Institutional innovation and inclusive growth: lessons from the coffee and palm oil sectors in Costa Rica

- Preliminary DRAFT –

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Jeffrey Orozco

Centro Internacional de Política Económica para el Desarrollo Sostenible, Universidad Nacional, Costa Rica (CINPE-UNA)

Abstract

This paper presents an analysis of the contribution of some institutional innovations to a more inclusive growth in the coffee and the palm oil sectors. The paper presents an historical approach, considering the concepts of growth and sustainable development, but specially the notion of inclusive growth. The point of departure is that development is more than just growth. It must consider wider goals, as environmental and social issues. The debate on sustainable development has pointed out the complexity of the process, not only for the inclusion of several dimensions, but also for the presence of different kinds of trade-offs. The challenges are multiple and diverse. Some are related to the economic dimension and in a clear link with growth. But other challenges are related with social issues, including health, income distributions, and access to opportunities, education and similar goals. It is then clear that growth is not the same as development. At sectoral level the difference is also clear. The market structure of a sector and various aspect of the institutional framework are fundamental factors to determine the contribution of growth on development. Institutions that define the structure of the market and opportunities for inclusive growth are fundamental factors.

There are some institutions that historically opened opportunities for inclusive growth in the coffee sector in Costa Rica. In the palm oil sector the structure changed drastically once the cooperatives entered to the activity. In principle, there are institutional innovations in both sectors, with impacts in the whole performance of the sector but also in the general economy of the country.

The analysis is based in a system of innovation approach, studying the main innovations and the main components of the systems of innovation contributing to the development of the sectors. We use historical information on the main institutions along the time and statistical data to confirm the main arguments.

1. Introduction

Costa Rica is a small country in Central America with 50,660 sq km and a population of about 4.5 millions. Traditionally, Costa Rica has developed several institutions to promote inclusive growth, based on policies of free and obligatory education and a good health system. In some of the main agro-food sectors –coffee, milk, grains, etc- there has been a relevant participation of small farmers or co-operatives and other kind of associations of farmers. In other sectors –banana, melon, etc- there is more concentration of few producers. The argument we develop in this paper is that there have been several institutional innovations that contributed along the time to inclusive growth in some of the sectors, but clearly in the coffee and the palm oil sectors.

Coffee production has played a key role in Costa Rica's history. It was the main export activity for many decades, until the end of the 20th century. Is more recently when coffee reduced its position in the export structure of the country, but continue to be a very important activity. Actually, by 2006 was Costa Rica's number three export, as a result from the efforts the Costa Rican government made in pursuing the inclusion of industry and tourism into the economy. Now agriculture contributes to less than 10 percent of GDP while employed a much higher,

around 20 percent, labor; industry accounts to more that 30 percent, and commerce, tourism, and services produce the lion share of more than 60 percent. However coffee still is important which not only makes up a major part of the agriculture, but also serves as an integrated factor contributing to the knowledge-based society and economy of Costa Rica as whole. Coffee represent about 2,7% of the total exports of the country in 2007. The planted area is about 98000 has.

Palm oil production has also been very relevant in the country since 1930. However, is more recently, after several institutional innovations, when the sector contributes more significantly to the development process, through the institutions for more inclusive growth. Today, the exports of crude palm oil are in place number fifth in the agro food sector, and represent about 1% of total exports of the country. The planted area is about 55000 has. Cooperatites participation is about 28% but there is also independent farmers owning about 15% of the harvested land.

A relevant point is that the coffee sector in Costa Rica is moving towards productivity and quality frontier. There is still a poor participation in the roasted market, and most of the exports are in green grain. However, most of the regulations from many decades ago are aimed to protect the farmers and less to stimulate the participation in the last part of the value chain. Palm oil evolved for many years as a very concentrated sector. However, from late 1980s the sector became more open to the participation of small farmers, thank to the promotion of cooperatives. The development of the coffee sector in Costa Rica goes through different stages. Something similar occurs in the palm oil sector, especially in the last 30 years.

About the palm oil sector the main argument is that after the 1980s the structure of the sector changed drastically towards a more inclusive scheme. Most of the new harvested area was developed by cooperatives and independent farmers. The change was possible thank to a strong collaboration network with participation of different stakeholders.

Following the framework of sectoral innovation systems, we examine the main dimensions of the system in both crops: the specific actors, institutions, organizations and networks, human capital, and technological choice and learning processes.

