Standards in the Jungle: Biotrdae challenges in the Colombian Rainforest.

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Abstract

This paper analyses the process of innovation that lead to the creation of novel products derived from native chili peppers and fruits and a link between small producers in the Amazon with supermarkets in Colombia. This access to dynamic markets, triggered by organic certification, shows how interactions among actors in an extended network adjust to the supermarkets' conditions. In order for Biotrade to become an inclusive strategy for local producers, important and continuous investments in basic research, product and label changes, marketing strategies, and training to adopt strict standards are essential.

Introduction

The contemporary diversity of standards related to quality, food safety, tradition, exoticism or social and environmental distinctiveness is one of the characteristics of globalization processes and market restructuring (Busch 2000, Reardon et al 2001).

This symposium promotes discussion on the lessons learned from those experiences in connection with sustainable development strategies in countries in the global South. How are these processes helping to create inclusion and exclusion? What are the main challenges for future programs and interventions?.

This paper addresses these questions by way of an innovation process that lead to the creation of novel products derived from Amazonian chili peppers (*Capsicum spp*.) and exotic fruits, and which promoted the link between small producers in Amazonia and supermarkets in Colombia.

Thispioneering case fromColombia's Amazon Region has special relevance. The Amazon rainforest, one of the richest areas in cultural and biological diversity onn the planet is, particularly in Colombia, also a key scenario of internal armed conflict. Therefore, economic alternatives for local people (or the absence thereof) could have a special potential to affect this complex state of affairs, and contribute to peace alternatives and sustainable development. With this paper we wish to contribute to point out the challenges and opportunities associated to the novel area of Biotrade and Green Markets in this region.

The theoretical background we employ is a combination of Global Value Chain and Innovation Systems approaches. The notion of Global Value Chains (GVC) refers to all

the activities required to bring a product or service from its conception, through all stages of production and distribution, to final consumers. GVC analysis is based on the flow of material resources, funding, knowledge, and information between actors along the chain (Kaplinsky & Morris 2000). The analysis of the relations and coordination between different actors has brought to the discussion the concept of "governance" which reflects the presence of key players setting and executing a series of parameters that "govern" production and which the other players should adjust to. This is especially the case in the specification of the characteristics of the product, including how and how much should be produced, its prize, where governance affects the organization of the whole chain, thus revealing power asymmetries between actors (Humphrey and Schmitz 2001, Gereffi & Korzeniewicz 1994).

Busch (2000), Ponte and Gibbon (2005) and Gereffi et al (2005) have recently shown different modes of coordination between actors, governance structures and the role standards play to translate characteristics of place (cultural or environmental aspects) and which affect governance structures.

Busch (2002) especially draws attention to the central and not much studied role of standards in the process of the contemporary transformation of nature and culture through market relations. According to this author standards reflect socio-technical relations that are essential in the establishment and regulation of social behavior and ethics in capitalist markets.

A complementary perspective that helps us to understand the interactions that drive and shape innovation processes is that of the so-called "Innovation System". This approach emphasizes the role of networks and policies, interaction among actors in the system (inside and outside the supply chain), the existence of non-linear evolution directions, the flow and transfer of knowledge, and the relationship between local and scientific knowledge (Hall, 2006).

The innovation Context.

The case study is set around Leticia, a small city (about 30,000 inhabitants) and capital of the Departament of Amazonas in Colombia, onn the border with Brazil and Peru. Its main economic activities are based on intensive timber and fish extraction, tourism as well as public employment through different official institutions and military forces.

Air transport is the main way of communication with the center of Colombia. No roads exist, and river communication with Puerto Asis (2,000 km up the Amazon and Putumayo rivers) and Cartagena (8,000 km up the Amazon River and the Atlantic Ocean) is too irregular and slow. Despite the possibility of greater trade integration with the neighboring cities of Iquitos (Peru) and Manaus (Brazil), Leticia largely depends on Bogotá - a fact directly related to the difficulties and transport costs of imported and exported products.

Only five percent of Leticia´s municipal territory is composed of urban and colonization areas. The remaining 95% areas are made up of Indigenous Reserves (*Resguardos Indígenas*)(of fourethnic groups and conservation areas (Gutiérrez et al 2004).

An ensemble of policies related to sustainable use of biodiversity provide an important

context for this case study. Colombia ratified the Convention of Biological Diversity CDB in Rio'92, and in 1993 created the Ministry of Environment (MMA), and two research centers on biodiversity -the Alexander von Humboldt Institute (IAvH)[1] and the Amazon Institute of Scientific Research (SINCHI)[2].

