Available online at www.sciencedirect.com
SCIENCE DIRECT®
Forest Policy and Economics xx (2005) xxx–xxx
Forest Policy and Economics
www.elsevier.com/locate/forpol

Entrepreneurship in value chains of non-timber forest products

Dirk Willem te Velde [a,*], Jonathan Rushton [b], Kathrin Schreckenberg [c], Elaine Marshall [d], Fabrice Edouard [e], Adrian Newton [f], Erik Arancibia [g]

[a] *Overseas Development Institute, 111 Westminster Bridge Road, London SE1 7JD, UK*
[b] *CEVEP, Bolivia*
[c] *Overseas Development Institute, UK*
[d] *UNEP-WCMC, UK*
[e] *Methodus, Mexico*
[f] *University of Bournemouth, UK*
[g] *Independent, Bolivia*

Abstract

Entrepreneurship and innovation by actors in the market for non-timber forest products (NTFPs) cannot be fully understood without a proper understanding of the position and behaviour of actors in the value chain of NTFPs. This paper places the market for NTFPs in the emerging literature on value chains which has, so far, lacked a detailed analysis of NTFPs. Our analysis reveals that certain key entrepreneurs are a driving force of success throughout several NTFP value chains in both Bolivia and Mexico. Where market information is scarce, e.g. where producers are distant from consumers, key entrepreneurs often govern entire value chains.

We argue that certain entrepreneurs are key to spreading success throughout the value chains of selected NTFPs offsetting potential negative consequences such as exploitation of more upstream actors (e.g. collectors and processors) in the value chains. Typical examples include the shopkeeper/organisation in Santa Cruz, Bolivia, who sources woven palm products from and supports several producers, and the entrepreneur in Mexico who established links between mushroom pickers in rural communities and brokers and consumers in Japan. Rather than criticising the monopolistic position of individuals, it is important to understand how the activity of key entrepreneurs can be supported in spreading successful commercialisation further and where necessary control negative impacts of their role. Our analysis indicates that policies to support commercialisation of the case study NTFPs would also need to be tailored to each value chain.

* Corresponding author.
E-mail address: dw.tevelde@odi.org.uk (D.W. te Velde).

1389-9341/$ - see front matter © 2005 Elsevier B.V. All rights reserved.
doi:10.1016/j.forpol.2005.06.010

1. Introduction

The paper presents an analysis of non-timber forest product (NTFP)[1] commercialisation using value chain analysis as used, e.g. by Gereffi (1999). The analysis is useful in determining the importance of key individuals in driving entrepreneurship and innovation in the market for NTFPs. Understanding these issues in turn is required for the design of appropriate policies and development interventions, which are often based on the assumption that poor and politically powerless extractors suffer from high levels of exploitation by intermediaries (Neumann and Hirsch, 2000).

Value chain analysis is a methodology which is different from other market chain analysis methodologies such as the chain analysis advanced by Porter (1985). Porter also analysed value chains, the activities within and around a firm, but focused on the analysis of the competitiveness of a particular firm.[2] Global value chain analysis does not focus on the competitiveness of a particular firm, but rather on how relations amongst firms are governed, i.e. on the efficiency of the chain as a whole.

Value chain analysis is emerging as a useful tool that has already led to new practical insights in the markets for textiles and clothing (Gereffi, 1999), fresh fruits and vegetables (Dolan et al., 1999), commodities such as tea and coffee, and wooden furniture in the case of the forestry sector (Kaplinsky et al., 2003). Recent developments in value chain analysis relate to describing a typology of governance in value chains, the factors that explain this typology (Gereffi et al., 2003) and the effects of certain governance forms.

There have to date been few attempts to use value chain analysis to obtain new information about what drives entrepreneurship in markets for NTFPs. This paper tries to fill this gap and is based on the result of a multidisciplinary, multi-year research project on successful commercialisation of NTFPs. It examines value chains some of which are international but do not enter into several countries (as global would imply), but the global value chain literature would apply.

The paper is divided into the following sections:

- Section 2 will discuss issues in global value chain (or GVC, as referred to in the theory) analysis, including a typology of governance of value chains.
- Section 3 discusses the research methods used.
- Section 4 summarises the value chain analysis for the 10 NTFPs studied and presents a more detailed analysis of three NTFPs that show clearly the importance of individual entrepreneurs in development of the entire value chain.
- Section 5 examines whether certain types of governance dominate the NTFP value chains we examined in our research.
- Section 6 examines more closely the relationship between governance and entrepreneurship in the three selected case studies.
- Section 7 presents the conclusions from the research.

2. Issues in global value chain analysis

Primary products such as NTFPs are linked to final consumers through so-called value chains. A value chain describes the full range of activities required to bring a product or service from conception, through the intermediary phases of production (transformation and producer services inputs), delivery to final consumers and final disposal after use (Kaplinsky, 2000). A value chain can be called global when it involves different stakeholders at different stages in different countries. A chain consists of a number of different actors each specialising in different functions, but linked through certain ways of cooperation in a network. A value chain can be distinguished from the ordinary market place by the degree to which firms in a chain cooperate, and value

[1] For the purposes of this paper, we define non-timber forest products as natural products (excluding animal or wood-based products) collected from more or less managed forest resources and, in some cases, with a proportion harvested from cultivated sources.

[2] Porter distinguishes between primary activities concerned with delivering a product (inbound logistics, operations, outbound logistics, marketing and sales, and services) and support activities (procurement, human resource management, technology development, and infrastructure). The costs or competitiveness of the firm depends on its ability to manage linkages between all of these activities.

chain analysis describes governance and power-relations in the chain, and how this affects success for various actors in a chain.

The analysis of global value chains has emerged over the past 5–10 years. Three issues in value chain analysis are of particular importance to the current paper.

- How useful are value chains as a tool for describing the commercialisation of NTFPs?
- What type of value chain governance should we expect for NTFPs?
- What is the link between governance and entrepreneurship in NTFP value chains?

2.1. Value chains as a descriptive tool

At the most basic level, value chain analysis can be seen as a methodological tool (Kaplinsky and Morris, 2001) for describing markets for NTFPs. The most common way is to draw a map of the different production blocks and the interrelationships amongst them. Another way is to compute profit margins or levels of success at each stage in the value chain. The paper will show that value chain analysis is an important methodology in describing markets for NTFPs and identifying key issues in policy and aid interventions. It can complement the multivariate analysis used by Ruiz Pérez and Byron (1999) and expanded upon by Ruiz Pérez et al. (2004) to describe the role of NTFPs in household livelihood strategies.

2.2. Governance of value chains

Governance of value chains relates to the *type* of coordination amongst dispersed but linked production systems. Gereffi (1999) introduced two different types of governance in value chains (which he called commodity chains). Buyers undertake coordination in "buyer-driven" value chains, while producers play a key role in "producer-driven" value chains. Buyer-driven chains refer to industries in which large retailers, marketers and branded manufacturers play the pivotal roles in setting up decentralised production networks. The specifications for the production networks are set by the large retailers or marketers that source the goods.

