

Regoverning Markets

Small-scale producers in modern agrifood markets

Innovative Practice

Colombia

**From the Amazon to the supermarket:
Innovation and the integration of small-
scale Amazonian chilli pepper producers
in green markets**

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From the Amazon to the supermarket: Innovation and the integration of small-scale Amazonian chilli pepper producers in green markets (Leticia, Colombia)

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Regoverning Markets

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Contents

1	Summary	5
2	Objectives and coverage	6
3	Theoretical framework and working methodology	7
3.1	Innovation systems in global chains or value agricultural products	7
3.2	Methodology	8
4	The context of the innovation	9
4.1	Geographical context.....	9
4.2	Territorial aspects	9
4.3	Cultural aspects: colonists and indigenous people.....	9
4.4	Production and economy systems within the study zone	10
4.5	The policy framework	10
5	Innovation	11
5.1	A brief history of the innovation	11
5.2	Knowledge innovations.....	13
5.2.1	Scientific and technological development	13
5.2.2	Knowledge transferral, capacity building, and local contributions to product development	14
5.3	Institutional innovations.....	16
5.3.1	Organisational innovation at grass roots level	16
5.3.2	Innovations in policies and intersectoral alliances.....	17
6	Description of the value chain	20
7	Inclusion factors: key factors that determine producer insertion in the market	22
8	Exclusion factors: who has been left behind and why?	23
9	Costs and benefits of inclusion.....	24
10	Conclusions.....	27
10.1	Sustainability	27
10.2	Recommendations	28
11	References	30

1 Summary

This document provides an in-depth description of the innovation processes involved in forming links between small-scale producers in the Colombian Amazon and supermarkets in Bogota in order to market chilli pepper¹ sauces and Amazonian fruits as local biodiversity products. Small-scale producers have accessed dynamic markets as a result of the formation of a broad network made up of research institutions, universities, non-governmental organisations, ministries and private sector entities. Small-scale farmers need new capacities and forms of organisation in order to deal with entry conditions and standards in these markets, and this has presented a great challenge to them. The Amazonian context also implies serious limitations on marketing activities due to both geographical isolation and poor production support networks. We conclude that these producers face two main challenges. Firstly, in order for the innovation to remain sustainable and flexible, small producers must develop and maintain alliances with agents responsible for marketing and promotion of the product in 'distant' markets and they must learn to take timely decisions in order to succeed. Secondly, they must improve their organisational and business capacities to meet the processing and marketing standards and conditions required to enter the dynamic and demanding green markets.

¹ Known as 'chile' in Central America, 'ají' in Latin America and 'pimenta' in Brazil.

2 Objectives and coverage

This case study highlights the challenges faced in forming links between small producers in the Colombian Amazon region and green markets, exploring innovatory processes and their potential to contribute to sustainable development in tropical rainforest areas. Special emphasis is placed on:

- the interaction between scientific and technological innovation and local knowledge;
- the use of local biodiversity in the design and introduction of new products on the market;
- and the role of the various alliances and associations involved.

3 Theoretical framework and working methodology

3.1 Innovation systems in global chains or value agricultural products

The group of activities required to move a product or service from its conception through all the phases of production and distribution to the final consumers has been termed a 'global value chain' (Humphrey, 2006). From the value chain perspective, every organisation that contributes to the coordination of producers, distributors and consumers is a key element. For example, when an actor within the chain circulates information on the nature of demand, or on reigning market parameters and standards, it is simultaneously supplying information that influences the management of an innovatory process. The 'innovations systems' perspective lies at the heart of this work as it helps us to understand precisely the type of interventions that help shape and direct innovation processes. This outlook forms a comprehensive framework for processes contributing to the social application of the innovation in any background situation. This framework has recently been applied to the agricultural sector (Hall, 2006) and adopted for analysis of innovation policies in developing countries (Cassiolato et al., 2006). It emphasises:

- the role of networks and policies; interaction between agents within the system;
- the existence of nonlinear lines of evolution;
- knowledge flow and transparency and the relationship between different types of knowledge (scientific, local, etc.).

The innovation systems perspective can provide useful contributions in analysing associative processes that have resulted in the development and marketing of products based on local biodiversity. Fundamental elements of these chains include the role of networks and the interrelationship between agents with very different capacities and levels of power (such as small-scale producers and supermarkets), and they also play an important role in information flow and interrelations between different types of knowledge.

The innovation system concept provides the present study with the notion that commercial use of the innovation (in this case the novel use of local biodiversity) not only depends on the linear transferral of scientific knowledge, but also, to a large extent, on interaction between various actors within the system. It also emphasises the role of attitudes and practices amongst the actors - particularly in relation to their ability to comply with market standards and conditions; the role of policies; and, finally, the role of the interrelationship between various types of knowledge in consolidating novel uses of local biodiversity.

3.2 Methodology

The following elements contributed to the methodology employed in the study:

- Initial description of the value chain;
- Interviews with key actors in the chain:
 - State actors: Colombia's Ministry of the Environment Housing and Regional Development (MAVDT) Green Markets Programme; research institutes: the Amazonian Institute of Scientific Research (SINCHI), the Alexander von Humboldt Institute for biological resources research (IAvH). Non-governmental organisations: Caja de Herramientas, '*Colombian Network of Environmentally Friendly Community Producers*' (*La Red*) programme;
- Workshop with members of the Association of Agricultural Producers of the Amazon (APAA) (Leticia);
- Interviews and questionnaire directed to APAA members and independent individuals, key informants, and Carrefour²
- Improved organisation of APAA accounts.

² Carrefour refrained from providing information for this report.