In 1996 During the VI Conference of the Parties of the CBD, the BioTrade inititaive was formulated as a new generation of economic tools to achieve three main objectives: namely conservation of biodiversity, sustainable use of its components and equitable sharing of the benefits generated from its use. In 1999, the IAvH launched a national Biotrade program (*Biocomercio sostenible*) to promote sustainable trade of biodiversity-based products. Later, in 2002, the Ministry of Environment (restructured as Ministry of Environment, Housing and Territorial Development or MAVDT[3]) launched the National Strategic Plan of "Green Markets" in order to better link production and consumption of environmentally friendly goods and services.

This frameworks of policies and institutional arrangements has been accompanied by market liberalization and foreign investment in Colombia. In the food sector, this process led to a rapid concentration of sales in a few supermarkets dominated by foreign capital, as has been experienced by many other developing countries (Reardon & Hopkins 2006).

Methodology

In order to understand the process of innovation and the establishment of a novel value chain, a history of innovation was reconstituted (Douthwaite and Ashby 2005; Berdegué et al 2006). The way the actors in this network react and adapt themselves to dynamic changes in requirements and implementation of standards was a key aspect of our analysis. We paid special emphasis on the flow of information and knowledge, multi-actor coordination, and the governance structure of the value chain. In addition, workshops with small producers, individual interviews with all members of the Association, some independent producers, and key informants from the other actors involved (research institutes, NGOs, Ministry, small shops, supermarkets) were carried out. With this a characterization of the value chain was constructed (Kaplinsky & Morris 2000).

Results and discussion.

Brief summary of the innovation process.
Since the 1980´s the SINCHI Institute[4] has been conducting a series of basic research on native chilli peppers diversity, species widely used by indigenous groups in the whole Colombian Amazon Region. In 2000, a germoplasm bank was established and a series of studies on taxonomic, agronomic, biochemical, and molecular characterization was carry out (Melgarejo et al 2005). A second phase in the research program included the standardization of technologies for crop growing, post-harvest management and development of local value-added products. This "technology transfer" phase started in

[1] Instituto de Investigación en Recursos Biológicos Alaxander von Humboldt
[2] Instituto Amazónico de Investigaciones Científicas SINCHI
[3] Ministerio de Ambiente, Vivienda y Desarrollo Territorial
[4] The SINCHI Institute adopted its name in 1993 after the re-structuring of a previous Amazonian research institute called the Corporación Araracuara.

2001, involved a partnership between SINCHI and APAA[5], a local and legally registered small producer's association. At this stage, with the contribution of local knowledge, a traditional tomato-based chilli pepper sauce and four kinds of exotic spicy sauces using Amazonian fruits were developed. This development went hand in handwith the establishment of new, mixed agroforestry systems. With SINCHI´s support, a small-scale production plant was constructed and a series of training on *Good Manufacturing Practices* organized in order to reach all the basic requirements of the food-safety standards of INVIMA[6], t Colombia´s National Institute of Food and Drug Monitoring. In 2003, the local producers start to sell their brand '*Majiña* Spicy Sauces' in local fairs and stores.

Also in 2003, an agreement was reached between the MAVDT (Green Markets Program) and the *Carrefour* supermarket chain to link small producers and urban supermarkets. *Majiña* products was included as a pioneer case. This public-private agreement made it possible for APAA to "jump" from the local to the national market while simultaneously forcing it to adhere to a private, organic certification process. Advisers to the Ministry started to carry out some training in business and supply chain planning. In line with *Carrefour*'s wishes, they recommended successive changes in the presentation of the product and label design. The Dutch Embassy provided seed capital to further support these changes and the introduction to the market. In January 2004, *Majiña* products arrived to the supermarket's shelves – but found tough competition. Problems related to label specification, organization and logistics begin to arise, causing some rejections as well as production and harvesting losses. Small producers begin to realize that participation in the national market is hard, and experience that their investments do not reap significant returns. Figure 1 shows the small producer' investments, subsidies, and returns.