Gereffi et al. (2003) elaborate further and distinguish between five types of governance:

1. *Markets*. There are repeated transactions amongst different actors but the costs of switching to new actors are low.
2. *Modular value chains*. Suppliers make products to a customer's specifications. Suppliers take responsibility for competencies surrounding process technology and incur few transaction-specific investments.
3. *Relational value chains*. There is mutual dependence regulated through reputation, social and spatial proximity, family and ethnic ties, etc.
4. *Captive value chains*. Small suppliers depend on much larger buyers for their transactions and face significant switching costs and are, therefore, "captive". These networks are frequently characterised by a high degree of monitoring and control by the lead firm, creating dependence on the suppliers.
5. *Hierarchy*. This implies vertical integration with managerial control.

Gereffi et al. (2003) go on to argue that the following three factors explain which type of governance can be expected:

1. Complexity of inter-firm knowledge transfer required for transactions;
2. The extent to which this information and knowledge can be codified and transmitted efficiently without transaction specific investment; and
3. Capabilities of actual and potential suppliers to meet the requirements of the buyer.

Table 1 presents the probability that different forms of governance will be associated with the three factors described.

For instance, governance by ordinary market transactions will occur when product specifications are relatively simple, transactions are simple and easily codified and suppliers have the capability to make the relevant products with little input from buyers so that there is nothing specific about inter-firm relationships. At the other extreme, we would expect a hierarchical governance structure (in-house production) when product specifications are based on tacit knowledge and

t1.1 Table 1
t1.2 What type of governance is likely?

Governance	Complexity of inter-firm knowledge transfer	Ability/Potential of codification of knowledge	Capabilities of suppliers
t1.4 Markets	Low	High	High
t1.5 Modular value chains	High	High	High
t1.6 Relational value chains	High	Low	High
t1.7 Captive value chains	High	High	Low
t1.8 Hierarchy	High	Low	Low

t1.9 Source: Gereffi et al. (2003).

cannot be codified, while competent suppliers are absent.

In between these extremes, modular value chains arise when the specifications applying to more complex products are easily codified. Relational value chains arise when specific knowledge is exchanged, dealing with complex products and/or market information, and there is a low potential to codify product specifications, while lead firms are motivated to access suppliers with high capabilities. Finally, captive value chains can arise when it is easy to codify product specifications through detailed instructions in the context of complex products and where there are suppliers with lower capabilities. Low capability suppliers require instructions from lead firms, fostering dependence and the lock-in of suppliers, while other potential suppliers may be excluded from the benefits of the lead firm's efforts. Suppliers incur significant switching costs and are "captive" as inter-firm relationships contain specific transactional assets. In captive value chains, suppliers are often locked into simple tasks such as production according to specification, while lead firms are involved in more complex activities such as design, logistics, and process technology upgrading.

This framework was developed in the context of bicycles, apparel, fresh vegetables, and electronics (Gereffi et al., 2003). We will examine the value of the framework in the context of explaining governance in NTFP value chains. NTFPs are the subject of great current interest among conservation and development organisations (Ruiz Pérez and Arnold, 1996; Wollenberg and Ingles, 1998; Neumann and Hirsch, 2000). Not only do they contribute to improving many rural livelihoods but, where they are harvested in a sustainable manner, they may also contribute to conserving the resource (Belcher and Schreckenberg, 2003). As more research is carried out on individual NTFPs, there is growing awareness that the governance structures that dominate NTFP value chains may be highly inequitable, the best-known example being the debt peonage of the wild rubber harvesters in the Brazilian Amazon (Schwartzman, 1992). Intermediaries or entrepreneurs are undoubtedly the most maligned actors in the value chain (Schreckenberg, 2003). Yet some studies suggest that the role of 'middlemen' has been underestimated (Padoch, 1992) and that it is a mistake to try to bypass them (Corry, 1993, cited in Neumann and Hirsch, 2000). More appropriate interventions in NTFP commercialisation require a better understanding of NTFP value chain governance, particularly relating to the roles of intermediaries and their relationships with other actors (Humphrey, 2000; Maynard et al., 2001).

2.3. Linking governance to success and entrepreneurship in value chains

Humphrey and Schmitz (2001) found that governance of global value chains matters. For instance, if global value chains are governed by a few lead firms or entrepreneurs, market access for suppliers is dependent not only on the efficiency of the supply capabilities, but also on how suppliers fit into the strategies of these lead firms. The type of governance also affects the distribution of gains. When lead firms govern a chain they are able to determine where high return activities (often intangible activities such as marketing and R&D) and low-return activities are located along the chain.

Value chain governance can contribute to the success of a value chain by influencing how production capabilities are upgraded. Value chain analysis considers four types of upgrading (Kaplinsky and Morris, 2001). Process upgrading is associated with increases in the efficiency of production processes within or between stages of the value chain. Product upgrading leads to improvement and introduction of products. Functional upgrading changes the mix of activities and functions conducted within the value chain or firm (for example, taking responsibility for marketing

and design, improving transactions, and optimal redistribution of activities). Finally, chain upgrading involves moving to a new value chain.

Taking the captive value chain as one example, there are both opportunities and barriers to achieving success for suppliers by upgrading in such chains. A classic example (outside NTFP markets) where upgrading helped to raise the level of entrepreneurship of suppliers is the textile and clothing value chain present in several Asian countries (Gereffi, 1999). East Asian countries upgraded production processes and functions (from simple assembly to marketing and design) in the context of 'triangle manufacturing', whereby developed country buyers place orders with East Asian countries, who in turn became successful entrepreneurs and outsourced parts of the production to low-wage countries (China, Indonesia, Vietnam). East Asian countries are now much more involved in design and other downstream functions.

However, other countries (e.g. Central American countries) are locked into the upstream part of the value chain with few incentives (from lead firms lower down the chain) to upgrade. UNIDO (2002) discusses the global value chain of wooden furniture in South Africa where pine furniture has faced increasing price competition putting pressures on export prices. Products were also considered of low quality and poor delivery reliability. The global buyer in this captive value chain did not consider increasing the efficiency of this manufacturing stage and switched to more competitive East Asian suppliers, while South Africa had to focus on a different value chain using environmentally friendly wood (and upgraded in that way).

Understanding the type of governance is important, therefore, when developing policy and directing technical assistance. Policy initiatives may affect a number of firms more intensively when they are closely related. Technical assistance programmes can be made more efficient by targeting lead firms to the benefit of suppliers upstream. Where there are a small number of lead firms or individuals that control a chain, there is a need for monitoring and perhaps regulation to ensure that such firms or individuals are not abusing their position of power within a chain. In many developing countries, where NTFPs are important to poor families, such monitoring and regulation policies are rarely well implemented.

3. Methods

The project investigated the commercialisation of NTFPs in Bolivia and Mexico. Data collection and analysis methods were developed within a framework provided by six research hypotheses. The first four examined the impact of NTFP commercialisation on the poorest producers, processors and traders; women; the resource; and access to the resource. The two hypotheses of most relevance to this paper were:

- The successful commercialisation of an NTFP depends critically on the existence of an accessible market, potential demand, and the access by producers, processors and traders to market information.
- The success of poor producers, collectors, processors and traders in NTFP commercialisation depends critically on the number of suppliers and demanders, capacity to exert market power, barriers to entry, and the degree of vertical and horizontal integration.