In the coffee sector, growers, millers, and traders began interacting in a regulated market, in which the rules aimed to balance the different interests. In most of the decades in the 20th century inside Costa Rica there continued evolutions in institutional and technological aspects in line with the principle of regulated and balanced participation of different actors. The creation of sector-specific institutions which played roles initially for regulatory and later on, public R&D and extension services, were part of the institutional innovation promoting inclusive growth.

We focus on changes of both sectors since the 1990s. The coffee sector seems in a fundamental transition to be more knowledge-intensive, more actively penetrating into the global value chain. It consolidated competitiveness in quality and productivity in the segment of green coffee, and began extending into roasting. It has achieved impressive progress in reduction of water use in milling under much more aggressive program and in rather effective coordination and collaboration. These are surely based on technological capability, managerial experiences and the ability in policy making and implementation, accumulated in the centaury-long evolution. The palm oil sector is also including technological change, but the more relevant innovations are in the institutional framework, including a wider and inclusive knowledge base which gave access to many small farmers.

2. Conceptual framework: sustainable development, systems of innovation and inclusive growth

The need to consider several kinds of challenges (economic, social and environmental) as well as the trade-offs between them, is one of the core ideas in the discussion about the concept of sustainable development. It is important to use the concept as a political orientation for the necessary transformations towards a situation in which the exploitation of resources, the

direction of investments, the orientation of technological development and institutional changes are made consistent with this diversity of challenges (Van den Bergh, 1996). 'Sustainable development' as a concept was popularised by the Brundtland Report as that meeting 'the needs of the present without compromising the ability of future generations to meet their own needs' (WCED, 1987: p43). This concept was originally proposed as a starting point in exploring solutions for potential conflicts between several challenges or interest groups. The challenges or sub-goals can be summarised in four groups:

- Increasing or maximising human welfare of present generations
- Maintaining sufficient opportunities for welfare realisation of future generations,
- Conservation or improvement of environmental quality and natural resources availability,
- The preservation of biotic and genetic diversity.

The concept aims to the challenge of simultaneously solving problems of scale, allocation, equity and adjustment via investment and technological advance (Van den Bergh, 1996). As a political concept 'sustainable development' has had a strong impact, opening a vast debate but also the adoption of political orientations toward the necessary transformations. So, in spite that the concept did not give a precise definition, it is clear that several countries and organisations have introduced changes in order to move in that direction. In the debate there are people highlighting different topics. One of the critics is that the concept does not make distinction between the vastly different needs in the First and Third Worlds not between the human needs and the consumers wants (Ekins, 1995). One more discussion is about if economic welfare is enough for 'meeting the needs' or if is necessary to totally change the concept of welfare (James, Nijkamp and Opschoor, 1990). For the study of innovation, the concept is also relevant and introduced the idea to think about the orientation and speed of the technological change, but also about the need to innovate on the institutional framework to met the different dimensions of development.

The concept of sustainable development is mainly used at a macro level. However, most of the challenges depend on transformation of the patterns of production, consumption and social behavior. From the supply point of view, a relevant dimension is on the patterns of production, which depends on transformations at sector and firm level. This implies to consider sustainability also at these levels. The concept sustainable performance is a way to have an operative approach of sustainable development at firm and sector level. The core aim is to stress the idea of different challenges to be considered in a holistic and systematic approach. More precisely, sustainable performance is defined as the simultaneous achievement of desired scenarios of performance in three dimensions (economic, social and environmental). In operative terms a process towards sustainable performance can be understood as an evolutionary process of setting multidimensional targets and strategies to reach the targets. To evaluate the contribution of innovation and catch-up process on sustainable performance of the sectors, it would be necessary to consider specific indicators which characterize the challenges in the different dimensions. It would be necessary to select a set of indicators which can be comparable among different countries and to evaluates how the evolution of the sectoral systems have impact such indicators (see the original debate in Orozco, 2004).

The social dimension of sustainable development can be studied with the concept of inclusive growth. "Inclusive growth means growth with equal opportunities. Inclusive growth therefore focuses on both creating opportunities and making the opportunities accessible to all. Growth is inclusive when it allows all members of a society to participate in and contribute to the growth process on an equal basis regardless of their individual circumstances" (Ali and Zhuang, 2007: 10).

There is a clear link between the debate about sustainable development and the debate on systems of innovation. Both of them are focused on the necessary transformations to improve in different issues. Most of the key questions in the study of systems of innovations are related to

the explanation of why nations differ in economic performance (Lundvall (ed), 1992; Edquist (ed), 1997). However, this focus on economic performance should not exclude the consideration of the other kind of challenges for sustainability (Segura, 1999). It is convenient to consider that even focusing in the economic dimension, is possible to find strong differences in the performance of a sector, many of them explained by the characteristics of the institutional framework. The technological trajectories and the social performance of a sector can differ as a consequence of different institutions in the systems of innovation.