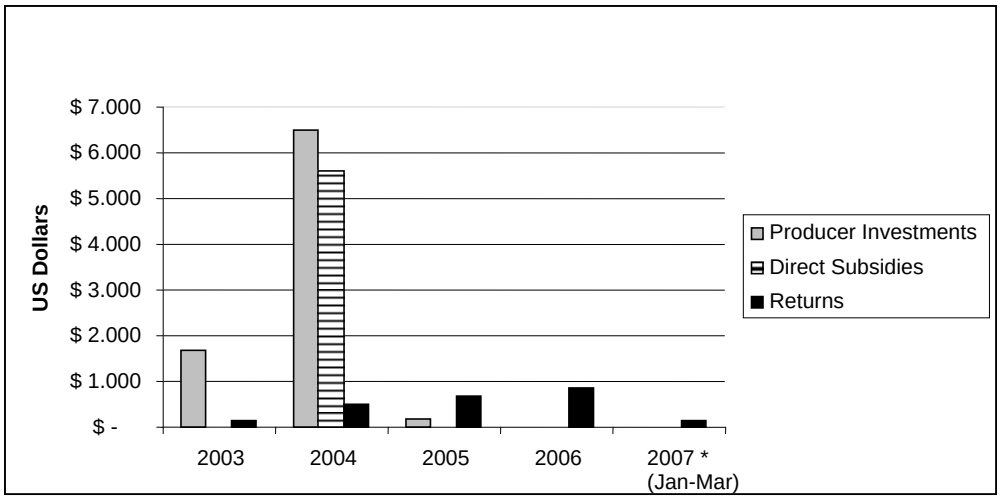

Figure 1: Investments and returns of *Majiña* spicy sauces

Marketing and commercialization strategies were detected as big bottlenecks; hence, different actors develop new interventions. In 2004, IAvH launches a program of incentives for small producers and initiates work on a marketing strategy (started in

[5] Asociación de Productores Agropecuarios del Amazonas (APAA).
[6] Instituto Nacional de Vigilancia de Medicamentos y Alimentos, INVIMA.

2005) to promote the use of Amazonian fruit-based products in Colombia's main Andean cities.

The MAVDT continues to promote agreements with national supermarkets: *Carulla* in July 2004, and *Cafám* and *Almacenes Éxito* at the beginning of 2006. The MAVDT together with the Dutch Embassy promote the creation of a program to advise environmental friendly producers at national level. This program starts in 2006 when CdeH[7], an NGO, starts an Organics and Fair Trade Program providing advice on marketing, logistics and certification processes. CdeH also lays the basis for a trading unit that aims to mediate between APAA and the four supermarket companies. This unit also builds a consortium of small producers: *LaRed*[8] (Colombia's Network of Communitarian and Environmentaly Friendly Producer). See fig. 2 for an overview of actors involved in the process.

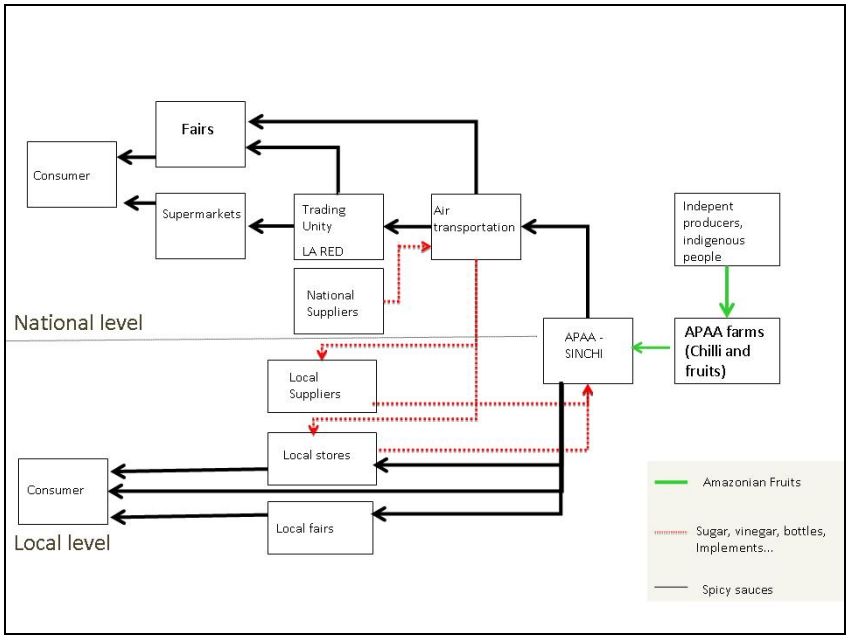

Figure 2: actors and levels involved in the trade of *Majiña* spicy products

In June 2007, the processing of the product still takes place at SINCHI's facilities in Leticia because APAA's members fail to accumulate enough capital to invest in their own infrastructure and equipment. Most of the associates are disappointed and propose to re-structure and establish a new company with fewer associates and larger womenn participation. Although they have completed the first part of the organic certification process already and the number of sales points has increased, production is still very low, and producers have difficulties to organize effectively.