In each country the policies relating to NTFP commercialisation were reviewed. Ten products were selected for detailed study from a larger initial group (see Marshall et al., 2003 for full list) based on the criteria that the NTFP was:

- traded beyond the village of collection;
- of interest to the project's partner NGOs (all of which were development NGOs with a secondary interest in research);
- not a fresh fruit; and
- traded from two similar communities via different marketing networks.

For each product a structured 'market' report was written based on a combination of secondary data and key informant interviews. These reports described the main market chains for the product, beginning in the study communities and tracking information as far downstream to the final consumer as possible. As some of the products were marketed in very different ways (e.g. fresh mushrooms for local consumption, dried mushrooms for the national market and fresh mushrooms for export),

t2.1 Table 2
t2.2 Some key attributes of case study value chains

t2.3 Location	Product	Final consumer	Dominance of individuals in the value chain	Apparent effect of the dominance[a]	Months traded
t2.4 San Antonio	Fresh mushrooms	Local	A few local traders		2
t2.5 Cuajimoloyas Oaxaca, Mexico	Dried mushrooms	National	Community enterprise	Positive for the community	2
t2.6 Santa Martha Latuvi, Oaxaca, Mexico	Fresh matsutake mushrooms	International (Japan)	Entrepreneur	See later	2
t2.7 Arroyo Blanco and Agua Pescadito, Oaxaca, Mexico	Pita fibre sold to artisans for embroidering belts	National and International (North America)	Yes, President of the local producers' association	Positive in that this individual has stimulated and maintained new markets	2
t2.8 La Esperanza and Topiltepec, Guerrero, Mexico	Soyate palm fibres woven into hats	Local, national (international through tourists)	No		12
t2.9 Monte Tinta and Nueva Santa Flor, Oaxaca, Mexico	Camedora palm fronds sold as floral greens	International (North America)	Entrepreneur	See later	5.8
t2.10 Yagavila and Tiltepec, Oaxaca, Mexico	Tepejilote palm inflorescences sold as traditional food	Local	No		3.7
t2.11 La Esperanza and Topiltepec Guerrero, Mexico	Maguey 'heads' distilled to produce mezcal (traditional alcohol)	Local, national and international	Broad involvement in collection of maguey, but only one family distils serious quantities	Not enough information to comment	7
t2.12 Carmen del Emero, La Paz, Bolivia	Organic wild cocoa	National and some international	A small number of traders dominate the purchase of cocoa beans	Potential negative impact as these traders limit access to markets with better prices	5.2
t2.13 San Silvestre, La Paz, Bolivia	Organic wild cocoa paste	Local and some national	No		5.2
t2.14 Tomachi, La Paz, Bolivia	Natural rubber latex for specialised La Paz workshops	National	Dominated by concessionaires from outside the community	Concentration of concessions appears to have encouraged investment in processing facilities. But has increased costs of entry to the chain	6.3
t2.15 Santa Rosa Challana, La Paz, Bolivia	Rubber used to waterporoof bags and ponchos	Local miners	No		11.3
t2.16 Pucasucho, La Paz, Bolivia	Incense and Copal	Copal in Mexico and incense to Argentina	Dominated by an oligopoly	Negative impact on collector prices and on the environment by not passing on price differentials	12
t2.17 Potrero Rafael and Candelaria, Santa Cruz, Bolivia	Jipi Japa palm fibre woven into tourist artefacts	National (international through tourists)	Entrepreneur	See later	11.5
t2.18 Carmen Surutú, Santa Cruz, Bolivia	Jipi Japa palm fibre woven into hats	Local	No		10

t2.19 Source: project research.

a total of 15 distinct value chains were examined (see Table 2).

For each of the 18 communities in the study a structured 'community' report was also written, based on secondary information and data collected by partner NGOs using participatory techniques (such as timelines, resource mapping, wealth-ranking, Venn diagrams) and key informant interviews. The data collected covered a wide range of topics necessary for the understanding of current patterns of resource use and management, with a focus on the collection, cultivation, processing and marketing of the case study NTFP. Both the 'market' and 'community' reports were written by partner NGOs over a 2-year period and finalised in 2003 after much interaction with the project team, interim data analysis and supplementary data collection.

A formal household questionnaire was designed to collect data about the household, its use of the NTFP including any costs and benefits incurred, and the interviewee's perception of the household's success and the contribution of NTFPs to their livelihood strategy. During 2002/2003 the project's partner NGOs applied the questionnaire to as many of the households involved in NTFP activities in each community as agreed to participate. Where more than 20 households were involved in NTFP activities, around 20 households were sampled on the basis of participatory wealth-ranking. In one community (Nueva Santa Flor), trade had ceased as a fungal disease had decimated the resource so no interviews were carried out. In the remaining 17 communities, a total of 289 households were interviewed. A further 117 control households not involved in the NTFP activities were also interviewed. In addition 46 national traders were interviewed using a slightly modified version of the questionnaire. In practice this meant that detailed information was not obtainable for elements of the value chain that extended beyond the national boundaries.

Data analysis included comparative text analysis of the community reports, statistical representation and regression analysis of the household data, and construction of value chains (on the basis of the household data and the market reports) for each product. A detailed presentation of the data collection and analysis methodology is provided in Schreckenberg et al. (2005).

4. Description of NTFP value chains

Table 2 provides an overview of the NTFPs included in our research, describing some of the more salient points for each value chain. Key factors that vary between value chains include the distance between producer and consumer, the presence of dominant individuals in the value chain and the number of months the product is traded. The latter also has an effect on the total value added (see te Velde et al., 2004) which varies greatly between different value chains as well as between households in one community trading the same product. For further quantitative information, see Rushton et al. (2004) and te Velde et al. (2004).

4.1. Value chain maps

NTFPs differ markedly in ease of collection, required technology and skills for processing, strength of demand, etc. So it is not easy to group them together. There is insufficient space to present all our NTFP value chain maps, so we have focussed on three products: mushrooms, Jipi Japa palm and Camedora palm (for other products see Rushton et al., 2004). These products have been chosen, because they best illustrate the important influences of entrepreneurs in the development of NTFP value chains. There is no standard approach to mapping value chains. In the maps presented here (1 Charts 2 Charts 3) the solid boxes indicate individuals, communities, companies or institutions and the dotted lines indicate an alliance. The arrows represent the flow of products in exchange for money or goods hence the name value chain. Going beyond what is usually presented in value chain maps, these charts show not only the types of activities carried out by different actors (collectors, processors or traders), but also provide information on where each activity takes place.