4 The context of the innovation

4.1 Geographical context

The case study took place around the city of Leticia (approximately 30,000 inhabitants) in the far south of Colombia, on the border with Brazil and Peru. Leticia lies in a very special geographical setting: the Colombian bank of the Amazon River lacks roads connecting the town to the interior of the country, and river communication with the rest of the country is similarly challenging. The city has air links to Bogota, with one daily commercial passenger flight and six to eight cargo flights each week. There is irregular contact by river between Leticia and Puerto Asís (2,000km along the Amazon to Putumayo river link) or Cartagena on the Caribbean coast (8,000km along the Amazon to Atlantic Ocean river link). In spite of the possibility of better trade integration with the neighbouring cities of Iquitos (Peru) and Manaus (Brazil), Leticia depends to a large extent on its relationship with Bogota. This situation has a direct impact on product import and export due to transportation costs and difficulties.

4.2 Territorial aspects

A large part (85.6 per cent) of Colombian Amazonian territory has been designated protected areas, reserves or areas requiring special management. Meanwhile, the remaining 14.4 per cent of land is covered by areas of spontaneous colonisation, legalised retrospectively, or urban areas. In the municipal district of Leticia, 40.2 per cent of the territory is covered by rainforest reserve zones, 36.3 per cent by natural parks, 13.8 per cent indigenous reserves, 4.8 per cent are classified as Reserves and Natural Parks, and only 4.9 per cent is open to extraction or colonisation - meaning either urban areas or farmlands (Gutiérrez et al., 2004).

4.3 Cultural aspects: colonists and indigenous people

The vast biodiversity of the Colombian Amazon is echoed in its cultural diversity. There are 58 ethnic groups with their own languages, who use Spanish as their connecting language, as well as a very varied population mainly originating from the Andean zone of Colombia. The 'indigenous' and 'colonist' cultural categories have important implications in conservation and development policies. The terms are often directly associated with opposing forms of production systems which differ greatly in their views on the exploitation of and access to natural resources.

4.4 Production and economy systems within the study zone

Economic development in the Leticia region is mainly based on extractive activities, like fishing and the selective extraction of wood. Outside these extraction economies, the public sector, tourism and various services are important on a regional level. The distribution of the value generated within the chains of goods and services is very unequal, with significant value accumulation outside the region.

4.5 The policy framework

In 2002, the Environment Ministry (MMA) produced the National Strategic Plan for Green Markets in an effort to form links between environmentally aware producers and consumers. This plan is being implemented by the National Environmental System (SINA), which consists of MMA and important signatory research institutions like IAvH and SINCHI.

These national policies fall within the framework of international programmes related to the sustainable use of biodiversity. These include the Convention on Biological Diversity (CBD), the Common Regime of Access to Genetic Resources, and the regional biodiversity strategy for countries of the Andean Tropic within the Andean Community (CAN). Special mention must also be made of the biocommerce initiative, developed from the United Nations Conference on Trade and Development (UNCTAD), which has been implemented in Colombia since 1999 under the IAvH sustainable biocommerce programme. This programme aims to promote trade in products derived from the local biodiversity whilst complying with sustainability criteria.

These interlinking policies and regulatory frameworks run alongside an increasing openness to foreign investment in Colombia. This has led to market integration and the rapid concentration of end sales of foods in a small number of supermarkets (in this case dominated by European companies) - a common phenomenon in many developing countries (Reardon and Hopkins, 2006).

5 Innovation

5.1 A brief history of the innovation

Research projects and initiatives undertaken by SINCHI formed the basis for current links between small Amazonian producers of Amazonian chilli pepper sauces and the local and national supermarkets selling them. Indeed, the innovation processes behind these connections were constructed on the same basis. Several research projects on the properties, genetics and cultivation of Amazonian chillies made SINCHI researchers aware of the potential for marketing these chillies as a possible economic alternative. SINCHI accepted COLCIENCIAS³ funding for continued research into the physiological characteristics of the peppers, inviting a group of local producers to participate in this development alternative. In 2002, SINCHI formed a consortium with the Amazonian Agricultural Producers Association (APAA) – a body legally established in 1999, with 85 members drawn from the commercial, services and agricultural sectors of Leticia – but which was relatively inactive at the time. In the early stages of the project, 21 members made capital contributions and worked on adapting the cultivation technology for the proposed products: spicy sauces, dried chillies and chilli-based pickles preselected by SINCHI researchers. This process forms the basis of technology transfer between SINCHI and APAA. SINCHI provides APAA with the infrastructure and equipment for processing the chillies and local fruits into sauces under the highest possible quality and hygiene standards - a key factor in accessing the national market.

Once the crops were grown, some of the initial ideas for the chilli products were dropped in favour of others. APAA members expressed their preference for spicy sauces based on Amazonian fruits instead of tomatoes (as had initially been proposed by technicians) and the *Majiña* trademark was coined. The local Amazon fruit-based sauces began to be marketed in 2003 along with various Amazonian chilli-based pickles. The leap to the national market level took place under an agreement between the MMA and a Carrefour. Ministry advisers (from the Green Markets Programme) supported APAA in the organisational and financial aspects of developing business plans. This new stage implied implementation of rigorous standardisation in processing and marketing the foodstuffs. Health clearance was sought from INVIMA⁴, barcodes and labelling were researched and APAA became committed to the organic certification process. The Embassy of The Netherlands provided financial support for this process along with an injection of capital for product packaging and air transportation. *Majiña* chilli sauces first went on sale in the aisles of Carrefour, Bogota in January 2004. The sauces are now also sold in other supermarkets (Carulla, Cafam and Éxito) which serve the highest socio-economic

³ Colombian Institute for the Development of Science and Technology.

⁴ National Institute for the Control of Medicines and Food Products

brackets in Bogota. However, the product has faced difficulties in the process, including low demand for the product and logistical and organisational issues. At present, the product is still processed in the SINCHI facilities, as APAA members have not accumulated sufficient capital for their own infrastructure and equipment.

The following section provides a schedule of the innovation processes in the chain. Special attention is given to elements of institutional policy and knowledge, as well as networks and alliances between the various actors in these spaces.