We can see how the framework of policies favoring the creation of economic alternatives based on local biodiversity has been translated in a series of actions of small producers, Research Institutes, Universities, NGOs, the Government, International Cooperation programs and the private sector. This case shows how the link between small producers in the Amazon and final consumers on the Andean cities in Colombia

[7] Corporación Caja de Herramientas, CdeH.
[8] Red colombiana de productores comunitarios ambientalmente amigables, LaRed.

has been made possible only thanks to the coordination among actors of an extensive network. An analysis of the connection between small producers and dynamic markets evidences the challenges facing wider implementation.

The process that leads from the gathering, or production and harvesting of a diversity of chilli peppers and fruits to the sale of organic products in supermarket shelves, can be considered as the gradual process of setting standards as well as actor's adjustments to new features in the value chain. The main implications of this process are briefly discussed bellow.

Firt, the innovation process was supported by a series of supply-oriented investments in basic and applied research to bring forward standardized products and processes. The process of adjustment required for actors to access the market necessitated significant and specific investments of CdeH, IAvH, MAVDT, and the Dutch Embassy in terms of advisers and direct subsidies. For the small producers'Association this meant capital investments which were beyond the capacities of many of its associates, and which reduced the number of participants from 85 to 22.

The application of complex systems to monitor production and to regulate transactions and, hence, to control supply chain activities can be a factor of exclusion. In our case, the small producers were required to possess the skills and abilities to be able to both efficiently manage the production and marketing process while at the same time convincing supporting organizations to have confidence in them. These skills have been difficult to develop, and cause continuous organizational problems and troubles between the partners.

An important factor for the exclusion of some of the small producers is the low demand and therefore the few benefits that the initiative has brought with it. The leap to the national market through large supermarket chains has not yet brought any relevant increase in returns. The strong competition with spicy sauces of established companies that offer lower prices and count with more efficient marketing strategies, have been decisive factors.

According to Eymard-Duvernay (1989), prize is the main determinant of a particular market only if there is no uncertainty about quality. If this is the case, differences in price directly express known differences in quality. In *Majiña's* case, despite the successive adjustments in packaging and labeling, the attributes of origin, environmental geographic and ethnic origins are not yet effectively positioned to reflect confidence and reputation.

Finally, the organic certification process limits the ability of the initiative to create local economic linkages with independent and indigenous producers, because all the fruits must originate from certified farms exclusively. In sum, high transport costs, low demand, and organizational problems not only limit upgrading but strongly jeopardize the initiative's success, turning it into a risky business vulnerable to collapse.

This scenario, highlight by the geographic localization of Leticia, is not uncommon to the young field of Biotrade and Green Markets in Colombia, and exemplary for huge areas of the Amazon region. According to Lozada and Gómez (2005) market development for bio-businesses in Colombia is still in its early stages as 71% of

initiatives remain in initial stages of investment, and 51% have serious problems to have financial statements.

In the *Majiña* case, the coordination between actors that made possible the insertion of small producers with dynamic markets, also contributed to the creation of a captive structure of governance (Gereffi et al 2005) where the rules and conditions are set by supermarkets, and where agreements with the MAVDT compel organic certification as a condition of entry and expansion.

The inclusion in the value chain of LaRed as a mediating organization between APAA and supermarkets can lead to a significant shift in the balance of power in favor of small producers. Nevertheless, the plasticity of the sustainability and innovation still hardly depend on the ability of small producers to develop and maintain alliances and to make opportune decisions with "distant" agents responsible for the commercialization and promotion of their products.

The challenge for the success of the innovation, then, relates to continuous investments to foster the ability to keep adjusting the standards and conditions of transformation and commercialization necessary in dynamic and demanding markets, including more effective multi-actor interaction, continuous innovation in product development and labels, and business- and organizational capacity.

Conclusions

This pioneer case study points to a dilemma that the young field of Biotrade and Green Markets in Colombia is facing. While promoting innovations based on “inclusive” standars (for local firms and consumers), these standards do not by themselves lead to adjustments to the more dynamic source of demand (in the global market). Yet if more “exclusive” standards are implemented then only a small segment of firms stand a chance of being equipped enough to participate in the global market (cf. Reardon et al 2001).

A big challenge (and one that requires strong investments) is to create and implement standards for the currently non-tradeable products of small producers with the aim of increasing their tradeability and raising the incomes for local people in biodiversity-rich regions. This suggests a need for institutional programs to promote basic and applied research, and create supply capacity on the basis of an holistic view of the innovation process.

Learning strategies including universities should be integrated in order to find a better multi-actor coordination, enhance local novelties, and reinforce small producers’ ability to effectively participate in these programs.

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