If the focus is in specific sectors, it is convenient to follow a sectoral innovation system approach (see Malerba F, 2004). It is necessary to put emphasis in the trajectories of three different issues: the knowledge base, the actors and networks, and the institutions. The Knowledge and technological domain is relevant because any sector could be characterized by a specific knowledge base, technologies and inputs. As argued by Malerba, in a dynamic way, the focus on knowledge and the technological domain places at the centre of the analysis also the issue of sectoral boundaries, which usually are not fixed, but change over time.

The dimension of actors and networks are also relevant. In principle, any sector is composed by heterogeneous agents, both organizations and individuals. Organizations include both firms (e.g. local firms, subsidiaries of multinational corporations, users, producers and input suppliers) and non-firm organizations (e.g. universities, financial institutions, government agencies, or technical associations), including sub-units of larger organizations (e.g. R&D or production departments) and groups of organizations (e.g. industry associations). Each agent is characterized by specific learning processes, competencies, beliefs, objectives, organizational structures and behaviors. The agents interact through processes of communication, exchange, cooperation, competition and command. In a sectoral system approach, innovation is considered a process which involves systematic interactions among a wide variety of actors for the generation and exchange of knowledge relevant to innovation and its commercialization. Interactions include market and non-market relations that are broader that the market for technological licensing and knowledge, inter-firm alliances, and formal networks of firms, and often their outcome is not adequately captured by our existing systems of measuring economic output. Institutions are key factors, because agents' cognition, actions and interactions are shaped by institutions, which include norms, routines, common habits, established practices, rules, laws, standards and so on. A lot of institutions are national, as for example the patent system, while others are specific to sectors, as for example the sectoral labor markets or sector specific financial institutions (based on Malerba, 2005).

The challenge is then how to study the role of sectoral systems of innovation on the performance of the sector and on the process of development of the country. The role of the systems of innovation on performance is derived from their role on innovation processes, especially on the fact that innovation is an interactive process. Edquist (2001) argues that the most important function of the systems of innovation is to produce, diffuse and use innovations. The relationships between institutions and organizations in a system of innovation influence innovation processes and thereby also the performance of the system (Edquist and Johnson, 1997).

The role of the systems of innovation is strong for any kind of organizations in the system, even in particular firms. It is recognised that firm efforts and competencies are supported and shaped by the system or, as Nelson has pointed out, "what firms do, and the technologies they employ and develop, are influenced to a considerable extent by the environment they are in" (Nelson, 1998: 512). A similar idea is presented by Cimoli (1998), arguing that the interactions between competencies (referring to a firm, organization or country abilities to solve both technical and organizational problems) and performance (as measured by variables such as competitiveness and contribution to industrial growth) are shaped by the systems of innovation. He also argues that economic performance depends on how each country implement policies and organizes its institutions, which are also part of the system of innovation. Some other studies emphasizes that growth and catch-up potentiality are clearly related to a country's historical path and to the development of the systems of innovation (Katz, 1997).

Institutional innovations

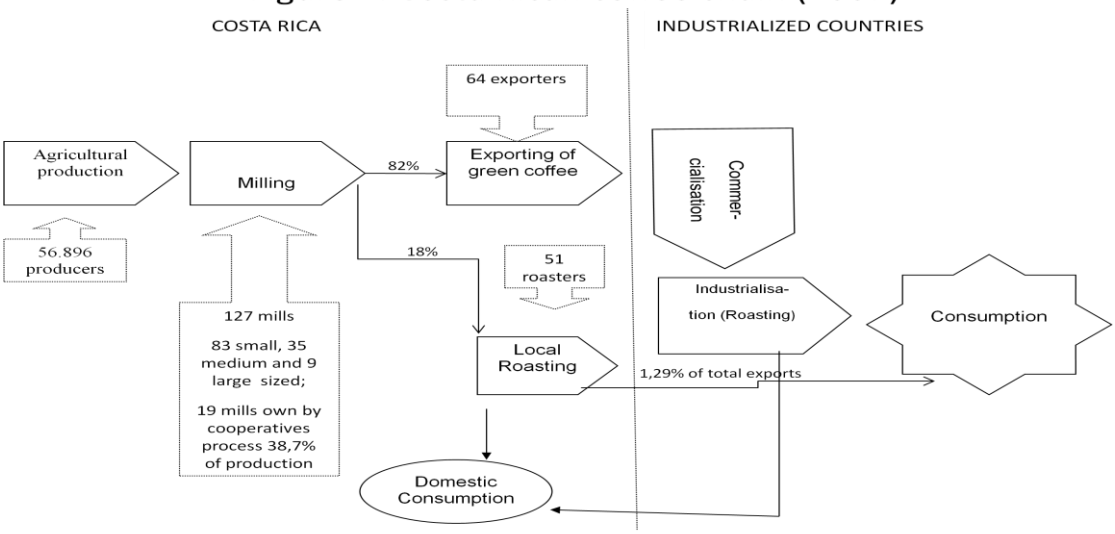
Institutions[1] shape the behaviour of firms and other organisations (Edquist, et al, 1998). In that sense, changes in institutions can also generate constraints or incentives to innovation. In general, changes in the institutional set-up can be considered as innovations when are aimed to reach explicit targets. It is possible to have institutional innovation in the institutions that are created by design (patent law, and other institutions designed by public agencies as policy instruments, also formal organisations as state agencies or non public organisations). It is also possible to find innovations in other institutions that evolve spontaneously over extended periods of time, such as various kinds of social rules or habits (Orozco, 2004).