Table 5.1: Innovation progression

Date	Event in the chain	Innovation event
1999		APAA given legal status in Chamber of Commerce.
2000		Finalisation of the SINCHI and National University of Colombia (UN) project on diversity of <i>Capsicum</i> .
2001		Approval of the SINCHI-APAA project. Participation of 21 members. One member provides land for community planting.
2002	Direct sales and local markets. First packaging and labelling.	Establishment of crops and development of chilli and fruit sauces. Planting of fruit trees on the farms.
2003	Redesign of labelling. Sales in local supermarkets. Change in labelling regulations.	MMA-Carrefour agreement. Assembly of production plant in SINCHI. Development of transformation protocols. Logistical and marketing advocacy. Procedures for health, registration and barcode. <i>Majiña</i> product included in an agreement with Carrefour. Fresh contributions of capital by members.
2004 January- June	First deliveries to Carrefour, third labelling design.	Member contributions and funds for seed from the Embassy of The Netherlands. INVIMA procedures. Problems with labelling and logistics in Bogota. Procedures for organic certification begin.
2004 July- December	Promotion in markets.	Lack of knowledge of invoicing system and participation in events causes conflict in the organisation. Supermarkets and new contracts complain because APAA fails to complete orders. Institutional alliances to create a support network. APAA wins sustainable biocommerce prize. MAVDT-Carulla agreement.
2005	Promotion in markets. First delivery to Carulla.	Orders returned. Some harvests lost. Loss of interest by some members. APAA president changes job. Accounting allowed to lapse and logistics to become unstructured. IAvH launches promotion strategy for Amazonian fruits in Bogota. First phase of organic certification.
2006	<i>La Red</i> marketing mediates between APAA and supermarkets. Sauces produced only twice in the year.	Caja de Herramientas launches <i>La Red</i> . MAVDT agreements with Cafam and Éxito stores. The president of APAA returns to work on the <i>Majiña</i> project.
2007 January- April	Promotion in international fair. First delivery to Éxito stores.	APAA members debate on redefining the associative or private nature of the entity, the inclusion and exclusion of members, renewal of directorship roles and greater participation of women.

5.2 Knowledge innovations

Knowledge innovations have occurred in the scientific area and in technology development. This knowledge is transferred (although not in a linear manner), building local capacities and contributing to product development amongst the producers. The following sections describe each of these elements.

5.2.1 Scientific and technological development

Scientific and technological aspects form a very important component of innovation. In the mid-90s, SINCHI had already accumulated a body of works indicating the potential for the sustainable marketing of various species of fruits. However, they did not yet have sufficient knowledge of the biological, chemical and physiological characteristics of these and, above all, suitable post-harvesting technologies to make the best use of the crops. As a result, they undertook a series of studies on Amazonian fruit trees, including chillies.

Chillies, botanically classified under the genus *Capsicum* in the Solanaceae family, originated in the Americas. The plants have undergone a long process of domestication and are now one of the most important plants in the indigenous diet of the Amazonian region (Velez 1991; Arias and Melgarejo 2000). The great potential offered by this plant for the Amazon and the large gaps in information available on this group of species have inspired a group of researchers from SINCHI and the UN genetics department to propose a programme for the collection and description of species for conservation and use. This programme included implementation of a standardised collection system in indigenous and colonial communities in all departments of the Amazon region. An *in situ* germoplasm bank was also established with support from the International Centre for Tropical Agriculture (CIAT) (Melgarejo et al., 2005).

Initiatives included studies of agricultural morphology, biochemical and molecular descriptions of the genus, and the physiology of the plant at the various stages of fruit development. Post-harvesting studies on the ripening and controlled preservation of chillies were especially important. These studies contributed to the design and implementation of productive systems making the best use of the produce and reducing losses due to the perishable nature of the products – a crucial issue given the high temperatures and humidity of the Amazonian region (Op Cit). Altogether, these studies allowed for the standardisation of production systems.

5.2.2 Knowledge transferral, capacity building, and local contributions to product development

Knowledge transferral and the capacities created as a result, took place in three main areas: farming, processing and marketing.

5.2.2.1 Farming

Research had to be taken into the agricultural behaviour and productivity of the selected peppers before they could be widely grown. APAA members selected farmlands as demonstration parcels for the crops and one association member provided a hectare of land those who had no land. Several SINCHI agronomists and UN biologists were involved in the early stages with APAA members, focusing on training in seed management (supplied by SINCHI), helping them to establish procedures for planting, transplanting, sowing, crop maintenance labours, harvesting and post-harvesting management of the fruit. There was also some input on organic fertilisation and pest management practices. Once the crops were planted, however, some problems occurred. The original plan had underestimated the spacing needed between different plants, which resulted in pollinator action causing some types of peppers to crossbreed and generate hybrids with low seed viability. This, coupled with the decision to use Amazonian fruits in the spicy sauces, implied the development of new agroforestry plans where the different types of pepper were planted further from each other in mixed cultivation with other species of fruit bushes or trees. Several APAA members decided to plant only one type of pepper per farm, thereby minimising the potential risk of cross-pollination. One of the plants tested – a dark purple coloured fruit and the spiciest variety - presented difficulties because of its weight: the branches bent over covering the fruit under the foliage and making it more difficult to harvest; also, it proved difficult to identify the optimal ripeness point, because of the very slight change in colouring of the fruit. This type of pepper was also the most susceptible to damage from cold in storage and its pulp, almost black in colour, darkened the spicy sauces excessively. As a result of all these factors, APAA members ruled to abandon the variety.

5.2.2.2 Processing

Three different alternatives for processing the peppers were investigated: spicy sauces, pickles or preserves, and drying. In the spicy sauce production option, production processes must run in accordance with ICONTEC⁵ directives, and particularly regulation NTC 1631, which outlines requirements for the production of tomato-based sauces. This quality protocol was behind the initial proposal of combining peppers with tomato. However, tomatoes do not grow easily in the climatic conditions of Leticia, meaning the fruit must be imported by air from

⁵ Colombian Institute of Technical Standards and Certification

Bogota making the product considerably more expensive. APAA producers suggested a solution to this problem by using the pulp from Amazonian fruits to replace the tomato. This idea makes better use of the local diversity of fruit trees and reduces production costs. SINCHI representatives accepted the proposal and began work on the standardisation of pepper sauce production using four local fruits: cocona (*Solana sessiliflorum*), araza (*Eugenia stipitata*), star fruit or carambolo (*Averrhoa carambola*) and the Amazonian pineapple (*Ananas comosus*). APAA members were trained in aspects of good practice in manufacturing in order to maintain production standards and comply with health and safety and quality requirements for the national market.

