?
- Were the potential benefits of cooperative membership masked by unpopular initiatives like the NTFS?
- Are there important spillover effects where non-members were free-riding on cooperative benefits by, for instance, benefiting from rising local prices only because the cooperative had accessed more distant markets or from road improvements which were only achieved because the cooperative had successfully lobbied for them?

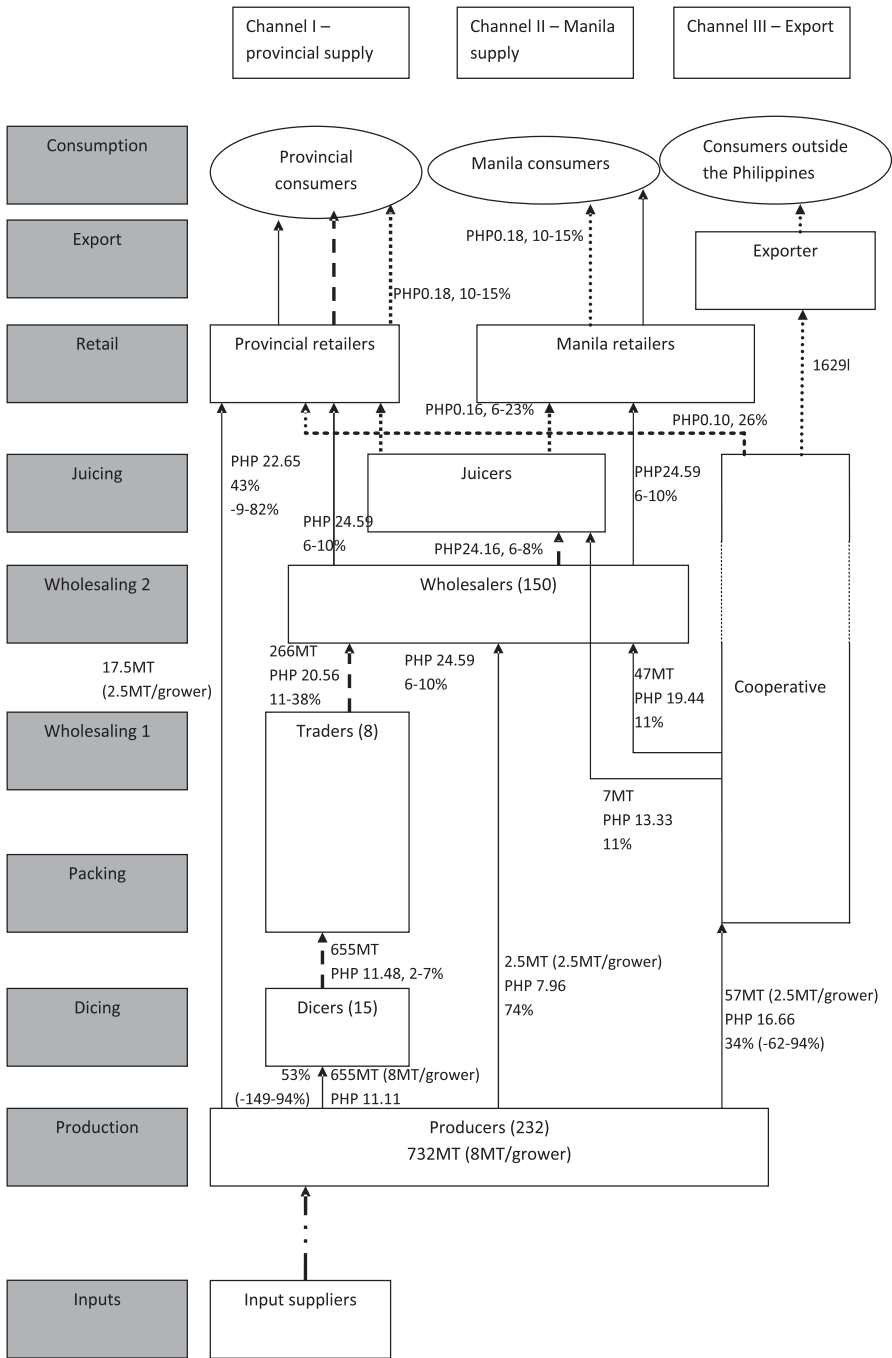
The highly dynamic kalamansi market caused the need for flexibility and responsiveness to new market intelligence. Vulnerability to volatility in wet markets was tackled by diversifying into new value chain strands including processing, which has the potential to smooth supply and demand and offer a more stable market.

This project questions the wisdom of the OTOP development strategy from two viewpoints. First, why was Siay designated (apparently on competitive advantage criteria) a kalamansi municipality when production of the fruit



Source: Digal and Tuason (2010)

Figure 3.32 Kalamansi project – Initial value chain map



Source: Digal and Tuason (2010)

Figure 3.33 Kalamansi project – Final value chain map

is unviable in the major domestic markets for almost half the year? Second, irrespective of the roller-coaster viability of kalamansi throughout the year, is it a sound development strategy to seek to increase the dependency of livelihoods in a whole local economy to one product?

The high profile role of women in financial control and decision making at a household level (much more significantly than in cluster or cooperative structures) meant that although technological innovations improved the productivity and income of female labourers, the whole household shared in these gains.

The project demonstrates the huge barrier of distance from markets, faced by producers in remote, rural locations. The costs of moving products to market reduce (sometimes to zero) the viability of rural production and can, at times of the year, make it more viable to leave fruit on trees than harvesting it. The critical role of the state in providing public investment in infrastructure (and also possibly juice processing also) is necessary to improve the competitiveness of lagging rural regions. In this project, road repairs led to reductions to transport costs, which significantly improved the viability of production in the study area.

Notes

- 1 Below poverty line (BPL) is defined as the cost of an all India average consumption basket at which calorie norms were met. The norms were 2400 calories per capita per day for rural areas and 2100 calories for urban areas. These calorie norms have been expressed in monetary terms as per capita consumption expenditure below INR356.35 (US\$7.8) for rural areas and INR538.60 (US\$11.8) for urban areas.
- 2 Exchange rate of US\$1=INR45.45.
- 3 There are 100 paise to the Indian rupee, the exchange rate used is 45.45 rupees to the US dollar.
- 4 The machines have proved very popular and INBAR is investigating local production rather than import from Vietnam. The costs of locally produced machines could be recouped within one year.
- 5 Djouka is precooked fonio mixed with groundnut and salt.
- 6 Or 153,310 CFA XOF as of 2005, income estimated as necessary to sustain calorific intake.
- 7 At an exchange rate of 1 CFA XOF = US\$ 0.00191.
- 8 The amount of purchased with the bank lending was 60,606MT, the UACT used its own resources for the rest.
- 9 Gross margins have been calculated using Tables 3.3 and 3.5.
- 10 Calculated on the basis of sum of total profit redistributed to the female members of the UACT in 2007 (Table 3) and (2009) from precooked and djouka sales.
- 11 Estimates as to the total amount of marketable surplus fonio surplus prior to the projects interventions by UPAs were 108MT, of which 11 per cent (12MT) was sold to the UACT, based on average productivity levels of approximately 300kg/ha.
- 12 Assuming 760 households (UPAs) yielded 600kg/ha of fonio from a total area of 1.3ha.
- 13 Exchange rate is 15991.47 Vietnamese dong to the US dollar.
- 14 SQF1000 is a Hazard Analysis and Critical Control Point management system (HACCP) -based supplier assurance code for the primary producer and is administered by a division of the Food Marketing Institute (FMI), based in Virginia, USA.

- 15 Government of Tanzania/USAID, Demographic and Health Survey 2004/05.
- 16 US\$1 = NPR68.45 in 2008 and NPR73 in 2009.
- 17 US\$1 = INR40 in 2002/3 and INR45 in 2009.
- 18 Despite being less than half the income level of international headcount poverty measure of US\$1.25 per person per day, the target households in India were above the official state poverty line of INR478 per capita per month (or US\$0.35 per person per day). The fact that the target group were not officially poor therefore reflects the low level of the official poverty line rather than the affluence of the target group.
- 19 Exchange rate of 46 PHP to the US dollar.

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4

Working Together – Horizontal Coordination as an Upgrading Strategy

Christopher Coles and Jonathan Mitchell

One of the main obstacles facing small-scale enterprises in developing countries is the very fact that they are small-scale. Horizontal coordination is the process of firms (which can be as small as individual actors) collaborating within a functional node (be it input supplies, production, processing, trading or retailing) to achieve a strategic balance between competition and collaboration. The aim is to collaborate in order to compete more effectively. Competition drives innovation and upgrading, while cooperation helps firms to achieve economies of scale and overcome common constraints to pursue opportunities (Rosenkopf and Almeida, 2003).

The central question we address in this chapter is: Can horizontal coordination in value chains improve poverty, environment and gender outcomes and, if so, under what circumstances and how?

The nature and benefits of horizontal coordination

The purpose of horizontal coordination is to address shared constraints, interests and entry barriers associated with scale. These include high transaction costs, low and poor quality output, weak negotiating power and lack of capital and management of common property resources. The formation of horizontal alliances is driven by market forces. For example, Neven and Reardon (2002) describe how cooperation in the horticultural sector may be induced by consolidation in downstream retail markets requiring larger-scale deliveries from suppliers. Financial and technological requirements may require pooling resources across firms with different comparative advantages but which are still similar enough to do business. A retail organization

may require year-round supply, implying a need for producers to collaborate across climatic zones.

There is a spectrum of increasingly formalized modes of horizontal interactions from loose, irregular collaborations, like those of smallholder farmers sharing transport to market their produce (or tour guides attending periodic tourism interest group meetings), to full share companies such as coffee cooperative unions. Between these extremes, there are intermediate institutional models such as registered self-help groups (SHGs) and marketing organizations. Institutions can be multilayered and hierarchical, spanning regions, nations and even whole sectors of the global economy. The model that is most appropriate depends upon the common objectives as well as individuals' resources and knowledge and group rules and relationships.

Value chains are dynamic and, therefore, the appropriate model for horizontal coordination is likely to change as the value chain develops. This suggests that, whatever model is chosen, a key consideration should be the ability of the model to adapt to innovation and rapidly changing circumstances. The implementing entity for the incense stick project (a grass-roots NGO), for instance, adapted remarkably successfully from having a monopoly on the output of stick rollers to facilitating links between the producers in SHGs and commercial purchasers of rolled batti. However, whether the SHGs and the NGO TRIBAC (Tripura Bamboo and Cane Development Centre) are the best organizational form to support the dissemination of stick rolling machines (with their capital investment requirements and game-changing increase in productivity) is less clear (see project summary in Chapter 3).

There are very many variations in the structure of horizontal organizations. Indeed, in the case of producers' groups and marketing structures there are almost as many designs as there are support agencies who implement them. However, we can broadly generalize a typology based upon degree of formality and purpose (Table 4.1).

Table 4.1 *A broad typology of horizontal organization*

<i>Status and purpose of horizontal alliance</i>	<i>Scale</i>	<i>Examples</i>
Informal, functional	Household to international	Fishing crews; multiple-household farms; peer-to-peer-learning arrangements
Formal, functional	Micro to national	Producers' and traders' associations; microcredit schemes; community-based organizations
Formal, regulatory and advocacy/promotion	Regional (sub-national) to global	Industry associations; business chambers
Formal, economic (share company)	Local to national	Cooperative union (primary association and apex); business groups with centralized service functions

Source: Authors

Decisions on group structure are influenced by the types of group ‘status’ available (and being promoted) within national legislation. In the Indian bay leaf project, for example, there is strong national and state encouragement for involving rural producers in SHGs and financial incentives are provided to new groups that maintain a bank account for at least six months. Minimum requirements for SHGs, which are broadly in common with similar registered organizations in other contexts, are the existence of a constitution of some kind, elected leaders, regular meetings and a bank account. In addition, they are usually required to have a savings scheme for members and there is an expectation that members will invest capital in the groups’ activities.

In the past, producer groups were often state-imposed collectives, designed to link individuals with monopsonistic, state-run commodity boards. In addition to exploitative economic relations, state-led cooperatives were often used as a fairly blunt instrument for political control. As a result, cooperatives may still be viewed with suspicion by communities of producers (see below for further details).

It is striking that horizontal coordination focuses largely upon the production node in the development economics literature and much development practice. Underlying this production focus are a range of implicit assumptions – perhaps the most prevalent being that to help the resource poor one should work with them. The projects summarized in Chapter 3 also have this production focus and they demonstrate some of the weaknesses of this approach. Working directly with producers may not be the most cost-effective way of generating a pro-poor impact at scale. It may also encourage a supply-side approach which does not take a detailed assessment of market conditions and opportunities as the starting point for a value chain analysis, and may ignore the central tenet of value chain development – fostering a mutually beneficial strategic partnership among actors at all levels along the chain.

An example of horizontal coordination taking place downstream of the production node is the formation of the Sea Freight Pineapple Exporters of Ghana (SPEG) – a business partnership between large farmers, export companies and the government (with USAID support). As a result of better coordination within the pineapple cluster, sea-freighted pineapple exports increased rapidly from 16,000MT in 1995 to 57,000MT in 2003. This expansion of production has benefited large, medium and small-scale producers and increased farm-level incomes and employment (Gorman and Webber, 2010). Obviously, it cannot simply be assumed that, because of an increased volume of pineapple exports, low-income farm workers and producers have benefited (often export-promoting projects are particularly weak at demonstrating convincingly this linkage between exports and the resource poor). However, in cases where expanding exports do feed back into higher low-income household budgets, an intervention at the export node could have a greater poverty reduction impact than working exclusively with large numbers of small producer groups in isolation.

Horizontal coordination is very often an essential prerequisite for vertical coordination and functional upgrading. For example, retailers are often the first node in the chain to grow to the size where they can deliver the quantity,

quality, economy and variety demanded by consumers (because they are best placed to understand changes in the customer demand). This growth can be indigenous (that is, through reinvestment and gradual expansion) or can take place by forming horizontal alliances (including, at the extreme, mergers and acquisitions). The existence of large-scale retailers and small-scale suppliers creates an asymmetry, which puts pressure on upstream firms to start cooperating. In the words of Neven and Reardon (2002), ‘... truly meaningful vertical alliances can only be formed after horizontal alliances have led to organizational structures that have resolved the asymmetry problem’. The objectives of horizontal coordination can be summarized as follows:

Pooling resources to share costs and risk

Where participation is contingent upon heavy and risky investment, large resource requirements or economies of scale, horizontal coordination brings together individuals’ assets and dilutes costs and risks. For example, as was the case in the octopus project, boats and gear are not affordable for many individual artisanal fishers but without them they cannot participate in offshore fishing. Fishers who own assets often struggle to cover running and maintenance costs. Therefore, fishers form largely informal alliances and work as crews to operate the equipment and share the revenue from each catch among the crew, the owners of the engine and of the boat – often on the basis of a one-third share to each.

Cost sharing is also a common feature in markets characterized by onerous standards, where compliance and verification costs are prohibitively expensive for individuals and fees are shared among group members (Aranda and Morales, 2002; Garza and Trejo, 2002; Lyon, 2002; Méndez, 2002; Bacon, 2005; Ruben, 2008). All functional groups, such as producers’ associations and cooperatives, offer fixed cost sharing to their members, for example in processing, transport and branding. Box 4.1 below describes how the pangasius project shared costs and risks between participants.

Achieving economies of scale and reducing costs

Horizontal coordination can generate scale economies (bulking) in both input and output markets. Bulk input purchase can reduce costs or allow higher quality inputs to be purchased while keeping costs stable (e.g. Roy and Thorat, 2008). Bulking of outputs generates economically feasible volumes that attract buyers and open up new market opportunities. It also decreases transaction costs for buyers and sellers alike. Centrally bulked sales of honey in Muzzafarpur, India reduced marketing costs and increased producers’ profits (Kumar, 2009), for example.

Sharing skills, technology and innovation

Horizontal coordination can promote collective learning. This may be simply via information exchange through increased contact with other actors engaged

BOX 4.1 EXAMPLE OF COST SHARING THROUGH HORIZONTAL COORDINATION IN VIETNAM

Increasingly stringent food quality and safety standards in EU and US export markets are being applied to fish production in the Mekong Delta. At the beginning of the project in 2007 there were virtually no externally imposed quality standards on production. As a consequence, small-scale fish farmers were using large quantities of locally produced feed (generally fish caught from the river), stocking at very high densities and lacking any effluent control from farm discharges into the Mekong.

The project piloted the implementation of the SQF1000 food safety standard for the target producers, which involved capital investments in infrastructure, such as water sanitation and filtration, and operational expenditure on certification and auditing. This expenditure is beyond the means of individual fish farmers, but sharing costs between members of the newly established producer group, The Tan Phu Clean Pangasius Club, reduced individual contributions to 8 per cent of the total figure. This is an example of collective action allowing pangasius producers (with an average household income in the Mekong Delta in 2008 of US\$4735 per year) to enhance the quality of their output without facing impossibly high barriers to entry.

Source: Khiem et al (2010)

in similar activities, or through deliberate group-based initiatives such as exchange visits and study tours. For example, the facilitators of support groups for Indian incense stick producers became aware of new processing technology during a visit to Vietnam and were subsequently able to disseminate knowledge of this innovation throughout their network of SHGs.

Accessing services and information

Organizations can enable access to services such as financing, information, technical support and donor and government support on favourable terms and at lower marginal costs than individuals (and group membership is often a prerequisite for participation). For example, in Indian export horticulture, market information is obtained at high fixed costs (attending trade events and meeting buyers) on behalf of smallholder farmers by a cooperative union and disseminated to them effectively at low marginal cost (Roy and Thorat, 2008).

A viable organization can assist its members in gaining access to public services serving both the interests of its members and service providers by reducing the transactions costs faced by both parties (Stockbridge et al, 2003). Horizontal organizations are also able to leverage collective power for gains in other activities. For example, the organizational and business skills gained by board members of fair trade coffee cooperatives in western El Salvador through training are transferrable to non-coffee activities (Méndez, 2002).

However, this strategy can risk causing distractions from providing basic member services. For example, an organization mandated to provide technical

BOX 4.2 HORIZONTAL COORDINATION AND ACCESSING PUBLIC FUNDING AND MARKETS IN THE KALAMANSI PROJECT

Catholic Relief Services (CRS) established the Zamboanga Sibugay High Value Crop Marketing Cooperative for kalamansi growers in Siay municipality. Kalamansi is the One Town One Product (OTOP) product for Siay and the project team actively sought linkages with local, regional and national government and international donors. Municipal and provincial funds were mobilized for road improvement, training and a juice-processing plant and premises.

In addition to providing subsidized inputs, the cooperative was also able to access markets in public sector organizations such as schools and hospitals for kalamansi concentrate. This example demonstrates both the ability of horizontal organizations to leverage public services and markets and the importance of similarly amenable authorities with the financial capacity for replication elsewhere.

Source: Digal and Tuason (2010)

support to farmers and fishers in Zanzibar, Tanzania designed many programmes to provide services in malaria and HIV/AIDS prevention in response to greatly increased availability of donor money in these areas. However, it then largely ignored its core remit in agriculture and fisheries sectors, a ‘mission creep’ not uncommon among externally funded organizations.

Acting as governance bodies

Horizontal coordination can form platforms for setting, implementing and upgrading industry standards. For example, codes of conduct can give a shared sense of responsibility and cohesion that promote effective self regulation, improving vertical relationships and increasing income. This was the case in groups of tour guides, fruit sellers and craft retailers in The Gambia’s beach tourism sector (Bah and Goodwin, 2003).

Self-monitoring by groups also facilitates vertical coordination. By contracting on a group basis, members are incentivized to monitor and take action against their contractually errant peers (Warning and Key, 2002; Simmons et al, 2003; Singh, 2009). This greatly reduces coordination and maladaptation costs thus improving the chances of success, as illustrated in Box 4.3 below.

Governance issues are discussed in more detail in Chapter 9.

Lobbying and advocacy

Horizontal coordination can increase the voice of actors through lobbying and advocacy. This can apply to whole industries, as in the case of trade associations, or to specific groups within them. For example, lobbying by Indian

Box 4.3 HORIZONTAL COORDINATION FACILITATING VERTICAL COORDINATION, AN EXAMPLE FROM JAVA

A commercial project in East Java where Pioneer – a multinational hybrid seed producer – contracted 50 heads of grower groups (HGGs) to link 10,000 out-growers to the company. The success of this project was attributed to horizontal coordination benefiting both the buyer and producers of seeds. For the buyer, the grower group structure reduced the transaction costs of dealing with huge numbers of individual smallholders by linking directly with powerful local leaders of clusters of smallholders. The benefits of drafting, negotiating and enforcing and managing contracts at grower group level were tangible and significant. The producers also benefited from access to inputs, including credit and a secure market for their output.

Source: Simmons et al (2003)

honey producers' groups successfully persuaded the government to reduce VAT from 12.5 per cent to 4 per cent (Kumar, 2009). In Nepal, Federation of Community Forest User Groups of Nepal (FECOFUN) has become a political force to be reckoned with, taking the government to court when it tried to increase taxes on timber from user groups in the Terai region (Schreckenberg and Luttrell, 2009) similar to the relaxation of state harvesting and marketing regulations in India and Nepal in the incense sticks and bay leaves cases.

There is not, however, consensus that horizontal coordination is key to upgrading the rural poor. Hyman (1993) cites the example of development projects seeking to limit participation to village groups rather than individuals for ideological reasons. In his example of uptake of ram press seed oil processing technology in Tanzania, it was demonstrated that the spread of a new technology can be much faster among individuals than groups, and individually owned enterprises often make more efficient use of a new technology than a community group.

Rather than asking the question 'Is horizontal coordination necessary to develop value chains?', the above evidence should encourage us to ask a more nuanced question: Which are the appropriate functions to support at group level and which are best left for individual agency?

The effectiveness of horizontal coordination in value chain development

All the case study projects had horizontal coordination as a central strategy in their upgrading processes. Some were based on strengthening existing producer group structures (the incense sticks project in India was based on strengthening existing self-help groups; the fonio project in Mali was based on the Union des Agriculteurs de Cercle de Tominian (UACT) farmers' union; and the octopus project in Senegal based on the Fisheries Resource Management

Committee (CGRH), the local fisheries management resource committees). Others were based on creating new groups (cassava, pangasius, kalamansi and bay leaves), sometimes using existing groups as an entry-point for identifying members of the new group (e.g. cassava).

Many factors influence the effectiveness of horizontal coordination initiatives, the most significant are summarized in Box 4.4 below.

Institutional structures to promote horizontal coordination do face inherent weaknesses. Table 4.2 summarizes the key weaknesses of conventional

BOX 4.4 FACTORS AFFECTING THE SUCCESS OF HORIZONTAL COORDINATION

- Use pre-established groups if possible: Walker (2001) describes how Ghanaian women fish traders used to work in networks of well-established matrilineal 'companies'. A Women in Development project reorganized these structures to meet donor criteria which resulted in conflict and the eventual failure of the fish stocks.
- Only collectivize functions for which there are tangible benefits over individual ownership: A women's association, which supplied sun-dried fruit to the company Fruits of the Nile for export to the UK, initially used group-owned driers. Due to problems managing the driers efficiently, members now use individually owned driers but retain the group marketing functions which add real value to members (Stringfellow et al, 1997, cited in Stockbridge et al, 2003).
- Ensure the acceptability of institutional architecture to members: In Vietnam, there is strong resistance to 'old style' cooperatives (with recent memories of the use of cooperatives as instruments of political control) but support from small-scale fish farmers for joining a producer club (Khiem et al, 2010).
- Form follows function: Most countries have a range of institutional forms available which can be used as a legal entity for horizontal coordination (i.e. partnerships, associations, trusts, cooperative, joint-ventures, etc.); they have key differences in terms of who is liable if the business fails, how the organization is taxed and the level of financial monitoring required (Schreckenberg, 2003).
- Government support: In India, the government is supporting the SHGs by offering fiscal incentives for them compared with other forms of organization.
- Vehicle for cultural change: Van der Valk (2007) illustrates how, through a process of organizational change, a Mexican coffee farmers' cooperative has transformed representation from being a function of honour, privilege and seniority to a more instrumental one of entrepreneurship, leadership, knowledge and skills.
- Capacities of members: Afghan refugee women in Pakistan have low human and financial capital and found a SHG provided the 'glue' for them to support each other and deliver market-orientated development interventions (CRS/SASIA, 2008).
- Keep groups small: Organizational costs and free-rider incentives are minimized with small groups, the likelihood of members sharing common interests and objectives reduces as group size expands.

Sources: Walker, 2001; Stockbridge et al, 2003; Khiem et al, 2010; Schreckenberg, 2003; Van der Valk, 2007

Table 4.2 *Inherent weaknesses of conventional cooperatives and their likely applicability to emerging cooperatives in Kwa-Zulu Natal in South Africa*

<i>Inherent weakness</i>	<i>Applicability</i>	<i>Comments</i>
Free-rider (common property) problem	Not initially, but later	Conventional cooperatives usually have a large amount of collective capital (common property) derived mainly from retained earnings accumulated over time. Initial membership fees (equity shares) at establishment are usually the same for all members and are normally not tradable. However, new members joining later receive the same benefits although they are not required to make the same investments proportional to their use of the cooperative (i.e. new members get immediate access to all the assets of the cooperative).
Horizon problem	Yes	The benefits members expect to receive from investments will reflect their personal time horizon. So, the cooperative will often not make the best investments (tending to underinvest in assets with long-term payoffs) and managers will be pressurized to increase equity redemptions at expense of investment of retained earnings.
Portfolio problem	Yes	Because equity shares in a conventional cooperative cannot generally be freely traded, members cannot diversify their individual investment portfolios to reflect their personal wealth and risk preferences. This makes it impossible for cooperative managers to make investments in the interests of all members.
Control problem	Uncertain	The challenge of designing incentive mechanisms for managers to align their interests with those of the managers. This may not be a problem with small cooperatives with a homogenous membership.
Influence cost problem	Not initially, possibly later	Cooperatives with a wide range of activities and diverse members' objectives risk costly misallocations of resources – as members try to influence managers' decisions.

Source: Ortmann and King (2007)

cooperatives identified by Ortmann and King (2007). The case for support is clear; farmers have limited access to farm inputs, credit and information and markets are constrained with inadequate property rights, high transaction costs, poor infrastructure and poorly educated household heads. But the conventional cooperatives also have inherent weaknesses, such as free-rider, horizontal and portfolio problems, which are likely to impinge on the success of organizing smallholders in a conventional cooperative.

Ortmann and King (2007) propose that a thorough analysis of the product supply chains are necessary to assess which is the most appropriate organizational form for the farmers, market intermediaries and advisers in the chain, and what are the appropriate boundaries between them. This aligns closely with the approach adopted by the authors of this chapter. The appropriate institutional form may also change with time, from for instance, a conventional cooperative to more new generation cooperatives and investor oriented farms (IOFs).

Barriers to entry into horizontally coordinated organizations (and their implications)

At the core of value chain development is a tension. On the one hand, the overarching aim for developing value chains is to reduce poverty. On the other hand, the only way to reduce poverty is to increase the rents captured by participants from the target group through increasing the efficiency of the chain, which necessitates the exclusion of others from the chain (a value chain with no barriers to entry would provide easy access to a low return livelihood). In other words, value chains can only reduce the poverty of some by not benefiting everyone. The issue of who is included (and who is excluded) in the development of a value chain is therefore critical to the outcome.

Group membership is often a precondition for participation in vertically coordinated outgrowing and contracting schemes (Warning and Key, 2002; Simmons et al, 2003; Ashraf et al, 2008). Thus, horizontal coordination can be exclusive as well as beneficial – group membership is often self-selecting and where institutional membership represents a barrier to entry, the poorest are usually among those excluded (Simmons et al, 2003; Eyhorn et al, 2005; Ashraf et al, 2008). If the poor are excluded from value chain development initiatives, there can be consolidation of the value chain and negative effects on income distribution (Kleinwechter and Grethe, 2006).

Exclusion can take place at different levels. The first hurdle may be registering an organization, with registration processes being longwinded and requiring basic literacy, numeracy (bank accounts) and access to government administrative offices. In some instances, potential participants are excluded because of the type of organization of which they are a member. Méndez (2002) contrasts the heterogeneity existing in the cooperative sector in El Salvador with the restrictive requirements of the apex organization in the fair trade network, which tend to exclude the smaller and newer cooperatives. Lyon (2002) highlights a similar issue in coffee cooperatives in Guatemala and notes the paradox that fair trade networks are – presumably inadvertently – excluding cooperatives in which women have a more significant role.

Exclusion can also occur at the individual level. DrumNet (a programme in Kenya linking smallholder farmers to a horticultural exporter as well as inputs) required farmers to be a member of a SHG, have irrigated land and be able to meet the first Transaction Insurance Fund (TIF) commitment of US\$10. Not it might seem an insurmountable barrier to entry – but the TIF payment alone constitutes a week's labour income. Having entered the programme, cost of compliance with EurepGap standards (a common standard for farm management practice created in the late 1990s by several European supermarket chains and their major suppliers) per farmer under group certification was \$581 (toilet, grading shed, fertilizer and chemical stores, waste disposal pit, protective clothing, etc.). Although these certification costs were generally covered by donors and exporters, it is unsurprising that middle-income farmers were the most likely to join the DrumNet programme (Ashraf et al, 2008).