4.2. Mushrooms (Oaxaca, Mexico)

Chart 1 describes the main value chains for four types of mushrooms all collected from the wild in three communities in the state of Oaxaca, Mexico. San Antonio Cuajimoloyas collects three types of mushrooms. Some of these enter a short fresh mushroom

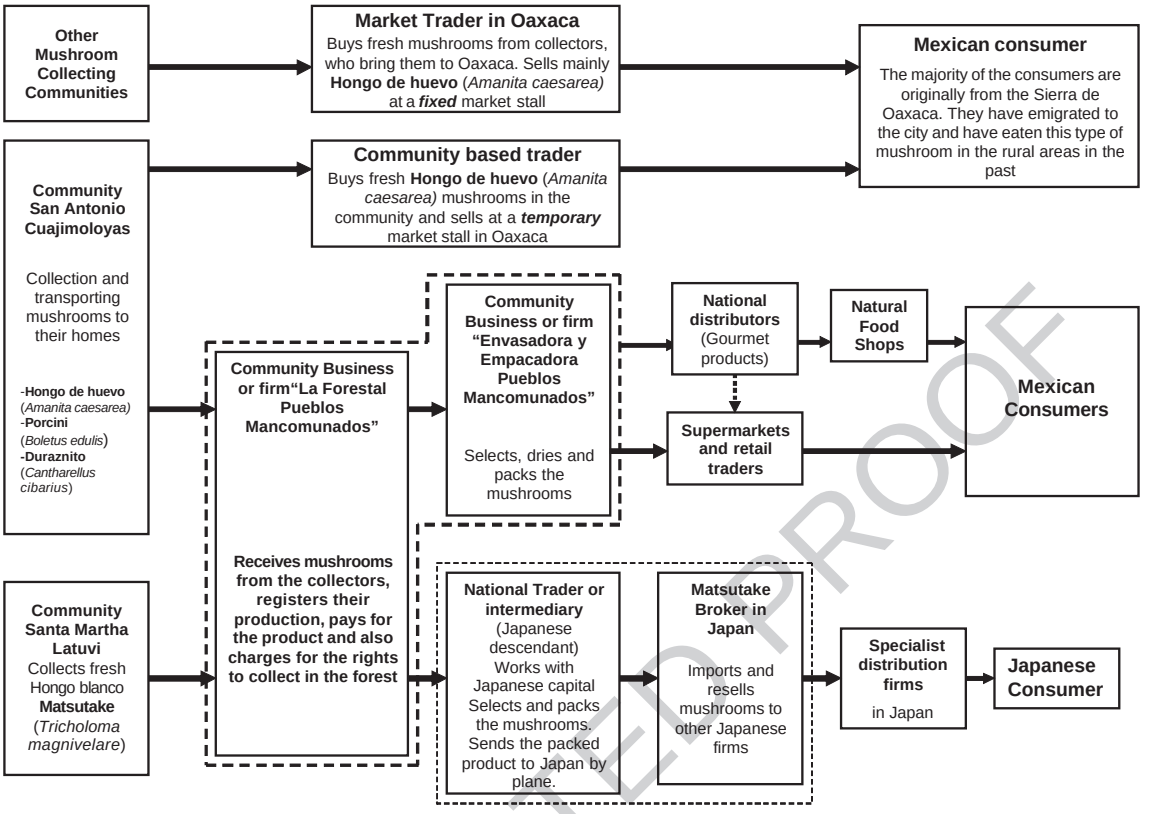

Chart 1. Value chain maps for mushrooms collected in communities close to Oaxaca, Mexico. Source: Rushton et al. (2004).

chain ending with local consumers in Oaxaca, while the remainder are dried and enter longer national chains ending with consumers in various large Mexican cities. The community of Santa Martha Latuvi collects only Matsutake mushrooms, which enter the value chain that ends with Japanese consumers in Chart 1. This value chain is "global" and was initiated by a Korean entrepreneur based in Mexico who had an alliance with two Japanese firms, which provided him with capital to collect, purchase, pack and send Matsutake mushrooms to Japan. This entrepreneur was a critical influence in the development of this value chain but has since retired, being replaced by a Mexican of Japanese descent.

4.3. Jipi Japa palm (Santa Cruz region, Bolivia)

Jipi Japa is a palm (*Carludovica palmata*), the leaves of which are woven into products such as hats, placemats and bags. During the study of the commercialisation of Jipi Japa products two value chains were identified (see Chart 2). The value chain that links collectors and processors of Jipi Japa from the community El Carmen Surutú with consumers through local shops is the least important in terms of value. The other value chain is dominated by one company, which buys products from 'associate' weavers (all women) in the communities of Potrero San Rafael and Candelaria. This company then sells these products through shops that can reach consumers in various locations including tourists in international airports. The company was established by a dynamic woman who has a strong interest in supporting indigenous ethnic groups, and has played a crucial role in the development of this value chain.

4.4. Camedora palm (Monte Tinta, Mexico)

Camedora palm (*Chamaedorea* spp.) fronds (Chart 3) are a floral product used by European

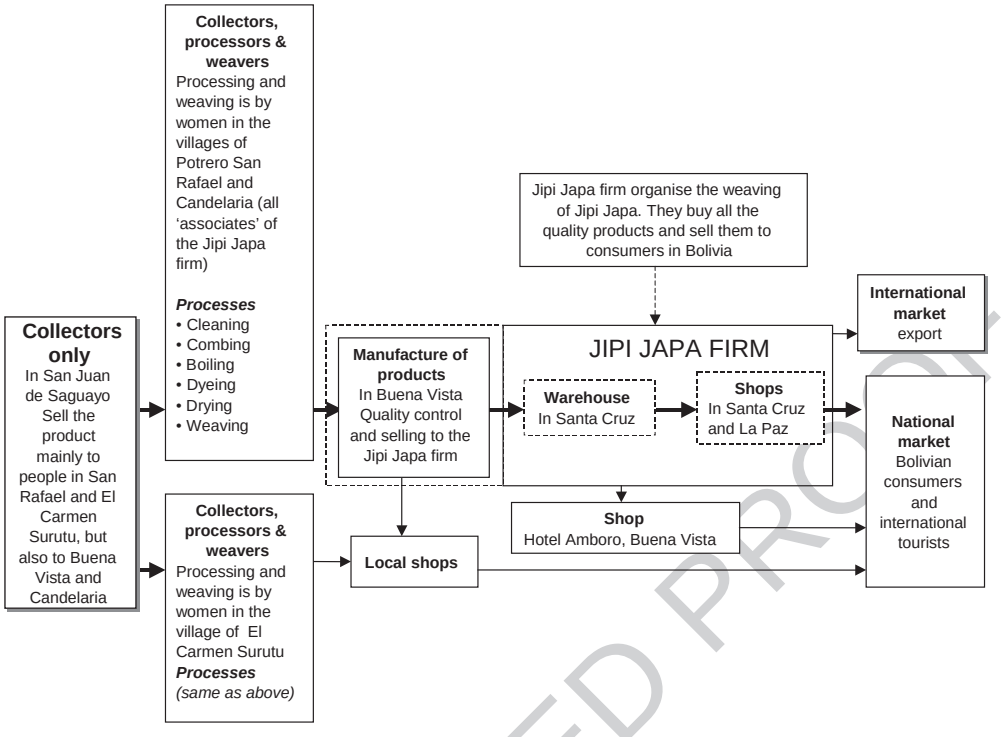

Chart 2. Value chains for Jipi Japa palm (*Carludovica palmate*), Bolivia. Source: Rushton et al. (2004).