5.2.2.3 Marketing

Marketing presents some big challenges to the project. The first of these lies in achieving the most effective combination of packaging, brand and labelling in order to communicate the attributes, characteristics and values associated to the product in an attractive manner. The first marketing model used the *Majiña*⁶ brand on 230 g jars (jam jar style), with labels showing an image of different coloured peppers under the banner “from the Amazon 100 per cent natural”. At this time, the health and safety registration process was incomplete and the product was only sold in the local area and at markets.

Shortly afterwards, MMA advisers recommended changes in labelling to make them less opaque and more attractive. This resulted in a second label design with a multicoloured image which included the text “100 per cent organic” and “pure natural fruit,” as well as a small map of Columbia with the Amazonian region highlighted. From this time, smaller jars were used (170 g) on a par with those of competing brands.

Once health and safety registration was completed and the barcode settled, the network of actors involved in the product sought ways of inserting the product on the national market. To stress the Amazonian nature of the product, a small covering of a yanchama bark fibre⁷ was added over the lid, and a nutritional composition table added to the label. A small text referring to the source of the product was also attached to the packaging with chambira palm fibre.⁸ The yanchama and chambira

⁶ ‘Majiña’ is the local term for a small ant renowned for its burning bite. This intense sensation led to the ants being linked to chilli peppers and the name was suggested by APAA members. It could be a limiting factor as the name has little meaning outside the local context.

⁷ Vegetable fibre extracted from the bark of various species of trees in the Moraceae family used as natural fibre in craft products.

⁸ Vegetable fibres extracted from the new leaves of the *Astrocarium chambira* palm, used in making hammocks and bags.

palm fibres were later removed as they increased costs and made the packaging process more wasteful.

The second marketing image arose from the regulatory demands of the market and suggestions by experts and APAA members, but a successive third change in labelling aimed to emphasise the organic certification process and to tackle one of the most serious problems of the marketing process: ignorance of Amazonian products, particularly regional fruits, amongst national consumers. Although pineapple and carambolo are found in many supermarkets, the araza and cocono fruits are practically unknown by consumers in Bogota. As a result - working on suggestions by MAVDT experts, supermarkets and IAvH - the third label placed much greater stress upon the fruit by including full colour images. Similarly, text was added to the nutritional composition table to highlight the BioLatina organic certification process, and a clear product description was placed on the label. This currently also appears in English as "spicy sauce of...". This first stage was shadowed by staff from the MMA Green Markets Programme, who contributed advice on financial aspects, price calculation, supply chain planning and the business plan.

In summary, knowledge and technology transfer processes occurred through a series of actions and decisions in the production, processing and marketing areas, with input from SINCHI and other institutions. APAA members involved in chilli pepper and fruit production found the project was an opportunity for training and learning new techniques and skills, both agricultural and commercial.

5.3 Institutional innovations

One of the main concerns of the innovation system is the incidence of the institutional framework. In this section, we present the institutional innovations that accompanied the construction of the chain both within the APAA and through intersectoral alliances.

5.3.1 Organisational innovation at grass roots level

The APAA was created in a General Assembly in 1998, where members appointed a president, vice-president, treasurer and secretary, and statutes were approved. The Association was registered with the Chamber of Commerce of the Amazon in 1999. When the project with SINCHI began in 2002, capital contributions⁹ were approved, the Association was sustained and the number of members was reduced to 21. As the initiative developed, a network of support institutions encouraged the

⁹ The Embassy of the Netherlands contributed aid for marketing in 2004, which required an equal counterpart investment by the Association members.

Association to participate in various fairs and national meetings in efforts to promote the product, make marketing contacts and share experiences. The exchange of experiences with other small-scale producers working on similar projects has had an important impact, helping to highlight various factors and processes related to local biodiversity products, and generating an important sense of self-esteem and pride in their achievements. In the meantime, logistical difficulties arose in filling orders and in planning and coordinating production processes along the length of the chain. There were returns of products due to low turnover, labelling problems and low demand, and it was difficult to make any profit in the initial phase. These elements have formed part of the organisational apprenticeship process, testing the members and pushing the Association to seek training and meet the demands of production and certification.

Expanding sauce production has translated into an incipient division of labour. For example, not all APAA members like to work directly with the chilli peppers, as it implies exposing themselves to burnt eyes and skin in spite of protective equipment. This has led the Association to employ external labourers in the processing stage. Members not directly employed in processing have provided support in other areas, like sales, production and management.

5.3.2 Innovations in policies and intersectoral alliances

The innovation process analysed in this study forms part of a series of intersectoral alliances that included the State (MAVDT and research institutions SINCHI and IAvH), non-governmental institutions (Caja de Herramientas), private supermarket companies, and the Embassy of The Netherlands in Colombia. These alliances were formed gradually as interests converged on the issues of the green markets and biocommerce - initiatives that reflected current international agendas on trade, biodiversity, and development.

IAvH has created a line of research into biocommerce, promoting the take-up of green market opportunities, and has also created a national biocommerce initiatives competition. Meanwhile, MAVDT has launched a Green Markets Programme, which serves as a bridge between the State, private companies, various research institutions, universities, autonomous regional corporations and certification companies. The areas covered include technological research and development, market intelligence, policies and regulations, organisational reinforcement, business development, logistics and distribution, marketing or communication and processing. For example, a recent agreement between MAVDT and the National Apprenticeship Service (SENA) aims to strengthen organisational structures and the business capacity of biocommerce and green market initiatives and companies. The status of the Ministry has enabled it to become an important facilitator between the various actors interested in the development of biodiversity products and services

and clean technologies (Londoño 2006). The Ministry establishes agreements with supermarket chains and BioLatina - the Latin American certification company that undertakes the organic certification process for small-scale producers like the APAA. SINCHI, in turn, is working on biocommerce and green market initiatives, strategies and policies. Thus, their 2003-2007 strategic plan included redefined and strengthened objectives and strategic guidelines that placed special emphasis on improved academic training for researchers. The plan also aimed to increase opportunities for research and specialist consultancy in the strategic areas of green markets and value chains in various regions of Amazonia. All these institutional innovations occurred alongside the development of APAA and 'Majiña.'