Evidence for improvements in poverty, environment and gender outcomes from horizontal coordination

Poverty

Horizontal coordination leads to chain-level benefits in several ways. First, directly, through increased income attributable to factors such as increased bargaining power and cost savings for inputs and production processes. These effects are frequently difficult to untangle from the associated benefits of, for example, entering into longer-term output contracts or improving product quality (vertical coordination or product and process upgrading respectively in our typology) which, although different upgrading strategies, would often not be feasible without horizontal coordination as a first step in the value chain development process.

Second, there is some reasonably compelling evidence emerging (see bay leaves project in Nepal and kalamansi in the Philippines – ICIMOD, 2010 and Digal and Tuason, 2010) that horizontal coordination can have spillover benefits beyond the membership of the original target group. When a producer group, as a result of horizontal coordination, is able to raise output prices, it appears that prices often rise across the region – so producers who were not part of the original intervention nonetheless benefit from it.

Third, it is clear that horizontal coordination can result in non-financial enhancement to the human capacity of members, such as skills development and self-esteem. Rural livelihoods are inevitably complex. When investigating the effects on household welfare of changing any one of these sources of income, it is important to understand the changes to other sources of income. For instance, the incense stick project in India had difficulties on occasion with the limited availability of the women in the target group – most of whom were also beneficiaries of the guaranteed 100 days of work under the National Rural Employment Guarantee Act (NREGA). Although NREGA presented operational challenges to developing the incense stick value chain, the tightening of the rural labour market caused by this public works programme aligns precisely with our understanding of how labour markets (and specifically, the increasing price of unskilled labour) is reducing poverty across Asia. In this sense, the fact that poor rural women have an opportunity cost to their time is a powerful indicator of socio-economic progress.

The project summaries in Chapter 3 describe the chain-level impacts of value chain upgrading. Only in the minority of cases can household- or community-level impacts be attributed directly to horizontal coordination strategies. As a result of the baseline survey and project monitoring in the bay leaf project, we are able to attribute the impact of the upgrading strategies at the household level. In Nepal, the average household in the target group experienced a US\$87 increase in cash income from bay leaves (a 22 per cent increase in total household income) as a result of the project – and the project partner estimates that 33 per cent of this increase was attributable to the increased bargaining power which producers gained from the formation of the collectors cooperative. In India the average increase in household income

from the bay leaf project was US\$14, of which 5 per cent is attributed to horizontal coordination.

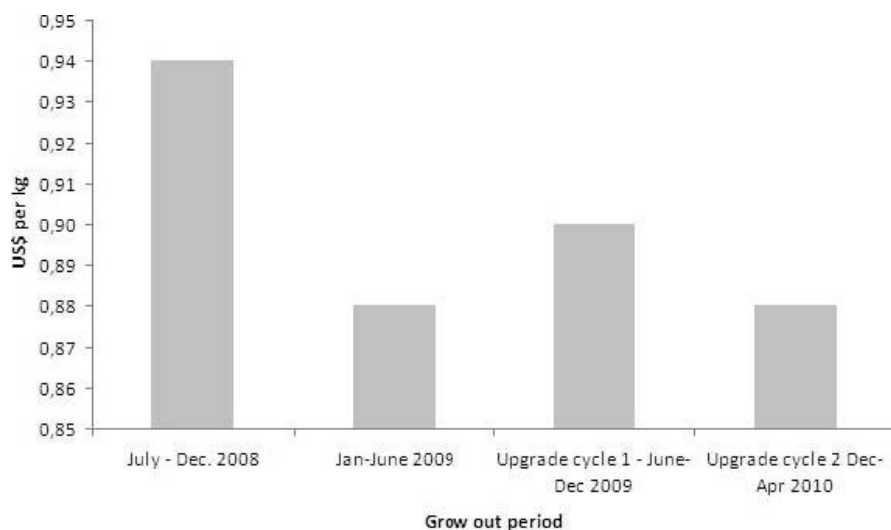
The kalamansi project was one of the more methodologically rigorous projects in terms of monitoring and evaluation. The result was that cooperative farmers experienced a 10 per cent greater increase in net revenue during the project than farmers in the 'control' group could be interpreted as suggesting that cooperative membership actually diminished the livelihoods of kalamansi farmers.

This conclusion would be incorrect for two interesting reasons. First, the main reason why cooperative farmer incomes growth was slower than the 'control' was that members were more ready to adopt technological innovations, such as organic production, which sacrifice short-term yield for longer-term benefits. Second, a number of the most dramatic achievements of the cooperative greatly reduced production costs for all kalamansi producers. For instance, the benefits of the new road to the port and kalamansi harvesting technology, which were largely because of the actions of the cooperative, soon benefited all farmers. Therefore, many of the gains of non-cooperative farmers are a spillover effect of horizontal cooperation. The fact that horizontal coordination is demonstrably able to benefit poor producers outside the formal structure of the cooperative strengthens, rather than weakens, the case for coordination.

The pangasius catfish project is an illustration of the ability of horizontal coordination to reduce the vulnerability of producers to volatile swings in the viability of production. As a result of group formation, the nursing farmers were able to negotiate the terms of entry into the certified nursing network and therefore providing them with information to reduce variation in supply and increase the quality of their production. There is also evidence that certification, which was only possible as a result of horizontal coordination has reduced the operating costs of pangasius production for grow-out farmers. The cost reductions in Figure 4.1 may appear marginal but, given the very narrow and volatile margins on which farmers operate in the Mekong Delta, this change in the cost structure of production is very significant.

As highlighted in Chapter 1, poverty is more than the absence of money. The fonio and cassava projects should have been case studies of the effect of commercialization of a largely subsistence crop. Unfortunately, the monitoring of the projects was insufficiently rigorous to directly measure the quantities of crop retained by households for own-consumption compared with the amounts of production which were sold.

Our analysis suggests that poverty reduction at the household or community level is not an automatic outcome of horizontal coordination of value chains. First, producers will sometimes trade-off short-term benefits (like high yields) for longer-term gains (organic and low-input agriculture) – as was the case with the kalamansi cooperative in the Philippines. Second, often the apparent increases in net income for producers from horizontal coordination are, at least in part, a consequence of inflation and a multitude of different



Source: Khiem et al (2010)

Figure 4.1 *Reducing production costs as a result of pangasius certification*

upgrading strategies. Third, given the evidence of significant spillover benefits, it is often difficult to define an appropriate control group who are distant enough to not benefit from the intervention, but close enough to have sufficient similarities with the target group to be credible.

Notwithstanding all these caveats, however, there is robust empirical evidence that horizontal coordination can lead to significantly improved livelihoods.

Environment

Hardin (1968) was pessimistic about the ability of resource users to manage resources sustainably, postulating that appropriators inevitably act selfishly to the longer-term detriment of mutual interests. However, a large body of work on natural resource management (e.g. Agrawal, 2001) suggests that collective action by resource users through institutions designed to manage common property resources (CPR) can avoid a ‘tragedy of the commons’. This has led, in recent years, to a growing trend by governments to decentralize resource management to local communities with mixed objectives including achievement of development goals, providing public services and ensuring environmental conservation (Agrawal and Ostrom, 2001; Ribot, 2003).

Three of the projects are centrally concerned with CPR – bay leaf, incense sticks (bamboo and jigat inputs are both sourced from common forest resources) and octopus – and have benefited from this trend towards community-based management. They illustrate the relevance of the conditions highlighted by Agrawal (2001) as being critical for CPR institutions to adopt sustainable management (see Box 4.5).

Box 4.5 CRITICAL CONDITIONS ENABLING THE ADOPTION OF SUSTAINABLE RESOURCE MANAGEMENT FOR COMMON PROPERTY RESOURCES

Agrawal's (2001) synthesis of three major studies of CPR institutions identifies some of the critical conditions that enable them to adopt sustainable management:

- Resource system characteristics – small sized and predictable with well-defined boundaries, low levels of mobility, and the possibility of storage of benefits from it.
- Group characteristics – small with clearly defined boundaries, shared norms, social capital derived from past successful experience, appropriate leadership, interdependence among members, heterogeneity of endowments, homogeneity of identities and interests and low levels of poverty.
- Institutional arrangements – simple, easily understood management and access rules that are locally devised and easily enforced with graduated sanctions, readily available low cost adjudication and monitors and other officials who are accountable to users.
- External environment:
 - technology – low cost exclusion technology and sufficient time for adaptation to new resource related technologies;
 - low levels of articulation with external markets;
 - gradual change in articulation with external markets;
 - State – no undermining of the local authority by central government, supportive external sanctioning institutions, appropriate levels of external aid to compensate local users for conservation activities and nested levels of appropriation, provision, enforcement and governance.

Source: Agrawal (2001)

In both the Indian bay leaf and incense cases, access to the wild resource was strictly controlled by the Forest Department. In response to organization of producers and lobbying by facilitating NGOs state forestry departments have been willing to trial changes to laws, giving greater control over harvesting to local community SHGs and village committees. Bay leaf harvesting was previously organized on a five-year rotation over large areas (in line with the forestry department's administrative units) with harvest permits allocated to contractors – giving no incentive to local residents to manage the resource sustainably with the result that leaves were harvested by cutting entire branches, often damaging the trees.

Under the new system, local-level rotation allows annual harvests (important for households' income planning) and permits are allocated via community governments to harvesters. In the project area, harvesters have decided to divide the quota equally between households and have introduced peer monitoring to ensure harvesting is carried out according to best practice (e.g. involving picking of individual leaves). Initial impacts on the environment are

positive, with producer groups harvesting much less than their allowed quota in the first year as the late arrival of the permit meant they were concerned not to harvest leaves beyond a certain level of maturity. Confident of their new rights of access to this resource, communities have also begun to plant bay leaf seedlings to enrich the resource.

In the incense stick project, marketing clusters were established, based upon SHGs and joint forest management committees (JFMCs) to promote sustainable input sourcing (i.e. *jiggat*). The existing organizational structure was used to successfully recycle charcoal from domestic sources and the stick production process. These are all good examples of the role of horizontal coordination to both mitigate the negative environmental impact of a sharp increase in production volumes of a natural resource-based product and improve the local economic impact of this productive activity.

In the case of octopus, the project has helped existing community-based resource management committees to improve sustainability through the use of JICA-funded vases to encourage octopus regeneration (the latter being process upgrading). Although the committees have attempted to restrict catch to individuals above 500g (beyond the regulatory minimum of 350g) and have sought to restrict fishing during the biological rest period, these 'best practice' guidelines have not been enforced rigorously. This reflects the committees' lack of authority to exclude non-members (such as industrial fishers) and the technical difficulties of doing this for a wild and accessible resource – the Agrawal (2001) framework demonstrates clearly the management challenge for this resource. While it is valid to question the regulatory effectiveness of the CGRH structures in Senegal, this critique should be set against the context of an almost complete absence of state enforcement of the conservation measures and recent catch data which suggest that the viability of the octopus stock may be improving.

The success with which small and medium-sized pangasius farmers implemented SQF1000 certification reflects the captive nature of their fish stocks in individually owned ponds and their organization in small, relatively affluent and homogenous producer groups. The value of horizontal coordination was evident when the pangasius farmers were challenged over the water treatment system by downstream rice farmers (who, paradoxically, wanted to maintain a high nutrient load in fish pond effluent as this improved their rice yields and therefore opposed the fish farmers' attempts to improve the quality of their discharge).

Although cassava and fonio are cultivated resources, communal agricultural land in Mali and Tanzania is a form of CPR. Without strong management, an expansion of cultivation – as resulted from the cassava project – may be at the expense of previously uncultivated land with negative environmental consequences. Horizontal structures played a central role in encouraging producers in two of the projects to implement environmental technology that – in the short-term at least – had a deleterious impact on household incomes. Horizontal structures made possible the treatment of effluent from pangasius ponds and accelerated the adoption of organic farming among members of the cooperative in Siay in the Philippines. The latter is a considerable

achievement given the negative impact of adoption on farm yields and the average daily income of cooperative growers of just US\$2.33 per day, which is significantly below the poverty line. This finding is interesting because reinvestment in natural resource management is often afforded a lower priority than livelihood needs (farmland, livestock, school fees and clothes) by poor producer households (Kaaria et al, 2008).

By bringing together many people working in the same way, horizontal coordination can allow discussion and resolution of issues that workers might otherwise suffer alone. In the case of incense sticks, SHGs introduced the use of face masks and rolling desks to reduce respiratory problems caused by inhaling the masala mixture and reduce the incidence of back pain, respectively. Access to health insurance for bay leaf SHG members is another positive outcome of horizontal coordination.

Gender

Horizontal organization can increase women's market and social power, improving access to services and assets and helping to tackle some of the underlying gender inequities, such as low social status and lack of access to assets and revenue streams, which disempower women in some value chains.

In theory, horizontal coordination should increase the voice and negotiating power of women within the household. In development practice, there is a strong emphasis on increasing female participation in group management structures in many projects. However, there is little evidence of this 'empowerment' actually resulting in tangible benefits for women in a rural context in the South.

Women bay leaf collectors in India were excited by their first experience of group-based activities, and optimistic about their ability to use the SHGs as a springboard for further income-generating activities. It is striking that the SHGs, which are the key organizational unit in the incense stick project, became a platform to discuss a range of health and broader financial issues among the overwhelmingly female participants.

The evidence is anecdotal, but does broadly support the hypothesis that the revenues from value chains are spent differently depending upon the gender of the person controlling investment decisions. When women control the household budget, items of expenditure like school fees, food and clothes are prominent. This is not to suggest that men necessarily spend money fecklessly, but that their spending priorities are different and often include items which convey social status (such as livestock) which may not maximize the social capital of more vulnerable members of the household. There is, however, no evidence that horizontal coordination per se has had any influence on who receives the proceeds of value chain activities.

The cassava project also provides a reminder that cultural norms are not fixed forever. The proportion of households in which men control all aspects of finances reduced significantly in both project areas during the implementation of the project (from 60 per cent to 40 per cent of households in Morogoro and 42 per cent to 10 per cent in Mukuranga).

However, intervening in poorly understood existing horizontal networks can have damaging outcomes. In addition, the often ‘default’ intervention of creating women-only groups may not be the best solution for all development problems. For example, an evaluation of a project introducing the new livelihood strategy of mud crab grow-out for supply to hotels in Unguja Island, Tanzania showed that the exclusion of men from some producers groups created resentment and anger that manifested itself in acts of sabotage and, in comparison with mixed groups, introduced additional transaction and input costs because women were reliant upon a small number male fishers for seed stock and feedstuffs (Coles, unpublished data).

The case study projects illustrate some of the dangers of adopting too narrow or prescriptive an approach. Some of the projects used inputs as the key measure of gender empowerment. The cassava project, for instance, focused on the membership of groups by women and participation of women in the crop production process. This may, of course, be significant. However, in the context of a strongly patriarchal society, it should not be assumed that the link between group membership and influence on the one hand and participation and gain on the other, are automatic. The results reported in Tanzania are entirely consistent with an increasing labour burden on women and powerful control of cash earnings by men (see Naved, 2000).

Summary

There is evidence that, through various forms of horizontal coordination, small scale producers can improve the efficiency of their production. This may involve reaping economies of scale in terms of input costs or making infrastructure investments that improve the competitiveness of production. There are also examples of horizontal coordination encouraging the transmission of innovation in the production process which in turn can improve product quality and productivity (linked to product and process upgrading).

In addition, this strategy places producers in a stronger price lobbying position for their output. Coupled with continuous development of market distribution channels and increased accessibility to government resources, smaller producers have been afforded the opportunity to bulk up their output volume to levels that may attract larger buyers. This can be achieved while also maintaining stable and sustainable extraction levels of common pooled resources.

Examples of ineffective collective structures are abundant and there are inherent weaknesses in such organizations. Unfortunately, the development sector often aggravates these fundamental weaknesses by imposing inappropriate organizational forms on project target groups. There are also instances of horizontal organizations that construct barriers to entry for the poorest and most vulnerable. The trade-off involved between maintaining some barriers to entry to horizontal coordination (to generate the rent with which to reduce poverty) without only allowing the already empowered access is what distinguishes a developmental outcome from a regressive outcome.

Where horizontal coordination expands the size of value chain nodes, poor households have been able to increase their income as a result of this increased efficiency of production. In some cases the increases in household income are rather significant and can be directly attributed to horizontal coordination. To understand the impact of value chain upgrading on poverty reduction, it is necessary to examine intra-household resource flows and, particularly, to find out who controls household resources. Gender issues are, in this sense, an important variable in determining the extent to which gains from value chain upgrading are reflected in developmental outcomes.

Horizontal coordination represents a very important mechanism in terms of providing an organizational vehicle to allow large numbers of low-income households to access common property resources on a sustainable basis. The challenge of community regulation becomes increasingly acute when large groups of poor people operate under complex management rules and without state support.

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5

Going for Win–Win – Upgrading through Vertical Coordination

Christopher Coles

Vertical coordination is the process of strengthening relationships between functional nodes of the value chain, involving the shift away from one-off spot transactions toward developing longer-term business connections. It is an acknowledgement that there is value in longer-term associations beyond simply establishing the price for output of a particular quality (see Coles, 2010). Developing these relationships can be a slow and difficult process because it requires, above all else, trust-building among actors and the clear manifestation of ‘win–win’ scenarios for all participants.

Long-term relationships between producers and downstream actors, for example, connect product characteristics and production processes to consumer preferences. Where markets do not efficiently communicate the appropriate signals to suppliers and their response is inconsistent, contracts (formal or informal) are used to coordinate functions such as production, marketing and processing. The process occurs either through vertical integration or ‘contractual’ arrangements of varying degrees of formality.

This chapter outlines the modalities and benefits of, and barriers to vertical integration and describes how it can impact poverty, environment and gender outcomes. It examines how practitioners have attempted to facilitate or strengthen vertical relationships and evaluates the effectiveness of these interventions.

The nature and value-chain level impacts of vertical coordination

In institutional economics, the distinction is usually made between markets, networks and hierarchies. In markets, products are traded in repeat anonymous transactions and partners can be easily exchanged. Markets tend to function

well if products are homogeneous, with little specific information attached to them, and if the business and legal environment facilitates transactions – for instance, if contracts can easily be enforced. Hierarchies are at the other end of the spectrum, where production is vertically integrated in a single firm and the management exercise control over the whole production process. Firms may opt for in-house production if they want to keep control over core technologies, if processes are difficult to codify, or if contract enforcement is unpredictable. Global value chain theory contends that most chains are of the intermediate, network type, that is, without ownership control, but different non-market coordinating mechanisms. In most industries, such network-type arrangements offer the optimal combination of gaining from specialization and maintaining sufficient control over the production process (Altenburg, 2006).

Vertical integration may be regarded as a form of functional upgrading, where firms add activities by taking on these functions themselves or by acquiring their suppliers or buyers. For example, a supermarket retail operation may acquire a wholesaling operation, a food import business and a farm, or a small-scale producer may take on some processing activities.

In contrast, vertical disintegration is the process of increased specialization by value chain participants. For example, firms may ‘out-source’ lower-value functions in order to focus on their ‘core business’, typically at the customer interface. Decisions relating to integration and disintegration are based on the risk and return balance delivered by mixtures of value chain activities.

Chapter 6 focuses on functional upgrading. In this chapter we focus on vertical coordination through the strengthening of trading relationships, falling short of establishing a hierarchy with ownership control of the vertical value chain.

The term ‘contract’ can be applied very loosely to describe vertical relationships of varying degrees of formality. For example, one Indian fruit and vegetable retailer distinguishes its ‘contract growing’ scheme from ‘contract farming’ or ‘outgrowing’ (Singh, 2009). This supermarket chain issues information on its specific requirements to growers without a formal (written) agreement. If it cannot buy produce at a certain time it introduces its suppliers to alternative buyers, stating that its aim is to remain the first-choice buyer for all the smallholders with which it deals.

Formal contracting is widely assumed to be universally desirable for the rural poor. However, contracts can serve more of an information exchange and coordination function than a legally binding one. For example, in a small-scale producer–buyer transaction, producers are most often the defaulting party and litigation against them is impractical. Moreover, formal contracting, particularly with embedded credit or credit-in-kind services, may not be the most efficient and competitive way of transferring benefits to low-income producers because working capital may be tied up for long periods (which is very difficult for small-scale producers to carry); there is a very high risk of default by producers; and pre-financing may lead to oversupply of products and incurs interest costs that must be passed on. However, in the case of agricultural products, where contracting is the

Box 5.1 HOW TO IMPROVE THE CHANCES OF SUCCESS AND MAXIMIZE POSITIVE IMPACTS OF CONTRACT FARMING

One of the main causes of contract farming scheme failure is high costs – set-up and running costs, enforcement costs and maladaptation costs (of growers failing to comply with requirements). The best contracting schemes minimize costs by keeping interface time with individual growers as short as possible. Mechanisms for achieving this and maximizing benefits to both parties:

- Design contracts with marketing and price premium guarantees to incentivize investment in high quality.
- Deal with traditional grower groups that are well-established, functional and well-led. Dealing with individual farmers increases the costs of drafting, negotiating and enforcing contracts and requires more face-to-face contact time. Incentivize internal handling of grievances and maladaptation through group contracting.
- Use social rather than physical collateral to maximize participation of the poorest. In contrast to most other contracting examples, where group participants are selected based upon their physical collateral (e.g. Dhananjaya and Rao, 2009), a maize processing company in Senegal used local information on social collateral (honesty and trustworthiness) provided by its community agents. Each cluster functions like a small firm with a powerful CEO. Notably under this system, the members and non-members of the scheme could not be distinguished statistically using wealth indicators such as landholding size and livestock assets – in other words, even the poorest farmers were able to participate.
- Crops that are the most likely to be grown successfully and beneficially under contract have the following characteristics:
 - low asset specificity, so that farmers are able to redirect resources if they find contract terms unsatisfactory;
 - crops with a ready alternative market of comparable value – to minimize the risk of monopsony and exploitation;
 - crops with multiple seed sources to further constrain buyer power because producers are not dependent upon any one supplier.

Sources: Bolwig et al (2008); Simmons et al (2003); Warning and Key (2002)

chosen mode of vertical coordination, there are means of improving its likelihood of success (Box 5.1).

Vertical coordination rarely takes place in isolation from other upgrading strategies. Closer, more formal (and lucrative) business ties are often associated with higher performance requirements, such as higher-quality products, larger volumes and delivery schedules that are more frequent and reliable.

Overcoming the barriers associated with these requirements may necessitate a preliminary step of horizontal coordination. A commonly used mode of horizontal organization used for vertical linkage is a two-layered primary producer group and apex structure in which the first-level institution provides bulking and often primary processing services and the second-level entity

performs secondary bulking and marketing activities, often also providing production finance. These are given various nomenclature but a common example is the primary cooperative and cooperative union model.

An increasingly common model that has developed, in some cases as the result of the inability of institutions to efficiently and effectively provide services to their clients, is that of professional marketing intermediaries. Kumar (2009), for example, describes how a federation of beekeepers in South India invited local entrepreneurs to meet with them and discuss the possibility of their entry into the honey market. Of the 25 potential traders who attended the meeting series, six became professional marketing agents¹ (PMAs), eventually supplying large buyers across India. In comparison to existing private traders buying from individual farmers, the PMAs have lower procurement costs because they can access bulk quantities of honey in one place and have better purchasing and sales networks. These advantages are passed on to the producers in the form of a price premium.

There is an established tradition in micro-enterprise development projects of implementing institutions not only facilitating the horizontal coordination of producers, but also providing a market for their output. The rationale for this is often to ‘protect’ producers from exploitative intermediaries. The TRIBAC NGO, for example, provided all supplies to incense stick rollers and purchased all output at a fixed price. Although such projects may claim superficial successes, the producers are held in an essentially captive chain, entirely dependent upon the NGO for input supply and output markets in a manner that may not be sustainable.

In contrast, TRIBAC additionally facilitated successful linkages between producers in the stronger self-help groups (SHGs) to large-scale stick buyers. In this case, the role of the support organization is essentially temporary and exogenous, raising the capacity of stick rollers but not itself taking part in chain activities. However, there are many cases of NGOs in development projects becoming a near-permanent barrier between small-scale producers and the market. This situation reinforces a damaging web of dependency (the development agency dependent on the project sustaining impact results; the NGO dependent on an ongoing flow of concessionary finance; the producers dependent on the activities of the NGO), where donor-funded projects can become a blockage to – rather than a support for – linkages between the rural poor and markets.

Value chain level impacts

Input and output market stability and reliability

Vertical coordination can present a stable, assured market, with fixed prices that sometimes exceed the market rate as an incentive for longer-term commitment. Longer-term relationships create incentives to invest in process, product and functional upgrading by providing the stability of assured and predictable income. They can reduce risk and vulnerability by insulating participants from price volatility (e.g. Aranda and Morales, 2002). Box 5.2 describes how input

Box 5.2 WORKING TO MAKE INPUT AND OUTPUT MARKETS MORE RELIABLE THROUGH STRONGER VERTICAL RELATIONSHIPS IN THE VIETNAMESE PANGASIOUS SECTOR, INCENSE STICKS IN INDIA AND BAY LEAVES IN INDIA AND NEPAL

Input markets

In order to access the export market via processing companies, family-scale² pangasius grow-out farmers in Vietnam's Mekong Delta had to follow a certification process, which meant developing firmer relationships with accredited suppliers of feed and seed, allowing farmers to access a government subsidy that reduced their debt burden considerably, representing a significant saving on their bank loans (informal credit at the end of the grow-out cycle is available to farmers only from informal channels at the rate of 3.5 per cent per month). Nursery farmers also changed their input sources through vertical coordination as they began to sell to the An Giang Seed Centre (AGSC) and bought their fingerlings there. They did not change their feed provisioning.

In India, vertical coordination between incense production SHGs and the TRIBAC NGO included their provisioning with masala paste and raw bamboo stick inputs (although with a risk of dependency as discussed above).

Output markets

Although no structural price premium was offered for certified pangasius grow-out output, new payment terms and conditions were negotiated in contracts with major potential cash-flow benefits for farmers. However, these contractual changes were not observed for two reasons. First, grow-out farmers are in a weak position because they have ponds full of fish and incur high interest repayments and lower prices as fish become larger with each passing day. Secondly, grow-out farmers sell their fish to agents working on behalf of (but not directly for) the processing companies. Therefore, the agents are not bound by the provisions of farmer–company contract and minimize the price they pay by giving fish low quality ratings.

Pangasius nursery farmers improved their output sales considerably through their membership of the AGSC nursery network, which was conditional upon supplying minimum volumes of fry on contract. Although the price was competitive with market rates, farmers were initially reluctant to enter into these formal arrangements as they feared negative effects from fixed pricing. A solution was reached whereby AGSC permitted nursing farmers to sell any surplus above the contracted quantity as certified seed on the open market.

Through their cooperative, bay leaf collectors in Nepal negotiated 100MT, six-month contract with a trader at fixed prices for leaves of each of four quality grades. Quality grading was carried out by a village supervisor (and rarely challenged by the purchasing trader) and, therefore, producers could accurately predict their returns in advance of transactions.

TRIBAC offered a guaranteed market at a specified price for incense stick outputs.

Sources: Khiem et al (2010); ICIMOD (2010); INBAR (2010)

and output markets became more stable and reliable in three of the action research projects.

Diversification into additional channels and reduced vulnerability

Surrounding the most common vertical coordination interventions in the development context are the direct linkage of small-scale producers with new buyers. Selling output through additional market channels diversifies income and can reduce vulnerability (e.g. Aranda and Morales, 2002; Ruben et al, 2008). Although the financial returns from selling under contract to premium buyers may be significant, suppliers to higher value markets must usually meet tough quality control procedures. The benefits of such contracts can be constrained by the relatively small proportions of total production that is sold through these premium channels. For example, fair trade producers commonly sell only around 30 per cent of their output to this market (Ruben et al, 2008).

Box 5.3 outlines how vertical coordination aimed to allow poor suppliers to access additional channels in two Asian action research projects. The first example illustrates that sometimes mainstream markets offer better terms for producers than ‘niche’ segments. The second example illustrates a simpler point in a contrasting context. Even contracts motivated by corporate social responsibility (CSR) need to be competitive and economically viable.

Embedded services

In spot market trading there is often, by definition, little or no scope for longer-term linkages between the parties. Longer-term linkages are important

Box 5.3 DIVERSIFICATION INTO ADDITIONAL CHANNELS THROUGH VERTICAL COORDINATION IN TWO INDUSTRIES IN ASIA

Incense sticks in India

SHGs signed contracts to supply mainstream industrial groups with unscented incense sticks. Early indications are that the prices paid in the mainstream market are somewhat higher than in the ‘niche’ TRIBAC market. Having access to three market strands – premium, regular and low-cost channels – reduced producers’ vulnerability.

Kalamansi in the Philippines

The project attempted to add a new marketing channel supplying a large fast food company in Metro Manila, which offered a year-round guaranteed market for fresh fruit. However, the high costs involved in maintaining the fruit to the prospective buyers’ quality standards with the long land and sea journey made the venture financially unviable.

Sources: INBAR (2010); Digal and Tuason (2010)

because they often encompass more than just the financial transaction. Buyers may advance credit (as cash or in the form of inputs), provide equipment and supply market information and technical assistance to producers in return for the right to buy the outputs. They gain from enhanced sustainability and reliability of supply of products of the appropriate quality but, depending upon the availability of alternative marketing channels, may risk suppliers selling to other buyers.