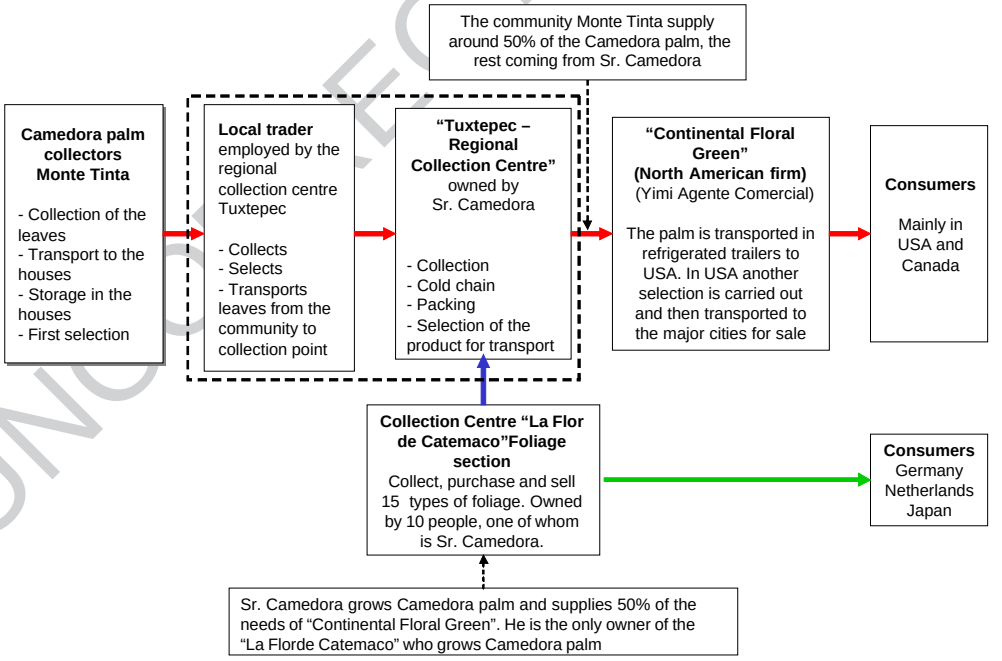

Chart 3. Value chains of Camedora palm (*Chamaedorea* spp.). Source: Rushton et al. (2004).

t3.1 Table 3
t3.2 Profits for Matsutake mushrooms (US$, annual)

	Collectors	Community firm	Mexican exporter
t3.4 Total	193	7294	39,000
t3.5 Per kg	12.9	4.3	25.5

t3.6 Source: Rushton et al. (2004).

and North American consumers. The value chain in Mexico is dominated by one person, who is a representative of a North American importing company and owner of a regional collection centre responsible for collecting, selecting and exporting. In addition to purchasing fronds from collectors of the wild palm in the Monte Tinta community, the one-man company cultivates and supplies half of the required palm. This man has been important in developing other markets for this NTFP in Europe and Japan and his entrepreneurial activities have been key in the general development of the Camedora palm value chain in Mexico.

4.5. Profits along the chain

An alternative way to present a value chain is by analysing the distribution of gains along the chain. Without the objective of being representative or complete for all NTFPs analysed, we computed profits (revenues-costs) for three different actors in the Matsutake mushroom chain as one example. Information for collectors was obtained from the household questionnaires, while data for the community firm and entrepreneur came from discussions with key informants. Table 3 shows that collectors, the community firm and the exporter earn very different profits. It was not possible to make estimates of the profits for Jipi Japa and Camedora palm value chains. In the case of Jipi Japa, the processing of the product into a large range of differently valued items was such that calculating a unit value of profit was not possible. In both cases the strong position in the value chain of one trader who, as pointed out by Padoch (1992) in her seminal study of NTFP marketing in the Peruvian Amazon, are notoriously difficult to interview, made the collection of data to develop enterprise budgets extremely difficult.

5. Governance of NTFP value chains

This section examines in more detail the governance type of the different NTFP value chains and the extent to which they are likely or predicted to be governed by key entrepreneurs downstream from the producer. Section 2 argued that three factors are

Table 4 t4.1
Knowledge characteristics and governance types of case study value chains t4.2

Value chain	Complexity of interfirm knowledge transfer	Potential to codify knowledge	Capabilities of suppliers	Market governance type[a]
Fresh local mushrooms	Low	High	High	Market
Dried mushrooms	Low	High	High	Market
Fresh exported mushrooms	High	High	Low	Captive
Pita	Low	High	High	Market
Soyate palm	Low	High	High	Market
Camedora palm	High	High	Low	Captive
Tepejilote palm	Low	High	High	Market
Maguey[b]	High	Low	High	Relational
	High	Low	Low	Hierarchy
Organic wild cocoa	High	Low	High	Relational
Organic cocoa paste	Low	High	High	Market
Natural rubber latex[c]	Low	High	High	Market
	High	Low	Low	Hierarchy
Rubberised products	Low	High	High	Market
Incense and copal	Low	High	Low	??[d]
Jipi Japa palm (tourist artefacts)	High	High	Low	Captive
Jipi Japa palm (hats)	Low	High	High	Market

[a] As predicted by Gereffi et al. (2003).
[b] The maguey value chain is relational at the collector and community-based distilling level; but beyond this it becomes hierarchical in nature.
[c] The latex rubber chain begins as a 'market' type with many labourers available for hire by many rubber concessionaires. Once the latex is collected and moved to the La Paz workshops, the chain becomes more hierarchical.
[d] Gereffi has no model for this combination of knowledge transfer characteristics.

important in explaining the type of governance of value chains:

- Complexity of inter-firm information and knowledge transfer.
- Potential of codifying information without incurring transaction specific costs.
- Capabilities of suppliers.

Below we explain how we interpreted these factors for the case study value chains, basing our decisions on a combination of quantitative and qualitative data collected for the project. Table 4 then summarises the knowledge transfer characteristics and governance types of all the value chains.

5.1. Complexity of inter-firm information

While it would seem that NTFPs are fairly simple products (although clearly that is not the case for some of the products we researched, e.g. Jipi Japa woven tourist artefacts), this misses an important point. The complexity of products in the eyes of local collectors and processors is not necessarily in the product itself, but in the information required to successfully market the NTFPs, i.e. complexity of inter-firm relationships. Market information is often not readily available to local collectors and they have few contacts further downstream (e.g. how can local collectors establish links with Japanese or American markets?). Hence, selling NTFP products (to actors/consumers downstream) is extremely complex for local collectors and processors.

Evidence that this is so is provided by Chart 4, based on analysis of household questionnaires, which shows that market contacts and market information were considered to be the most important barriers to households selling NTFPs. Market knowledge and contacts are important barriers for most products but detailed project data show that this is particularly so for Camedora palm and Matsutake mushrooms (in Santa Maria Latuvi), so that the score in the first column of Table 4 for most of these products is "high".