3. Institutional arrangements and inclusive growth in the Costa Rican coffee sector[2]

Coffee is one of the most popular beverages worldwide. Most of the areas suitable to coffee plantation locate mainly in the South. There is a high income elasticity of coffee consumption, which restricts coffee mainly affordable for people in the North. Having production in the South and most of the consumption in the North, it is not estrange that the coffee value chain is doomed to be international. Historically the input - output relations in the value chain was organised in such a way that colonies earlier and new republics later were in charge of providing raw (green) coffees while imperial earlier and industrialised countries later run the international commerce and roasting activities.

The coffee value chain embraces cultivation, milling, roasting, distribution and consumption (see Figure 1). In Costa Rica harvesting of coffee fruits is made mostly by hand picking, becoming a labor intensive process. There is a wide participation in the cultivation and less actors in successive stages. From 1920s Costa Rica introduced several regulations in the interactions among the different actors. The regulations have evolved but the principle has been the same: to protect especially the farmers from the more powerful actors in the coffee value chain.

Figure 1: Costa Rican coffee chain (2007)



Note: Adapted from Figure 5.1, Díaz (2003) with data by ICAFE, 2007

[1] I use the definition by Edquist and Johnson (1992), considering institutions as the set of common habits, routines, established practices, rules, or laws that regulate the relations and interactions among individuals and groups. In that sense, there is a distinction among institutions and organizations. Organizations are understood as formal structures, consciously created and with an explicit purpose.

[2] The data and main arguments on the evolution of the coffee industry in Costa Rica is based in Orozco and Diaz (2008)

Costa Rica, has been engaged mainly in plantation and milling, in order to produce raw or green coffee for export throughout the 19th and 20th centaury until the 1990s (Figure 1). Since then the Costa Rican coffee sector has been moving towards high-value activities. On the one hand, the Costa Rican sector entered and increased roasting, now about one fifth of produced green coffee is further roasted locally, although the majority of roasted coffee is for domestic consumption including sold to coffee tourists; a small part of it has been sold directly to international consumers, as shown in figure 1. On the other hand, quality and productivity of Costa Rican coffee has been in improvement, the sector is now becoming a leader in these terms among international green coffee producers.

Institutional framework and inclusive growth in the coffee sector

Coffee growers in Costa Rica have been traditionally smallholders. Several regulations and policies were developed to guarantee this inclusive condition of the sector. From very early in the development of the industry in Costa Rica, the authorities of the Republic implemented a series of measures to promote for the entry. For example, in 1821, when the production of coffee was in the beginning stage, the Municipality of San José distributed free coffee plants among residents. Later on, in 1825 the Government exempted coffee from tithe payments. Then, in 1831 the National Assembly decreed that anyone who grew coffee for five years on idle land could claim the land as their own[3]. A brotherhood spirit of coffee farmers made Costa Rica the first Central American country to establish coffee as an industry.

The processing in Costa Rica followed the wet processing technologies from the very start. The social networks and the concentration of power in the coffee sector were closely associated with main processing technologies. "In contrast to the cheaper dry method, which was so extensively and economically used in Brazil,--and used on a much smaller scale in certain more marginal parts of Costa Rica as well—Costa Rica's wet method led to central processing plants (*beneficios)*. They were located either on large farms or in towns and cities, with increasingly technical procedures and attention to quality. Such processing had implications for the manner of harvesting (handpicking only ripe cherries rather than Brazil's more industrial and less discerning style), the development of transportation (first oxcarts, then railroads and trucking), and relations between coffee mill owners and their suppliers of fresh coffee fruit." (Samper, 2001). There was a natural concentration in the processing phase. However, from the 1960s, an important group of cooperatives of farmers have played a relevant role. These organizations gave access to small and medium farmers to the value added in the processing phase.