Export companies, in addition to export services, often provide technical assistance, training, finance and/or inputs to their small enterprise suppliers. For example, in the Ethiopian and Tanzanian coffee sectors exporters routinely work with producers to make quality and productivity improvements (despite laws that prohibit exporters from buying direct from producers) (Coles, forthcoming). The provision of technical support is often preferred over provision of financial or material assistance as being more cost-effective and lower risk.

A common instance of a simple embedded service is the provision of credit by traders in agricultural and fisheries systems. For example, boat owners (often wholesalers or sometimes simply entrepreneurs who take a cut of the income from sales) in artisanal fisheries often provide crews with credit to buy fuel and bait to keep them at sea during lean times. These loans are repaid as deductions from income payments after boat and gear maintenance allocations and local taxes have been deducted.

Three examples of important embedded service benefits which were made available to small producers because of vertical coordination are outlined in the Asian action projects below (Box 5.4).

BOX 5.4 EMBEDDED TECHNICAL SUPPORT IN VERTICAL RELATIONSHIPS – THREE EXAMPLES FROM ASIA

Incense sticks, India

Suppliers in the TRIBAC strand of the chain receive significant technical support with input supply, production training, producer group formation and strengthening and technology transfer for product and process upgrading.

Kalamansi, Philippines

A local buyer (who exports to Canada) of kalamansi juice concentrate offered the services of his food technologist in process and product upgrading.

Pangasius, Vietnam

While processing companies were supportive of group formation as a means of reducing their cost of testing there was no reduction in frequency of testing as companies are under mounting pressure to ensure fish quality. Although the companies initially charged the farmers for performing this operation, contract negotiations have now led to testing costs being covered by the companies.

Sources: INBAR (2010); Digal and Tuason (2010); Khiem et al (2010)

Risk transfer and cost reduction

Where transaction and capital costs are high, or value chain-specific, firms may choose to contract out activities to other parties. This may create efficiencies but also transfers risks to the contracted party. This is an example of vertical disintegration – as downstream companies specialize their activities in generally more lucrative nodes. Millard (unpublished), for example, describes how Starbucks Ltd contracts intermediaries to perform quality control and coordination functions, protecting both the company and coffee producers from the risk of consignments being rejected only when they reach their destination.

In the Vietnamese pangasius sector, processing companies contract with ‘core suppliers’ (generally large-scale grow-out farmers, many of whom also have an equity stake in the processing company) and additional ‘buffer suppliers’ to offload the risk and costs of producing for a volatile market onto family-farm grow-out producers. This is an example of large, established buyers shifting risk back upstream. In practice, there was little that any amount of vertical coordination could do, including entering a formal contract, to strengthen this inherently weak position held by small-scale grow-out farmers.

The inclusion of the nursing farmers in the AGSC nursery network is another example of outsourcing. AGSC developed a brand of certified seed which they hope to market to the various certification systems now in development. They have contracted out-growers to tackle an undersupply of this seed with training and support burdens partly outsourced to growers’ cooperatives.

Quality assurance for buyers

Vertical relationships allow buyers to source products and services of the quality they need. Firms are able to communicate their needs to their suppliers when they work more closely with them and preferred buyers enjoy privileges such as having the best quality products reserved for them or being supplied with products that surpass their quality specifications, as is commonly the case between suppliers and large-scale retailers of perishable goods.

Buyers of bay leaves in Nepal bought on contract with differential pricing by quality grade, incentivizing supply of the best leaves. A miller in Dar es Salaam, Tanzania contracts with primary processing groups she knows are capable of meeting the quality standards she requires to produce cassava flour for human consumption. In India, incense stick producers’ community enterprise clusters (CECs) were informed of the quality requirements from the end-market by the purchasers of their output.

The Vietnamese pangasius case highlights the importance of strong vertical relationships to allow producers to understand the likely direction of future changes to market quality requirements and the ability of even smaller-scale producers to meet quality standards if they are incentivized to so do.

Reputational and marketing gains (and losses) for buyers

Vertical coordination can increase buyers’ competitive advantage. For example, Spencer’s retail company in India makes cost savings and engenders farmer

loyalty and preferred buyer status by sourcing directly from farmers above the market 'farm gate' price (but below wholesale market cost). The retail company also introduces producers to other buyers when its usual supply network has greater volumes of crops than it requires (Singh, 2009). In addition, this more direct buying system gives the supermarket a reputation among consumers for stocking among the freshest, highest quality produce available.

However, the action research project illustrated how marketing gains need to be balanced against losses. Retailers of pangasius catfish in the US and EU have enjoyed the initial gains of being able to offer low-priced bulk white fish products to replace more expensive and controversial local products. However, competitors (domestic pangasius catfish producers in the US and wild-caught white fish interests in Europe) have been quick to seize upon uncertainties caused by food safety and quality scares (Figure 5.1) with potentially damaging consequences for stockists.

Barriers to entry to vertical coordination (and their implications)

Evidence on the barriers to entry of vertical coordination is ambiguous. Exclusivity is inherent to the process, the primary goal of which is to eliminate players outside the vertical relationship. The pertinent question is who is being excluded from these vertical arrangements?

Intuitively, it seems reasonable to suppose that producers who are more vulnerable are less likely to access vertical arrangements. The resource-poor, for example, may find it harder to meet the quality and performance demands of a more formal commercial relationship. There is some evidence to support this view – a feature of contracting in smallholder agriculture is that contract winners are often better off to start with (Maertens and Swinnen, 2008). Against this, however, are three important issues:

First, the empirical evidence of the exclusive nature of vertical contracts is less clear when producers are contracted as groups rather than individuals. For instance, an analysis of Kenyan farmers producing horticultural products for the export market showed that both high- and low-income producers were less likely to participate in the scheme, with middle-income producers being most likely to innovate with new markets (Ashraf et al, 2008). This study also highlights risk adversity as an important part of the explanation for why farmers will often supply markets that are not the most profitable (on a unit of output sold basis) but do provide the most dependable livelihood through providing local crops for the local market.

Second, the costs of compliance for farmers developing direct, more formal relationships with larger commercial enterprises are often significant. A study of mango exporters in Peru found an average compliance cost of US\$145/ha/year or US\$9.5/MT (around 3.8 per cent of farm gate price) with EurepGap standards required by importers in the EU (Kleinwechter and Grethe, 2006). While this finding implies an element of exclusivity, producers directly linked to exporters did not display any significant tendency in terms of their

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In recent months, Alabama authorities have intercepted thousands of pounds of contaminated catfish and related fish from Vietnam, China, Cambodia, Indonesia and Thailand that slipped through the current weak safety net of U.S. oversight and nearly landed on Alabama dinner plates.


In fact, only 2 percent of the 5.2 billion pounds of imported seafood – including catfish and catfish-like products – is being inspected for U.S. health and safety standards.

The State of Alabama found illegal and potentially dangerous drugs in Vietnamese and other Asian catfish-like species. Several foreign countries have halted imports of catfish and similar products from Asia in the past year after finding evidence of chemicals that can cause cancer and because of concerns over unsanitary farming conditions.

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Source: Catfish Farmers' Association of America

Figure 5.1 *Increasing market share of Asian pangasius catfish into Western markets has been met with local resistance*

differences in financial resources, educational attainment, farm characteristics or group membership with those who were not. Rather, the key is the strength of the link to the export organization: enterprises support poorer and smaller producers that would otherwise not be able to comply with the standard to

obtain certification and risk exclusion from lucrative markets. This suggests that, while the demands of linking with export enterprises may impose significant costs on poor producers, the benefit of a longer-term relationship may overcome this constraint on the participation of the resource poor.

Third, although they are relatively modest in terms of global trade flows, 'ethical trade' initiatives mean that firms are increasingly seeking to source supplies from smaller-scale producers.

In the pangasius project the household-scale farmers' barriers to entry to horizontal coordination (the scattered distribution of farms) and lack of capital for process and product upgrading were effectively also barriers to vertical coordination; this was due to the sequential nature of implementation of upgrading strategies – the other forms of upgrading were prerequisites for developing relationships with processors. Similarly, in Tanzania, buyers of semi-processed cassava were unprepared to enter into negotiations with producers before they could provide them with samples of the upgraded product. This did not occur during the lifetime of the project and, therefore, no vertical links could be made.

Other significant barriers to vertical coordination found in the action research projects were, paradoxically, those generated by state regulations. The potential benefits of vertical coordination were not open to non-timber forest products (NTFP) collectors in Uttarakhand, India because products have to be sold through public auction. While auctions are effective price finders on any one day, they preclude the formation of vertical relationships and tend to produce price instability that discourages longer-term investments by poorer actors. In Tanzania and Ethiopia, mandatory coffee auctions in open market channels link prices to those in commodity markets and strict marketing legislation inflates transaction costs, borne by producers, while not achieving its stated objective of making markets more competitive. Only producers with the (collective) capacity for direct export can benefit from (official) longer-term buyer relationships. One of the major blockages for small-scale producers developing longer-term relationships with the market appears to be the state.

Evidence for improvements in poverty, environment and gender outcomes from vertical coordination

Poverty

Vertical coordination may lead to poverty reduction indirectly through chain-level outcomes including increased incomes from access to new markets or suppliers, reduced costs, new or better services such as financing and increased investment in assets and enterprises through market stability and reliability. The latter effect is important – detailed empirical analysis clearly indicates that when income is reliable, producers are much more liable to invest in upgrading their production and household assets. In this sense, long-term relationships can reduce non-income poverty indicators, even if unit prices are no more lucrative than average result of the spot market. Similarly, stability stimulates increased employment as downstream firms invest in expansion.

Vertical coordination can address another aspect of income volatility. Where marketing options are diversified, risks are reduced and the poor are better able to withstand negative shocks in any one of the marketing systems to which they are linked. This was the most apparent poverty reduction effect of vertical coordination in the action research projects; wider marketing options and reduced reliance on single outlets for Indian incense stick producers and Philippine kalamansi growers (in the latter case through export contracting for processed concentrate).

Longer-term relationships may feature a trade-off between reliability and periodic price spikes that are features of spot markets. In fact, the quid pro quo of long-term contracts for kalamansi was that unit prices were frequently lower than the spot market price (and, in the case of the fast food initiative, below the cost of production and marketing for our remotely located study group). This price disadvantage made it difficult for the cooperative to gain sufficient market share of its members' output to meet the organization's contractual obligations. Producers faced the choice of supplying the cooperative at unattractive prices (with a further deduction made to cover the operating costs of the organization) or supplying private sector traders offering more attractive prices at the farm gate.

In the incense stick project in India and the fonio project in Mali the project partners (TRIBAC and UACT) offered a very limited price increment over market prices to encourage producers to supply through their marketing outlet. However, in both cases a large proportion of output is sold to the private sector traders – so the price increment may be rather insignificant. In fact in India, commercial buyers paid higher prices for rolled batti than ethically traded sticks sold to TRIBAC.

However, many poor producers would choose to smooth out volatile market fluctuations in preference to receiving periodic high prices (only to lose out again during market lows); reduction of vulnerability is potentially a key poverty reduction feature of the move away from spot markets to repeated transactions. Hence, the strategy driving the pangasius project was not to increase incomes or returns on investment per se but to reduce price variability and end the damaging boom–bust cycle that variously rewarded farmers and then drove them out of production, sometimes even causing them to lose the productive assets they had risked as collateral to finance working capital.

Environment

The major modality by which vertical coordination brings about improved environmental outcomes is through requirements to access new markets, such as environmental certification. This was central to the rationale for both the octopus and pangasius projects. Improved environmental performance (demonstrable in the case of pangasius and marginal in the case of octopus) was not rewarded with direct premia from buyers in these cases in the way that it is with certified organic products. However, there are still powerful incentives for producers to supply products in a more environmentally sustainable

manner. As in the case of pangasius, improved environment performance is increasingly becoming a prerequisite for accessing global markets.

In addition, investment in environmental upgrading can reduce production costs, as in the pangasius and kalamansi projects, although in the latter the initiative was driven by process issues rather than market requirements. The pangasius project demonstrated that upgrading and improving environmental performance can actually be achieved without increasing net costs up. So market access can be gained or maintained at no extra cost for small producers.

Lastly, the very existence of the resources that value chains (and the livelihoods of the poor) depend on is a major outcome of sustainability interventions. For octopus, without direct reward from markets (through vertical coordination) and because of weak state implementation of regulations, the incentive for stock stewardship by fishermen may be insufficient to change behaviour in the short term. Although some wild capture fisheries markets are becoming increasingly sensitive to provenance and sustainability, this is not as yet a strong feature in Japan and southern Europe, which constitute the major markets for Senegalese octopus.

Gender

Vertical integration can affect gender dynamics indirectly through the changes it brings to men and women's roles and incomes. For example, east African horticulture was traditionally female dominated, with women selling produce on the local market and using the income for household needs such as food and education. However, high value export contracting has increased returns, leading men, who own the productive assets and control their outputs, to appropriate the income while women still provide the bulk of the labour (Dolan, 2001).

In the action research projects, the impact of vertical coordination on gender relations is difficult to distinguish from other value chain upgrading strategies. The acceptability of women engaging in trade appears to be strong in south Asia and there is clear evidence that women retain and control the revenue which they generate. The traditional role of women as the controllers of household finances, whether or not they participate in the value chain, in south-east Asia is striking. In Africa, there were no successful examples of vertical coordination, other than the agricultural union establishing a relatively limited marketing channel for fonio in Mali.

Summary

Vertical coordination includes both the functional upgrading-based process of vertical integration and the process of forming and strengthening relationships between nodes in a non-integrated value chain. This chapter focuses on the latter. Vertical relationships exist in a spectrum of increasing formality and complexity, from unwritten, loosely implemented agreements to formal legally binding contracts.

At the value chain level, the benefits of vertical coordination can include increased input and output market stability and reliability, diversification

into additional channels and reduced vulnerability, access to imbedded services, risk transfer and cost reduction, and quality assurance and reputational and marketing gains for buyers. The major benefits to buyers are predictable supply of a sufficient product volume at the desired quality specification.

Contrary to the widely held belief within the development community that achieving formal contracting is always the desired objective for the poor in commercial transactions, it may often be an unattractive and impractical option. Firms have very limited practical recourse to the common situation of default by producers and the provision of imbedded services ties up capital, incurs costs and risks an oversupply situation. In addition, contracting carries transaction and coordination costs that must be passed on to suppliers.

However, where contracting is the transaction mode of choice, high costs are one of the major causes of failure and reducing coordination, transaction and maladaptation costs can increase the likelihood of success. Other measures that can facilitate successful contracting include price premium guarantees in the contract design, the use of traditional grower groups and those that are well led and managed, the selection of group members based on social as well as physical collateral and the choice of crops with low asset specificity, ready alternative markets and multiple seed sources (so that producers do not weaken their bargaining position through dependence on the buyer for inputs and an output market).

While the potential benefits of vertical coordination can present a strong business case for buyers, the price has to be right. A project-supported fast food chain kalamansi supply initiative in the Philippines illustrated that, if the commercial basis for a longer-term relationship is lacking, it will flounder. This also reinforces the wider point that buyers, whether they are fish processors or fast-food chains, will not implement a contract that is not in their interest.

Perhaps even more so than other strategies, given the deliberate choices made by participants to trade with certain actors but not others, vertical coordination is exclusive. It need not, however, exclude low-income producers and there are many examples with compelling business cases of poor producers in long-term relationships with large companies. However, there are instances where producers are unable to coordinate vertically because misplaced government regulations do not allow or support these relationships.

The overwhelming evidence from the action research projects and wider practice is that the main value of vertical coordination for the poor lies not in improved prices and associated increased incomes but in reduced vulnerability through greater reliability of input and output markets (and revenues) through long-term relationships themselves. In addition, non-financial benefits such as access to market intelligence and embedded technical assistance are very important for poor participants in value chains.

The projects clearly illustrate the potential for vertical coordination to transmit changing market requirements, such as improved environmental sustainability, from buyers to upstream suppliers through the value chain. It is also clear that chain actors are adept at responding quickly to these changing market requirements. However, global markets are highly dynamic and driven

not only by consumer demands but also some elements of protectionism. Whatever the cause, the challenge for the poor is to keep up with new demands in order to maintain their place in the value chain as the business case for their inclusion weakens in some instances.

In addition, vertical coordination brings new gender dynamics, for example, as female horticultural producers become linked to global value chains their output gains in value, and in some contexts men may move to appropriate the revenue. This poses new challenges for households and communities in rewarding female contributions and ensuring that basic household needs are met.

Notes

- 1 Professional intermediary paid by producers.
- 2 See pangasius project in Chapter 3 for an explanation of the terms ‘household-scale farmer’, ‘family-scale farmer’ and ‘nursing farmer’.

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6

Doing Different Things – Functional Upgrading

Christopher Coles and Jonathan Mitchell

Functional upgrading means changing the mix of activities executed by actors in the value chain by adding or deleting activities to the ‘repertoire’ of individual firms. For example, in development projects this may involve smallholder farmers adding value by taking on primary (and possibly secondary) processing functions of their crops. The resulting distribution of functions among actors in the chain should maximize its efficiency and competitiveness by attaining the optimal level of specialization versus integration. This chapter describes different modes of functional upgrading and their impacts at the value chain level.

Types of functional upgrading and value chain-level impacts

Vertical integration

The process of a firm expanding the number of value chain activities it performs is known as vertical integration, a specialized form of vertical coordination (see Chapter 5). The integration process may be categorized as backward (for example producers acquiring input supply roles or retailers acquiring production roles), forward (for example producers adding processing activities) or balanced (both forward and backward acquisition). It takes place in one of two ways – by adding new functions to an existing business or by vertical expansion through acquiring other firms.

Adding functions at firm level can increase efficiency and capture additional value. Examples of this form of vertical integration in firms in which the rural poor participate are:

- advertising prices to tourists by juice pressers in The Gambia, helping to improve vertical relationships with customers, contributing to increased sales and income (Bah and Goodwin, 2003);

- newly formed producers' groups in Kenya performing grading and packaging of fruits and vegetables at dedicated centres to meet buyer requirements (Ashraf et al, 2008).

Grading is a relatively simple and low-capital activity that can be undertaken by producers fairly easily. However, it is disproportionately powerful in its potential impacts – taking control of quality control 'in-house' increases negotiation power and removes vulnerability to often-biased third-party evaluations. In addition, it can be attractive to buyers because it reduces their transaction costs. Finally, a transparent, in-house quality evaluation system can incentivize process and product upgrading by producers.

For example, the bay leaf cooperative in Nepal developed a quality grading system where members, who are trained assessors, grade consignments in the fields. Their classification would be verified by the trader at his weigh-in, reducing the likelihood of the trader exploiting his market power by offering an undifferentiated price through misclassification.

Integrating functions vertically offers the possibility of transforming raw materials into new products and thereby increasing the proportion of value captured. Producers commonly progress from selling undifferentiated commodities to (fully or partly) processing them into derivatives. Examples of upgrading through processing include:

- smallholder farmers in Egypt producing dairy products when previously they sold only milk, empowering women with new skills and increasing incomes (ACDI/VOCA, 2007);
- increased likelihood of Ugandan coffee producers investing in processing and receiving premium prices as a result of being linked to a stable, reliable market (Bolwig et al, 2008);
- increased processing of oil seeds by Tanzanian producers either through ownership of improved ram presses or access to service processing, resulting in the stimulation of local oil and seed markets accompanied by increased incomes for farmers and processors (Hyman, 1993);
- introduction of processing technologies to coconut farmers in South Asia resulting in increased and diversified incomes from sales of new products (Manohar and Sancha, 2005).

As illustrated by the kalamansi project, functional upgrading in the form of primary processing can help to smooth seasonal supply spikes, and address storage and transportation problems (Box 6.1).

In addition, the kalamansi project demonstrated cost savings from farmers' own production of organic inputs (backward integration of the input supply function). However, these gains were more related to a process upgrade (moving from purchased chemicals to self-produced materials) than from a direct functional upgrade, which would have required producers to acquire the ability to synthesize agrochemicals. Clearly, diseconomies of scale and technology barriers prevent the rural poor from taking on such specialized and capital- and knowledge-intensive activities.

BOX 6.1 KALAMANSI PROJECT: UPGRADING FROM FRESH FRUIT TO JUICE CONCENTRATE

Unable to fulfil its original aim of marketing fresh fruit to Manila because of seasonal uncompetitiveness when producers closer to the city reach peak production, the Zamboanga Sibugay High Value Crops Marketing Cooperative (ZASHIVCMC) in Siay developed an additional strand of their kalamansi value chain by moving into production of fruit juice concentrate.

This allows output to be stored during gluts when kalamansi prices in fresh fruit markets are low and removes the imperative to sell the (highly perishable) goods quickly after harvest. At the time of the action research project closure, the processing plant had been established and the concentrate formula developed and standardized with the product branded in conformity with nutrition labelling requirements. The cooperative has a contract with a Canadian importer and is researching potential local outlets. In addition to adding value and overcoming the competitive disadvantage of Siay's remote location, the processed product holds its price year round and helps to insulate producers from the price volatility of domestic wet markets.

Source: Digal and Tuason (2010)

As an illustration of the related and sequential nature of upgrading strategies, the fonio action research project demonstrated that greater unit profitability can be obtained by processing paddy fonio into its derivatives (Table 6.1), but only after a milling machine was introduced (process upgrading) to improve conversion efficiency. This led to an almost doubling of the number of women involved in processing.

Backward integration is one way for companies to meet increasingly stringent market standards. As Gereffi et al (2005) emphasized, this is particularly likely

Table 6.1 *Profitability of fonio (US\$) in its unprocessed form and three derivatives processed using mechanized milling, assuming a production cost of US\$0.14/kg*

	<i>Paddy fonio</i>	<i>Dehulled fonio</i>	<i>Precooked fonio</i>	<i>Djouga</i>
<i>Volume sold, MT</i>	–	51	1200	1600
<i>Price/MT</i>	499	599	1297	1996
<i>Sales</i>	–	30,540	1,556,948	3,193,740
<i>Costs/MT</i>	144	10,344	488,187	1,289,616
<i>Gross profit</i>	–	20,196	1,068,761	1,904,124
<i>Gross profit/MT</i>	355	396	891	1190
<i>Gross margin (%)</i>	71	66	69	60

Source: Sogoba et al (2010) (Chapter 3)

when there is highly complex knowledge transfer (for example, concerning standards) between firms and the capabilities of the suppliers to respond is low. For example, tougher standards in pangasius markets have led large processing companies to invest in creating their own farms in order to take greater control of the production process and ensure compliance with GlobalGAP standards. This has further lowered the status of the marginal, family-scale grow-out farmers in terms of supplying the larger processing companies.

Offloading functions at firm level to transfer costs and risks (vertical disintegration)

In what is almost the opposite strategy to the vertically integrated acquisition of additional functions, some firms choose to shed activities and the risks and costs that accompany them, focusing on their competitive advantage in specialist areas of expertise.

An example of this is the food retail industry, which has increasingly shed overhead costs by shifting functions such as storage, packaging and quality control upstream. The implication is that to remain in the market, upstream actors must take on new functions and have the capacity to perform these activities to the standard and specifications required by buyers. While this may mean that the poor are unable to directly perform these activities within their own firms, it presents new employment opportunities as the labour requirements of larger firms increase. Box 6.2 describes an example of mutually beneficial (for buyers and producers) vertical disintegration in the coffee industry.

BOX 6.2 COOPERATIVE COFFEE AND STARBUCKS LTD

The evolution of functional upgrading (in combination with horizontal and vertical coordination) in the case of Starbucks Ltd buying coffee from Mexico is a fascinating example of a large international organization experimenting with different organizational models to reduce risk and costs in its supply chain.

Initially, cooperatives were vertically integrated and organized the production, processing, transportation and export of coffee directly, facilitated by the American NGO Conservation International (CI). However, cooperatives were not competitive at providing their members with services (timely payment and negotiations with processors) and CI began to negotiate with processors on behalf of the cooperative. CI and Starbucks then arranged with a third-party exporter to service the cooperatives until, ultimately, Starbucks asked this company to buy from the producers' groups on their behalf. This reduced Starbucks' transaction costs and introduced the ability to communicate directly with the immediate supplier.

The contract stated the buying price for both the third-party company and Starbucks. Farmers earned more, notwithstanding Starbucks' requirement for constant prices, as the result of improved chain efficiency. Cash flow for the farmers also improved because the exporter paid for coffee on receipt.

Source: Millard (unpublished)

Shortening chains by excluding intermediaries and redistributing their functions among the partners of a newly formed vertical relationship

A widespread example of this strategy is in the formation of direct linkages between small-scale producers and buyers. For example, in India several major retailers have designed schemes for buying directly from fruit and vegetable producers. The supermarkets took on the transport function and producers performed bulking and grading at dedicated collection and distribution centres coordinated by farmers' groups (USAID, 2008; Singh, 2009). Farmers gained assured markets with increased, stable prices and favourable payment terms while the supermarkets reduced their costs through elimination of intermediaries' fees and gained the reputation of selling high quality, fresh produce.

These are examples of 'buy higher, pay lower' schemes where the seller receives a price above the going farm gate rate and the buyer saves considerably on prevailing wholesale rates. In these cases 'middlemen' did not lose out significantly because high proportions of retail requirements were still sourced through conventional channels. However, where middlemen are poor themselves, eliminating them may be less justifiable in developmental terms. In the Indian bay leaf project, previous village-level intermediaries were actively engaged as trainers in sustainable harvesting in order to utilize their expertise and retain their goodwill in the value chain. In the incense stick case, elimination of some intermediaries was accompanied by the creation of new jobs in raw material supply chains (Box 6.3).

Intermediaries may perform crucial roles that serve to reduce risk and facilitate marketing such as brokerage and coordination, storage, quality control, transportation and finance. The Starbucks example (in Box 6.2) illustrates how vertical disintegration and specialization, with the introduction of an intermediary rather than its removal, was beneficial to all parties. Indeed, companies are increasingly working to extend their distribution networks to small-scale farmers through partnerships with intermediaries. These actors can aggregate both producers' outputs and buyers' demands, function as a two-way trading platform, and make services and products more appealing by bundling them (World Economic Forum, 2009). This causes us to re-examine intuitive, automatic reactions toward creating 'efficiency' by exclusion of actors from the chain.

One important reason for this is that specialized, experienced and professional actors tend to be more efficient at providing services to their clients than non-specialist horizontally coordinated institutions. The kalamansi case reinforces this point strongly. Many producers were reluctant to sell through the cooperative channels because its high overheads meant that it could not match the prices available on the open market while remaining financially sustainable. Although the cooperative offered an additional processor marketing channel, this represented a relatively small proportion of total production and there was much 'pole vaulting' (that is, producers reneging on their commitments to sell through the cooperative) when higher prices became available on local wet markets.

BOX 6.3 ELIMINATING INTERMEDIARIES FROM A VALUE CHAIN, IN INDIA

Traditionally, individual traders buy bamboo sticks from household producers, making payments according to their assessment of quality grades. Rolling of incense stick is contracted out to (largely female) household rollers elsewhere. Perfuming and packaging is performed by the large commercial incense stick companies downstream of the incense stick rollers.

TRIBAC introduced incense stick rolling to the project area by procuring raw materials such as jigat and charcoal from outside Tripura state in north-east India. The project eliminated jigat importers, establishing a new supply chain within Tripura from five joint forest management committees (JFMCs) direct to stick rolling community enterprise clusters (CECs), more than halving the local price of jigat from US\$0.88 to US\$0.40/kg. The charcoal chain intermediaries were similarly replaced by sourcing from household level collection and conversion of bamboo waste through drum kilns at minimum price by CECs.

With the enhanced role of CECs, the role of intermediaries was reduced. However, the risks they were carrying in coordination, storing and marketing functions were transferred to CECs. Several have their own collection centres and direct linkages with the buyers with three marketing their own brands of incense sticks.

Source: Rao et al (2009)

Functional downgrading

The term ‘upgrading’ implies an ‘upward’ trajectory; that is, actors or firms occupy a superior position in the supply chain by moving forwards, or ‘downstream’, along it to capture greater value. However, in some circumstances functional ‘downgrading’ takes place – moving backwards, or ‘upstream’ along the chain and taking on lower value (inferior) functions. Little evidence exists to demonstrate the outcomes of this strategy but Box 6.4 describes how pangasius producers moved upstream into nursery farming to escape the damaging boom–bust cycles in grow-out production.

Barriers to entry to functional upgrading

The barriers to functional upgrading for the resource poor can be considerable. Gereffi (1999) describes the classic case of Asian garment producers moving from the assembly of imported inputs, progressing to responsibility for the entire production process, designing under ‘own brand’ names and, finally, sale of own-branded goods on internal and external markets. However, the latter two cases are rare and, as Schmidt and Knorringa (1999) pointed out, buyers can engineer obstacles to producers, impinging upon their areas of core competency. However, there may be less resistance to producers taking on less strategic services such as logistical functions and quality control (Dolan et al, 1999).

BOX 6.4 FUNCTIONAL DOWNGRADING IN VIETNAMESE PANGASIOUS CATFISH

The pangasius industry in An Giang, Vietnam has been characterized by producers shifting between upgrading and downgrading cyclically and, more latterly, leaving the sector permanently. The greatest potential losses and returns for farmers are through grow-out operations (fattening of pangasius fingerlings to marketable weight in a 60–90 day cycle). Therefore, this function represents the ‘superior’, higher value position for these actors. However, cyclical influxes of grow-out farmers into production in response to price signals flood the market and force prices down. This then causes a mass exodus (downgrading) and movement into fingerling production, which decreases output and causes prices to rise again, thus completing the boom–bust cycle.