Non-governmental and Dutch cooperation organisations provided key contributions in the generation of alliances, and the "*sustainable production and marketing in international cooperation projects*" seminar provided the basis of one particularly important innovation. This seminar was attended by many actors interested in biocommerce and green markets in Colombia – including APAA - and allowed them to share information and marketing possibilities and seek assistance and support in order to comply with market demands (Rodríguez and Spijkers 2004). The one major outcome of this meeting was the formation of the Columbia network of environmentally friendly community producers (*La Red*), within the framework of the Caja de Herramientas Corporation. One of the key elements provided by the network is their commercial outlet¹⁰, which is owned by associated small producers on the basis of it being self-sustaining (after an initial phase funded by the Embassy of The Netherlands) through a 10 per cent charge on the sale of products on national and international markets (Londoño 2006).

Business sector participation in the alliance is also crucial, and Carrefour - the second largest multinational retail trader in the world – played a role that must also be highlighted here. Carrefour has been operating in Colombia for the last 10 years and sustainable development forms part of its global policy on environmental and social responsibility in extending its market network (Carrefour 2006). An agreement with MAVDT in 2003 resulted in Carrefour establishing some display areas for green products in its supermarkets. The company has set up more appropriate payment policies, does not charge a bar-coding fee on these products and it has made a commitment to begin the formal certification programme.¹¹ MAVDT validates and endorses producers and their 'green' credentials for Carrefour and then works alongside the supermarket in providing advice to small-scale producers on the quality, packaging and labelling of products and the certification process. This

¹⁰ La Red structures include marketing, product development and a commercial unit (market intelligence, marketing and commercial support). It has the technical and financial support of the Embassy of The Netherlands, MAVDT and the Fund for Environmental Action and Children (FPAA).

¹¹ http://www.presidencia.gov.co/prensa_new/sne/2003/junio/13/16132003.htm downloaded 29 March 2007.

initiative has been replicated in similar agreements with chains like Carulla in 2005, Cafam and Éxito stores in 2006.

6 Description of the value chain

A diagram of the value chain for the *Majiña* spicy fruit sauces is given in Figure 1. The different levels of production, processing and marketing are laid out with the latter divided into local and national levels.¹² On the production level, APAA members grow the chilli pepper on their farms, often intercropping with various fruits. The members own the seed but can call on SINCHI resources for new seed when needed. Both the organic fertilizers and the pest management mixtures are produced with materials found on the farms: chilli pepper, garlic and tobacco. However, the APAA are not self-sufficient in fruits such as pineapple, cocona or araza which are bought in from independent producers or from the fruit markets in Leticia. There are also some independent producers who have received SINCHI selected pepper seeds and who have later brought their produce to APAA for sauce production.

The processing phase – the preparation and packaging of sauces - is completed in the SINCHI production laboratory in Leticia. Some basic ingredients like vinegar and sugar are purchased in local supermarkets and containers and labels are brought in from Bogota. The processes of depulping, weighing, mixing and cooking, concentration, filling, sterilisation and labelling all take place in the laboratory (Melgarejo et al. 2005). There is also an annex laboratory for quality control analysis. These facilities and part of the machinery are owned by SINCHI, some other machinery belongs to the National University, and APAA has only a freezer and an industrial liquidiser. The laboratory has an operating capacity of 1,100 packages per day, and production is organised around a production manager (APAA-member), a quality control manager (SINCHI researcher) and four operators (non-APAA members contracted by the Association). Production costs, apart from raw materials and gas, consist of wages for the production manager and operators. SINCHI provides subsidies for the premises, equipment, electricity and water as well as the quality control manager role.

¹² International marketing, guided by La Red, has only just started to be explored with samples taken to international fairs.