From early stages of the coffee industry, the Republic government invested in infrastructure, mainly the construction of new roads, the rehabilitation of harbours, and later on the construction of rail routes, based on coffee revenues (Acuña and Molina, 1991: 90). In spite of the participation of many actors, there was some concentration in the processing and the exporting stages of the value chain.

The coffee sector in Costa Rica was set up from the very start as export-oriented sector. Many factors contributed to facilitate this international insertion: the active growers and processors and other actors and their *intense dynamic inter-linkages*, the engagement in processing and chosen technologies, and the ideal land and climate--the volcanic-rich soil, high altitude, afternoon sun, plentiful rain, and cool evenings together created perfect conditions for yielding beans that are rich and intense in flavor. Very relevant have been the formation of social, cultural, economic and political reliability of the country. The coffee sector is an inherent part of the economy, in contrast to banana, which was an enclave, largely isolated from the rest of socio-economic structure.

As argued by many actors (see for example Acuña y Molina, 1991), an important *institutional innovation* took place around the 1920s -1930s, which was the creation of a sectoral regulatory

[3] Source: at the web http://www.aboutcoffee.net/2008/10/history-of-gourmet-coffee-in-costa-rica.html written by Mission Grounds Gourmet Coffee.

agency IDECAFE (1933, Institute for the Costa Rican Coffee). IDECAFE developed new mechanisms in order to resolve rising tensions between growers, processors and exporters. This institute was the answer to solve many conflicts occurred in the 1920s and 1930s in which small farmers were struggling against powerful processing mills' and mills-large farmers-exporters joint action in price setting. The regulation of price gave small farmers the possibility to get better conditions in face of the processing factories, exporters and local roasters. In 1948 IDECAFE was transformed in the Coffee Bureau as part of the Economy Ministry, it was organized in the way in which representatives of farmers, processing mills, roasters and exporters were all included. One of the main functions of the Bureau remained in regulating the prices. In addition, the National Bank was created in the same year with which farmers further feed from the restrictions posed by millers who had served as one of the creditors for them. (Naranjo 1999, Samper 2001)

IDECAFE also introduced regulations for the development of specialized private exporters. The growth of independent exporting agents enhanced the capacity of the Costa Rican sector in involvement in international negotiation and piecing, gained a bit more influence on the international chain governance. The presence of new actors specialized in negotiation gave the opportunity to get better prices, even in the future market of New York for Arabica Coffee and London for Robusta (Diaz, 2003). Promoting simultaneously the participation of these trade actors and the regulations in pricing to farmers, the institute created condition for inclusive growth in the sector.

Another institutional innovation was the promotion of cooperatives. Small farmers organized themselves into *cooperatives* since the 1960s. Some vertical integration appeared with the growth of cooperatives which developed processing mills and have technical advisors. A federation of cooperatives –FEDECOOP- became one of the main exporter firms latter on. Cooperatives enabled farmers to earn better profits which otherwise came to processing mills, and processing mills have to compete with the new actor of cooperatives. So, farmers got the possibility to get better prices for the grain.

Technological changes were incremental in most of the years. The challenge of cost reduction oriented the introduction of more machines and equipment in the processing mills; the development of better transport conditions was an incentive to reduce the number of *beneficios*, incrementing the scale of production. The use of chemical fertiliser produced increment in productivity in coffee plantations. In addition, the Arabic coffee was introduced as an technological change. Planted areas increased significantly.

One of the most important institutional innovations for inclusive growth was the *institutional development for formal knowledge creation and dissemination*. The institutional framework put the State in the centre of the knowledge base, but interacting with all the actors along the coffee value chain. The institution evolved or derived from the institutional basis already there for the sector, namely ICAFE (1985 the Institute of Coffee –the successor of IDECAFE and Coffee Bureau) and CICAFE (the Costa Rica Coffee Research Center started in 1977, latter on a part of ICAFE). These organizations have been the most important knowledge centers specialized in coffee since the 1970s. The government has been the key promoter for the knowledge centers creation, for which the small farmers could not afford or do not have the ability to engage in it. CICAFE carried out researches in variety breeding, among the achievements a short coffee tree variety has been widespread adopted. One result from studies in agronomics in the centres was a standardisation of technologies in plantations. It has a chemical laboratory, provides support for quality control. The Ministry of Agriculture in coordination with CICAFE developed an efficient system of extension of technologies (Orozco and Ruiz, 2002).