Attempts to smooth this damaging pattern by contracting with export processors were unsuccessful. The additional certification costs required for the award of contracts made an already marginal activity unprofitable and smaller scale farmers are exiting the sector at an unprecedented rate. In a sector that is responding to increasingly stringent standards in export markets by vertical integration, the business case for the involvement of small-scale producers is growing progressively weaker.

Some actors have left the sector altogether, others have moved to alternative, less risky and less demanding value chains (Chapter 8) and the remainder have functionally downgraded to nursery farming or breeding. Demand for certified fry is increasing as the remaining grow-out farmers upgrade to remain in the sector. Although superficially lower value functions, these are highly skilled activities and the most profitable producers (with the lowest mortality rates) are highly skilled; indeed, only the most skilled and successful grow-out farmers are able to succeed at the breeding function.

Source: Khien et al (2010)

In the incense stick project, the coordinating NGO (TRIBAC) and some CECs have succeeded in functional upgrading from rolling incense sticks to perfuming, packaging and marketing incense sticks (progress along Gereffi’s (1999) ‘benign escalator’) but inadequate finance for equipment and working capital has prevented most CECs’ advancement to masala production or scenting and own-brand production.

In the Philippines, the development of the kalamansi concentrate function required machinery, a building, technical support (food hygiene, product development and market development) and sufficient working capital tied up in stock (kalamansi, packaging and finished concentrate). These costs are beyond the affordability of individual kalamansi growers, with an average income of US\$2.47 a day. Even where growers are organized in a cooperative structure, this kind of investment is only possible with concessionary funding.

However, in some cases, a lack of information is a more significant barrier to marginalized participants. For example, while the capital costs of imported Vietnamese incense rolling machine can be recouped in two years, Indian producers only became aware of this technology as an incidental benefit of a study tour by the project team to Vietnam.

Evidence for improvements in poverty, environment and gender outcomes from functional upgrading

Poverty

Functional upgrading is rarely, if ever, implemented in isolation and its individual contribution to poverty reduction outcomes is, therefore, difficult to isolate from that of complementary mechanisms. However, increased value-added and link-ages with buyers that are more direct, resulting from packages of strategies that enable functional upgrading, can improve incomes from target value chains and some of these gains may be captured by resource poor participants.

Table 6.2 provides examples of poverty reduction (at the household level) related to functional upgrading in two projects. What is less clear is how low-income producers taking on additional functions affect the livelihoods of poor downstream participants. For example, when incense stick rollers in Tripura state started to market their own scented sticks they were competing with supply from the large commercial factories in the South of India, which employ many people. A rigorous analysis would consider the net impact of functional upgrading, factoring in the losers as well as the winners.

There is also evidence that one of the benefits of functional upgrading and/or downgrading for resource-poor households may not necessarily be in raising household incomes – but in reducing income variability. Our example from fruit farmers in the Philippines suggests that lower but stable returns may be preferable to higher but more volatile returns for households ill-equipped to absorb the impact of market volatility. The same was true for some Viet-namese household-scale fish farmers who decided not to pursue certification because it entailed removing all ducks and trees from on and around their ponds, two assets that made a substantial contribution to their livelihoods. The rollercoaster of the international markets may be a ride on which the poor simply cannot afford to participate.

Table 6.2 Poverty reduction outcomes directly attributable to functional upgrading in two action research studies at household or community levels

Project	Household or community level outcomes
Kalamansi, Philippines	Figure 3.31 in the kalamansi project summary illustrates the price volatility of kalamansi wet markets. Upgrading to concentrate production did not increase average producer income but offers an additional channel with a reliable, stable price and, therefore, reduces vulnerability to price shocks and their impact on the kalamansi component of their household income.
Pangasius, Vietnam	Downgrading by grow-out farmers to nursery production has meant a high opportunity cost in terms of net income (\$4026 over two years) during booms in the cycle but their avoidance of the ‘busts’ meant that they may have earned up to five times more than grow-out farmers on aggregate. Given that the pangasius sector delivers their main source of income households may have benefited greatly from downgrading.

Sources: Digal and Tuason (2010); Khiem et al (2010)

Environment

There are few recorded examples of functional upgrading that have significant environmental impacts, be it positive or negative. In the Philippines, as in many other agricultural development programmes, the project encouraged the target group to produce their own inputs (that is, backward integration) by implementing a natural farming technology scheme (NFTS) to replace the traditional reliance on chemical inputs. Taking on input supply (or other) functions has little or no environmental impact inherent per se, unless there is an accompanying change in processes (see Chapter 7).

In India, local forest councils (known as *van panchayats*) took over the function of collecting and distributing Forest Development Corporation bay leaf collection permits from traders. No payment is made for these services but this quasi-regulatory activity bolsters their role as managers of local forest areas and should, in the longer term, contribute to a more effectively managed resource.

Gender

Despite the implicit acknowledgement in the field of market development that the functional position of women in value chains needs to be upgraded in many cases, in order for them to move to higher value activities, there is little available evidence of how this has taken place.

The ACIDI/VOCA (2007) case describes how transfer of dairy processing skills to Egyptian women allowed them to contribute more to household income, leading to the reallocation of family resources. One of our own projects illustrates some of the opportunities and constraints for functional upgrading to benefit low-income female producers. The upgrade of producers in Tripura along the chain, from non-participation to producing rolled incense stick increased their incomes and allowed them to retain control of both production and exchange. Moreover, these increased incomes have resulted in superior female status and greater investment in schooling. These impacts are difficult to distinguish from those of increased output and better quality resulting from product and process upgrading. However, three of the CEC leaders supported by TRIBAC have managed to establish themselves as independent entrepreneurs

BOX 6.5 FROM EXTENSION WORKER TO ENTREPRENEUR

Shikha Rani Debnath worked as a field coordinator for TRIBAC before setting up an incense stick business with her husband, who had been trained in preparing masala. Bank loans enabled her to set up the Shukanto self-help group, which now employs around 100 people. The enterprise sells scented incense sticks under the brand name Sukanta, competing with TRIBAC's own production. It brings in a monthly profit of US\$89, which compares well with an average of less than US\$16 earned by over 60 per cent of women involved in the sector.

Source: Rao et al (2009)

and have taken on the functions of scenting, packaging and selling incense sticks direct to the local market (Box 6.5).

That these women are so few in number is a reflection of the barriers to small producers progressing along the escalator. Bank loans, for example, require collateral and creditworthiness, and businesses that compete with subsidized institutions such as TRIBAC struggle to succeed. This introduces the wider issue that where support organizations such as NGOs or state institutions participate directly in value chains, they risk distorting markets and increasing barriers to upgrading by individuals.

Summary

Functional upgrading is the process of altering the mix of functions performed by a firm, usually to gain greater value in the chain but sometimes to trade off financial gains against moving to a more secure position, known as ‘downgrading’. It encompasses the process of vertical integration, where individual firms acquire upstream or downstream functions to improve their competitive position.

Other common modalities of functional upgrading are offloading functions at firm level to transfer costs and risks and shortening chains by excluding intermediaries and redistributing their functions among the partners of a newly formed vertical relationship.

The main value chain-level benefits of functional upgrading relate to increased efficiency, for example through reduced transaction costs, increased share of final product value, risk reduction and enhanced stability and reliability of income.

The main barriers to functional upgrading are lack of investment capital and information, and resistance from downstream actors who act to protect their core competences. The number of activities associated with bringing a product to market is finite so acquisition of a function by one party implies its loss for another. Although traditionally viewed as ‘parasitic’ sources of inefficiency by the development community, intermediaries often perform vital specialist functions, including accepting risk, creating economies of scale for both producers and buyers and acting to coordinate activities and exchange information; indeed in some cases they have been deliberately introduced to the chain to improve its functioning and increase benefits to both parties in a contractual relationship. In addition, barriers may be introduced by support organizations themselves by capturing functions that could be performed by entrepreneurial individuals in the target group.

Functional upgrading can increase household incomes through capturing greater rent and reducing costs through efficiency gains. Downgrading may result in lower net incomes (although this is not always the case) but acts to secure revenues through the firm exiting a situation where it is uncompetitive or avoiding unfavourable market conditions such as costly high standards or boom and bust cycles. Although there is a consensus within the development community that women should upgrade to higher value functions in the chain,

there is little evidence of the success of such initiatives beyond some instances of them taking on value addition activities, such as processing.

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7

Better Quality and Working Smarter – Product and Process Upgrading

Christopher Coles and Jonathan Mitchell

One of the most common and intransigent barriers for the rural poor is that their output fails to meet market specifications, both in terms of quality and volume. Raising product quality and increasing the efficiency of production are critical prerequisites to accessing and competing successfully and beneficially in markets.

Product upgrading is about making better products that hold greater value and fetch higher prices. Process upgrading relates to the efficiency of processes within or between nodes. Formal definitions include, ‘achieving a more efficient transformation of inputs into outputs through a reorganization of productive activities’ (Humphrey and Schmidt, 2002).

Product and process upgrading are intimately related and fundamentally inseparable. For example, the nature of production, handling, processing, packaging and storage processes determine the quality and value of wine and coffee. With the exception of improving the quality of inputs in isolation, it is difficult to conceive how a product may be upgraded without changes to the way it is produced.

All markets are segmented – by consumer age, gender, income status and geographical location, for example. Each market segment has its own ‘critical success factors’ (CSFs) (Daniel, 1961) – the minimum standards that products or services must meet to enter the market (known as ‘order qualifying’ CSFs) and those that allow it to outcompete similar products that ‘qualify’ (known as ‘order winning’ CSFs). Quality and volume are very often order qualifying CSFs, affirming that product and process upgrading are central to participation and competitiveness in markets.

One of the most common examples of process upgrading in rural-based value chains is agronomic improvement, resulting in higher productivity,

production and sales, or increased own-consumption, or both. An increase in output by subsistence farmers, allowing them to generate a marketable surplus and enter a market, is one of the simplest forms of process upgrading. This traditional approach to agricultural development has latterly been supplemented by market analysis approaches in order to ensure that supply-side improvements align with consumer demands.

The terms process and product upgrading additionally apply to processes internal to firms (such as inventory and human resources), those between nodes (such as transport and invoicing) and intermediate products such as part-processed materials and inputs.

Nature of product and process upgrading

Higher prices for better products

Development interventions to improve the quality of products (through process changes) follow the rationale that better quality products attract higher prices, which allow producers to capture more rent within the value chain. This is often the case but requires some qualification.

There exist, particularly in lagging rural areas, multiple market and state failures that create an environment in which higher quality is not necessarily rewarded by higher prices for producers. This may be due, for example, to the existence of oligopsonies, where buyers exert their economic power to capture the additional rent created by better quality inputs without passing these gains back to sellers.

Other potential factors can cause price–quality disconnects in value chains. For example, intermediaries may offer no quality-based price premium because the final consumer is unable to discriminate among ‘upgraded’ and poorer quality products. Quality is not an absolute concept in this context; a quality premium is paid only if it is perceived and regarded as desirable by customers (adds value), as the experience of the pangasius project illustrates (Box 7.1).

The octopus project facilitated quality upgrading of octopus without any assurance from the sole buyer – or any potential alternative market – that quality improvement would be reflected in a higher price. Moreover, the interventions were based on the flawed assumption that the quality of octopus was a critical issue in this value chain. Monitoring evidence indicated that only 0.5 per cent of the octopus offered for sale at the beginning of the project was rejected on quality grounds and that the price is determined by the weight, not quality, of the specimen. In this example, product upgrading was a solution to a non-existent problem.

Stock management imperatives often require reduced fishing output. If it is necessary for production to decrease, the maintenance of fishers’ income requires higher unit prices. In the octopus project, it was assumed that improving the quality of octopus would lead to higher prices. For some reason this relationship did not hold. What is not clear is whether the end-market does reward quality and the processor is exploiting his market power

BOX 7.1 PRODUCT AND PROCESS UPGRADING AND PRICING IN THE VIETNAMESE PANGASIUUS SECTOR

At the beginning of the pangasius project in 2007, there were no external standards applied in the Vietnamese pangasius sector. However, the team recognized the emerging consciousness of food quality and safety considerations and competition issues in end markets. After research and scoping of producer options, the project adopted the SQF1000 certification standard because it was the only standard available to smaller scale producers at the time.

Costs to producers included the need to construct sedimentation ponds for the treatment of grow-out pond effluent, adhere to maximum stocking densities that were lower than previous levels, and the use of certified fingerlings and feedstock, which are more expensive in unit costs terms than uncertified inputs. On the benefit side, improved inputs and pond management reduced fish mortality rates. The net effect was gains for producers from decreased net production cost.

However, processing companies did not make structural changes to pricing in response to quality improvements for two main reasons. First, since 2007, buyers have responded to increasingly stringent European market requirements by adopting more rigorous production standards than the SQF1000, including the GlobalGAP and British Retail Consortium (BRC) systems. The SQF standard is now regarded as a minimum standard (an order qualifying rather than order winning critical success factor) and attracts no price premium in end markets.

Second, SQF certification (or horizontal coordination) did not alter the producers' status as a 'buffer' in a two-tier provisioning system. Their output is sought by processors only when the supply from centrally contracted medium- and large-scale producers is insufficient. This weak bargaining position gave the companies no incentive to recognize quality improvements by offering improved contractual terms.

Source: Khiem et al (2010)

by failing to pass these higher prices onto the fishers (in which case processors are responding to a short-run gain but potentially undermining their long-run viability through stock collapse). Alternatively, it could be that the market simply does not pay for quality attributes other than size, in which case the market-based incentive for improving quality is undermined.

In such cases there is a role for state intervention in seeking to ensure stock sustainability while ameliorating livelihood impacts. The Senegalese authorities do not enforce existing fisheries regulations, leaving the fishers themselves to regulate access to the common pool resource.

The wider issues are the implications of support organizations advocating strategies for their target beneficiaries without first performing a robust market analysis. Encouraging poor people to invest in any activity exposes them to increased risk and it is they who suffer the costs of flawed analyses if increased risk is translated into greater vulnerability. It is the responsibility of institutions advocating on behalf of their beneficiaries to ensure that risks are identified and controlled to keep them to a reasonable level. Of course,

what it ‘reasonable’ and acceptable may vary among individual beneficiaries according to their ‘risk appetite’.

Increased efficiency, competitiveness and cost savings

Upgraded processes bring efficiency gains, improving competitiveness. Agricultural development, for example, has the potential to improve efficiency of production through two main pathways – increased productivity through more efficient conversion of inputs to outputs, and reduced post-production inefficiency (post-harvest losses). The fonio project provides an illustration of this – yields were doubled in two years through the use of improved seed varieties (Box 7.2).

Success in agricultural development is strongly dependent upon the availability of relevant, up-to-date technical support for producers. In the case of improved planting materials, on-farm performance rarely mirrors the potential exhibited by higher yielding varieties (HYVs) in research settings. The reasons for this include the higher input requirements of many if not most HYVs, inadequate multiplication and distribution capacity, inadequate technical support, and suboptimal planting regimes and conditions (compared with the ideal conditions maintained at research stations).

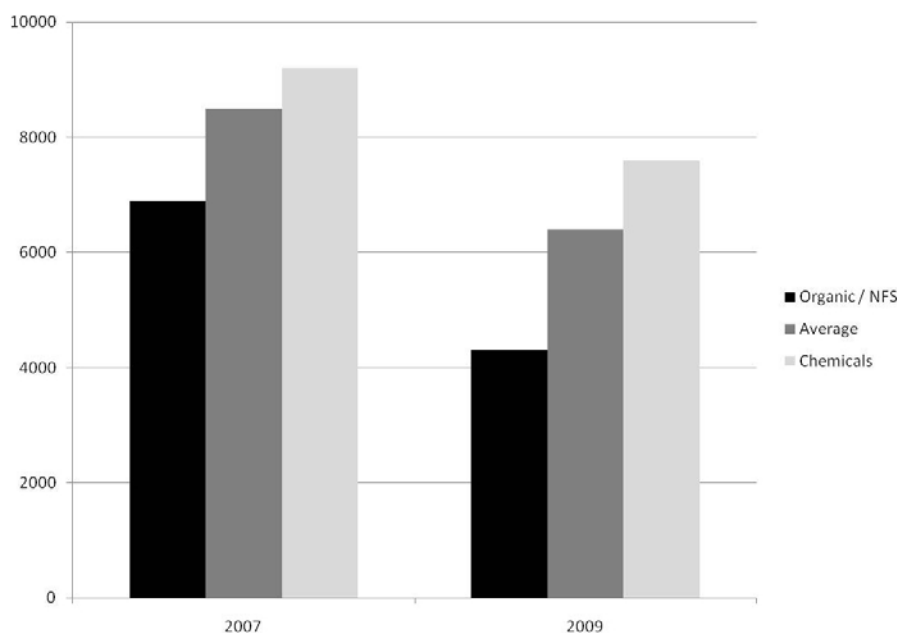
For example, most small-scale producers cannot emulate the plot sizes and irrigation regimes used in research trials and many follow intercropping schedules to broaden their livelihood base. Wherever possible, HYVs should be developed using trials on typical farm plots (with the assets typically available to the ‘average’ producer) and with an ongoing package of technical support. Increasingly, private buyers are stepping in to provide such support where state intervention has been inadequate in terms of generating the desired supply side improvements.

BOX 7.2 POTENTIAL TO INCREASE EFFICIENCY IN RURAL MALI

At the most basic level, fonio yields were increased from 300kg to 617kg per hectare between 2007 and 2009 as a result of the progressive adoption of improved seed varieties. Without any change in cropping system, the marketable surplus produced by the target group and sold through the agricultural union increased from 12MT in 2007 to 75MT in 2009.

This suggests that the amount of fonio retained for own consumption almost doubled and the revenue from selling the marketable surplus rose from US\$8600 to US\$41,500 (equivalent to a redistribution to the household of US\$4 in 2007 and US\$31 in 2009). This illustrates the scope to very significantly improve agricultural efficiency in one of the poorest parts of one of the poorest countries and for this to be reflected in tangible improvements to both household income and food security.

Source: Sogoba and Kergna (2010)



Source: Digal and Tuason (2010)

Figure 7.1 *Kalamansi yield (kg per ha) using different production techniques*

In addition, the state plays a role in the development of the rural infrastructure required to increase process (transportation and marketing) efficiency, whether it is by providing physical markets and auctioneers for artisanal fisheries and horticultural produce or in maintaining rural road networks, for example. During the kalamansi project, road improvements within the study area reduced marketing costs by 81 per cent, increasing the viability of the wet fruit strand of the value chain and increasing returns to all rural producers in the project area.

A very common instance of agricultural process and product upgrading is conversion from conventional (chemical input-based) to organic production. In common with most switches to chemical-free production (e.g. IFAD, 2003) the kalamansi farmers in the study group enjoyed cost savings, in this case a reduction of 26 per cent, even though labour requirements tend to increase.

The results illustrated the difficulties created by the timing of costs and benefits of organic farming. In the long term it is likely that organic farming will, by reducing production costs more significantly than reducing yields, generate a pro-poor benefit for producers. However, in the short term, the impact of reduced production costs from adopting Natural Farming Technology Scheme (NFTS) is overshadowed by the lower yields following adoption of organic techniques, resulting in a loss of producer income. In this case, therefore, there is a clear trade-off between the short-term pro-poor benefits of conventional farming techniques and the longer-term benefits of organic

production which certainly deliver environmental gains and may also include net income benefits to producers.

This example indicates that, notwithstanding the positive environmental externalities of organic cultivation, the price of conversion is not one that can be feasibly carried by low-income rural producers. Squaring this circle can be attempted in two different ways. One is for public authorities to impose standards to require the conversion to organic production. This may have the effect of excluding low-income producers from the value chain by imposing unaffordable conversion costs on producers. An alternative is for concessionary funding to be used to fund any one-off costs of organic conversion and to compensate producers for the resulting temporary reduction in their incomes.

A switch to organic production is a long-term proposition and needs to be implemented with excellent agronomic knowledge in order to be successful. It is difficult to advocate short-term sacrifices in yield and, therefore, income to poor producers in return for potential longer-term benefits. However, tree fruit producers (whose crop may take several years to yield post-planting) are already familiar with the concept of gradual, longer-term investments. As with HYVs, one of the main constraints, particularly in sub-Saharan Africa, is that extension services are generally very poor and do not provide the technical knowledge required to attain high yields without chemical inputs. Therefore, producers are locked into a cycle of soil degradation and ever-increasing demands for chemical inputs to simply maintain current output levels.

Another factor responsible for the low uptake of the organic NFTS in the Philippines was that markets do not currently offer any price premium for organic fruit. Such price premiums are critical to the decision to transfer to organic production because it is a key upside to lower yields (see Box 7.3). In the kalamansi case, the market is not yet differentiated enough to recognize the value of organic production, particularly in domestic fresh wholesale segments. However, the action research team is continuing to support the target group in branding their concentrate and are researching potential outlets that recognize the value added of chemical-free products. This may ultimately provide the incentive required for producers to fully implement the new processes.

Table 7.1 summarizes process and product upgrading impacts at value chain level. There is a striking categorization of scale of intervention in terms of resource allocation, with correspondingly different outcomes. Simpler, cheaper process upgrades such as those applied in bay leaf and incense stick projects created 'quick wins' such as efficiency improvements and better prices. In contrast, the resource-intensive upgrading processes of the pangasius and octopus projects did not translate to the same degree into immediate or obvious gains such as structural price increases (although pangasius producers did enjoy lower costs and increased output) but instead contributed to longer-run benefits – for example, the ability to meet basic market requirements and enhanced stock sustainability, respectively.

Both kinds of strategy are necessary. Relatively small, incremental interventions in value chains in which very many poor people participate hold the best prospect of positively enhancing the livelihoods of many people quickly and

Box 7.3 ECONOMIC TRADE-OFFS IN ORGANIC PRODUCTION

Six case studies of organic adoption in Latin America and the Caribbean differed in the way that production cost, yields and prices evolved, but organic producers obtained higher net revenues in every instance.

Farmers converting to fully organic approaches from near-organic production experienced cost increases as a result of improved production technologies and certification fees. Those who had applied chemical inputs experienced a decrease in total production costs even though labour and overhead costs increased.

Similarly, those with previous practices most resembling the organic system experienced rapid yield increases with the new techniques but farmers previously using chemical inputs experienced declines for several seasons following conversion.

All farmers obtained higher prices than producers selling similar conventional products nearby, partly through the nature of the organic product itself but longer-term relationships with buyers also played a key role in determining better price margins. The organic process lends itself to small farmers who are often accustomed to producing without chemical inputs, and qualitative data suggest that health benefits may accrue from discontinuing the use of chemicals. Finally, it was observed that success in organic production is very difficult for farmers previously using chemical inputs, with little access to family labour (often women) and uncertain or no land tenure.

Source: IFAD (2003)

economically. However, the transformational growth that has lifted hundreds of millions of people out of poverty over the last three decades has been based upon dramatic, large-scale changes (urbanization, industrialization, demographic transition), which have reshaped the world's economy and people. Therefore, we should hesitate before automatically rejecting upgrading strategies that are exclusive, expensive and risky but that could precipitate a step-change in the local economy benefiting many within and beyond the focal value chain.

The rural development community is generally preoccupied with producers' selling prices, using rising prices as a proxy for developmental impact. If all else were equal, producers would rather receive higher prices for their output than lower. However, evidence from certification projects suggests that most producers would exchange high but volatile prices for lower more stable income (through vertical coordination and sometimes even product downgrading, for example from high quality fair trade certified coffee to fair quality organic certification), which reduces vulnerability and allows producers to plan and invest in their farms and families (e.g. Reuben, 2008).

Barriers to entry for product and process upgrading

Whether process and product upgrading is based upon horizontally coordinated groups or upon individuals, there must be a clear sense within the target community that the benefits will outweigh costs. In some instances the

Table 7.1 *Examples of process and product upgrading impacts at value chain level in action research projects*

<i>PROJECT</i>	<i>PROCESS UPGRADING</i>	<i>PRODUCT UPGRADING</i>
Bay leaves, India/Nepal	Increased output of bay leaves from 2.8 to 6MT per hectare due to improved harvesting techniques and a modest increase in production area in Nepal.	Improved quality (leaf colour and quantity of non-leaf material such as sticks) through better harvesting, drying and grading led to an increase in average from US\$0.15/kg in 2008 to US\$0.28/kg in 2009.
Cassava, Tanzania	Improved agronomy and inputs (including higher yielding varieties) generated (or increased) marketable surpluses.	Planned production of high quality chips to meet quality assurance benchmarks did not take place.
Fonio, Mali	Significantly increased marketable surplus 2008 and 2009 and almost doubled yields through high-yielding varieties. Production costs reduced through mechanized threshing and milling. Distribution channels established to collect fonio for milling and transportation to local markets.	No change in quality of raw or processed fonio; unit prices remained static (although the proportion of fonio which was processed increased).
Incense sticks, India	Average productivity increased from 5kg before the project to 10–12kg per week through use of rolling desks and ‘dip and roll’ technology. Potential further increase to 30kg per week with the same time input using mechanized rolling desk.	Mechanized stick production, improved input sourcing and masala production, and better rolling techniques improved end product quality. Incense stick rejection rates dropped from 18% to 8% and rolled incense stick prices increased from US\$0.22/kg to US\$0.41.
Kalamansi, Philippines	Adoption of NFTS reduced production costs but yields dropped (the latter may be an initial effect exacerbated by only partial implementation). Improved roads reduced transport costs.	NFTS and other process innovations reduced rejection rate by 90%. Improved packaging and transport extended shelf life of fresh fruit.
Octopus, Senegal	Extent of improvement from enforcement of biological rest periods and breeding vase immersion is unclear.	Improved post-harvest processes including octopus handling, hygiene and insulated catch storage. Rejection rates decreased from 0.5% to 0.1%. Selling price remained static.
Pangasius, Vietnam	Improved water quality in grow-out ponds through enhanced sedimentation processes. Enhanced environmental sustainability through switching to commercially produced feed. Nursing farmers achieved certification by An Giang Seed Centre through improved processes. Household-scale farmers switched from marine fish based feed to cheaper and more sustainable paddy snails.	Grow-out and nursing farmers produced better quality products with higher survival rates and higher quality flesh with fewer chemical residues.

Source: Action research teams, see Chapter 3 for project summaries

political economy of the value chain conspires to create a price–quality disconnect (e.g. Coles, forthcoming). In other cases the end market itself does not differentiate on quality terms. Where this is the case producers cannot and will not invest in upgrading because cost disincentives are not balanced by incentivized returns. Support organizations need to understand market drivers and political economic influences before setting their target groups on risky and expensive upgrading paths.

A major contemporary driver of the evolution of processes and products is the increased role of standards in shaping access to international trade. Supply chains are consolidating, production has become globalized and socio-economic concerns have materialized in codes of conduct and criteria of supply chain management (e.g. Tallontire et al, 2005; and Bolwig et al, 2010). In addition, consumer awareness of social, product safety and environmental issues has increased, driving a new focus in supply chains on provenance, traceability, impact measurement (both in environmental and social terms) and quality, including a desire to include smaller-scale and, sometimes, niche producers.

Contingent changes in rural landscapes and economies, including the diversification of land use and human population growth, have prompted concerns among buyers that supply is increasingly struggling to meet demand. There is also a reputational risk of failure to audit production bases for their social and environmental performance. Therefore, firms such as supermarkets are increasingly investing in suppliers to improve the efficiency and sustainability of their production, not only to create cost savings but simply to safeguard a supply of products to purchase with the desired specifications (see discussion in Coles, 2010).

The new pressures on value chain participants to conform to, and comply with, ever increasing market standards through upgraded products and processes present a challenge to the rural poor. All markets are exclusive and, while increasing standards have created new opportunities, there are also negative impacts among those unable or unwilling to participate (Gibbon and Bolwig, 2007). Can the rural poor, through complementary strategies such as horizontal and vertical coordination, meet these standards? If not, a more significant re-examination of the interaction between poor people and changing markets may be warranted, for example by functional ‘downgrading’ (Chapter 6); moving to a new value chain (Chapter 8) or shifting from primary to secondary roles (from production to supplying labour or services).

For example, as part of the shift toward stricter, higher standards and process requirements in end markets, African horticulture is becoming larger in scale and more vertically integrated. This can be exclusive in the sense of the barriers to small producers described above. However, Maertens and Swinnen (2008) present data suggesting that the poor can engage and benefit through labour rather than product markets as processes are upgraded – labourers associated with high-value export farming enjoyed higher returns than those in conventional farming and agro-industry. This questions the traditional assumption that labour conditions in export horticulture supply chains are necessarily poor, with important implications for rural development policy.

Outcomes on poverty, environment and gender of product and process upgrading

Poverty

If outputs can be increased in volume or quality with gains (greater than any losses through additional inputs), the resulting net benefits should increase household incomes – assuming that resources have not been diverted from other household activities. This is not necessarily a straightforward assumption. It may hold in the simplest case of subsistence producers increasing output to generate a marketable surplus through more efficient practices in a context where other livelihood options are very limited. However, in cases where the focal value chain represents only a proportion of the household's income and where assets and resources are allocated among multiple livelihood activities, value chain level gains do not necessarily translate into poverty reduction.