Figure 7.1: Value chain structure for *Majiña* chilli pepper sauces

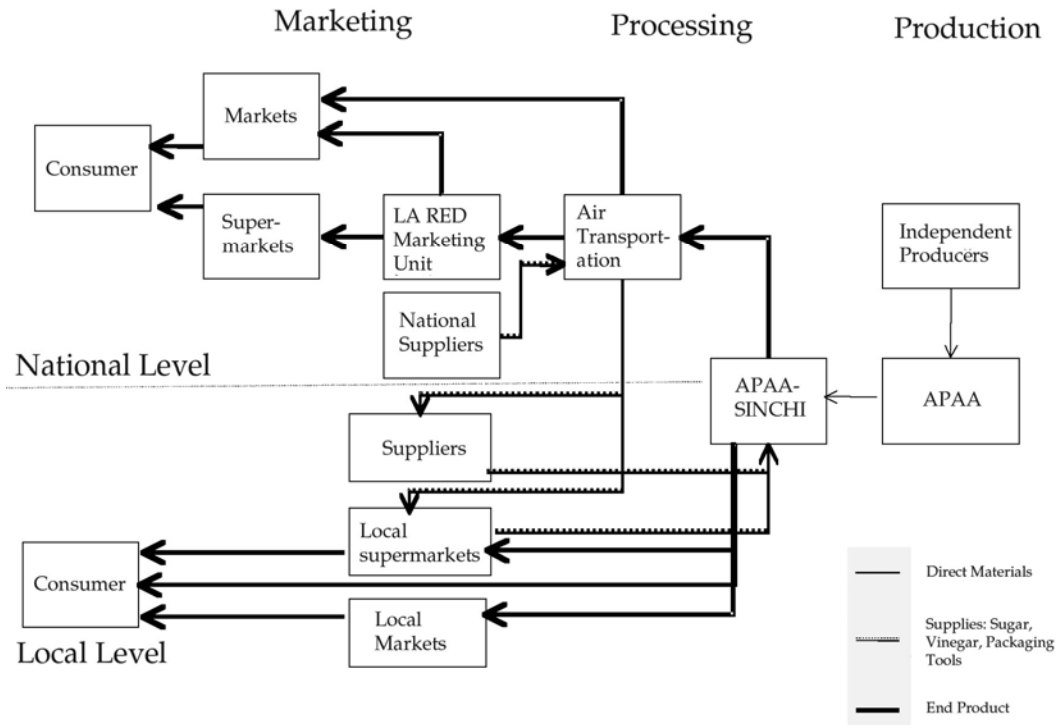


Figure 7.1 shows that marketing takes place on two levels. The sauces are sold in seven small local supermarkets in Leticia, and local consumers of *Majiña* are generally the better-off members of the community, as they know the product and are sympathetic to the project. On the national level, the product is sold in selected Carrefour, Carulla, Cafam and Éxito supermarkets. Sales in these establishments are associated with consumers of organic products in the higher socio-economic levels. Consumers have also been found at agricultural or organic fairs, where APAA has managed large sales in a short period of time. Marketing in Bogota has been in the hands of the *La Red* Marketing Unit since early 2006. *La Red* has storage and transport facilities in Bogota, as well as electronic document exchange facilities which receive direct orders from supermarkets. Through *La Red* *Majiña* has been shown at several national fairs and promotion initiatives have been started at international fairs in a quest for new business.

7 Inclusion factors: key factors that determine producer insertion in the market

Certain factors have been key elements in determining the inclusion¹³ of these small-scale producers in dynamic markets. The first factor is the great efforts made by SINCHI on the technological development of chilli pepper. The second is that the small producers organised themselves into a duly registered association. This decision - made with a view to participating in State-based projects - was a central factor in COLCIENCIAS formalising the relationship between SINCHI and APAA and channelling in resources for technology transfer and the product development phases.

The third inclusion factor is related to the increasing interest in biocommerce and green markets on multilateral agendas. These agendas lead to new institutional arrangements, and contribute to channelling resources and strengthening capacities in the sustainable marketing of biodiversity products. This is assisted by the fourth inclusion factor made up of agreements between the Ministry and the supermarket chains. Finally, it is worth stressing the central role played by the *La Red* marketing unit, which centralises the distribution of *Majiña*, serving as a bridge between the production level and the market niches whilst offering technical assistance in developing the initiative.

¹³ 'Inclusion,' as defined by Berdegué et al. (2006), is the capacity for small-scale producers to maintain their participation in a given supply chain and market as this develops and becomes more demanding and competitive.

8 Exclusion factors: who has been left behind and why?

Several factors can influence exclusion from the market. Firstly, investments in the initial phase of the project imply capital contributions from APAA members. Initially, only a subgroup of members (21 of 85), contributed capital and thus became direct beneficiaries. Contributions of capital and monthly quotas are an important factor in the inclusion and exclusion of producers, dependent on their economic capacity. A second exclusion factor is the low demand for the product and the low profits that have been accrued. Paradoxically, the jump to the national market through the large supermarket chains has not yet meant a considerable increase in demand, probably due to consumer ignorance and the fact that *Majiña* is competing with products from well-known companies who offer lower prices and better marketing. This situation has become an exclusion factor to the extent that low demand for the product has progressively discouraged producers both from planting peppers and fruit and from participating actively in Association activities and meetings. Finally, the certification process raises questions from the point of view of the inclusion of APAA members in green markets and the creation of local economic links. In this case, organic certification regulations do not allow the use of chilli peppers and fruits from outside the certified farms, and this restricts the possibility of independent producers selling their produce to APAA. Furthermore, the certifying agency demands the implementation of complex production and marketing control systems. The above can be an exclusion factor as it demands skills and abilities which have been very difficult to find up until now, causing continual friction between associates and at the same time limiting future inclusion and extension of the certified areas.

9 Costs and benefits of inclusion

When the chilli pepper production and marketing project began with SINCHI, 14 female and seven male members of APAA directly participated in planting and production, promotion and marketing. Of these, 67 per cent (14 members) owned farmland. Most of the farms, 80 per cent, were between five and 10 ha in size and the remaining 20 per cent were between 20 and 50 ha. Approximately 70 per cent of the farmland was covered with natural forest, while 30 per cent was covered with crops and grazing. All the farms grew various local regional fruits, mainly copoazu and araza, as well as various small-scale crops (flowers, some vegetables) and some had fish ponds.

Some 57 per cent of members were dependent on small businesses, 29 per cent were civil servants and 14 per cent were linked to other economic sectors like supermarkets and tourism. There is a remarkable diversity of productive activities amongst the members and this highlights the fact that agricultural activities represent a minimal contribution to income in these homes.

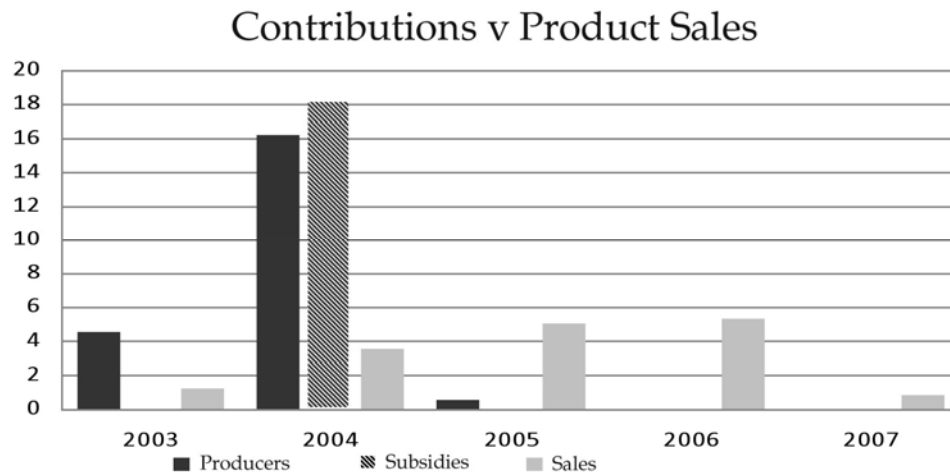
The innovation has relied on big institutional investments, but these are difficult to quantify. SINCHI has invested in strengthening research capacity, establishing germoplasm banks and advice on the implementation of agroforestry systems, product development, infrastructure, laboratories and staff training. The Embassy of The Netherlands contributed funding for supplies, registrations, labelling and certification. The Green Markets programme, IAvH and *La Red* have contributed in various advocacy activities for logistics and organisation as well as in product promotion.