Move towards "gourmet coffee": the international limits to inclusive growth

The main strategy in Costa Rica from the 1990s has been to concentrate in high quality coffee. The result is a clear participation in the "gourmet coffee" market, but still exporting non-roasted coffee. International organizations also changed the strategies. ICO and FAO (the United

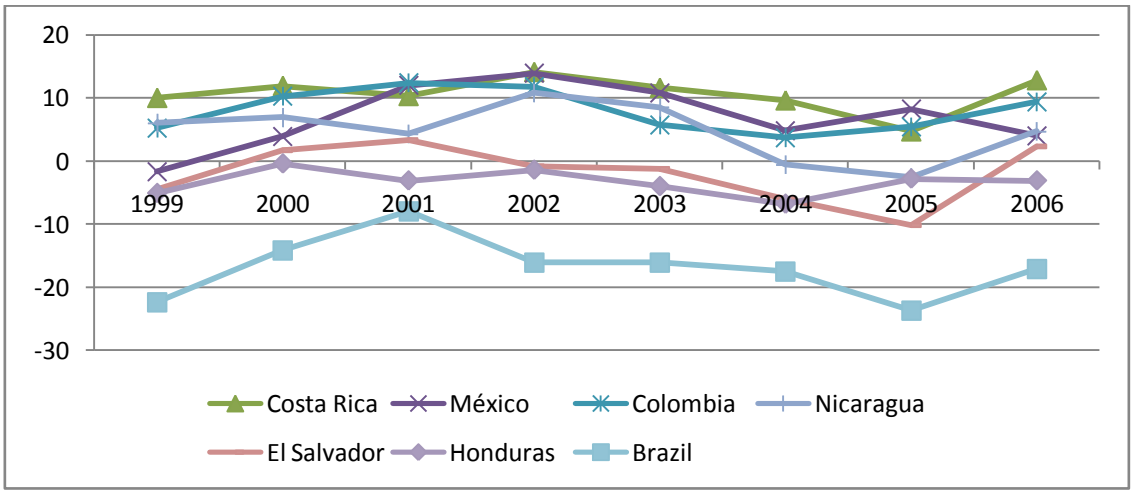
Nations Food and Agriculture Organization), began promoting specialized (certified or specialty) coffees (FAO 2003).

The transition was possible in Costa Rica thank to previous efforts. Producer were able to opt for the production of high quality coffees—gourmet coffee because of the support of the whole institutional framework. A specialized network of actors gave the possibility to take care of the issues defining quality. *Good quality* comes from careful management of every step throughout the value activities, plus favorable natural conditions. Farmers had the condition for better plantation management particularly in organic farming, and stricter milling quality control. Best practices were disseminated rather quickly, thanks to the coordination by responsible government agencies and R&D centers, such as the Agriculture Ministry, ICAFE, and the Institute for Learning (INA) which is in charge of training. The cooperatives also played a relevant role. They organized technological projects aimed to knowledge diffusion. Farmer´s attitude was also a crucial factor. They were open to advise by professionals from the different organisations. Farmers and *beneficios* sustained an agreement to receive only ripe coffee berries for the quality of processed beans. Most of the *beneficios* introduced a coffee taster. With this, farmers get a clear message as how to best manage harvesting (Diaz, 2003). As a result, the Costa Rican coffee has been getting a sustained *high differential* and keeps a leading position, as shown in figure 2.

Environmentally friendly milling

One of the main environmental problems in the coffee industry used to be the pollution by the *beneficios*. The rivers used to receive a lot of pollution and the communities around the *beneficios* had to suffer the consequences, including bad odors. The response came from an Inter-institutional Agreement for Cooperation (1992) made by coffee producers and authorities. The goal was to modernize coffee factories so as to improve the environmental performance of the coffee industry. International buyers' concern about environmental impact of coffee production gave a push to the initiative as well. The coffee industry used to generate near 60% of organic wastes in the country which were discharged into rivers. Besides, the coffee industry contributed 15% of industry-originated CO2 emission, 8% in electricity consumption, it produced hundreds of thousands tons of coffee flesh from 4 or 5 months' processing of coffee berries. This made up very negative environmental effects in spite of positive economic and social benefits (Chacón, 1997 mentioned by Ruiz y Orozco, 2001:38).

Figure 2. Differential in coffee prices obtained in selected ICO member countries
(Total exports all destination), 1999-2006



∗ In US$ / quintals

Source: Own elaboration with data by International Coffee Organization –ICO- (http://www.ico.org/coffee_prices.asp), and New York Board Of Trade – NYBOT.