Another type of complexity is found in the cocoa and maguey market chains, both of which have very complex social webs close to the production end of the chain. In the cocoa value chain, traders have

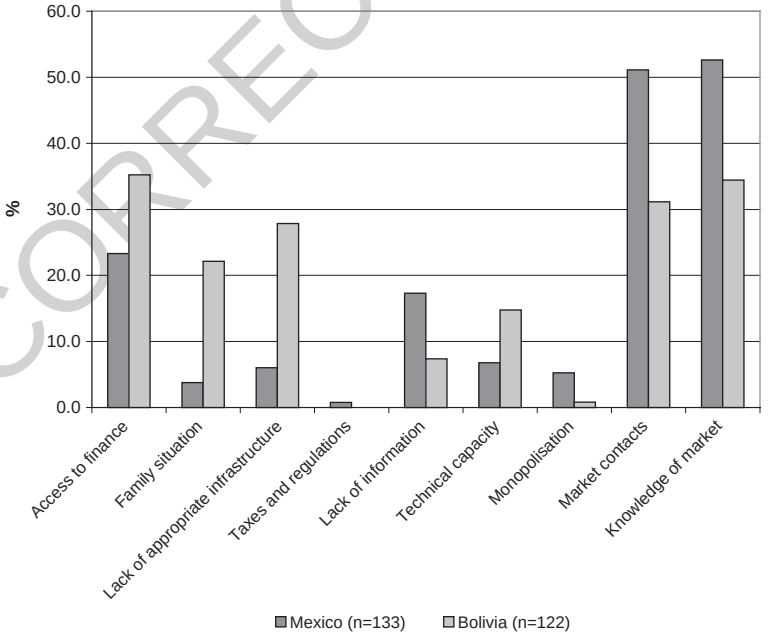

Chart 4. Barriers to selling NTFPs, % of NTFP households answering yes. Source: te Velde et al. (2004).

intricate relationships with community members, maintaining good relations by being godparents to the children of the community in return for having the right to purchase quality cocoa beans and dried fish. In the maguey value chain, social networks help to determine access to the resource, and mezcaleros (distillers) keep their labour happy with a constant supply of mezcal (in lieu of wages), which is further exchanged as gifts within the community.

A more conventional form of complexity is found in the Jipi Japa palm case, where production of the very varied range of tourist items requires women to be highly skilled in dying and weaving techniques. Finally, in the latex rubber case, while the knowledge required to collect the latex itself is fairly simple, the latex is then transported by the owners to La Paz workshops for processing into a range of highly specialist medical and sporting goods. For the remaining products in Table 4, the complexity of interfirm knowledge transfer is low.

5.2. Potential of codifying inter-firm information

When the lead firm/entrepreneur has acquired the market information it is relatively straightforward to communicate this to actors upstream. For instance, the Jipi Japa firm knows what it sells and communicates that it wants to purchase this specific range of Jipi Japa products from its suppliers. Nevertheless, given the low capacity of suppliers (see below), the firm has had to invest considerable resources in training to obtain the required quality and in establishing a system of payments to reward that quality. In the case of Camedora palm, after the importing company had established the links between the American and Mexican markets it was straightforward to codify the required amount of products to actors upstream in the value chain. The information for Matsutake mushrooms is slightly more complex, but is more easily transmitted to the collectors than in the Jipi Japa case because the mushrooms are purchased on the basis of weight and quality, with no need for processing. It is only in the 'relational' cases mentioned above that the codification of social norms and cultural conventions are difficult to codify in such a way that an outsider to the community could easily understand them. So in most cases the second column in Table 4 is high.

5.3. Capabilities of suppliers

Gereffi et al. (2003) provide no advice on how to assess the 'capability' of suppliers. In the case of the NTFP value chains studied, the key factors determining whether or not a supplier can meet the requirements of a buyer are their access to the resource, financial capacity and skills base. In some cases, being a member of a producer organisation can help to overcome one or more of these constraints. However, where discussions with communities and key informants suggested that one or more of these remained a serious constraint, the NTFP was graded 'low' in the third column of Table 4.

With respect to resource access, many of the NTFPs were originally collected from communal land to which everybody has access, but have now made the shift to being either collected from, or planted on, plots assigned for individual use (as predicted by Homma, 1996). This accounts for the 'low' rating of incense, for example, where only long-standing members of the community have access to dedicated collecting areas. Furthermore, owners require financial capital to cover the costs of a donkey, hired labour and food for the several-day collecting trips.

Financial capacity is lacking in all the case study communities, which are rural and marginalised in terms of access to markets, information and alternative income-generating activities. Within the communities, NTFP producers are usually amongst the poorer segments as categorised in participatory wealth-ranking exercises that reflected a combination of factors such as people's access to land, remittances, labour and education. In those communities in which only some households were involved in NTFP activities, these households were disproportionately concentrated in the bottom well-being ranking in five communities, amongst the middle ranking in two communities, and in the top ranking for only two communities. One of these was the incense community in which, as described above, only people with some capital can afford the collecting trips. The other was one of the pita communities in which pita is almost entirely domesticated, predominantly by people with the right kind of land and sufficient funds to cover the costs of establishing plantations.

Overall, a third of NTFP households felt that they could not meet their basic needs over the course of a year. In Mexico, NTFP households generally felt themselves to be less successful than other households in their communities with only 6% feeling more successful than their peers. In the Bolivian communities there were few if any alternative income-generating activities and most households relied on the NTFP activity as their only source of cash income. Access to credit is rare in all the case study communities and the provision of credit is one of the most appreciated aspects of the pita producers' cooperative and the Jipi Japa weavers' association.

A deficient skills base can also be a serious constraint for suppliers. Male heads of NTFP collecting households tend to have less years of formal education compared to non-NTFP households. Many households are engaged in NTFP activities out of necessity, although households argue that some do play a very useful gap-filling role in their livelihood strategies (te Velde et al., 2004). This would indicate that very few households can become entrepreneurs capable of playing a more important role (e.g. marketing NTFPs to key markets) in NTFP value chains. The reason is that while there are many opportunities for families to be involved in NTFP collection, which require few capital inputs, trading NTFPs tends to have low returns per unit and reasonable incomes can usually only be achieved on the basis of high volumes traded, for which capital to buy, store and transport products is needed (see Chart 4 on capital as a barrier).

In effect, the third column in Table 4 essentially splits the case study products into those with lower or higher thresholds of entry (Arnold and Ruiz Pérez, 1996). For the former group the only 'capability' a supplier needs, in addition to resource access, is reasonably good health. The second group require either higher levels of skill (Jipi Japa palm tourist artefacts, the downstream levels of the latex rubber chain and the fresh exported mushrooms) and/or up-front capital (Camedora palm, incense and copal, and the downstream level of the maguey value chain). Pita is a slight exception—although up-front capital is required to establish plantations, the capability of suppliers is generally high as they have relatively easy access to loans for this purpose from the local pita cooperative.