The producers have contributed their own unpaid work on shared lands, as well as management and marketing work. Expenditure on labour has mainly gone to non-APAA staff, paying for crop maintenance, production operatives, sales people in local and national fairs, and logistics in Bogota. However, a clear overview of the costs and benefits of the Association has been hard to achieve as there is no consistent or organised accounting system in place. The lack of clear and timely feedback reporting has caused constant conflict, reflecting the irregular management of accounts and gaps in information. Disagreements over account management, effective management, shared commitment and efforts, the redefining of management roles, and the greater participation of women, have been the main causes of tensions and conflicts within the Association during this process.

However, all available data has been used to estimate contributions and sales (Figure 10.1), as well as the cost structure of sauce production (Figure 10.2). The data presented in Figure 10.1 suggest that income has still not yet covered initial

investments (direct subsidies and contributions from partners) and entry into the national market does not show a clear tendency toward equilibrium and growth. This agrees with the general idea amongst partners that the initiative has not yet provided any tangible economic benefits.

Figure 10.1: Estimate of contributions and sales (chilli pepper sauce project)



Note: 2007 runs from January to April

Figure 10.2 shows that a large percentage of the production cost of APAA goes on transportation (moving the product to Bogota and packaging to Leticia). Net profits for the APAA are estimated at around 29 per cent of the final price of the product in supermarkets in Bogota. This value suggests a relatively high role of APAA in profit distribution along the length of the chain, in spite of the high transportation costs. The lack of economic return is therefore due to the current limited scale of the initiative, and not to a biased profit distribution toward other agents in the chain. Sales of *Majiña* sauces were estimated at 5.3 million pesos in 2006 (Table 10.1), a sum equivalent to approximately 6.4 minimum salaries in Colombia. These values are considerably poor when compared to the average annual income of Association members. An additional complication has arisen on several occasions when supermarkets have returned small orders due to low sales or problems with labelling. Transportation costs for the returns have been covered by APAA, resulting in harsh losses. In spite of problems with profitability, APAA members value the qualitative benefits received in terms of capacity development in organic agriculture and business management, and the contact formed with researchers, the business community, other producers and institutions involved in green markets. They also mentioned journeys to other regions and participation in various fairs and training programmes as other benefits. The outlook for future profits, once national demand is consolidated and exports begin, is an added incentive for members to continue participating in the project.

Figure 10.2: Estimated distribution of production costs for APAA chilli pepper sauces (2006)

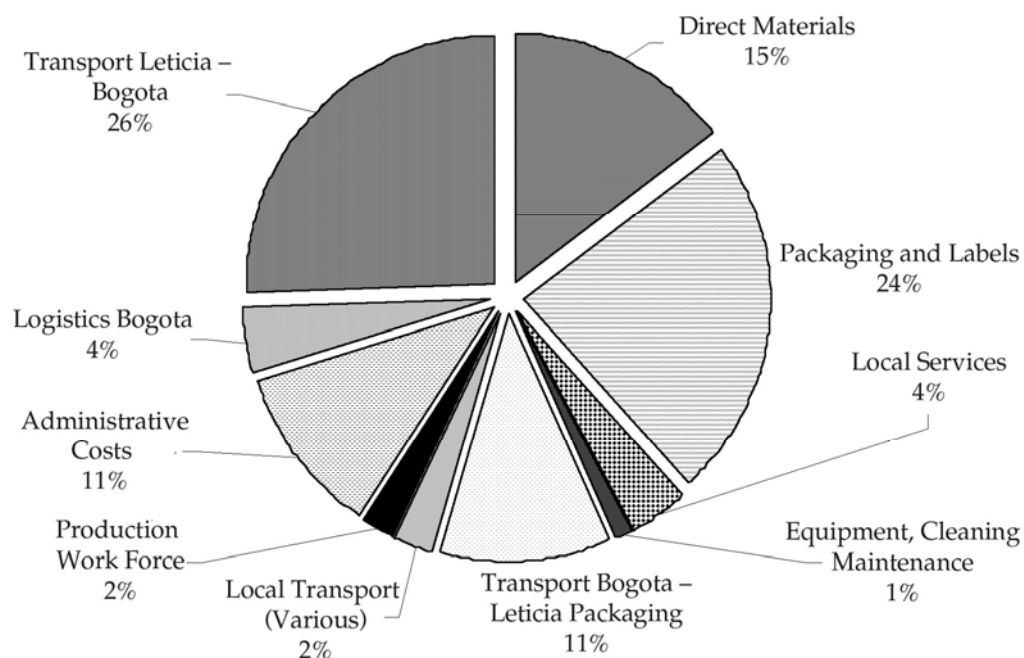


Table 10.1: Estimated sales of *Majiña* chilli pepper sauces

Majiña Sales 2003 to 2007 (Colombian pesos (COP))					
Detail	2003*	2004	2005	2006	2007**
Direct sales	341,250	1,065,240	300,000	407,700	15,000
Local supermarkets	455,100	1,361,500	660,000	600,000	540,000
Local markets	63,500	144,614	148,660		
National markets	360,000	965,149		273,000	
National supermarkets			3,200,000	4,000,000	278,000

*July to December

**Partial

Note: For national supermarkets the information is calculated on merchandise delivered and not actual sales.