The Inter-institutional Agreement for Cooperation set forth a framework for allied action, in which new environmental regulations were stipulated based on research works at CICAFE with participation of milling factories; implementation has been carrying out under coordination by a number of government agencies including the State Agency in charge of water management AYA (Instituto Costarricense de Acueductos y Alcantarillados), the state agency for regulation of public services ARESEP (Autoridad Reguladora de los Servicios Públicos), and the Health Ministry, together with CICAFE as mentioned, and in close collaboration of mills. It is worth mentioning that for necessary knowledge creation, international experts were invited to give advice to the works at ICAFE, and that research capacity at CATIE, an agricultural technology university was involved, signalling a broad interplay of domestic and international scientific communities. There has developed action program constituted of four steps. The first step attempts to reduce water use to one fourth from previous convention in milling per kg of coffee fruit; the following steps have the targets to largely eliminate small sized and then suspended solid wastes, and finally a thorough anaerobic treatment of the waters is pursued so that water pollution be substantially reduced by 80%. (Orozco and Ruiz, 2001:39) Apparently the aggressive attempts require enormous inputs in terms of knowledge and investment. It is reported that the coffee sector had invested near 11,000 million colons (USD equivalent?) by around 2000. (CEPAL, 2001: 52) The consequence has been very impressive thus far. Once again, an institutional innovation gave the response to improve the performance of the industry.

International value chain limits to inclusive growth

With high quality, Costa Rica is penetrating the higher value niche of the market. Table 1 gives a picture in which the large share of coffee from Costa Rica sold in international market has been under the category of gourmet coffee in recent years. However, the access to the most profitable part of the market is very limited. Actually, local roasters' participation is decreasing due to the concentration of economic power in the international value chain (Table 2). The international roasters put pressure to the local exporters and roasters, not to challenge their normal trading in which they buy only green coffee; and local roasters and exporters prefer not to take the risk of losing the relationship with the main buyers. There are *other problems* from inside the system too. Roasters feel that regulations to import coffee force them to use only Costa Rican coffee, more expensive. But the international roasters can use mix of high quality coffees with cheaper ones. The dilemma is how to protect the local producers but opening the opportunity to local roaster of importing relatively cheap raw coffee for mixing with expensive Costa Rican beans. Otherwise their export is less competitive.

Table 1 Costa Rica participation in Gourmet[1/] coffee market

As share in total exports of coffee, Harvests 2003/04-2006/07

Data for 46 kilo sacs

Harvest	**2003-04**	**2004-05**	**2005-06**	**2006-07** [2/]
Amount	1.252.759,14	1.103.684,06	1.050.091,82	1.020.933,02
Participation	*68,31%*	*71,51%*	*75,35%*	*71,20%*

1/ Gourmet Coffee include: Strictly Hard Bean, Good Hard Bean and High Grown Atlantic

2/ Preliminary data

Source: Instituto del Café de Costa Rica (ICAFE)

In conclusion, several institutional innovations have opened the possibility for inclusive growth. However, a strong concentration of economic power in the final stages of the international value chain is still the main restriction to get better condition. It is necessary a new set of innovations to get the benefits to the value added. The results in previous processes of improvement, for

example to reach the gourmet coffee or to reduce environmental impacts, shows that there are conditions to innovate. A strong participation of small farmers and cooperatives that benefit of the value added in the processing part of the industry shows also that the institutional framework in the sector gave more opportunities to inclusive growth than the one in other countries.

Table 2 Composition of Costa Rica coffee exports (2000-2007 in percentages)

SAC Code	Arancel ítem	2000	2001	2002	2003	2004	2005	2006	2007
0901.1	Coffee without roasting	95,01	96,97	97,94	99,13	99,06	99,07	98,85	98,61
0901.2	Roasted coffee	4,99	3,02	2,04	0,85	0,90	0,90	1,06	1,29
0901.9	The others	0,00	0,01	0,00	0,00	0,02	0,02	0,01	0,01
2101	Extracts, essences and concentrates of coffee	0,00	0,00	0,02	0,01	0,01	0,01	0,08	0,09
Total		100,00	100,00	100,00	100,00	100,00	100,00	100,00	100,00