The impacts of interventions are rarely measured at the household level and, very often, increases in income generated by a value chain are evaluated in isolation and presented as 'poverty reduction' outcomes. Such increases may reflect improved livelihoods by the poor. However, they may also be derived from wasting less (in addition to or instead of producing more) through improved post-harvest handling (see environment subsection below).

In the case of fonio, increases in output and cost reductions generated increased fonio producers revenue while prices remained stable. The extent to which these significant chain-level effects are translated into household-level gains is limited by the fact that the project focused exclusively on the revenue from Union des Agriculteurs de Cercle de Tominian (UACT) distribution channels – which only makes up about 8 per cent of the target group's total annual output of the crop. The size of the target group also diluted the benefits on a household level. The increase in annual average household revenue from fonio from US\$7 in 2007 to US\$31 in 2009 represented an increase of the crop's contribution to total household agricultural earnings from 2 per cent to 8 per cent. In addition, we have no information about what happened to the non-fonio livelihoods in the household or who in the household was benefiting. Therefore, it is not possible to conclude with any conviction that selling more fonio has reduced poverty among the target group.

In Nepal, by contrast, the contribution of upgrading within the bay leaf value chain can be disaggregated to some extent according to individual strategies and its contribution to overall household income was clear (Box 7.4).

The incense stick project increased average stick roller incomes from US\$1.30 per week before the project to US\$3.24 per week after the project. Stick rollers are supplied with inputs by TRIBAC so they face no costs when output increases. We have no information about how increased income from incense stick rolling has affected the 67 per cent of cash livelihoods of the target group households derived from other sources (see Figure 7.2 below).

However, the increased income from rolling incense sticks was earned without increasing the time spent on production, so there is no reason to suspect that other livelihoods were impacted by the project. It is possible that the 'small

Box 7.4 UNTANGLING THE CONTRIBUTIONS OF UPGRADING STRATEGIES IN THE BAY LEAF VALUE CHAIN TO HOUSEHOLD INCOME IN NEPAL

The impact of horizontal and vertical coordination was the ability to negotiate better prices, which were increased further by product and process upgrading to improve quality. Therefore, almost 80 per cent (or US\$72 per collector household per year) of the increase in revenue accruing to the target group was due to selling better quality bay leaves and negotiating a better price.

The remainder (20 per cent) was generated by process upgrading to increase output, so increasing revenue by simply selling more output.

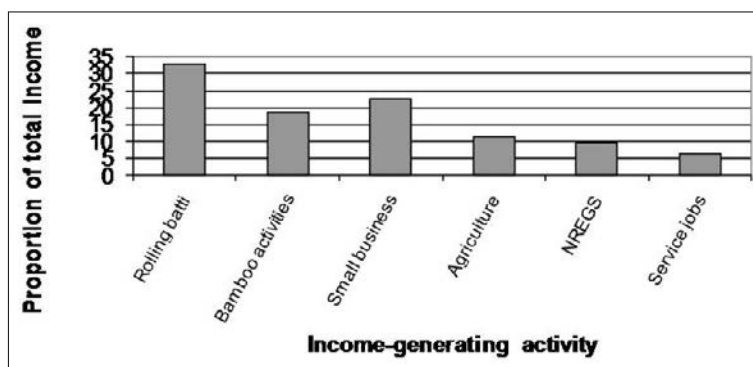
The project partners estimate that one-third of the total increase in income from bay leaves is directly attributable to product and process upgrading. This equates to about US\$29 per household per year or about 7 per cent of total average household income before the upgrading intervention.

The average target group income from bay leaves increased by US\$87 to US\$133 from 2008 to 2009.

Source: ICIMOD (2010)

business' category of income (the second largest livelihood among the target group) could have benefited from the additional cash generated from stick-rolling for investment purposes – but other livelihoods were not measured.

The kalamansi project demonstrates the importance of understanding the total range of livelihoods in a household, before concluding about the poverty reducing outcome of developing a specific value chain. In the project, average kalamansi income among growers rose from US\$2.47 per day to US\$3.71 – a significant increase of 50 per cent. This was mainly attributable to the lowering



Source: INBAR (2010) (Chapter 3)

Figure 7.2 Cash income sources for 125 incense stick roller households

of production costs (through improved road infrastructure and fewer inputs for farmers making the conversion to organic cultivation). However, non-kalamansi incomes only increased slowly. The result of this was that the share of grower income attributable to kalamansi increased from 38 to 45 per cent during the project – so the total incomes only increased 27 per cent (Digal and Tuason, 2010). Given the diversity of livelihoods in our target populations, this example demonstrates the danger of attributing a household welfare outcome to a change in just one element of the household cash income sources.

Environment

Of the individual upgrading strategies it is perhaps process upgrading that has the greatest potential to improve environmental outcomes, short of moving to a different value chain (Chapter 8). In value chains the processes of production, processing, marketing, distribution and waste disposal consume resources and produce by-products, with potentially negative environmental outcomes that ultimately impinge upon the livelihoods of the rural poor. Changes to these processes can reduce resource use, wastage and negative externalities.

The most obvious example of environmental enhancement through product and process upgrading is where interventions are made to improve the environmental impact of a core production process, such as the current widespread shift from conventional to organic agriculture. The short-term benefits include lower input costs and, in some cases, price premiums for outputs. In ‘organic by default’ crops, such as a significant proportion of smallholder-produced coffee in eastern Africa, the only debits in the cost–benefit equation are certification costs, which are often shared through horizontal or group certification. In the case of coffee, organic premiums often exceed those paid for conventional fair trade certified output. However, the sometimes drastic drop in yields for producers who have become reliant upon (ever increasing volumes of) chemical inputs along with, in some cases, the introduction of certification fees and increased labour costs, represent a short-term disincentive. Organic premiums are not payable on conversion-stage crops and therefore organic certification can require producers to be able to absorb a short-term financial reduction in viability.

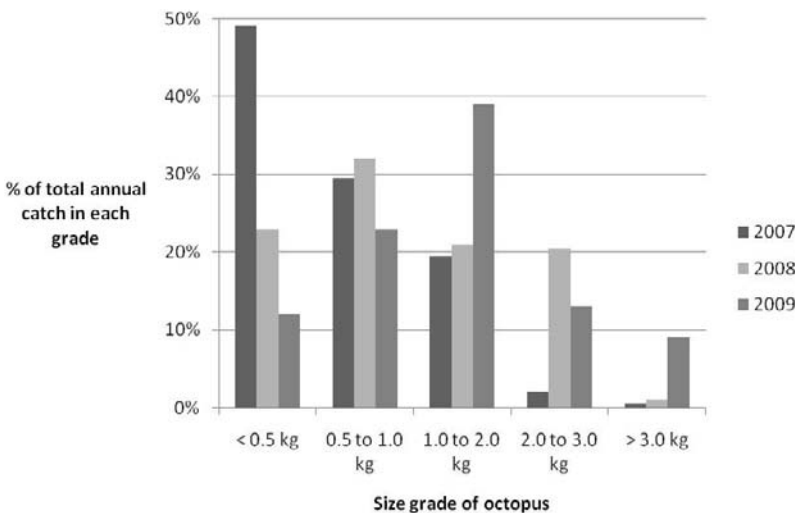
In the ideal scenario, as yields begin to recover in the longer term through better soil and crop management and as outputs fetch premium prices, financial incentives create a business case for such forms of ‘sustainable agriculture’. However, in the kalamansi case, where the market does not (yet) differentiate between organic and conventionally produced fruit, the lack of a premium meant that relatively few producers were incentivized to make the switch and even fewer to fully implement the system.

It is notoriously difficult to manage and regulate open access fisheries but octopus species, with their sedentary nature, perhaps offer one of the best chances for doing so because, unlike most pelagic and demersal species, there is a clear and direct link between the behaviour of local fishers and stock status.

In 2007, almost half of the octopuses caught by fishers in the Senegalese study area were in the smallest ‘PP’ grade, a figure that had reduced to 13 per cent in 2009 (Figure 7.3). Either the stock’s age structure had changed to include a more even distribution of animals of different ages or the fishers’ propensity to land immature animals decreased. Of course, the latter possibility would lead to the former and so both may be true. The project did involve some limited conservation measures, although the impact of these changed practices is not clear. However, as an unregulated open access resource, octopus will always be vulnerable.

Fishers receive a unit price six times higher for large octopus (over 3kg) compared with the smallest size grade of less than 0.5kg (US\$4.64 and US\$0.75/kg respectively). There is a strong financial incentive, therefore, to catch fewer, larger octopus. In addition, the local artisanal fleet has a longer-term incentive not to overexploit this sedentary resource to the point that the stock collapses. These financial incentives to catch octopus were present in 2007, when large numbers of immature octopus were being landed, so it seems clear that price signals do not necessarily result in sustainable fishing practices – even if it is not clear why the stock has recovered more recently.

The pangasius project had clear aims to reduce the environmental impacts of intensive fish farming. However, this only indirectly manifested itself to the farmers themselves – their rationale for achieving SQF1000 certification was access to lucrative export markets and, in theory, the prospect of better contractual terms. The environmental component of the treatment of wastewater and the switch from marine-fish based feeds was incidental for the grow-out farmers



Source: Kadigi (2010)

Figure 7.3 *Octopus landing frequency by size grades in two Senegalese villages, 2007–2009*

– as the costs of the negative externalities of these former practices were transferred to river users and sea fishers, respectively. However, grow-out farmers did benefit directly from better water management practices through higher survivorship and growth rates of their fish due to improved water quality.

More equivocal was the reduction in the proportion of Tanzanian cassava farmers burning for land clearance from 56 to 21 per cent and from 50 to 9 per cent in two study areas. The net environmental and agronomic impacts of this change are not clear (burning liberates nitrogen and phosphorus for utilization by plants but damages soil structure and, depending on burn characteristics, kills certain plant and animal species). In the fonio case, the stated aim of reducing soil erosion through increased plant cover in the Sahel sounds plausible but the area of land under fonio cultivation did not increase. Rather, increased production was achieved through higher productivity.

The incense stick project in India is an example of choosing to work in an inherently environmentally threatening chain to reduce its impact (also see Chapter 8, inter-chain upgrading). The project successfully reduced demand for wood for charcoal production by an estimated 1ha of forest per month, through process efficiency improvements and the community charcoal scheme.

There are important environmental and poverty implications of improved efficiency through better post-harvest handling and reduced wastage. First, greater efficiency in the use of natural resources enhances environmental sustainability. Second, in domestic food markets, increased efficiency should increase supply and lower consumer prices to make food more affordable to poor consumers without reducing producer returns (because increased sales compensate for any reduction in unit prices).

The central tenets of the Senegal octopus project were improved post-harvest handling, intended to reduce wastage and increase unit prices in order to incentivize fishers to land fewer octopus while maintaining their incomes. This strategy was based upon two false assumptions, that post-harvest losses were significant (they are not) and improved octopus quality would fetch higher prices (it did not).

Gender

There is nothing inherently ‘gender-focused’ about upgrading processes or products although either may represent blockages in the value chain that prevent female participation or gain. An example is the improved harvesting technology employed in the kalamansi project that allowed women and men to gather fruit at similar rates. However, this example illustrates the point that the actual ‘gender outcomes’ of such interventions are highly dependent upon intra-household and societal gender dynamics in each context.

Women in the Philippine households enjoy at least a measure of financial control in most households. The project therefore resulted in no ‘empowerment’ as such – everyone in the household benefited from increased incomes of female harvesters. Two contrasting examples of gender outcomes through process upgrading interventions show that process upgrading can be used in a

Box 7.5 GENDER OUTCOMES OF TWO PROCESS UPGRADING INTERVENTIONS

Koczberski (2007) describes how a company in Papua New Guinea, in partnership with support organizations, introduced a new payment process for women palm fruit labourers. Initial technological approaches to address poor participation in harvesting loose fruit had very limited success because they failed to address the underlying issue caused by male–female power dynamics. Direct payments to women via their ‘mama card’ incentivized female labour by giving the women control over income and allowing men to pay them housekeeping money in kind by giving them fruit to be registered on the cards. This reduced intra-household conflict and resulted in better nutritional outcomes for household members, because money controlled by women was spent almost entirely on family needs.

The introduction of simple water pump technology to rice paddies in The Gambia greatly increased yields within household compounds.

The resulting reallocation of resources led to reduced marketable surpluses and women losing control over rice production and income because the crop was shifted to male-controlled communal fields used for consumption. However, the families gained in food security terms. This example illustrates the way a fairly simple upgrading intervention with the immediate impact of increasing yield can lead to somewhat complex outcomes when mediated through intra-household dynamics.

Sources: Koczberski (2007); von Braun and Webb (1989)

deliberate strategy to address gender inequities in value chain functioning, or it can affect gender dynamics in unintended and unpredictable ways (Box 7.5).

In applying product and process upgrading strategies to value chains dominated by women at the production level, the south Asian (bay leaf and incense stick) projects aimed to improve household welfare holistically – women control the revenue they generate and anecdotal evidence suggests they tend to spend it on children’s welfare, clothes and household goods (while men tend to spend cash income on livestock and debt servicing).

As with other upgrading strategies, the key to gender-related outcomes at the household level is not in who participates or to what extent males and females gain from participation relative to one another, but in who controls the income and assets generated.

Summary

Focusing upon the common strategy of agricultural supply-side development, this chapter describes how products and processes in value chains can be upgraded to improve poverty, environment and gender outcomes.

Low productivity and poor product quality are key barriers to the participation of the poor in markets. The simplest example of this is the shift of subsistence households to producing a saleable surplus (and improving food

security) through (often simple) improvements to agronomic and handling processes. The two main ways to increase output are through better conversion efficiency of inputs to harvestable crops, and through better post-harvest handling to reduce waste.

Improved HYVs can potentially increase productivity but the prerequisites for them to meet this potential include timely and affordable access to appropriate and up-to-date technical support and inputs (of which HYVs often demand more than the varieties they replace). In fonio and cassava case studies in Mali and Tanzania respectively, yields were increased with relative ease but the extra output volume placed increased demands upon household labour resources during the harvesting process.

Where states fail to provide adequate technical support, private actors are increasingly taking on this role. However, the state is demonstrably more successful at providing and maintaining rural infrastructure in a condition that minimizes transportation costs for all actors across different value chains.

Successful process and product upgrading requires incentives to outweigh costs. In organic production, price premia and longer-term natural resource gains (such as soil integrity and water quality) are balanced against greater labour requirements and shorter-term losses such as drops in yield during the conversion period and auditing costs (where process changes are certified). Producers who are heavily dependent upon intensive use of chemical inputs tend to struggle to convert profitably to organic production.

Upgrading of processes to produce better products commonly assumes structural price rewards for improved quality. However, price-quality disconnects can de-incentivize not only investment in products but also environmental stewardship, such as wild-stock management (which commonly requires better prices to balance reduced exploitation rates). Regulatory and organizational failures in the value chain may also delink the quality of products with the price they fetch.

The increasing prominence of environmental, food safety and social standards in value chains, along with market restructuring, is challenging the position of the rural poor as suppliers. The strategic options open to them are to upgrade their processes and products to meet new requirements, to functionally downgrade to a less demanding role in the value chain, to exit the value chain and supply different products, markets (for example domestic and regional) or both, or to engage with the value chain in a secondary role by supplying labour or services in preference to products.

Net increases in revenue from increased output balanced against the cost of increased or improved inputs represent household-level income gains. Efficiencies at the post-production stage can increase affordability of food for poor consumers while maintaining supplier incomes as increased unit sales balance deflated prices.

Product and process upgrading have considerable scope to improve environmental outcomes in value chain. They may be applied to manage resources and harmful by-products in functions that include production, processing, marketing, distribution and waste disposal. For environmentally driven process

and product upgrading to be successful, the economic and business incentives must be conducive – markets must differentiate among products created by various sustainable processes, and producers need to have the capacity to take the long view with respect to trade-offs between shorter-term losses against ultimate benefits, as in the case of conversion to organic production. Improved production and handling efficiency (reduced wastage) can reduce utilization pressure on natural resources.

Gender impacts of product and process upgrading may be strategic, through targeting activities in which they actively participate, or unplanned, through process changes that affect gender dynamics indirectly. However, the ultimate outcome of these changes on men, women and children at household and community levels are highly context specific, depending upon the nature of male and female participation in decision-making and financial management. For example, in south-east Asia, female control of household finances meant that participation in the value chain was of limited relevance to the ultimate family outcomes related to value chain-level changes due to product and process upgrades.

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8

Skills Transfer – Inter-chain Upgrading

Christopher Coles

The nature and value chain-level impacts of inter-chain upgrading

Inter-chain upgrading is the process of applying the skills gained in one value chain to participate in another. Despite the large number of enterprise development initiatives that introduce new livelihood strategies to target groups, there are surprisingly few well-documented cases that present evidence for the success of this upgrading strategy. Accounts of deliberate, concerted development initiatives that fall into this category focus mainly on case studies of export horticulture and fisheries. Although the process is generally perceived as being one of moving to higher value chains, it can also entail horizontal shifts to products of similar value or even ‘downgrading’ to lower value chains.

Unsurprisingly, shifting to a new chain requires initial investment of resources, which may represent a net increase in resource allocation to household livelihood activities (Ashraf et al, 2008). Participants may also gain increased access to credit through changes in the institutional support environment required to enable upgrading to produce products for chains that supply higher standards markets (Ashraf et al, 2008; Dhananjaya and Rao, 2009). In fisheries, higher costs and greater assets are associated with targeting more valuable exported species, delivering higher net incomes (Kadigi et al, 2007). In all documented cases of inter-chain upgrading, income from the new chain exceeded that of the one it replaced.

Barriers to entry to inter-chain upgrading (and their implications)

The inter-chain upgrading process is often exclusive because, by its very essence, it relies upon the skills and assets derived from participation in another chain, which in itself is contingent upon overcoming entry barriers to the initial value chain and its successor. This is not to imply that only successful participants in one chain can enter another – downgrading is the choice of those who struggle to meet the requirements of their current chain.

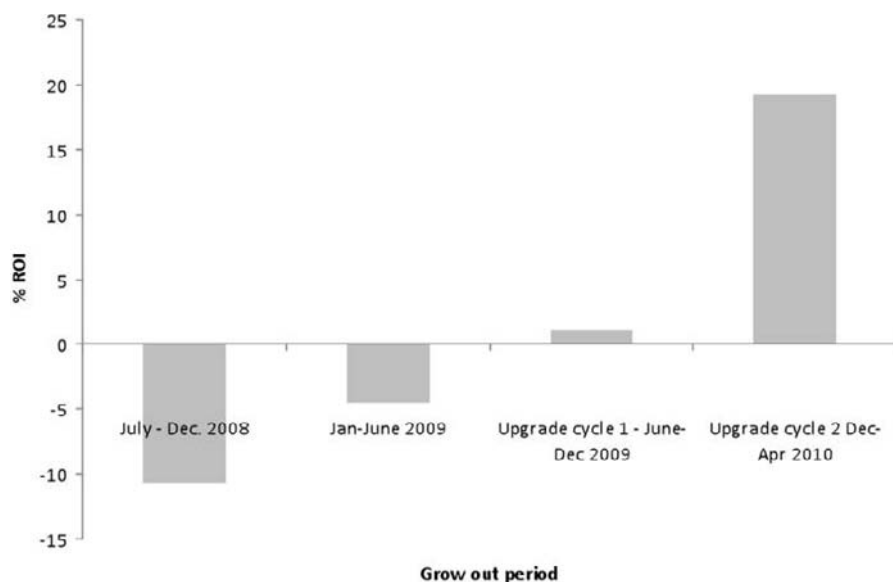
When making the shift from traditional (local variety) horticulture to high value (exotic) export growing, few wealthier farmers joined the Kenyan DrumNet horticultural export development programme because they had little need of additional support. By comparison few poorer farmers participated as they were unable to cover their share of certification costs. In this programme, middle-income farmers were the most likely to upgrade to high value export chains (Ashraf et al, 2008).

In a comparable initiative in India, irrigated production was a prerequisite of scheme participation and those excluded were from across the entire range of landholding areas, implying a wide range of income levels (Dhananjaya and Rao, 2009). In an east African case there was no significant relationship between individuals' pre-existing wealth characteristics and their likelihood of participation in an inter-chain upgrading project (McCulloch and Ota, 2002).¹

Kadigi et al (2007) provide additional empirical evidence of exclusivity in inter-chain upgrading in a study comparing Nile perch fishers with those targeting only tilapia and anchovies. Only inherently wealthier individuals possessing the assets (boats and gear) that allow them to upgrade and target Nile perch participate in the chain and enjoy the more lucrative returns it offers.

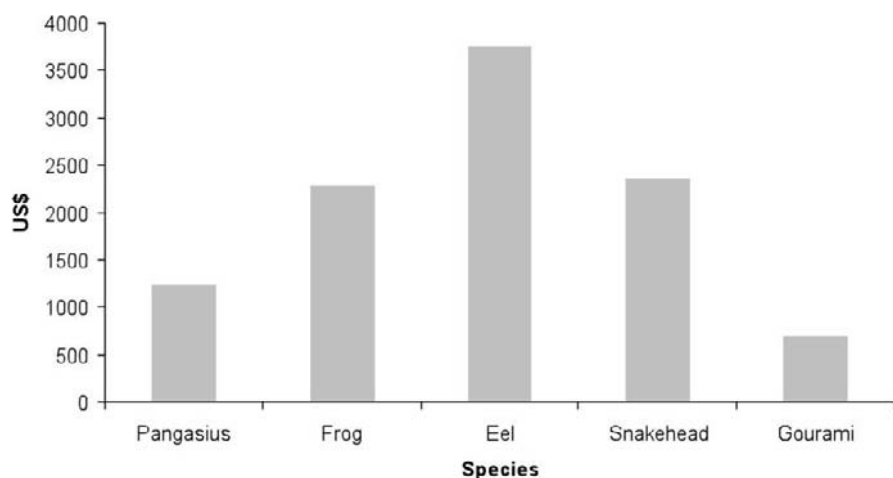
Some barriers to inter-chain upgrading are technological. For example, the smallest-scale pangasius grow-out farmers in Vietnam's Mekong Delta have been moving in and out of production for several years as market fluctuations caused price volatility. In this example, the asset – deep fish ponds, which are rarely abandoned because they are difficult to convert back to agricultural usage – are in place but the main constraint was the technical knowledge required to farm other fish and frog species optimally.

However, the more stable, less risky returns attainable from alternative species comprise only around one-third of the potential profits from pangasius grow-out during a boom and so these farmers rarely give up on the notion of re-engaging with the sector at a later date. However, the wildly fluctuating cyclic nature of returns from pangasius grow-out (Figure 8.1) means that cumulative profits from alternative species are greater in the long run (Figure 8.2), thus providing the economic rationale for 'downgrading'.



Source: Khiem et al (2010)

Figure 8.1 Comparison of return on investment from pangasius grow-out farming from 2008 to 2010



Note: Frog, eel, snakehead and gourami figures are based on historic data and on average incomes from target household farmers. The figure for pangasius is based on actual changes over four grow-out cycles

Source: Khiem et al (2010)

Figure 8.2 Comparison of cumulative profit of grow-out farming of pangasius and alternative species from July 2008 to April 2010

Evidence for improvements in poverty, environment and gender outcomes from inter-chain upgrading

Poverty

It is possible that higher incomes at value chain level, reported in the literature, may translate to higher household incomes, so long as these revenue gains were not offset by higher costs of the new chains. The greater ease of access to credit, which often forms part of support packages for new participants in higher-standards value chains, may in turn reduce indebtedness. Those moving to higher value chains tend to have greater assets, although this is a prerequisite (entry barrier) as well as an outcome and only the best studies robustly examine the direction of this causality.

However, an important poverty reduction outcome of additional or alternative livelihood options is the reduction in vulnerability within a volatile market, which is often a preferable outcome for the poor over potentially higher – but risky – income. Thus, household-scale fish farmers in the Mekong Delta enjoyed the benefits of being delinked from damaging boom–bust pangasius grow-out cycles and increased their cumulative incomes.

High standards export crops, grown increasingly frequently by smallholder farmers, are inherently riskier than traditional products and the specialization that contract horticulture engenders may increase vulnerability. For poor, risk-averse producers this represents a significant barrier to inter-chain upgrading.

Environment

Inter-chain upgrading is not inherently either positive or negative in its environmental impacts. It depends upon the environmental performance of the chain being exited relative to the chain being entered by the producer. However, as markets increasingly take account of environmental externalities, there may be a move to upgrade into value chains that have better environmental performance.

In the specific case of pangasius micro-producers shifting to species produced for the local market, the environmental outcomes were mixed. Much smaller volumes of water and feed were required for grow-out of alternative species and the carbon footprint of the supply chain is much lower for local markets than distant export markets. Despite this, farmers continued to use feedstuffs derived from marine fish and freshwater crabs.

Gender

Dolan (2001) highlighted the implications of women moving to higher value chains for intra-household gender dynamics; that is, the risk of male appropriation of female labour and income. In some contexts, this phenomenon is associated with the shift from women's roles in lower value local markets to more lucrative, globalized chains. How this affects the household economy is largely in the hands of the men in patriarchal societies – small incomes from local markets are generally kept and used by women at their discretion for

household requirements such as food, clothing and education. A change to a more lucrative chain may mean that this is no longer the case.

Naved (2000) describes how the success of two inter-chain upgrading projects, introducing new economic activities to women in Bangladesh, were contingent upon the degree to which women controlled the factors of production and, therefore, the resulting income. Crucially, the most successful participants in terms of retaining control of their income and its disposal were the fish farmers who, with the support of the development agency, managed to resist ceding the title deeds of their ponds to their husbands. In contrast, women who used male-owned land for vegetable production or lost ownership of their ponds gained relatively little from the upgrading of their production.

Choosing chains to meet objectives – Development begins at the planning stage

Inter-chain upgrading presents perhaps the best opportunity to build concerns relating to poverty, the environment and gender into value chain analysis and development from the outset. If the chain in which the target group is currently participating offers limited scope for improvement in these impact areas, selecting an alternative chain is an attractive option.

Guides to the selection of product areas and markets according to desirable criteria have existed for some time (e.g. Haggblade and Gamser, 1991). Yet, implementing agencies often seem reluctant to rationalize their choice of value chains for development and support; while gender and environmental outcomes in particular are often treated in a rather superficial and tokenistic manner.

The only way to confirm that a value chain analysis and development programme addresses and impacts concerns such as poverty reduction or support to marginalized groups is to make them explicit components of the selection process. That there should be a selection process at all is a revelation to some practitioners. It is unfortunately common for organizations to develop new projects in areas in which they already have capacity and experience. They continue to work in the same value chains often with only the justification changing to align with the objectives of the new project.

Clearly, there are no value chains that do not have any poverty, gender or environment issues but some are more amenable than others to intervention and positive outcomes. For example, leveraging environmental change had more potential in the Vietnamese pangasius sector, where environmental performance is central to production processes, than in the Tanzanian cassava sector, with more diffuse and nuanced links to environmental impact. Similarly, gender dynamics were impacted by intervening in the Indian incense stick sector, in which women participate strongly and control the gains from their participation, rather than the Senegalese octopus industry where their role is very limited.

The fundamental question, then, is whether to target value chains which perform badly (in terms of poverty, environmental and gender performance) but have considerable scope for improvement, or to promote those that are

already perceived as ‘good’. To summarize this point in the specific context of each outcome type:

- **Poverty** – a choice between selecting value chains in which large numbers of poor people participate (in which case one should consider carefully why they are still poor) and aim to increase their gains, or working to include the poor in sectors where they do not currently participate significantly. The latter presents particular challenges in overcoming the barriers that prevent their entry into the market.
- **Environment** – the question is whether to develop inherently environmentally positive value chains, for example alternative fuels, forest products that incentivize sustainable management and ecotourism services, or to take traditionally damaging activities such as charcoal production, capture fisheries and game hunting services and reduce associated externalities
- **Gender** – balancing the key result areas of ‘participation’ and ‘gain’. The choice is between targeting chains in which women participate strongly (as with the incense sticks and bay leaves projects) but there is scope for increased gains, or those in which they do not participate to a large degree but potentially could. It is crucial that the specific context of gender dynamics is fully understood. There exist the contrasting situations where women may participate fully but do not enjoy the benefits they generate and where their engagement is limited but their influence upon the household economy allows them to share in gains.

Shifting chains – Is high-value export really the panacea for poor producers?

There is a widely held view within the development community that production for export is an inherently more viable strategy than production for the local or national market. However, targeting high-value markets in upgrading the poor is not necessarily the best strategy for all producers. Domestic markets carry lower risks than export production and tend to have lower barriers to entry. However, lower risk is traded off against potential gains. If only low levels of risk are acceptable the potential gains are likely to be similarly small, albeit more predictable.

The Vietnam pangasius case is a good example of how more easily accessed domestic markets can sometimes represent the most viable option for the resource poor. Typically, household-scale producers have pond areas of less than 0.23ha and have historically sold relatively small volumes of pangasius and other species to the local fresh fish market. Their scattered distribution excludes them from the horizontal coordination initiatives applied to family and medium-scale farmers and they have insufficient capital to meet the ever-increasing upgrading demands of the global pangasius market.