10 Conclusions

10.1 Sustainability

The sustainability of the innovation, as well as its flexibility to meet unexpected events and demands, is closely related to governance of the value chain and the relationship between agents within the innovation system. The rules of the game and conditions are fixed by the supermarkets and agreements with MAVDT, but with certification increasingly becoming a requisite for market entry and expansion, a series of actors including *La Red*, SINCHI, IAvH, MAVDT and recently SENA also have the capacity to support the successful development and sustainability of the initiative. The inclusion of *La Red* in the value chain in particular implies an important change in the balance of power (management of alliances, strategic information flow and support from marketing experts) in favour of the small producers.

Serious difficulties exist in terms of the sustainability of the initiative, due to high transportation costs, low demand and low production as well as organisational weaknesses which leave the whole endeavour vulnerable to failure if decisions to improve the system are not made in a timely manner. However, these difficulties - even though accentuated by the geographical isolation of Leticia - are not unusual in the context of biocommerce initiatives in Colombia, for this is a very new sector of economic, environmental and social development. According to Lozada and Gómez (2005) 71 per cent of initiatives are currently in the initial investment and start-up phase, 51 per cent have serious accountancy problems, but there is still an incipient development of markets for biocommerce initiatives.

For the *Majiña* experience to become self-sustaining (financially, commercially or organisationally) within a reasonable period of time, therefore, the APAA and the related network of actors must deal with the vulnerabilities of the system. The human factor in the network can make all the difference. It is crucial for APAA members to maintain and develop alliances (especially with 'distant' actors), and to make the most of their comparative advantages of their product. This however implies a level of undertaking, leadership and initiative that demands more than has ever been asked of Association members. It also implies a better use of information and communication technology and better exploitation of journeys to Bogota to monitor development of the initiative.

It is important to stress that despite the geographical obstacles and organisational and logistical difficulties, *Majiña* and other Amazonian products must differentiate themselves from similar industrial products available at lower prices if they want to guarantee success. This type of differentiation can be achieved through the

generation of quality products that emphasise appropriate attributes including Fair Trade, conservation of biodiversity and representations of cultural or ethnic idiosyncrasies. Tagging of this type would be useful in ensuring a source of demand that is aware of the inherent values, endeavours and history of such products.

Finally, this case study reinforces the proposition that the social use of innovation requires much more than the generation of scientific or technical knowledge and its linear transferral. In this case, fundamental roles were played by local contributions (local knowledge), the interaction between a great diversity of actors and a network functioning within the framework of public policies (promotion of green markets). We have also shown the key role of human resources in this type of initiative, particularly in relation to capacities for the management and organisation of productive associations – one of the most important factors determining the success or failure of such a project. Despite the very significant effort made and the supporting framework of favourable policies, the initiative is still in a fairly vulnerable phase and runs the risk of collapse if corrective measures are not taken in time. This report suggests that strategies for the insertion of small producers (especially those suffering geographical ‘isolation’) tend to be onerous and highly risky. This does not imply, however, that they cannot or should not be undertaken. Another important lesson is that success can only be assured if all the key factors are covered, and there must be a holistic vision of how the innovation system operates. In this case, while the initiative has been very successful in knowledge transferral and product development, the organisational and marketing aspects have not received the due attention.

10.2 Recommendations

The initiative can be improved by approaching these three fundamental problems of the system:

- *Organisational aspects:* APAA members must draw up and comply with clear operational guidelines, which allow them to implement operation and information management standards imposed by the certification process. They also need to substantially improve their management and accounting capacities. This will possibly require greater business training of members, and the replacement of those who have assumed managerial roles.
- *Marketing:* Marketing and distribution of the product in Bogota is possibly the weak point of the current system. Even though this is an excellent quality product, it is possible that its ‘exotic’ nature and its definition as an Amazonian product are being underexploited. It would be a good idea to revise afresh the factors applied in the packaging, trademark, labelling and

price in order to achieve a more attractive communication of the meaning and the associated value of this product, and thus improve its ability to compete. More promotion is needed in the established markets, and new niches should be sought where there is greatest demand for these products like in Mexico or the United States. An influential actor like MAVDT could encourage joint promotion of green products in the media in an effort to increase awareness and knowledge of these products amongst national consumers. Similarly, a detailed review of *La Red* operations could increase its capacity as a key actor in the promotion and expansion of markets.

- *Cost reduction*: Options for reducing production costs include using river transportation¹⁴ for external supplies and transportation of the finished product. These and other alternatives, once evaluated and approved by the Association, could be strengthened with the backing of various authorities and entities supporting the management issues to be approached on a national and maybe international scale.

¹⁴ River transportation of supplies or the end product from and to the neighbouring cities of Iquitos and Manaus, using the Amazon, substantially reducing the costs in comparison with air transport from Bogota.

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Regoverning Markets

Regoverning Markets is a multi-partner collaborative research programme analysing the growing concentration in the processing and retail sectors of national and regional agrifood systems and its impacts on rural livelihoods and communities in middle- and low-income countries. The aim of the programme is to provide strategic advice and guidance to the public sector, agrifood chain actors, civil society organizations and development agencies on approaches that can anticipate and manage the impacts of the dynamic changes in local and regional markets. The programme is funded by the UK Department for International Development (DFID), the International Development Research Centre (IDRC), ICCO, Cordaid, the Canadian International Development Agency (CIDA), and the US Agency for International Development (USAID).

Innovative Practice

Innovative Practice is a series of case studies from the Regoverning Markets programme providing examples of specific innovation in connecting small-scale producers with dynamic markets at local or regional level. Based on significant fieldwork activities, the studies focus on four drivers of innovation: public policy principles, private business models, collective action strategies by small-scale farmers, and intervention strategies and methods of development agencies. The studies highlight policy lessons and suggest working methods to guide public and private actors.

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