5.4. Governance types

In conclusion, the analysis of the local collectors and traders for our case study NTFP value chains suggests we can expect NTFPs to fall predominantly into three of the governance types described by Gereffi et al. (2003):

- 'Market' types: these include all the products that are only sold to the local market, often with relatively numerous suppliers and consumers, as well as those with a fairly simple domestic market. For pita and dried mushrooms, the more distant markets are made accessible by the existence of a good community-based producer association.
- 'Relational' types: these are cases (cocoa beans and maguey) in which cultural ties and family networks play a key role in ensuring the success of commercialisation efforts.
- 'Captive' types: these include the three entrepreneur dominated chains (Jipi Japa, tourist artefacts), exported mushrooms and Camedora palm.

The critical factor in determining the governance type would appear to be the physical distance of the consumer from the NTFP collector and the need for specialised skills in processing, marketing and presentation of the product.

The predictions for governance in value chains based on the Gereffi typology relate very well to the type of governance which occurs in practice. For instance, Jipi Japa palm tourist items, exported mushrooms and Camedora palm are characterised by a "high" complexity of inter-firm information for which there exists a "high" potential to codify, while the capabilities of the local communities are considered "low", so that the Gereffi typology would predict a "captive value chain" type of governance. This was indeed what we found when we described these chains in Section 4.

In spite of this concurrence between predicted and actual type of governance, the Gereffi et al. (2003) typology was not always easy to apply to the NTFP cases. It is difficult to apply, for example, where governance changes as you progress along the value chain. This is the case for both maguey and latex rubber, which become "hierarchical" as they approach the consumer. The typology is also difficult to apply

where the distinction between "firms" is not clear, as frequently occurs in NTFPs that are first traded in the informal sector and only move into the formal sector when they cross national boundaries. It may also need to be applied in a more differentiated manner if it is to help distinguish the different forms of governance that may be found in producer level organisations (which are of particular interest to policy-makers). Here we came across three very different types, all of which, however, provided benefits to producers and played an important role in supporting the viability of the value chain: (i) in the pita case the producer cooperative is run by a pita producer and members have a say in the management; (ii) in the Jipi Japa palm case, the association is an institution set up by the trading company to assure its supply and giving members no say in decision-making; (iii) in the dried and exported mushroom cases, the community enterprise is run by a hired business manager who can be fired by the community. Finally it should be noted that governance changes over time (e.g. in the pita case, dominance by a strong individual has given way to a much more open market) and a different type may apply in the early and later stages of value chain establishment.

6. Entrepreneurship and upgrading in value chains

As discussed above, captive value chains were associated with significant upgrading of East Asian suppliers of textiles and garments, while certain parts of the furniture value chain in South Africa were locked out of the captive value chain. This section discusses whether entrepreneurship and upgrading was evident in captive value chains of NTFPs.

We find that entrepreneurship was indeed important in the 'captive' value chains (Jipi Japa palm tourist artefacts, Camedora palm and exported Matsutake mushrooms). An important question then is whether such captive value chains should be prevented or controlled, i.e. do these entrepreneurs exploit collectors and processors upstream, particularly since given the characteristics of complexity, codification and capabilities we would expect a captive value chain anyway?

Our research suggests that these entrepreneurs are actually key actors in driving the whole of the chain (as did the lead firms in the textiles and garments value chain in East Asia). Without them, the value chain might either not have existed or entrepreneurship throughout the chain would be less advanced, although in some instances there is evidence of a "lock-in" situation where suppliers are locked into certain production functions while in other instances potential suppliers are simply excluded from more successful value chains (as in the case of pine furniture in South Africa). It is noted that these value chains are relatively new (all less than 10 years) and the concern that these individuals are abusing their powerful position, or may limit future development of the chain, is best examined product by product.

6.1. Jipi Japa

In the case of Jipi Japa palm, the dominant firm is much more than a buyer and seller. It has a quality control system, markets the products to nationals and tourists, offers training to local weavers and provides several social functions such as funds for housing development. This firm maintains a high-trust relationship with local suppliers (the Jipi Japa weavers), who have benefited through an improvement in their production processes and opportunities to sell their products. However, there are a few negative aspects of this "captive" value chain. The Jipi Japa firm demands only products that fit into its shop (small, colourful and relatively cheap Jipi Japa products perform an important function of attracting tourists into the shop where they may go on to purchase other much higher value artisanal products) and suppliers are not encouraged to innovate and make higher value added products since the firm lacks the marketing channels to sell these products. The "switching costs" to alternative buyers by the Jipi Japa processors would be high as there are few about and none that could provide the same level of non-income benefits (health care, training, status, access to credit) that the association established by the Jipi Japa firm provides. Hence, while the Jipi Japa firm has been essential for *process* upgrading of existing products in the upstream part of the value chain, it also stifles *functional* upgrading upstream (i.e. marketing of higher value added products). Further there is *exclusion*. The weavers in one community, who are from a different ethnic

group, were reported to be excluded from this value chain and the associated marketing channels. This community sells hats to local people, which is a less attractive market.

6.2. Matsutake mushrooms

This case is simple: without the key entrepreneurs there would be no contacts between Mexico and Japan and there would be no niche market for Mexican Matsutake mushrooms. The entrepreneurs have therefore been responsible for *chain* upgrading. Actors upstream, including local collectors, make a welcome profit (Table 3). The question of whether the traders are making "super" profits is difficult to assess as the time taken to establish a position in the market and the risks incurred (e.g. advancing the costs of air-freight to Japan) were not available. However, during the two-year study period a trader entered and left the market, which indicates that even with high estimated profits at the national trader level, this is not an easy market to capture or maintain.

6.3. Camedora palm

In the Camedora palm value chain a key entrepreneur established the link between Mexico and the North American market. This link and the position of this entrepreneur within the chain are the result of his many years of work in the sector as well as training and financial support received from his American buyer. These have also enabled him to carry out *process* upgrading, including the production of better and more consistent quality fronds through domestication. This captive value chain also appears to have negative aspects: because the entrepreneur himself cultivates half the Camedora palm required, i.e. he is both a buyer and supplier. To some extent, therefore, he can exert his market power over the other suppliers. The prices paid to the collectors are so low that they only engage in the activity for 6 months of the year, whereas his cultivated supplies sustain the value chain for the rest of the year. Some evidence for the dissatisfaction this causes can be seen in the fact that all households engaged in collecting Camedora palm wanted to sell their product to the part of the chain above this entrepreneur.

7. Discussion and conclusions

The paper has examined the role of entrepreneurship in NTFP commercialisation through the lens of (global) value chains, which is novel in terms of its application to NTFPs. Value chain analysis has emerged as a new way of understanding markets for commodities. We have applied the analysis successfully to the market for NTFPs by (1) drawing value chain maps; (2) providing an example of distribution of profits along the chain; (3) predicting for NTFP value chains what type of governance we can expect in theory and what type has occurred in practice; and (4) discussing the effects of the type of governance for entrepreneurship in the value chain for three NTFPs. However, there are limits to some aspects of this methodology, particularly quantitative analysis, where the collection of data to develop profit distributions is made difficult by the sensitive nature of the information. To be effective as a methodology that helps to direct policy these data collection issues need to be overcome as one of the critical issues in the chains analysed is the powerful position of key individuals and firms.