However, the assets and skills developed through pangasius production are potentially applicable to the culture of other species with some upgrading of their technical knowledge of the new products. Another advantage of more familiar or indigenous products, as noted by Warning and Key (2002), is that

they tend to have ready alternative markets and low asset specificity, which limit risk to producers.

Summary

Inter-chain upgrading, the process of applying the skills learned from participation in one value chain to another, is one of the commonest forms of upgrading implemented in enterprise development projects and, paradoxically, one of the least well-documented. Although it conventionally implied movement to higher value chains, such as export horticulture from supplying domestic markets, it can also entail ‘downgrading’ to lower value chains.

This upgrading strategy often requires, at least initially, a net increase in resources allocated to household productive activities but participants can gain better access to credit through changes to the enabling environment to support these activities. In all documented cases, income from the new value chain was greater than that from its predecessor.

That participation in a new chain is dependent upon experience in other economic activities is in itself a barrier to entry but downgrading is evidence that inter-chain upgrading is not necessarily contingent upon prior success. Increased costs and prerequisites for participation, such as landholdings and other assets, may exclude the poorest from new opportunities. Technological barriers are also important – specific technical inputs may be required to enable target groups to apply their existing skills optimally to new products and markets.

Whether or not higher incomes at value chain level are translated into higher aggregate household incomes depends upon the overall profitability of the new mix of livelihood activities after new costs and investments are accounted for. Actors moving to higher value chains tend to be those who already have greater assets. However, one of the main potential poverty reduction outcomes of inter-chain upgrading is a reduction in vulnerability, for example when downgrading from volatile, high risk export markets to domestic segments with greater stability and reliability; of course, the opposite may be true if upgrading to supply riskier, more specialized markets.

Moving to more lucrative chains may affect gender dynamics. A common example is where women participate actively in horticulture; the shift from low value production for domestic markets to higher value exported crops may cause men to appropriate their income. The manner in which they choose to dispose of this income, therefore, determines how household members are individually affected. A key factor in female control of their income from new value chains is whether or not they control the factors of production.

There is no inherent relationship between inter-chain upgrading and the environment. However, the choice of which value chains to promote and develop offers support agencies the main leverage point to affect poverty, environment and gender outcomes. There are important choices in chain selection – to select chains that perform poorly (but have good scope to improve) in terms of the focal parameter(s), or to promote chains that already perform strongly in that area.

In the case of poverty, the options are to work on chains with many poor participants to discover why they remain poor, or to introduce the poor to chains in which they are currently under-represented. In the case of the environment, traditionally damaging activities can be tacked to reduce their impact, or 'green' products and services can be promoted. Gender considerations can also be incorporated in two ways – either through increasing female participation where they are largely absent or through introducing activities that inherently favour women's involvement. In this case it is vital that participation is not conflated with gain; women can participate but not gain or vice versa depending upon intra-household dynamics.

Finally, in the selection of value chains by, or on behalf of, the poor there is a trade-off between risk and gain. The widely held view that it is desirable to link the poor to global, in preference to domestic or regional, markets should not be taken as read. The pangasius case provides a clear empirical illustration of how domestic markets can offer equivalent (or even greater) gains with lower costs, risks and vulnerability than export outlets.

Note

- 1 The authors examined the shift from smallholder production to labouring on integrated farms in the context of Kenyan export horticulture.

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9

Who Runs This Place? The External Enabling Environment for Value Chain Development

Kate Schrekenberg and Jonathan Mitchell

All producers, and indeed all people, are influenced by their external environment. Similarly, the external governance of value chains has significant effects on the way they function. Although not upgrading strategies in their own right, changes in the external enabling environment of value chains can enable or constrain the development of inclusive value chains. This chapter seeks to understand how changes in the external environment can impact upon poverty, environmental and gender outcomes.

This chapter is structured around the framework proposed by Kaplinsky (2000) where governance is categorized as:

- legislative (i.e. setting the rules);
- judicial (i.e. implementing the rules); or
- executive (i.e. enabling others to follow the rules).

Table 9.1 illustrates the broad range of governance issues across these three categories which impacted upon the seven projects.

Legislative governance (the rules of the game)

Government creates legislation, policy and institutions that set the general development and trading environment in a country. A smaller subdivision of these ‘rules of the game’ is designed either to promote specific value chains or to support the participation of marginalized target groups.

The importance of legislative governance

Access is the primary prerequisite for natural-resource based value chains and access is determined, at least in part, by legislative governance. For example, land tenure is the key to farming livelihoods. Many developing countries are witnessing a shift from communal to more individualized land tenure and a formalization of traditional ownership systems as part of the globalization process. There is mounting evidence that this process is precipitating a ‘land grab’, often threatening a loss of access to land and other natural resources by the rural poor (Cotula et al, 2009).

Access to wild-harvested products is also undergoing a shift around the world. Concern about the so-called ‘tragedy of the commons’ (Hardin, 1968), whereby increased commercialization and growing populations would inevitably result in the overexploitation of wild-harvested resources, led many colonial or newly independent governments to ban or strictly regulate wild harvesting centrally.

The significance of legislative governance on the operation of value chains is best illustrated by the example of bay leaves collected from Indian state forests.

Government has complete control over who collects what resources from the forest at what time and also controls the wholesale markets (the mandi) at which the leaves are sold. While this regulatory environment, largely inherited from the colonial administration, is based upon legitimate concerns, which are ecological (protecting natural assets from overutilization) and socio-economic (protecting low-income collectors from exploitation by traders), the end result is that government structures have very strong control of the value chain. This regulatory regime has, as is illustrated below, a direct impact on who benefits from different chain activities. The corollary to this is that the recent efforts which Uttarakhand state has made to experiment with changes to the regulatory environment for the collection of bay leaves and the operation of the mandi markets have had important impacts on the livelihoods of poor communities living around the forests.

Legislative governance and collective action

The legislative environment impacts upon how producers and collectors are organized. As discussed in detail in Chapter 4 this is a basic prerequisite to the horizontal coordination which is often the first key step in value chain upgrading for poor people in rural areas. In Vietnam, the introduction of the 2007 decree on the organization and operation of cooperative groups was an important step in addressing the resistance to ‘old-style’ cooperative production, providing a new ‘cooperative group’ status for three or more individuals who ‘jointly contribute assets and labour to carrying out certain works for mutual benefit and responsibility’ (Socialist Republic of Vietnam, 2007). Under the decree, members in both forms of cooperatives are considered legal entities, allowing them to associate, advertise and access formal credit (Khiem et al, 2010).

The needs of small producers in value chains are seldom reflected in policies due to their weak financial, bargaining and convening powers. Governance

Table 9.1 *Examples of governance functions performed in the project*

<i>Project</i>	<i>Governance functions</i>		
	<i>Legislative (setting the rules)</i>	<i>Judicial (implementing the rules)</i>	<i>Executive (enabling others to follow the rules)</i>
Bay leaves, India/ Nepal	In India, government controls access to non-timber forest products (NTFP) in state forests and their sale by collectors. In the project, an NGO negotiated with the Forestry Department to relax restrictions to access NTFPs in state forests and improve access to mandi markets. The prohibition on collectors entering contracts with traders (all sales through the mandi spot markets) remained. In Nepal, Federation of Community Forest User Groups of Nepal (FECOFUN) negotiated registration of private bay leaf trees with the District Forest Office and the Land Revenue Office.	In India, self-help groups (SHGs) were used to enforce sustainable collection protocols which were monitored by Forestry Department. Significant level of corruption in levies at road checkpoints required to transport bay leaves in India and Nepal. In Nepal, lobbying through FECOFUN accelerated the speed of registration of private bay leaf trees.	Project partners (HARC and Forest Department) provided producers with training and marketing information and were also an essential prerequisite for functional upgrading (value addition).
Pangasius, Vietnam	Ecological standards and quality requirements are generally set by the market. Areas zoned by government for pangasius farming with concessionary interest rates for credit in zoned area. Government has changed legislation on cooperatives.	Groups were not self-monitoring but became the interface with third party inspectors (auditors for SQF1000 certification and purchasers for the processing companies).	Producer groups formed the interface between members and development agents, supporting farmers to upgrade.
Incense sticks, India	NGO negotiated with government to 'change the rules' to allow jigga collection (input related legislation) and tax concessions for incense stick producers in Tripura.	Communities enforced the sustainable collection of jigga. Tax concessions on Tripura-produced incense sticks were implemented.	SHGs assisted producers to meet quality standards and gain access to new technologies (product, process and functional upgrading).

Table 9.1 (Continued)

Project	Governance functions		
	<i>Legislative (setting the rules)</i>	<i>Judicial (implementing the rules)</i>	<i>Executive (enabling others to follow the rules)</i>
Kalamansi, Philippines	Standards are set by retailers and ultimately passed to producers through producer organizations (or through buyers). Government restriction on international competition for domestic shipping may inflate transport costs. One Town One Product (OTOP) policy has been adopted by government.	Cooperative of producers and processors is responsible for quality monitoring, both of wet fruit and processed concentrate.	Cooperative provided access to technical support for functional and process upgrading (food processing, packaging and agronomic improvements). Government improved roads linking farmers to the port – thereby reducing transport costs.
Octopus, Senegal	Fishery regulations are set by Fishery Department and quality requirements are set by third-party institutions and retailers that are passed to producers through producer groups or buyers, respectively.	No evidence of effective implementation of statutory ecological regulations by government. Traders apply market-driven quality standards on fishers. Some evidence of effective Fisheries Resource Management Committee (CGRH) regulation and possible future certification by international NGOs (Marine Stewardship Council certification).	Limited. Some indication that a stronger CGRH could perform these roles adequately.
Fonio, Mali			The district farmers' union (UACT) provides members with training and marketing, use of threshing machines and access to better quality seeds, and a guaranteed market with a fixed price and distribution of the dividends from the sale of processed fonio to all members.
Cassava, Tanzania	Government restrictions on cassava exports.		Slow speed of registration of cooperatives.

Source: Action research teams – see project summaries in Chapter 3

of the external environment is dominated by the strong influence of market actors, business membership organizations, government and several other actors who are often distant from the value chains. However, as illustrated by the case studies, lobbying for specific changes in policies and legislation can be effective.

A first step in achieving change is to determine the relevant locus of change for specific environmental constraints. Kumar (2009), for example, describes how beekeepers' federations were successful in persuading an Indian state government to reduce sales taxes on honey from 12.5 per cent to 4 per cent, increasing producers' profits. In the same way, changes to state-level taxation in the incense stick project required political lobbying at the level of Tripura state. However, in spite of national policy rhetoric in favour of decentralization of resource management to local communities, Tripura state was very resistant to lifting the ban on jiggat harvesting and ministers had to be lobbied by their constituents at panchayat, block and district level in order to overturn this ban.

By contrast, profound changes to local-level bay leaf harvesting regulations in Uttarakhand state in India (allocating collection permits directly to collectors rather than traders; changing the five-year rotation of bay leaves to one where the community assume responsibility for sustainable collection; bringing the mandi markets closer to the collectors' residential locations) were achieved with the active support of the state-level Forest Department. This success was underpinned by a state policy promoting the development of Uttarakhand as a herbal state, a strong basis of trust between the Forest Department and the main project implementers and clear empirical evidence that bay leaves could be collected annually without damaging the trees (ICIMOD, 2010).

For poor producers, lacking individual voice, horizontal and/or vertical coordination may be a precondition to lobby for external governance interventions in their favour. Farmers' organizations or federations can also play an important advocacy role, promoting policy and legislative changes that favour particular value chains or certain actors within them. FECOFUN, for example, plays a critical role in determining policy changes in relation to community forestry, including issues of national interest such as the level of taxes forest user groups should pay on their sales of timber and other forest products. Farmers rarely achieve such levels of coordination unless externally supported and FECOFUN is no exception, having received massive external donor input in the past but now representing over one-third of the population of Nepal.

More recently, and as illustrated by the project in Uttarakhand state, there have been encouraging movements towards more local 'community-based' management of natural resources. This process of decentralization is particularly well-developed in the forestry sector, with varying forms of co-management (between state and community) being introduced in many countries (Edmunds and Wollenberg, 2003; Lawrence, 2007). Both of the Indian case studies (bay leaves and incense sticks) have benefited from this growing perception that communities are able to manage resources successfully.

The ban on collection of jiggat from forests in Tripura was overturned after the project introduced sustainable harvesting techniques and trained collectors to shift from damaging harvesting practices to the new techniques.

Assured that collectors would harvest the resource sustainably, forest authorities gave harvesting permits, initially on a trial basis, to several joint forest management committees (JFMCs). For bay leaf, the situation was not dissimilar. The Forest Department began to issue collection permits directly to local harvesters through the local community forest councils (van panchayats), as they recognized the substantial improvement in resource management and increased income for the poorest actors in the bay leaf value chain and hence contribution to poverty reduction among mountain communities.

Incentivizing specific value chains

Legislative governance is not simply a process of government discouraging economic activities and seeking to limit the exploitation of natural resources. Governments frequently choose to support particular regions or groups of people to accelerate economic activity. This can be achieved in different ways, several of which are illustrated by our case studies.

Fiscal incentives such as tax concessions can be offered to participants in the value chain. The Indian incense stick project, for example, sought targeted tax reductions for local incense stick production. The project organized several consultation meetings with policy makers in order to raise awareness of the fact that the growth of the sector is hindered by the current system of taxation. The result of intensive lobbying was a tax reduction that increased the margin for producers and hence created incentives to invest in incense stick production. However, the sustainability of economic sectors, which are only viable when on-going tax concessions are offered, should be questioned.

The OTOP policy has been adopted in the Philippines since 2004 – and kalamansi identified as the chosen product, the unique value proposition, for the project area in Siay. The OTOP policy has a respectable theoretical foundation in the concepts of comparative and competitive advantage and economies of scale. A policy supporting particular products in particular areas is not, in principle, flawed and has its supporters (Cutaran, 2008). However, given that Siay's location requires transport costs that result in the fresh fruit being uncompetitive in the major domestic markets for five months of the year, one should question the process used to select these product/area combinations. This appears to rely mainly upon consultation with local officials rather than a rigorous market analysis (*AgriBusinessWeek*, 2008). Also, given the huge shifts in viability of kalamansi sales in markets remote from Siay throughout the year, the wisdom of a development strategy seeking to increase the dependency of livelihoods in a whole local economy to one product, should be questioned.

In Vietnam, areas are identified by government as zones for specific types of farming. Subsidized interest rates are available for pangasius farmers, if receiving technical support and producing fish in the designated pangasius farming zone. Fish farmers can benefit from interest rates of just 4 per cent compared with the more usual 12 per cent per year on loans from the Bank of Agriculture and Rural Development (Khiem et al, 2010).

Unintended consequences of legislative regulation

Paradoxically, many ‘developmental states’ which are genuinely committed to poverty reduction can nevertheless adopt and maintain policy frameworks that have regressive socio-economic impacts. The Indian examples are an indication of where, presented with evidence that policy is having an unintended impact, some government structures are willing to review – and radically change – their policy frameworks.

Ongoing liberalization of the state-controlled agricultural wholesale yard system in India (not yet evident in the project area in Uttarakhand), originally introduced with the aim of protecting producers from trading malpractices, has allowed the formation of mutually beneficial longer-term vertical coordination among farmers, retailers and exporters (USAID, 2008; Mishra, 2009; Singh, 2009). In other words, the Indian state has demonstrated a willingness to reconsider regulations which, whatever the original intentions, operate in practice in ways that constrains the livelihoods of poor people.

In The Gambia, women were given priority in the official land registration process in an attempt to maintain traditional matriarchal land rights (von Braun and Webb, 1989). However, this did not prevent women from losing control over the traditionally female-controlled rice crop as productivity increased significantly.

Inheritance law may also affect the willingness of people to engage in different value chain activities, though not always in the way intended. Thus changes in traditional matrilineal inheritance law in Ghana to favour widows, pitted daughters-in-law against mothers-in-law and in the fisheries sector saw the reorganization of traditional ‘firms’ to exclude the younger women, creating mistrust, conflict and disharmony and negatively affecting informal natural resource management and marketing systems (Walker, 2001).

Proposals for SQF environmental certification for the pangasius value chain in Vietnam were introduced by the government with the aim of contributing to environmental conservation. However, the development of the environmental standards happened in isolation from value chain actors. As a result, there was no price incentive for producers to adhere to the standards, resulting in poor levels of compliance. Traditional practices of farmers did not meet the proposed standards and compliance would have required additional training and investment with which poorer households were not able to cope. However, the more recent (and more stringent) environmental standards being passed from export markets to processing factories and on to farmers are being implemented rigorously (and are excluding large numbers of small-scale pangasius farmers) because they reflect changing market conditions (Khiem et al, 2010).

The Tanzanian government ban on cassava exports reflects a concern with exporting basic foodstuffs from a country with high levels of malnutrition. While the intent of such policies is clear and understandable, the outcome is more complex. For instance, econometric analysis suggests that such export bans contributed negatively to the food price hike experienced disproportionately by food importing African countries in early 2008 (Keats et al, 2010).

Judicial governance (implementing the rules)

The need for effective judicial governance

Regulations, particularly those governing access to common pool resources, will only be implemented when they are effectively enforced. This is because of the ‘free rider’ syndrome; it is in the short-term interests of each individual collector or producer to have restrictive regulations applying to everyone else – but for him or her to have a free rein. This is why it is important to have effective regulation to ensure fair access to natural resources, but sufficient restraint to avoid overexploiting and diminishing the value of the asset itself.

The need for regulation of common pool assets is illustrated by the example of forest-grown coffee in the Bonga zone of Jimma region in southern Ethiopia. The local government authorities are struggling to improve the quality of forest-grown coffee because anyone is free to collect the berries – and much of the crop is picked before it ripens, resulting in a poor quality product. No one does what is in everyone’s interest (i.e. to delay harvesting the coffee until it is ripe) because the closer to ripening the coffee becomes, the more likely someone else will benefit from this open access cash crop (Stellmacher, 2005).

Defending public goods, like the integrity of a natural resource, is often regarded as the role of the state. Where government is effective and able to monitor performance and enforce sanctions against those who break the rules, this is a role that the state can perform. The NTFP sector in India indicates how effectively, through strict control of the entire upstream end of the value chain, the state can regulate the exploitation of common pool resources – to the point where some relaxation of the regulations can improve the welfare of forest communities.

However, our analysis illustrates examples where the state is unable to effectively regulate access to common pool resources. In Senegal, the fishery sector is integral to the national economy. Fish products account for some 32 per cent of the country’s exports by volume, and roughly 37 per cent of the total export value. The population employed in Senegal’s fisheries industry accounts for 17 per cent of the labour force and 10 per cent of the total rural population in the country. In addition to the creation of export receipts and jobs, the marine fisheries sector in Senegal also makes a significant contribution to food security, constituting about 70 per cent of the total animal protein consumption in the country with an estimated fish consumption of 26kg per capita per year (Kadigi, 2010).

Despite the economic and human importance of Senegal’s fishery resources and the marine ecosystems that support them, the sector has been facing major difficulties in recent years due to overfishing – resulting from uncontrolled expansion of fishing efforts (in terms of the number of fishers, boats and gear) as well as land-based fish processing and preservation facilities. The government appears to be unable to implement regulations to ensure the sustainability of some of the most productive marine resources in the world. In this case, local communities have stepped into the void left by this absence of institutional action in an attempt to manage the resource themselves.

Even in robust, developmental states like Vietnam, government attempts to introduce basic water quality and food health standards were undermined by their failure to align these with market standards and to take account of the affordability of their proposals for fish farmers along the Mekong River. The implications of this failure are far-reaching, because it has allowed space for commercial interests in the major export markets in the US and EU to lobby against pangasius imports on the grounds of environmental conditions in the Mekong Basin and the danger to public health. The fact that these protectionist pressure-groups had little evidence base for their claims was less important than their political influence in some of the most risk-averse export markets (Bush and Belton, forthcoming). The consequence of this is that EU and private certification schemes are filling the vacuum left by ineffective government regulation in Vietnam and bringing new standards of safety and quality with which processors and, increasingly, producers must comply in order to maintain market access.

Can community-based enforcement work?

The Indian NTFP examples provide evidence of effective community enforcement in contexts where government has both liberalized the regulations themselves and devolved restrictive regulatory regimes to adequately capacitated community structures with a direct interest in making the community-based regulatory regime work. The initiatives empowering communities, through SHGs, to enforce protocols for the sustainable collection of jiggat for incense sticks and bay leaves in Indian state forests were successful (ICIMOD, 2010 and INBAR, 2010).

Community-based enforcement is clearly more difficult where government has abrogated, rather than decentralized, the enforcement function.

In Zanzibar, Tanzania, several villages manage their local fishing grounds cooperatively through a system of bye-laws implemented by fishing committees, with varying degrees of success. However, a large donor-funded marine and coastal management project with a component to strengthen enforcement of the country's exclusive economic zone (EEZ) had very limited success. The country's ongoing inability to enforce the EEZ (the project donated one patrol vessel, which the government cannot afford to fuel) results in regular illegal intrusions by foreign commercial fishing vessels. The EU delegation in Dar es Salaam estimated that some 70 ships are operating illegally, targeting tuna, kingfish, lobsters and prawns. In this context, it is difficult to convince individual fishers to stop unsustainable fishing practices. For community-based marine conservation programmes to be effective, it is important that they are genuinely community-based and sensitive to the local context; have an adaptive management style which can respond to unexpected needs; and are integrated into local and state-level government structures (Levine, 2009).

In Senegal, the seemingly successful attempts at community-based stock management are at least partly due to the sedentary nature of the stock. Management of mobile resources such as bush meat or migratory fish is much more difficult, particularly where institutional support is lacking.

An intriguing example of effective community action is from Nepal where FECOFUN successfully lobbied government to implement its own policy to register private bay trees – and thus reduce the levy placed on collectors (ICIMOD, 2010).

Corruption

One of the consequences of implementing a complex regulatory system, monitored by the state is the creation of numerous ‘rent seeking’ opportunities for the enforcers of these regulations. It is ironic that the south Asian NTFP regulatory framework, which is designed to protect the environment and collectors from exploitation from the market, actually exposes collectors and producers to high levels of exploitation from public sector workers. Road blocks staffed by Forestry Department staff, designed to prevent the smuggling of illicit NTFPs, provide an excellent opportunity to extort informal payments from chain actors who are transporting legitimate goods to market.

This judicial governance issue impacts on the livelihoods of producers and collectors whether they are directly making informal payments or not. For instance, the difficulties which bamboo traders have in obtaining transit permits to move bamboo within the state of Tripura and passing through road blocks efficiently, imposes a policy bottleneck on the incense stick sector (INBAR, 2010). This raises the cost of inputs which reduces the competitiveness of outputs. In the Indian bay leaf value chain, the cost of informal ‘royalties/taxes’ is estimated at 3 US cents per kg – or 10 per cent of the unit price of bay leaves sold by collectors at the start of the project (ICIMOD, 2010). As ‘price takers’, the revenue producers and collectors receive from traders is simply reduced to compensate for the increased transaction costs which corruption imposes.

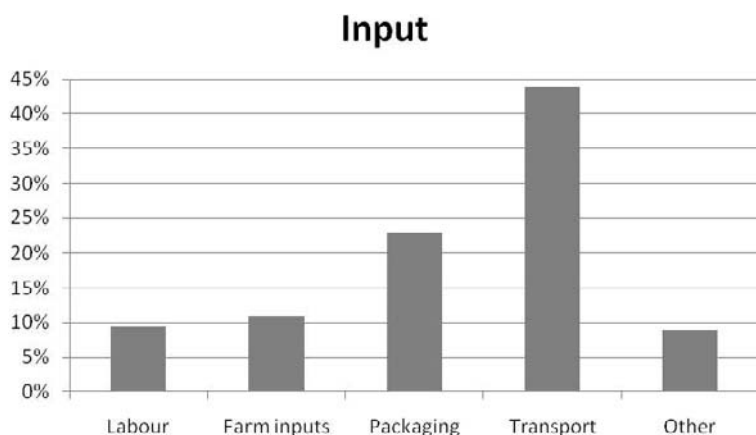
Appreciating the complex web of informal payments involved in the NTFP sector, makes the reforms of the sector towards a community management model, which were piloted during this project with the support of the Forestry Department, all the more striking.

Executive (enabling others to follow the rules)

Infrastructure

Many of the prerequisites for enterprise growth in rural areas are public goods, such as roads, electricity, telecommunications and other infrastructure (Haggblade et al, 2002). A lack of investment in these areas can severely limit the viability of value chains of products from remote rural areas. An example is the significant reduction in kalamansi marketing costs brought about by partnership with local government resulting in road repairs in Mindanao.

The spread of cellular telephony in developing countries has greatly reduced dependence on intermediaries for market information, increasing producers’ bargaining power. In Tanzania, mobile phones have become an essential tool of the trade for ‘*shu shu shu*’ (market spies) farmers who are trained in marketing and bargaining skills and carry out market research,



Source: Digal et al (2010)

Figure 9.1 *Cost structure of kalamansi production*

including negotiating deals, in some cases doubling the returns for farmers in their community (Lightfoot and Nyimbo, 2009). Given the private sector nature of mobile phone networks, there is an important role for government to play in regulating the distribution of networks and ensuring that even very remote areas have cellular coverage.

Poor market infrastructure and organization can limit participation in trade in several ways. In a study of the trade in NTFPs in Cameroon, which is dominated by women at retail but not at wholesale level, poor lighting, security and storage facilities were all given as reasons why women were restricted to local retail markets rather than travelling to more distant and lucrative markets where they would have to stay the night (Ndoye et al, 1997).

For rural producers, transportation costs are very significant and have an important impact on the competitiveness of rural value chains. Figure 9.1 outlines the cost structure of kalamansi production in Siay in the Philippines. Producers were not able to enter a long-term contract with a fast-food chain, since the price offered was just below production and marketing costs. However, at the start of the project, almost half the cost price of kalamansi of US\$0.41/kg, was required for transport (including hauling the fruit to the sorting shed; from the sorting shed to the highway; trucking to the port and ferrying to the main urban markets around Manila).

During the project, the development of a new road reduced transport costs by 92 per cent. More than any other factor, this allowed kalamansi grown in Siay to become competitive in the main urban wet markets throughout the year.

Producer support services

A number of studies (e.g. Ashraf et al, 2008; Sebstad and Snodgrass, 2008) have highlighted the importance of provision of business development, credit

and support services. The provision of microcredit and improved access to commercial credit on better terms has stimulated the creation of new enterprises, resulting in livelihood diversification and reduced vulnerability in many contexts where horizontal and vertical coordination have occurred (Ruben et al, 2008).

Although business development service training is widely provided by various government agencies, it is also of variable quality and often not specific enough for the particular product being traded and/or cannot on its own help producers overcome other constraints such as lack of finance.

One particularly valuable service provided by government institutions outside the value chain is extension services. It was an achievement of the cassava project to engage the Mkuranga and Morogoro district councils to the point that they contributed to the supply of high yielding and disease resistant cassava varieties for farmers and to the improvement of processing premises. In Vietnam, the pangasius project devoted much of its efforts to building the capacity of government staff (from the Department of Agriculture and Rural Development) to support farmers in their upgrading activities, including weekly monitoring visits to help farmers with the record-keeping required in the certification process.

Government extension services are an important facilitator in the assessment of the natural resource stock, the access to finance, assessing feasibility of use and providing training in sustainable management and harvesting. In the incense sticks, bay leaf and cassava projects, government extension services played a central role in working with both the communities and the local authorities. In Mali, the fonio producers' cooperative received extension support to obtain loans for the necessary working capital, allowing them to increase their business volumes. These examples show the benefits of cooperation between value chain actors and government institutions to elaborate strategies that balance natural resource conservation with economic growth.

Evidence for improvements in poverty, environment and gender outcomes from changes in the enabling environment

Although target groups cannot be 'upgraded' in terms of governance per se all the studies contain examples of where interventions at policy, institutional and enabling environment levels have facilitated upgrading interventions and removed blockages.

Poverty

The most striking impact of the enabling environment on poverty is where governments have overturned bans on low-income collectors accessing resources – to make available natural resources which were previously of no value to our target group. Thus, for example, the livelihoods enhanced by Tripura state allowing jiggat harvesting in the state are entirely due to this change in the enabling environment (although, of course, the loss in livelihood from the original supplier of jiggat should be subtracted to arrive at a net welfare figure for India as a whole).

Similarly, assuming the pilot project authorizing annual collection of bay leaves from state forests in Uttarakhand in India continues, a natural resource which used to generate a revenue stream once every five years (due to a regulation specifying a five year rotation) will now generate an annual revenue stream for collectors. This policy change is worth some US\$91 per household per year – so about US\$364 per household over a five year period.

The improvement in road infrastructure in Siay in the Philippines also generated significant improvements to the efficiency of the kalamansi value chain. Transport costs were reduced by some 92 per cent – equivalent to US\$0.17/kg (or US\$1683 for an average kalamansi production per farmer of 9.9MT per year).

Several of the changes to the external enabling environment have had a more modest impact at the value chain level, some of which may feed down into household level. These are:

- the registration of private bay trees in Nepal obviates collectors from a royalty charge of 3 US cents per kg (9.5 per cent of gross collector revenue) for bay leaves not from accredited private trees;
- bringing the mandi markets closer to the collectors in India. This contributed to breaking a local cartel arrangement between local traders which was holding the price of bay leaves down and accounts for an unknown share of the doubling of bay leaf prices for collectors from 2002/3 to 2008/9;
- suspending the 4 per cent tax on incense sticks exported from Tripura state in India – amounting, if stick rollers are the exclusive beneficiary of the tax concession, to an additional US\$1.96 on an average monthly stick roller income of US\$49;
- subsidising pangasius farmers with credit at 4 per cent rather than 12 per cent rates of interest may have improved the livelihoods of farmers in our target group. However, because we do not know their extent of exposure to indebtedness, we do not know the benefit of this financial incentive.

Environment

The short duration of the projects means that intended environmental outcomes of changes in the external environment brought about by the projects were only observable for a short period. Their impact in the longer-term requires ongoing monitoring.

The most important changes were effected in the two Indian projects (bay leaf and incense stick), in the pangasius case in Vietnam and in the Philippines kalamansi case. Changed harvesting regulations that promote community-based management of jiggit harvesting in Tripura and of bay leaves in Uttarakhand, combined with training in best-practice harvesting methods (process upgrading) should lead to more sustainable harvesting. However, this is not an environmental gain, because in both situations sustainable harvesting is being used to relax a highly restrictive regulation of bay leaf collection in India (five year rotation) and a complete moratorium on jiggit collection in Tripura state. The

objective of the regulatory change is not to improve the environment but rather to improve livelihoods while keeping environment degradation to a minimum.

The pangasius project illustrates, unsurprisingly, that basic environmental certification standards such as SQF1000 appear to improve environmental performance. However, they also illustrate that this form of certification is unlikely to be replicated throughout the Mekong Delta because the government enforcement of this standard is ineffective and the standard was developed in isolation of the market. The current market pressure from export markets to processors and thence on to fish farmers is for higher environmental standards than SQF1000, which are an insurmountable barrier for small-scale fish farmers. Small-scale fish farmers are exiting the pangasius value chain rather than improving their environmental performance within it.

The attempt to move kalamansi production from chemical towards organic production and natural farming systems was constrained (to 34 per cent of all kalamansi farmers and 56 per cent of cooperative farmers) by the same lack of either state compulsion or market logic. Farmers showed that they are reluctant to implement a voluntary standard which reduces their revenue, at least in the short-term. If organic production was mandatory and effectively enforced, or prices for organic fruit were higher to offset the reduced production using natural farming techniques – one would expect less lacklustre take-up rates.

Gender

Discussing African horticulture, Tallontire et al (2005) concluded that social codes have not necessarily achieved better outcomes for women and informal workers because the economy itself is ‘gendered’ and it is only by addressing this that the conditions of all workers, including women, are likely to improve. In other words, these interventions fail to address the underlying socio-cultural drivers for gender inequities.

The only projects which appear to have benefited women disproportionately are those where the external environment has been improved for value chains that are dominated by women (bay leaves and incense stick) or where women control household financial management (pangasius and kalamansi).

The fact that women in Mali generally had smaller plots than men and that many could not take part in the fonio value chain due to their inability to supply the minimum 15kg of fonio to the cooperative is indicative of the deep-seated gender inequalities that still need to be combated. In many countries, community forestry policies specify that a specific proportion of the membership of management committees is made up of women. However, a seat at the table is often not enough unless women and other marginalized groups are also supported in making their voices heard (McDermott and Schreckenber, 2009).

A good example of how targeted external intervention can help women improve their relative position is provided by some community forestry projects in Nepal, where CARE International has provided women with literacy and empowerment classes to enable them to participate in community forestry on their own terms, leading to some improvements in their situation (Maharjan

et al, 2009). An acknowledgement of the right of women to have an equal say in the bay leaf value chain, came when shares were made available to women for membership in the bay leaf cooperative.

Summary

This chapter has shown how important factors external to the value chain can be in determining poverty, environment and gender outcomes.

The most dramatic examples of this are where government bans or significantly restricts access to a natural resource. This chapter contains case studies showing the impact on the livelihoods of local communities and the environment when highly restrictive access regulations are relaxed. The irony is that these restrictions are often based upon a concern with the exploitation of the vulnerable. Governments do not only have restrictive policies – several examples of positive actions to encourage the development of particular value chains were reviewed and, in several cases, critiqued.

There are many examples of external policies being implemented which have unintended consequences. The mandi markets were intended to protect NTFP collectors from exploitation from traders and, in reality, allowed traders to form cartels to keep prices depressed. The protectionist pressure in Europe and the USA for restricting imports of ‘unsafe’ pangasius grown in allegedly industrial-scale farms in Vietnam is resulting in escalating environmental standards which are forcing small-scale fish farmers out of the value chain. Changing public policy without understanding how this will affect value chains and the incentives for stakeholders within them, can yield unexpected outcomes.

Whatever policies are adopted by public authorities, it is clear that they need to be enforced in order to affect behaviour. In some cases, the state has proved capable of protecting common pool resources effectively and, from a livelihoods perspective, perhaps over-rigorously. However, the dangers to livelihoods as well as natural resources of liberalizing regulations concerning access to common pool resources, is clear from the examples from the fishery sector. While community-based natural resource management is clearly not a panacea for ineffective or corrupt government, there are instances where this form of regulation has mediated between the socio-economic demands of natural resource-dependent rural populations and the ecological integrity of the asset on which livelihoods depend.

An aspect of the enabling environment which is often overlooked is the basic infrastructure which is required to get goods from rural areas to urban markets competitively. The ineffectiveness of many providers of business development services – particularly agricultural extension services in rural Africa – to provide even the most basic support for entrepreneurial activity in rural areas is striking. Although well-meaning, the capacity of government extension staff is rarely sufficient to support producers in what is often a fast-changing commercial environment. Yet the case studies showed little evidence of the private sector filling the gap, except in some highly vertically integrated cases of pangasius production.

Examples are given of changes to the enabling environment which have had a significant impact on value chains in which large numbers of poor people participate. These tend to involve access issues, such as changing access to a natural resource or to markets. Many other changes to the enabling environment appear to have rather limited poverty outcomes.

The focus on environmental outcomes was finding ways to enhance rural livelihoods without degrading environmental assets – rather than simply further restricting access for ecological reasons. The evidence here is not conclusive, but there are positive signs that communities can, under certain circumstances, manage the sustainable exploitation of natural resources better than either government structures or the free market. The record of governments and NGOs seeking to improve environmental standards in isolation of market stakeholders in the value chain is poor.

Improving gender relations through public policy has a chequered history. Certainly choosing to support value chains where women already participate and gain, or chains where they do not participate but control financial resources, is one strategy. This does not however, tackle the deep-seated socio-economic drivers for gender inequality. For this, a longer-term process of education and cultural change may be the most effective external action available.

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10

Conclusions

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This book poses some difficult questions, the overarching one being: ‘What can poor people in rural areas do to improve their livelihoods?’ At the heart of this question is one of the most intractable problems in development – how to improve the prospects of the roughly one billion who have been left behind in rural areas by the rising living standards in the developing world? The answer to this question is important because, as the scenario modelling exercise in the introduction suggests, the problem will not go away without active intervention.

There are many different ideas about what interventions could improve the lives of the rural poor. Some are quite dramatic, such as Western armed intervention in areas of instability, or making simple assumptions, for example that urbanization will solve the problem. Other approaches are less radical and some appear to be working. For instance, social protection policies in India are clearly tightening the rural labour market and are allowing poor households to begin to earn their way out of poverty. Similarly, the role of better government policy and implementation is a recurrent theme. It is a paradox that many states that regard themselves as developmental are actually implementing bad policies (or not implementing good ones) which, if changed, would significantly and rapidly improve the prospects for the rural poor.

However, we know that rural poverty is unlikely to be significantly reduced in the next two decades simply through the action of outsiders. Better policies, governance and leadership are necessary but they are not sufficient. This book focuses on what the rural poor, with support, can do to change their own life chances. This is a process that allows them to make the transformation from being hapless victims to active agents in their own future prosperity. It represents an important change from development being regarded as something that is ‘done to’ them to something that poor people in rural areas can themselves define, initiate and drive.

This chapter highlights the key findings in terms of contemporary rural development issues, synthesizes our learning on the incorporation of poverty, environment and gender outcomes into value chain analysis and development and finally, spells out some of the most important implications of our work.

Key findings

This book adopts a value chain approach because value chains focus on the distribution of power and value across the chain, a framework that is eminently capable of addressing the agency of workers and small producers. The issues are twofold: first, how to incorporate the rural poor into value chains, and second, how poor people can change the terms of incorporation to increase the benefits of enterprise to small-scale producers at the upstream end of the chain. To help us answer these questions, we had to amend the conventional value chain framework.

First, while much of the value chain literature focuses on global value chains, it is local and regional chains and their associated labour markets that are often of greatest relevance to low-income producers in rural areas. The pangasius project illustrates how small-scale fish farmers can improve their welfare by disengaging with global value chains to focus on production for the domestic market.

Second, we had to construct a new framework. Value chain upgrading categories have conventionally been restricted to process, product, functional and inter-chain upgrading. This categorization makes sense for a small, export-orientated firm in Hong Kong, but is less applicable to a largely subsistence household on the edge of the Sahara Desert in Mali. We have, therefore, developed a richer mix of upgrading strategies that take our target groups from where they currently are. Thus, we formulated strategies for working together (horizontal coordination); developing relationships with downstream actors in the chain (vertical coordination); which resonate within our target groups and with the wider evidence from value chain development experience.

Third, we had to undertake conceptual development to incorporate the pressing concerns of natural resource-dependent, rural communities in the South into the vertical and ‘stand alone’ concerns of the conventional value chain framework (governance, upgrading and standards). To date value chains and value chain analysis have generally not dealt adequately with the pressing ‘horizontal’ aspects of poverty, environment and gender – which lie at the centre of our study. The synthesis later in this chapter integrates the vertical and horizontal elements of value chain analysis to allow us to understand the impacts of chain upgrading on our target group.

Finally, our approach has been intensely practical. Armed with our research questions and conceptual framework, we have spent over two years working with Southern research teams and practitioners in some of the poorest local economies to apply these ideas across a broad range of agricultural and fishery products and monitor the effects of implementing upgrading strategies using an action research approach. This model is not only relevant to value chain experts in academic departments and think tanks – it has been field tested.

This book examines research-based evidence for the effectiveness of upgrading interventions in producing improved poverty, environment and gender outcomes to inform value chain development practice. The good news is that, even working with very poor producers of a broad portfolio of products, there are clear practical steps which can be taken by local actors which will significantly and sustainably raise the welfare of households.

Questioning received wisdom

Within the value chain development practitioner community it is assumed that moving from uncoordinated low-value markets to insertion into well-coordinated, highly competitive value chains with higher returns and a global reach is a 'good thing'. Within the very nature of competitiveness, however, there are winners and losers. This may be manifested in target group beneficiaries being given a competitive advantage over participants in other supply chains and non-participants or in increased barriers to entry. Our work challenges many of the assumptions routinely applied by development practitioners to value chain development involving low-income beneficiaries.

All market systems have entry barriers – for farmers to move even from subsistence production to commercial sales requires the ability to create a marketable surplus. However, as markets become more sophisticated and their requirements more demanding, entry barriers rise ever higher. This is necessarily a feature of formalization and strengthening of marketing relationships. In some value chains, such as Vietnamese pangasius catfish, the poorest producers are excluded in the certification 'arms race' because they fall below a minimum level of capability and assets for upgrading strategies to be applied within the target value chain or value chain strand. In these cases alternative strategies must be sought – 'down-grading' into upstream activities or switching to lower value, more accessible local markets, are examples of this. A further option is participation as labourers in a global, certified chain, while their households remain involved in other chains as direct producers. In terms of poverty and gender, value chain analysis and practice is developing the capacity to study and work with labourers as much as with producers.

Horizontal coordination

The starting point for most upgrading processes is horizontal coordination. Few individual producers engage in commercial value chains at a level where returns are sufficient to take them out of poverty. We know quite a lot about the coordination of rural producers, but much less about the experience of coordination elsewhere in the value chain.

The least successful types of organization are those that were imposed from outside and based upon donor-driven criteria (for example, size, organizational rules, membership rules) which do not resonate locally, have limited internal capacity and very broad and ill-defined objectives. More successful results were observed from horizontal organizations which have strict entry requirements and were created by local entrepreneurs to address a specific need.

Horizontal coordination can allow participants to pool resources and achieve economies of scale which is important, given ever-increasing standards and cost pressure from buyer-driven supply chains. Coordination also allows producers to share costs and risks. The success of Indian self-help groups (SHGs) (in alliance with NGOs) in lobbying for changes in the regulation of access by the rural poor to non-timber forest products (NTFP), and to self-regulate collectors' behaviour to limit the potential environmental impacts of deregulation, was notable.

Development experience suggests that horizontal coordination can be necessary to provide particular members with specific support, which would be difficult to access as individuals. However, other functions are best left to individual agency, and collectivist models may damage livelihoods by seeking to bring functions into the group which could be more competitively provided by individual entrepreneurs. A form of the 'subsidiarity' organizing principle (that matters are best handled by the most local competent party) emerges from the field evidence. So, only in cases where individual entrepreneurs are unable to provide a function, should this role be elevated to a group structure. In this way the horizontal structure focuses on providing functions that cannot be carried out by individual entrepreneurs.

For many development workers, the cooperative is the obvious institutional form for the horizontal coordination of low-income producers. The evidence suggests that, while appropriate in some circumstances, cooperatives have inherent institutional limitations that constrain their ability to provide a vehicle for self-sustaining enterprise growth. In addition to their structural weaknesses, the historic antagonism that producers in countries like Vietnam, Ethiopia and Tanzania have with the term cooperative (closely associated with crude and repressive instruments for political control) is striking.

Assessing the impact of horizontal coordination on poverty, environment and gender outcomes is difficult. The fact that horizontal coordination almost never takes place in isolation of other upgrading strategies results in attribution problems. Methodologically, it is also important to ensure that there were not existing differences between group members and the control group before the intervention – to correctly attribute outcomes to the project afterwards. There is also emerging evidence that there may be significant indirect effects of collective action on other producers in the local economy – the enhanced prices negotiated by farmers groups may drag up the prices paid to non-group members.

Notwithstanding the methodological difficulties, it appears that horizontal coordination can have a positive impact on household welfare – mainly from gaining higher unit prices for output through increased bargaining power, and there is some evidence of a reduction in production costs. Producer groups have also been used as an entry point for financial services. However, the impact is mixed and, in some cases, negative. In general, it is much harder to demonstrate unequivocal pro-poor gains from horizontal coordination than from product, process or vertical coordination – although the latter may well require collective action to be successful. In short, horizontal coordination

appears to be a necessary but insufficient strategy for poverty reduction. Horizontal coordination is often the precursor to vertical coordination.

Vertical coordination

Although formal contracts are seen by many as inherently desirable to market linkage initiatives for the poor, contracting is not the only form of vertical relationship. There are often good reasons why it is inappropriate for both buyers and sellers and equally numerous examples where contracts have been entered but are not enforced. However, where formal, written contracts are the chosen mode of regulating transactions, their success may be improved by designing incentives to quality and investment, dealing with groups with some internal capacity and products, and keeping administration costs as low as possible.

Closer vertical relationships can bring stability and reliability to input and output markets, reducing vulnerability and encouraging participants to invest in product and process upgrading (including enhanced environmental performance) and household assets. For buyers, stable and sustainable relationships with suppliers help assure quality and supply. Adding new market channels through contracting with new buyers or sellers allows producers and intermediaries to spread risks across several different markets, and thereby reduce dependence and vulnerability.

The value of enhanced vertical relationships is much greater than that of simple economic gain. Within partnerships participants can benefit directly from services that are provided as part of transactions, or indirectly through marketing and reputational gains and preferential terms of business.

Vertical coordination may encompass vertical integration. Integration offers firms more control of the value chain and greater value share but forfeits the benefits of specialization – which can include efficiency and quality gains. Therefore, vertical coordination among parties may bring more benefits than blindly following the assumption that the poor should functionally upgrade by adding additional functions.

The relationship between vertical coordination and functional upgrading is further illustrated by outsourcing – where firms choose to contract functions out to a third party. The contracting party gains by externalizing risk and costs while the contractor (which could be a low-income farmer) gains new opportunities to participate. An example of this is the growing number of smallholders acting as out-growers in high-value export horticulture.

There are considerable barriers to entry for vertical coordination of the poor into supply chains. Contract winners, for example, tend to be those already better endowed with capital and assets. The costs involved in upgrading to meet the standards of new buyers or higher-value markets are often significant and require horizontal coordination as a precursor so that fixed costs may be shared. Corporate social responsibility (CSR) schemes are increasingly commonplace and often involve commitments from firms to source from smaller-scale suppliers. A common feature of many development projects is the addition of value-adding functions, such small-holder farmers adding value by

some processing of their crops. The aim of this is to allow the target group to capture higher returns from their participation in the value chain.

NGOs in development projects often assume intermediary functions but, as we saw in the Starbucks example, cooperatives and NGOs are often not competitive market intermediaries and may find it difficult to meet market requirements. This is an example of where commercial entities (often themselves low-income businesses) can provide support to the smallholder sector much more effectively than development agencies using concessionary funding. In addition, NGOs may represent an obstacle between producers and the market (maintaining the dependency of the poor) rather than providing sustainable market linkages. The assumption that producers (or development agencies notionally acting on their behalf) absorbing the functions of market intermediaries is necessarily developmentally positive (for the intermediaries or even the producers themselves) should be questioned and alternatives examined in practice.

Barriers to entry may reduce the ability of resource-poor producers to upgrade their functions in the value chain. The Vietnamese fish-farmer example illustrates how, in the context of more onerous buyer-driven standards in global markets, marginal producers may find it difficult even to retain their current position in the value chain. This example illustrates the structural vulnerability often inherent in encouraging market linkages between powerful OECD end-markets and resource-poor producers in the South. The rules of exchange are made by the powerful (and often, it should be said, under pressure from powerful domestic producers seeking protection from developing country exports) and the capacity of the weak to respond is necessarily limited. In some cases it may be demonstrably beneficial for low-income producers to supply domestic markets and accept lower, but more reliable, prices.

Functional upgrading

Functional upgrading can provide a form of price support for perishable crops that face volatile demand (and therefore price) conditions in domestic wet markets. In the kalamansi case study, the juice concentrate strand of the value chain was developed to allow producers some return during periods of the year when spot market prices in the main wet markets were below the costs of production.

There are, however, quite significant entry barriers to functional upgrading in disadvantaged rural areas. While absorbing additional functions in the value chain can increase the capture of rent by a household or firm, lucrative functions tend to have high barriers to entry. From the perspective of the resource poor in rural areas, functions that they are able to take on easily will tend to have a low return. Functions with a higher return will be more difficult to access.

Product, process and productivity

It is clear that product and process upgrading can have a significant impact upon the livelihoods of poor people living in lagging rural areas. Low productivity is trapping very large numbers of people in poverty and relatively straightforward

initiatives to improve output are an important element of any upgrading process. This is obviously fundamental when households are graduating from a subsistence mode to one where a marketable surplus is sold. Unless output increases, there will be no surplus to sell without compromising the food security of the household. Evidence from the projects showed that fairly basic interventions (such as higher-yielding varieties for fonio farmers, desks for incense stick rollers and water pumps for irrigated agriculture) can have a rapid and significant impact on productivity.

Improving productivity is vital, because it means that output can be increased without inputting too much additional time, which is important when low-income households are already participating in multiple livelihood strategies. In the fonio and cassava examples, it proved relatively straightforward to increase yields dramatically but, because of the labour intensive nature of harvesting the output, an increased output put an increased burden on family labour.

It is certainly the case that product upgrading can allow poor producers to capture additional rent from their production. There is also ample evidence of the inexorable rise in standard required by end-markets. However, the pursuit of quality per se should not be the inevitable goal of all upgrading strategies. This is because sometimes quality differences are not necessarily discriminated and rewarded in the form of price premiums by end-markets (such as in the pangasius case). There may also be a price–quality disconnect. For example, even if end markets do reward quality with higher prices, intermediaries may use their economic power to withhold these benefits from producers (as may have been the case in the octopus project). In both cases there is a breakdown in the relationship between investment to achieve higher quality and returns at the producer level.

Domestic markets

One of the major findings of this research programme is that significant opportunities exist for poor, rural producers to sell their output in local and domestic markets – rather than take the risk of selling to global markets. The rapid rise in standards in agricultural output in global markets has yet to be reflected in Southern domestic markets. This creates an opportunity for small-scale producers to target the rapidly expanding domestic markets and allow more sophisticated producers to target global markets.

This is particularly true for producers investing in environmental performance improvements. If the aim is to significantly change the behaviour of producers at scale, it is important to align the short-run market incentives of producers with those of the desired environmental outcome. The consequence of not aligning these factors is that low-income rural households have to finance the costs of transforming production to a more sustainable outcome – which is socially regressive and will ensure limited conversion to more sustainable approaches. The incense stick project is a timely reminder that the largest environmental footprint of any productive activity may be in a distant tier of the supply chain rather than in the production node itself.

The gender impacts of product and process upgrading very much reflected the position of women in the social contexts of the projects. In Senegal, women were almost completely excluded from the octopus value chain. In Tanzania, women provided most of the family labour to grow cassava but it is not clear that they benefited financially from this increased labour input (although there may have been food security gains). In South Asia, women participated significantly in all the projects and appeared to control the gains from their participation. In Southeast Asia, women's control of household finances meant that their participation in the value chain was of limited relevance. This underlines the importance of understanding the gender dynamics in different contexts, as well as the impact of specific projects.

Moving to a new chain is a considerably risky and investment-intensive strategy that often requires considerable technical support. As such, it is often an exclusive process. However, gains to the rural poor can be high through increased income or reduced vulnerability.

Inter-chain shifts open opportunities

High-value export value chains have taken precedence in development initiatives in recent years but with their high risks and considerable barriers to entry they are not necessarily the best option for the rural poor. As developing countries urbanize rapidly, domestic markets are growing and offer easier access with greater reliability than international ones. Opportunities in labour markets are also improving as consolidation and integration are a growing trend in agricultural markets

The enabling environment

Research on governance has shown how important factors external to the value chain, over which poor participants often have little control, can be in determining poverty, environment and gender outcomes.

Most important among these external factors is how the rights to access the productive resource, whether land for cultivation or access to a wild-harvested product, are distributed. When value chain development processes encompass asset enhancement, they are likely to produce the biggest impacts, which may or may not be pro-poor, gender-equal and environmentally sustainable.

Public goods, such as transport or communications infrastructure, are critical to the development of all value chains. The case studies particularly highlight the critical role of the state in providing public investment in infrastructure to improve the competitiveness of lagging rural regions. One of the most significant interventions to limit the friction of distance between remote, rural producers and the market is to improve transport infrastructure. The savings in transportation costs achieved by these interventions accrue directly to producer households. However, this book cannot shed light on the differential returns produced by this type of investment.

The performance of a value chain is directly related to an enabling policy and business environment. Throughout the seven studies, value chain actors

and supporters argue for tax relaxation, policy adjustments, simplification of standards and their means of enforcement, ban lifting and trade facilitation.

Many of these interventions would simply serve to level the playing field, enabling small producers to participate and compete effectively in the market. However, some policies are specifically designed to promote certain disadvantaged regions or sectors. Although well-intentioned, the literature and the case studies show that certain policy interventions designed to help poor producers may inadvertently achieve the opposite because of an incomplete understanding of the value chain and the constraints faced by the poorer actors within it.

For instance, a One Town One Product (OTOP) policy runs the risk of selecting a product for which a region may not have a clear competitive advantage. Not only are the producers of the OTOP product likely to face unexpected competition, but other producers may suffer because of the over-concentration of resources on just one product. The policy of the Uttarakhand government to protect harvesters of medicinal and aromatic plants from exploitation by unscrupulous dealers by requiring all sales to go through government auction-yards had the opposite effect as the auctions were so distant from production areas that any transparency was lost and traders could collude in price-setting with impunity. These examples illustrate the point that benign intentions are a less helpful driver of external governance initiatives than a rigorous value chain analysis.

Many of the cases highlight the great potential importance of extension activities (from whatever source, be it private or public) in supporting producers with technical innovations (including compliance with standards), accessing credits and organizing themselves for marketing. However, the capacity of government extension staff is rarely sufficient to support producers in what is often a fast-changing commercial environment. The literature review revealed limited evidence of the private sector filling the gap, as was the case in the most vertically integrated cases of pangasius production. The question arises as to the relative proportion of effort projects should invest in improving extension services to the general benefit of producers, versus working with specific producer groups. Most Western donors regard the provision of technical support as usually a more efficient, effective and lower risk strategy than that of cash or material inputs, and a plethora of modalities exist that can be adapted to local and project needs, from peer facilitated learning and exchanges, expert-mediated field schools and training of trainer methodologies, to name but a few. This consensus has been challenged by the actions of a number of states which have achieved spectacular increases in agricultural output through the provision of subsidized inputs directly to small-holder farmers (Wiggins, 2010).

One of the most testing challenges in external value chain governance for natural products is balancing natural resource conservation with commercialization or economic growth. Certificates and standards can fetch premium prices and give a competitive edge, but at the same time they demand capacity and compliance from farmers who may have little formal education. Overall, they represent a substantial financial and time investment both by producers and intermediaries.

To achieve change in external factors, there needs to be a clear understanding of whether change lies within the scope of the target group and, if

so, where decision-making takes place (e.g. at political level or by local level civil servants). Lack of voice means that producers can best achieve changes in external environment either through horizontal coordination leading to advocacy or with the help of a ‘champion’ such as a project or NGO.

Synthesis – Incorporating poverty, environment and gender concerns into value chain analysis and development: Evidence and practice

In the section above, we highlight how our findings enhance understanding of current rural economic development issues. In this section we reflect upon the actual process of incorporating poverty, environment and gender outcomes into value chain analysis and development, gathering our evidence into a common narrative and, finally, building our learning from the ‘upgrading journey’ into a ‘how to’ framework.

All upgrading strategies can potentially affect poverty, environment and gender related outcomes through proximate impacts at the value chain level and leading to ‘ultimate’ outcomes at the household and community levels (the ‘horizontal impacts’). These impacts and outcomes may be visualized along continua from the ‘most proximate’ to the ‘most ultimate’ (Figure 10.1).

These examples illustrate the context in which we have explored impacts and outcomes of value chain development projects, attempting to move the spotlight beyond the focal value chain to consider the effectiveness of upgrading strategies with a wider perspective. We now examine the nature of each of poverty, environment and gender outcomes in greater detail.

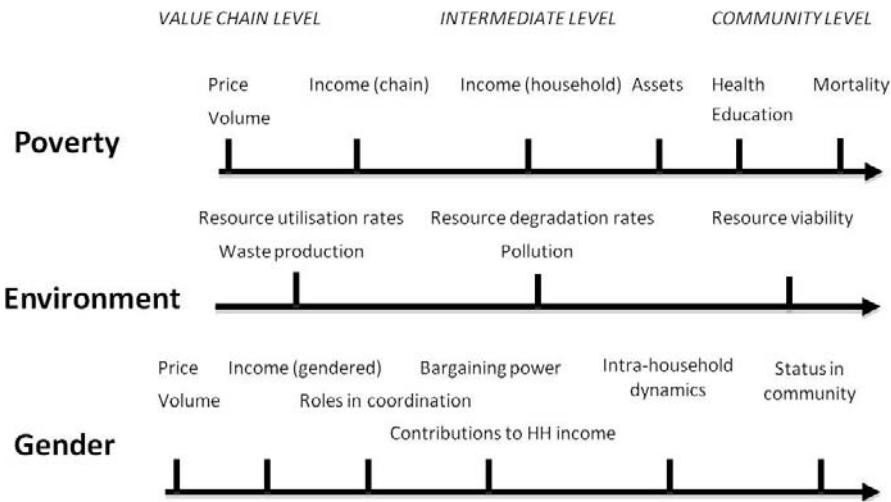


Figure 10.1 Continua of example poverty, environment and gender outcomes, from value chain level impacts to broader scale outcomes

Poverty

It is important to recognize that the translation of aggregate value chain level impacts into poverty reduction outcomes at a community level occurs through a complex process. It should not be assumed that because a value chain is expanding, so the welfare of all beneficiaries is correspondingly enhanced. Crucially, households and communities engage in a variety of livelihood activities and, as was the case in several of the action research projects, the focal value chain may represent only a relatively small proportion of total income. In all cases, to understand poverty outcomes of interventions in single value chains it is necessary to monitor the household (and community) economy as a whole – for example, has reallocation of resources and assets to the target chain affected other sources of returns such as cash income or food? There are a number of conditions that must be met in order for improvements at value chain level to be manifested (scaled) into poverty reduction outcomes (Table 10.1).