Our analysis of NTFP commercialisation has shown that entrepreneurs are important in the development of innovative marketing of NTFPs and are often key to spreading success throughout the value chain. Typical examples include the company in Santa Cruz which supports many producers by moving their woven palm products into the tourist market, and the entrepreneur in Mexico who established links between mushroom pickers in rural communities and brokers and consumers in Japan. Entrepreneurship appears to be particularly critical where markets and consumers are physically distant from collectors.

Based on these conclusions, we suggest that it can be shortsighted to criticise the monopolistic position of such individuals. Instead, thought should be given to how they might be supported in order to increase the positive impacts of their innovation and entrepreneurship within the value chains. At the same time, it would be unwise not to consider ways of limiting the potential negative aspects of their powerful positions within these chains. As the analysis has shown, the negative effects differ from case to case. Therefore projects to support the com-

mercialisation of specific NTFPs need to be designed to take into account the activities and attitudes of the key individuals. The experience of the project's partners suggests that some local organisation now have the capacity to provide the necessary flexible and differentiated support on a case-by-case basis. More generally, producer communities can be empowered to understand (and monitor) the role of downstream intermediaries and improve their bargaining position through the provision of organisational support and improved market information systems. Better education and access to credit (especially for NTFP-based enterprises), combined with a simpler and more transparent system of regulations (for those products for which collection and/or various export permits are required) can help existing entrepreneurs as well as opening up the playing field for new actors to take on the entrepreneurial role.

Acknowledgements

The authors thank the communities and traders who participated in this work. Names of individuals have been changed to preserve their anonymity. We also thank two anonymous reviewers for their suggested improvements to the paper. This publication is an output from a research project funded by the United Kingdom Department for International Development (DFID) for the benefit of developing countries. The views expressed are not necessarily those of DFID. Project R7925 Forestry Research Programme.

References

Arnold, J.E.M., Ruiz Pérez, M., 1996. Framing the issues relating to non-timber forest products research. In: Ruiz Pérez, M., Arnold, J.E.M. (Eds.), Current Issues in Non-Timber Forest Products Research. Center for International Forestry Research, Bogor, Indonesia, pp. 1–18.

Belcher, B., Schreckenberg, K., 2003. NTFP commercialisation: a reality check. Paper presented to NWFP side event, World Forestry Congress, Quebec, 20 September 2003.

Corry, S., 1993. 'Harvest Moonshine' Taking You for a Ride. Survival International, London.

Dolan, C., Humphrey, J., Harris-Pascal, C., 1999. Horticulture commodity chains: the impact of the UK market on the African fresh vegetable industry. IDS Working Paper 96.

Gereffi, G., 1999. International trade and industrial upgrading in the apparel commodity chain. Journal of International Economics 28, 37–70.

Gereffi, G., Humphrey, J., Sturgeon, T., 2003. The governance of global value chains. Forthcoming in Review of International Political Economy, available from http://www.ids.ac.uk/globalvaluechains/publications/govgvcsfinal.pdf.

Homma, A.K.O., 1996. Modernisation and technological dualism in the extractive economy in Amazonia. In: Ruiz Pérez, M., Arnold, J.E.M. (Eds.), Current Issues in Non-Timber Forest Products Research. Center for International Forestry Research, Bogor, Indonesia, pp. 59–82.

Humphrey, L., 2000. Which way to market? Exploring opportunities for marginalized producers in developing countries to supply mainstream commercial companies in the UK. Traidcraft Policy Unit Report Series No. 1. Traidcraft, UK.

Humphrey, J., Schmitz, H., 2001. Governance in global value chains. IDS Bulletin 32 http://www.ids.ac.uk/globalvaluechains/publications/HumphreySchmitz.pdf.

Kaplinsky, R., 2000. Spreading the gains from globalisation: what can be learned from value chain analysis. IDS Working Paper 110.

Kaplinsky, R., Morris, M., 2001. A Handbook for Value Chain Research. Report Prepared for IDRC.

Kaplinsky, R., Memedovic, O., Morris, M., Readman, J., 2003. The Global Wood Furniture value chain: what prospects for upgrading by developing countries? UNIDO Sectoral Studies Series. www.unido.org.

Marshall, E., Newton, A.C., Schreckenberg, K., 2003. Commercialising non-timber forest products: first steps in analysing the factors influencing success. International Forestry Review 5 (2), 128–137.

Maynard, B., Blowfield, M., Burchell, R., Collinson, C., Nelson, V., Tallontire, A., Thornback, J., 2001. Ethical Trade, People and Forests: A Manual. Natural resources Institute, University of Greenwich, UK.

Neumann, R.P., Hirsch, E., 2000. Commercialisation of Non-Timber Forest Products: Review and Analysis of Research. Center for International Forestry Research, Bogor, Indonesia. 176 pp.

Padoch, C., 1992. Marketing of non-timber forest products in Western Amazonia: general observations and research priorities. In: Nepstad, D.C., Schwartzman, S. (Eds.), Non-Timber Products from Tropical Forests: Evaluation of a Conservation and Development Strategy. Advances in Economic Botany, vol. 9. The New York Botanical Garden, Bronx, NY, pp. 43–50.

Porter, M.E., 1985. Competitive Advantage. The Free Press, New York.

Ruiz Pérez, M., Arnold, J.E.M. (Eds.), 1996. Current Issues in Non-Timber Forest Products Research. Center for International Forestry Research, Bogor, Indonesia, pp. 1–18.

Ruiz Pérez, M., Byron, N., 1999. A methodology to analyze divergent case studies of non-timber forest products and their development potential. Forest Science 45 (1), 1–14.

Ruiz Pérez, M., Belcher, B., et al., 2004. Markets drive the specialization strategies of forest peoples. Ecology and Society 9 (2), 4 http://www.ecologyandsociety.org/vol9/iss2/art4.

Rushton, J., Perez, L., Viscarra, C., 2004. Marketing chains for a range of non-timber forest products in Bolivia and Mexico. Project Report. Overseas Development Institute, London.

Schreckenberg, K., 2003. Appropriate ownership models for natural product-based small and medium enterprises in Namibia. Consultancy Report for the Ministry of Trade and Industry, Windhoek, Namibia.

Schreckenberg, K. et al., 2005. Methodological Procedures. Project Report. Overseas Development Institute, London.

Schwartzman, S., 1992. Social movements and natural resource conservation in the Brazilian Amazon. In: Counsell, S., Rice, T. (Eds.), The Rainforest Harvest: Sustainable Strategies for Saving the Tropical Forests? Friends of the Earth, London, pp. 207–212.

te Velde, D.W., other project participants 2004. Successful NTFP commercialisation: a quantitative analysis based on household and trader level data. Project Report. Overseas Development Institute, London.

UNIDO, 2002. Industrial Development Report 2002/2003: Competing through Innovation and Learning. UNIDO, Vienna.

Wollenberg, E., Ingles, A. (Eds.), 1998, Incomes from the Forest. Methods for the Development and Conservation of Forest Products for Local Communities. CIFOR, Bogor, Indonesia.