Table 10.1 *Proximate and ultimate level impacts of upgrading interventions on poverty outcomes, and the conditions necessary for chain-level impacts to be translated into poverty reduction outcomes*

<i>Intervention</i>	<i>Proximate (chain-level effects)</i>	<i>Ultimate (household and community level) effects and conditions</i>
Horizontal coordination	Economies of scale can reduce or share costs and increase incomes; increased bargaining power allows negotiation of better trading terms, increasing incomes; acts as prerequisite for others upgrading strategies and, therefore, ‘unlocks their benefits’.	If coordinated bodies are well-functioning and return gains to their members, and if the gains exceed costs of membership (such as overheads), affiliated households and communities can gain in net terms.
Vertical coordination	Can deliver more favourable trading terms and enable access to embedded services; access to more lucrative marketing channels can increase incomes.	If sustained, longer-term relationships can create conditions favourable for investment in productive activities, household assets and services such as health and education; diversification of marketing options can reduce vulnerability of households and communities.
Functional upgrading (and downgrading)	Adding value and moving to more profitable activities can increase incomes; downgrading can stem losses.	If opportunity and capital costs do not exceed gains from upgrading, households can benefit. Downgrading can reduce vulnerability by shifting to lower risk (but, usually, lower income) activities.
Product upgrading	Better products may (but not necessarily) fetch higher prices and open up, or maintain, access to higher value marketing channels.	Net benefits arise if investment in product upgrades is rewarded by gains that exceed any losses due to reallocation of resources from other livelihood activities.

Table 10.1 (*Continued*)

<i>Intervention</i>	<i>Proximate (chain-level effects)</i>	<i>Ultimate (household and community level effects and conditions)</i>
Product upgrading	Better products may (but not necessarily) fetch higher prices and open up, or maintain, access to higher value marketing channels.	Net benefits arise if investment in product upgrades is rewarded by gains that exceed any losses due to reallocation of resources from other livelihood activities.
Process upgrading	Increased output volumes increase chain incomes in most situations; efficiency increases reduce costs.	Reduced wastage of food crops can enhance food security through increased own consumption and lower end market prices; where a greater marketable surplus is generated household incomes rise, assuming that the value of increased outputs exceed that of the inputs required to generate them; all other things being equal, cost reductions lead to increased net household income.
Inter-chain upgrading	In all recorded cases income from the new value chain exceeds that from the original one.	Assuming that gains from increased income exceed the opportunity cost of leaving the original chain, household income increases.
Changes to enabling environment	Policy incentives and permissive regulation can promote certain value chains and stimulate increased output; liberalization can induce demand side competition, increasing prices and incomes.	In a competitive environment, care must be taken to consider losers in addition to winners. In promotion of certain activities over others, exclusivity is inevitable.

Environment

The strategies with the greatest potential for affecting environmental impacts are horizontal coordination and process, product and inter-chain upgrading, along with changes to the enabling environment. The choice of strategies depends upon the programme approach – whether a decision has been made to work to improve the environmental performance of relatively damaging activities or to work in a value chain with an intrinsic environmentally ‘friendly’ nature. We deal with each strategy in turn below.

Horizontal coordination is the means by which natural resource governance is commonly applied at community level. Groups of interested parties are given the joint responsibility for managing a resource or resources. Their likelihood of success is related to the presence of certain resource system and group characteristics, institutional arrangements and aspects of the external environment.

For example, natural resource-dependent communities can, through collective action, lobby to increase access to common pool resources. The examples of South Asian NTFP are pertinent here, where rural communities negotiated

the easing of highly restrictive regulations governing access to forest resources. The quid pro quo of this limited deregulation by the Forest Department was the effective self-regulation of NTFP resource exploitation by communities, which was achievable only as a result of well-organized community-level structures. Although the data are far from perfect, there is some evidence that community-based structures in Senegal are protecting octopus stocks through tackling the opposite problem with government regulations to that found in India – namely the almost complete lack of effective regulation on the octopus stock.

There is, of course, nothing inevitable about collective structures of low-income producers and collectors generating sustainable outcomes. The success of community-level attempts at environmental regulation depends upon the characteristics of the resource system, group characteristics, institutional arrangements and the external environment. There is a significant literature on these issues, underpinned with interesting theory in institutional economics and sociology. This research merely affirms the possibility of better and more just natural resource management through horizontal coordination.

Process upgrading delivers the potential to modify the environmental impacts of existing value chains. Process changes usually result in an upgraded product that may be differentiated among its competitors for its environmental ‘credentials’ – for example, organic products, line-caught fish and ‘bird friendly’ coffee.¹ Short-run economic incentives are often required to counter increased costs and declines in output before long-run benefits are realized.

Despite the recent trend towards consumer selectivity based upon social and environmental consciousness, some markets do not yet discriminate among products on these bases – meaning that incentives are less clear. Thus, while organic coffee commonly fetches a price premium that results in prices higher than those paid for fair trade certified output, chemical-free kalamansi production is not currently recognized with structural price differentials compared with conventionally produced fruit.

Inter-chain upgrading presents the opportunity to move to (actually or potentially) less damaging activities. Environmental benefits may be incidental to this strategy rather than its driver, as was the case for household-scale pangasius farmers, who were responding to economic factors in their shift to activities with inherently lower environmental impacts.

The kalamansi project exemplifies strategies that aim to link value chain level impacts (heavy demand for wood for packing crates) with wider environmental outcomes (deforestation). As in this case, the necessarily limited scope of measurement within individual value chain development projects means that these wider impacts are more often inferred rather than proven. Assumptions such as these should be examined carefully to confirm that such inferred causal links do exist in reality.

Gender

The current discourse on gender and value chains, as summarized by Laven et al (2009), places the economic empowerment of women as a central issue.

Kabeer (1999) defined ‘empowerment’ as the process through which people who have been denied the ability to make strategic life choices gain the ability to do so. She also distinguished three ‘dimensions’ of empowerment: a) resources (human, material and social), serving to enhance the ability to make choices and shape one’s life; b) agency, ‘the ability to define one’s goals and act upon them’; and c) achievements, the manifestations or outcomes of the different choices, and the different shapes that lives take. Access to these resources, abilities and achievements for men and women is often inequitable.

In the context of value chain development, empowerment may be viewed as the process of reducing inequalities in people’s capacity to make choices regarding their manner of participation on two levels. First, not everyone can freely choose to participate in value chains. Second, the extent to which participants gain from their involvement is governed by a complex set of factors, many of which are gender related.

Gender dynamics in value chains play out along two main axes: first, that of scale, from individual interactions at the household level through clusters of horizontally linked households to the level of the value chain; second, that of participation related issues versus factors that govern levels of gain from participation.

Levels of participation and gains are shaped at the household scale by gendered divisions of labour, time budgets and decision making, and at the value chain level by differential access chain to functions, services and resources and by gender related power disparities in chain management. These gender inequities arise from disparities in access to factors of production and education, from gender disparities inequities in time budgets (‘time poverty’), gendered labour markets and power imbalances or cultural norms that affect participation of individuals in decision making.

Horizontal coordination

Horizontal organization can be beneficial by increasing women’s economic and social power, improving access to services and assets and helping to tackle some of the underlying gender inequities, such as low social status, that disempower women in value chains.

The formation of women’s groups is one of the interventions often ‘defaulted’ to by support organizations. It is true for all upgrading strategies, but particularly those that intervene within the local socio-cultural dynamics, that generic menus of interventions should be avoided and each action needs to be based upon the context and its underlying problem. In other words, in each instance policy makers and practitioners should understand: a) what specific issue they are trying to address in group formation; and b) that using existing, sometimes informal, groups and networks has proven to be more successful than initiating them from scratch.

Vertical coordination

Both men and women can clearly benefit from increased and strengthened inter-nodal linkages; this can be in terms of increased income and access

to credit on better terms or less tangible outcomes such as increased social status and prestige.

However, we have illustrated how participation in economic activities does not always result in equitable gains, which are contingent upon underlying issues such as the intra-household dynamics that govern income control. In situations where increased incomes through better terms of trade tend to result in the appropriation of activities by men, a more fundamental change is required to achieve gender equity.

Strengthened vertical linkages, therefore, can actually reinforce existing inequities, as has been reported in some Fairtrade schemes (Ruben et al, 2008). The most successful forms of vertical coordination treat men and women as individuals and empower and reward both for their participation – a good example of this is the ‘mama card’ scheme of Papua New Guinea’s palm oil industry (Koczberski, 2007).²

Where vertical coordination brings greater returns in female-dominated activities, women are at risk of losing their income to men. How this then plays out in terms of poverty outcomes, through the allocation of resources to food and education, depends upon the social and intra-household dynamics in each particular context.

Product and process upgrading

Product and process upgrading strategies can be highly effective when applied to value chain products and processes in nodes in which women are already participating. Removal of chain level blockages to increased sales or value at these nodes can have direct impacts on returns to female participants.

Again, however, how those returns are used to benefit all household members depends upon the specific cultural context. As products become more valuable they tend to be the subject of conflicts among household members. The introduction of effective new processes can transform yields and incomes; this often has major implications for household division of labour. Therefore, policy makers need to consider aggregate outcomes at the level of the entire household economy in addition to value chain level impacts.

Chain upgrading

There is a paucity of information covering chain upgrading events to address gender inequities but the available evidence suggests that benefits to women are determined by their control of productive assets, trading functions and, thereby, the resulting income. In addition, it implies that the introduction of new economic activities can alter household food security and expenditure patterns in a positive manner.

Functional upgrading

Project interventions commonly redistribute more lucrative activities to women and focus on value addition, often through processing to new products. However,

the key to how beneficial these initiatives are lies in the extent to which the women control this new income and, if the household economy is male-controlled, to what extent women can leverage spending on household needs such as food, health and education.

In addition, if the sexual division of labour restricts women's participation in the production node and men control exchange, functional upgrading can imply an additional burden of work without any improvement in financial gain. There are counter-examples where men produce and women control trade and exchange, in which case women can be significant beneficiaries of functional upgrading initiatives.

Policies, institutions, laws and internal governance (chain management)

Removal of blockages in the enabling environment can quickly result in improved chain level outcomes, such as increased incomes through liberalized input sourcing and trading policies. However, as with other upgrading strategies, the extent to which men and women ultimately benefit depends upon underlying issues such as who controls resources and incomes.

Enabling environment interventions to improve gender equity fall into three main types: a) generic interventions that remove blockages in functions and nodes where women participate (or could participate) strongly; b) specifically gendered codes of practice applying to the way women participate; and c) positive discrimination to make representation more equitable, for example increasing female presence in horizontal institutions such as producers' groups and committees.

Placing women in groups and committees can help to challenge power imbalances but the presence of women does not necessarily confirm their active participation. As with the case of the 'women in development' Ghanaian fisheries project, intervening in established social networks that people feel comfortable with, can be potentially damaging.

Gender-sensitive codes of conduct can successfully address labour issues but their effectiveness can be limited if additional underlying issues are ignored; social codes have not necessarily achieved better outcomes for women and informal workers because the economy itself is 'gendered' and it is only by addressing this that the conditions of all workers, including women, are likely to improve (Tallontire et al, 2005).

The implementation of laws based upon western notions of property ownership and collective working can have disastrous results – for example, westernized property rights reform has formalized the exclusion of women: the imposition of inheritance laws in Ghana that were designed to favour women have contributed to the destruction of powerful female-controlled networks.

Summary of knowledge of gender and value chains

One of the key points emerging from our analysis is that establishing who participates and gains in value chains on an individual basis is insufficient

to achieve an understanding of the manner in which gender dynamics shape the benefits received by men and women. Categories such as ‘the household’, ‘men’ and ‘women’ need to be understood in each individual context. This illustrates that even where women may not directly control assets and income, they and their households can benefit from their engagement in value chains, for example through better nutritional outcomes and increased food security that result from increased aggregate household production and income.

For example, in the Tanzanian cassava case, the burden of work on women growing cassava has increased with little evidence of any improvement in their economic position. In Vietnam, however, women are almost completely excluded from the pangasius value chain but, as the managers of household budgets, have benefited from the collective activities – and cash income – of their husbands.

Interventions do not necessarily have to be exogenous (that is, from outside the value chain); indeed, an excellent example of iterative monitoring, learning and revision process in the reviewed literature came from a private sector actor within a value chain. Moreover, generic value chain level interventions targeting nodes in which women participate are of limited effectiveness if issues at the institutional and household levels are not addressed.

Rather than an end in itself, empowerment of women is an intermediate step toward improving poverty impacts for whole households and communities. The translation of chain and intermediate level improvements, including women’s empowerment, into ‘ultimate’ impacts is mediated by context-specific socio-cultural and intra-household dynamics in addition to political economies (the interaction of institutions and policies, laws with markets). Therefore, broader scale outcomes are not a given of a successful empowerment process.

In conclusion, although we are still learning, we know enough to be able to support policy makers seeking to maximize impacts of pro-poor value chain development initiatives, and practitioners in identifying and addressing root problems in order to avoid ineffective and damaging interventions. We define two broad approaches to value chain development for better gender equity outcomes:

- Use a generic (non gender-specific) approach to act on sectors and nodes of value chains in which women are participating significantly. In cases where women have control of household budgets (for example in parts of south-east Asia) they will benefit from any generic improvement in incomes and other impacts.
 - Remove non gender-specific policy and legislative blockages, such as taxation and trade laws.
 - Introduce new functions to increase value added and improve processes and products in female dominated industries. Special consideration should be paid to anticipation and prevention of male appropriation as activities become more lucrative, for example securing equitable control of factors of production.
 - Improve vertical and horizontal coordination. The latter is often a prerequisite for the former – actors in organizations are better able

to negotiate improved terms with buyers and suppliers. Institutional backing also increases women's ability to negotiate within their households. Horizontal coordination works best with existing, functional and well-led organizations. Formal vertical contracting works best with indigenous crops that represent minimal investment, risks and implementation costs.

- Employ gender-specific interventions. These are most appropriate in situations where women do not have control over household income and decisions and do not necessarily benefit from generic approaches.
 - Address gender-specific policies and legislation, for example land tenure law, inheritance law and constitutional arrangements of institutions. Care should be taken a) not to reinforce or formalize existing inequities, and b) that policies and laws are appropriate to the context (not simply imported westernized models).
 - Address differential access to education, information and social and political capital that affect women's ability to bargain and organize.
 - Address where men and, more commonly, women are not participating in economic activity by introducing new value chains that are appropriate to their available resources. Women, for example, are particularly time constrained.
 - Increase female representation in institutions to give them greater control of chain management. Special measures may be required in some contexts to ensure that attendance equates to participation.

However, on a cautionary note, it is necessary to acknowledge that some underlying issues driving gender dynamics in value chains are beyond the scope of a single value chain analysis and development programme. In these cases the initiating institutions will need to find ways of working with others to coordinate and scale up their impact.

A practical framework for incorporating poverty, environment and gender concerns into value chain analysis and development

At a practical level, the learning from this research culminates in a framework for value chain analysis and development incorporating poverty, environment and gender issues (Table 10.2). It has a strong focus upon chain selection because it is at this stage where the greatest scope exists to impact poverty, environment and gender issues *by design*. We witnessed how several of the IDRC action research projects for example either failed to address gender and environment issues altogether, or did so in a contrived and partial manner. The best way to affect outcomes in these areas is to build them into value chain selection from the very beginning (i.e. as part of the chain selection process).

Table 10.2 is very similar to the 'seven steps' table with which we started the project (see Chapter 2). Key differences, prompted by our learning during the implementation of the projects were as follows. A greater emphasis on the restrictions which financial and human capacity constraints impose upon

any upgrading project should be recognized from the outset. Our experiences suggest that the attention focused upon value chain selection should be much greater than we envisaged. This is because chain selection determines the outcomes of upgrading to a significant extent. Notwithstanding the considerable emphasis placed on monitoring and evaluation during this research programme, we still ended up with some projects pursuing upgrading strategies with limited likelihood of success and outcomes which were difficult to evaluate. The need to review projects during implementation and, if necessary, redesign strategies is critical for this kind of intervention.

Project stakeholders are involved from the outset and inclusive methods should be used wherever possible, for example in value chain, indicator and participant selection. Validation is a vital component at each stage and practitioners should be prepared to progress through additional iterations of project processes until the selected options have a high level of acceptability among key stakeholders. The key roles that trust and shared objectives contribute to value chain development lend the process to participatory methodologies. These should be tailored specifically to the context of each exercise (e.g. Bernet et al, 2005; Bammann, 2007).

The quality of analyses is of fundamental importance for the success of identifying and addressing critical poverty, environment and gender issues. At the root of each of our projects that failed to perform satisfactorily was an inadequate analysis of either the existing value chain, or the proposed modification – or both. Existing, commonly used, familiar and readily understood participatory research tools such as combinations of SWOT analysis, problem tree analysis, ‘five whys’ and weighted problem analysis (e.g. Dorward et al, 2007) are highly suitable for establishing root causes and underlying issues.

Following strategic planning conventions, ‘critical issues’ can be expressed in a manner that readily allows solutions to be devised; that is, with the following three components made explicit:

- What is the issue?
- To whom (which actors in the chain) does it apply?
- What are its implications?

Similarly, where doubt exists to whether a particular root problem may be within the scope of a particular programme it may be useful to decide whether it constitutes a ‘key issue’ by asking:

- What is the underlying issue?
- What will be the outcome for the project and the community of failing to address it?
- Do we have the resources (for example, time, money, political access and power) to address this issue?

Upgrading strategies can then be designed using a tripartite structure that mirrors critical issues:

Table 10.2 *A phased practical framework for incorporating poverty, environment and gender concerns into value chain development projects*

<i>Phase</i>	<i>Activities</i>	<i>Sub-activities</i>	<i>Considerations</i>
Scoping and planning	Scoping	<ul style="list-style-type: none"> Identify financial and other resources. Identify stakeholders, including the target group. 	<ul style="list-style-type: none"> What temporal and geographical scale of project is appropriate according to the resources available?
	Strategic planning	<ul style="list-style-type: none"> Identify organizational or project aims and objectives (in terms of poverty, environment and gender outcomes). Prioritization of objectives. 	<ul style="list-style-type: none"> What should this project achieve? Which poverty, environment and gender issues should it address?
Value chain selection	Data collection	<ul style="list-style-type: none"> Gather and synthesize data on value chain performance in key criteria reflecting development aims and objectives. 	<ul style="list-style-type: none"> Are existing data sufficient for an informed selection process or will additional primary data collection be necessary?
	Rating and ranking	<ul style="list-style-type: none"> Weighted scoring and ranking of candidate value chains according to criteria derived from prioritized objectives. Value chain selection. Validation by stakeholders. 	<ul style="list-style-type: none"> Which are the most important developmental of the project's developmental objectives? Who should be involved in the selection process? Does the project aim to select and promote (scale up) a chain that performs strongly in priority criteria, or to upgrade within a chain that has scope for improvement in terms of development objectives? Should the emphasis be placed upon increased participation, gain or both? Is the preferred option economically viable (in addition to addressing priority issues) and approved by key stakeholders? Are you prepared to include another iteration of the selection process if no clear options emerge?
Analysis	Value chain analysis	<ul style="list-style-type: none"> Economic analysis, beginning with end markets. Poverty, environment and gender analyses. 	<ul style="list-style-type: none"> What are the key economic parameters in terms of market segmentation, profitability, seasonality, employment and the relative importance of channels according to product flow volumes? What are the critical poverty, environment and gender issues? Are they generic to the entire value chain or do they apply to certain strands only?

Table 10.2 (Continued)

Phase	Activities	Sub-activities	Considerations
	Value chain strand selection	<ul style="list-style-type: none"> • Weighted scoring and ranking of value chains strands according to criteria. • Value chain strand selection. • Validation by stakeholders. 	<ul style="list-style-type: none"> • What role is (or isn't) played by the target group and what are their inter-dependencies with other participants? • Which value chain strands offer the best combination of economic and social performance (or greatest scope for improvement)?
Project design	Upgrading strategy selection	<ul style="list-style-type: none"> • Matching upgrading strategies to critical issues. • Entry (action) point selection. 	<ul style="list-style-type: none"> • Which upgrading strategies most appropriately address the critical issues? • Where in the value chain will the project apply its upgrading strategies in order to bring about the desired changes for the target group?
	Participant and control selection	<ul style="list-style-type: none"> • Selection of direct and indirect beneficiaries and control groups for comparative monitoring. 	<ul style="list-style-type: none"> • How many of each kind of value chain participant (or potential participant) will be included? • How will the control groups(s) be selected in order to enable the impacts of upgrading strategies to be monitored effectively?
	Monitoring and evaluation	<ul style="list-style-type: none"> • Selection of indicators and means of verification. • Design of monitoring and evaluation schedule. 	<ul style="list-style-type: none"> • How can the priority poverty, environment and gender outcomes be measured? • Are proxy indicators suitable where outcomes cannot be measured directly? • Do the selected indicators cover the full spectrum of value chain-, intermediate- and community- (or broader) level impacts? • How often will formal monitoring and evaluation events occur and how will the result be incorporated into project redesign?
	Action planning	<ul style="list-style-type: none"> • Activities arranged by timescale. • Resource allocation by activities. 	<ul style="list-style-type: none"> • Which activities are required to achieve project objectives in a time and cost effective manner? • Who will perform these activities, when and what resources are required? How do these requirements compare to the available resources identified at the scoping stage?

- Eradication of the issue becomes the objective.
- The group to which it applies becomes the target group.
- The implications suggest areas for outcome indicators.

Finally, the key to successful monitoring and evaluation, as applied in a particular format in the action research process, is the flexibility and preparedness to respond to a changing environment, be it unplanned or unforeseen project outcomes, changes in the circumstances of the target group or, inevitably, changes in the dynamics of the value chain itself. The kalamansi action research project is a good example of how several iterations of project redesign were necessary in order to respond positively to changes in a highly dynamic and competitive market.

Evaluation of action research projects

The research outputs of local research teams in south and south-east Asia were relatively robust in comparison with those based in sub-Saharan Africa. In part this was a result of Asian teams having a higher propensity to partner with international organizations. In addition, much higher fee rates in Africa and a common, fixed budget across projects meant there was less time to implement projects there. However, the lower quality of African project team outputs also, perversely, reflects the fact that they are in high demand for development research, because of the relatively small pool of researchers.

This is a serious issue for organizations seeking to develop value chains in parts of Africa because poorly designed projects are demonstrably less likely to be successful and achieve impact. The clear contrast in the quality of analysis and design among the seven projects may suggest that there is a trade-off between developing in-country capacity and designing projects which will have the greatest possible impact in some locations in Africa.

In the summaries a great deal of attention was focused upon quantifying the impacts of the projects. These compare poorly in the short term to the cost of implementing the projects (a ceiling of US\$130,000, although several projects were unable to utilize the total funds available). For instance, we calculate that the bay leaf project generated about US\$18,000 additional income to collectors in 2009.

However, if sustainable change has occurred within value chains (which is debatable in some cases, even where some value chain level benefits were derived), so the pro-poor benefit will be realized over time – these are not single cash transfers. In addition, considerable resources were committed to research activities (such as drafting and disseminating learning), which would be somewhat less prominent in most purely developmental projects.

It is also clear that, although this aspect was not measured well, several of our projects had beneficial ‘spillover’ effects beyond the target group. Notwithstanding these caveats, it is important for development practitioners to be explicit about returns on investment and the relative value for money of alternative interventions.

Value chain development is often about developing trust relationships within a commercial context and this is difficult to achieve and operationalize in poor places in the South within two years. However, some of our projects did achieve success within this timescale. In some cases this was because our project built upon ongoing activities – so projects had a running start. In others, products were chosen with a frequent production cycle, so it was possible to experiment with several different marketing channels in any one year. In addition, some projects demonstrated a remarkable capacity to suffer set-backs and reprogramme within even quite a constrained project cycle. Therefore, although more time would be useful for value chain projects, practitioners can – through wise chain selection – ameliorate the negative impact of demanding donor-driven schedules for value chain development.

Implications

The implications of this analysis are profound for the rural poor, Southern governments and the private and development sector.

Poor people in rural areas can, under certain circumstances, significantly increase their returns from agricultural activities by upgrading themselves in value chains. In several examples in this book, the cash income households received from a specific value chain was doubled as a result of upgrading, without negatively impacting upon the environment. Evidence suggests that enhancing the position of women through value chain upgrading is possible, but requires a more nuanced and sophisticated approach to upgrading than has been followed hitherto.

Such an approach implies that a development strategy for poor rural areas should not regard the poor as passive victims of globalization whose livelihoods can only be improved by welfare grants or stabilization by military forces. Through simple strategies of working together and producing more and better products which more closely fit market requirements, the rural poor can work their own way out of poverty. Our projects were in some of the most disadvantaged rural areas in the South, which suggests that enterprise can potentially benefit a significant share of the ‘bottom billion’.

However, the rural poor need support to engage with the market on more advantageous terms. There are multiple market and state failures that must be overcome if the rural poor are to engage with markets on better terms. Governments in the South could rapidly make an important difference by ceasing to implement rules and regulations that damage the livelihoods of the rural poor. Notwithstanding the sound intentions of legislation preventing producers from entering long-term relationships with buyers and providing highly restricted access to state-owned natural resources, for example, the impact can be harmful to the rural poor in some circumstances. Although enterprise can develop in areas with political instability (i.e. Philippines, Mali, Nepal), governments would deliver an important peace dividend to the rural poor if political conflicts could be resolved without damaging rural economies.

Governments can do more than simply trying to avoid harming rural areas. Several important positive steps to improve the prospects of the rural poor are suggested by this analysis. The provision of economic infrastructure to make it easier for rural producers to get products to urban markets is critical. In addition, providing effective agricultural extension services which include market as well as technical support, would impact on large numbers of the rural poor.

This analysis has many sobering messages for the development agencies involved in value chain development. The most important is to assess, rather than to assume, the most viable value chains for attention. The choice of upgrading strategy for each potential target group is also often not self-evident. A typical value chain strategy – involving the establishment of a producer cooperative and appointment of a local actor to facilitate vertical coordination with buyers of niche export products – may be the correct strategy in some specific circumstances. However, this popular strategy can also be risky for several reasons.

First, the choice of which value chain to support is critical because it pre-determines the gender and to some extent the environment and poverty impacts of the upgrading intervention. It is very difficult to successfully ‘bolt on’ poverty, environment and gender dimension to already-selected value chains. This is because the social norms and expectations, which determine who participates in and who gains from different economic activity, are unlikely to be altered in the context of a short to medium term value chain intervention.

Second, there is something inherently appealing about a Western development organization facilitating trade links between small-scale producers and their home market. However, the practical experience clearly illustrates that for most of the rural poor, a much more appropriate strategy would be to target domestic markets which are growing fast with the rapid urbanization and rising incomes in many urban areas in the South. This means that the key intermediaries are local or national, with expertise in these markets. International agencies would do well to consider supporting such initiatives rather than, or as well as, taking on direct roles themselves.

Export markets generally have much higher barriers to entry and are volatile – often anathema to risk-averse, small-scale producers. There is clear evidence that buyer-driven standards are making many global value chains more exclusionary to poor producers. The significance of market-driven standards suggests that, even if rich countries did provide duty free access to their markets from ‘bottom billion’ producers (as Collier suggests, 2007), producers would face market standards as a barrier rather than tariffs – which used to be the main trade barrier facing development country agro-food exporters (Gibbon et al, 2010).

Third, the evidence suggests that poor, rural producers are more likely to succeed targeting mainstream markets than niche markets. Niche markets do not necessarily pay higher prices than mainstream markets (see the example of the price premium paid by mainstream incense stick producers compared with the ‘ethical trade’ channel in India). Niche markets also tend to be less accessible to low-income producers.

Fourth, the skills mix and preconceptions of local specialist organizations to support the target group in developing the value chain is critical. There are

many organizations which will pay lip service to value chain analysis but have neither a full grasp of the technical aspects of the framework, nor the inclination to work with the downstream (market end) of value chains. A value chain development exercise which focuses upon 'empowering' producers – but fails to find a viable marketing channel in which they can sell their output, is not an effective use of development funding. A value chain development exercise should start with a careful analysis of the existing – or potential new – markets, to understand their requirements and constraints. Our projects illustrate clearly that upgrading chains in the abstract (i.e. without understanding market requirements) is not only usually a waste of time but it can actually damage the livelihoods of the target group. Investing to improve the quality of output, for instance, only makes sense if the market will pay a quality premium.

Fifth, externally imposed institutional structures (as a vehicle to achieve horizontal coordination) are almost always less effective than working with imperfect, but already-established, structures. In the context of a two or three year value chain development exercise, developing a new institutional architecture can absorb a disproportionate amount of time and resource.

Another major point emerging from our synthesis is that no amount of goodwill, money or effort is sufficient to develop relationships that operate against business models. This reality was strongly illustrated by the case linking kalamansi farmers to a large fast-food chain, which was not implemented because remotely located kalamansi producers in the Philippines were uncompetitive, and the family-scale pangasius catfish farmers in Vietnam who failed to improve the structural terms of their contracts because their position as a 'buffer' supply to processors remained unchanged.

Finally, there is no reason why poor rural households should have to choose between social protection and enterprise development. Both are necessary to reduce poverty. The evidence suggests that social protection transfers can allow households to build up assets and benefit from tightening rural labour markets which are entirely consistent with upgrading activities in a specific value chain. This book demonstrates that value chain development can be an important tool to reduce poverty in poor households in rural areas across a rich diversity of products and places. It is not, however, the only tool available.

Notes

- 1 Coffee that is grown in shade, where natural vegetation has not been cleared for plantations.
- 2 Women were not getting paid by their husbands for their labour and so withdrew it. Through process upgrading and a different form of vertical (payment) relationship (the mama card) women gained control of their income and were willing to invest more time in the value chain, resulting in higher yield, productivity, revenue (both chain and household levels) and increased spend on food at household level in addition to reduced conflict and domestic violence. By addressing the unequal household gender relations, all household members have benefited.

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