Source: Own elaboration with data by Central Bank of Costa Rica

4. Co-operatives and inclusive growth in the palm oil sector[4]

The palm oil activity in Costa Rica started in the 1930s. The United Fruit Company decided to begin the production of palm oil, trying to develop an alternative to the banana plantations, which were affected by a disease named "mal de Panamá". In 1951 a US citizen who was living in Costa Rica founded the company "Numar American Brand", producing nutritive margarine. Eight years later, the company established a palm oil factory in San José named the Numar Company. With the development of this factory, the company substituted imports of oils from Malaysia. The opening of the Central American Common Market in the sixties established a framework for the Numar Company to expand into other countries in the region. They consolidated two now well-known trademarks in the region: Clover Brand and Numar. In 1965, the United Fruit Company bought the Numar Company, developing the Numar Group with several firms in the activities of plantation, extraction, and processing of vegetable oils and fats. The group included four firms. Palma Tica manages the palm oil plantations and extraction mills. ASD is specialized in the research, development, and trade of palm oil seeds. Numar processes palm oil for production of margarine, vegetable oils, and other related products. Unimar is responsible for the marketing and commercialization processes. Until now, the group's activities have continued to expand (Orozco, 2004).

Table 3. Annual production and exports of palm oil fruit and crude palm oil (CPO) in Costa Rica. 2001-2006

	2000	2001	2002	2003	2004	2005	2006
Are harvested	39790	39790	42480	43200	46600	50125	52625
Producction oil palm fruit (tonnes)	609117	666084	571200	581000	670000	780000	790000
Yield (Hg/Ha)	153082	167399	134463	134490	143776	155610	150119
Production CPO (tonnes)	137051	149868	128400	131460	150750	157500	164250
Exports CPO (tonnes)	95940	77671	64816	106979	179550	132809	102788
Exports / production (CPO)	70,0%	51,8%	50,5%	81,4%	119,1%	84,3%	62,6%
Imports CPO	204	2746	10558	1965	1970	4168	8177
Imports/production (CPO)	0,0%	0,4%	1,8%	0,3%	0,3%	0,5%	1,0%

[4] Based in Orozco (2004)

Source: Own elaboration with data by FAO

One characteristic of the industry until the 1980s was a strong concentration of the activity in few hands. However, the performance of the industry was attractive in terms of export generation and economic growth. The kind of soils and the climate conditions in the southern part of the country are also ideal for the activity. For the policy makers, there are then some characteristics in favor of promoting the activity but some others, especially the high concentration of wealth, which make it not attractive. The solution was to find a new scheme with more inclusive conditions. The cooperative organizations gave an answer, but it was necessary a long process to get to this strategy.

The palm oil activity in the co-operative sector is recent and responds to direct policies to respond to a big crisis in the southern part of the country. During several decades, the main economic activity in the Southern Pacific Region of Costa Rica was the banana industry. For long periods two foreign companies developed the banana production: Standard Fruit Company and United Brands Company. The tradition was to develop big banana plantations in the region. Thousands of employees were attracted from other parts of the country and even from other countries. However, during the 1970s, sanitary problems in the plantations, low international prices, and labor problems, made the companies leave several plantations. The immediate effect was the abandoning of several farms, generating a massive unemployment in the region (Bolaños, 1998). There were no other economic activities in the region able to generate employments. Many unemployed people decided to fight for a piece of land. They invaded the abandoned areas or other areas, which were not used for banana plantations. The initial response by the government was to resist the invaders, who, however, did not give up.

In several steps, the government generated mechanisms to support the population, opening spaces for discussion and concerted solutions. One of the main strategies was to develop agrarian peasant settlements. After extended processes of negotiation with the companies and the people fighting for land, the government decided to create a scheme, distributing land to the families involved in different agrarian settlements. The main purpose was to provide the families with small individual farms, but keeping several families together, in order to be able to provide the area with a basic infrastructure. One of the main difficulties was to develop a "peasant mentality" in families who had previously been employees of the big banana companies. During the first years, the families produced mainly for their own benefit (Coopeagropal, 2001).

The process began with the direct intervention of the Institute for Agrarian Development –IDA- This institute promoted several peasant settlements. The Coto Sur region was one of the main areas developed within this scheme. The idea was to give access to land to a big number of families. The land ownership scheme consisted of individual parcels, distributed to the families living on them. The normal size of the parcels was between 7.5 and 20 hectares, and the average was about 10 hectares. The people involved were responsible for designing the scheme. For more than one decade, the families tried different products, such as rice, bean, corn, and different vegetables, but the results were very poor. The normal picture was bad harvests and big difficulties to reach the market and low prices in the case of a regular harvest. For more than ten years no significant progress took place in this area. As Bolaños (1998) argues, still in the mid 1980s, the living conditions were very poor with small houses in bad conditions, without electricity and potable water. In addition, the population in the area began to have problems repaying their loans. The bank agencies did not want to give these families more credit. This made the region one of the poorest in Costa Rica during the 1980s.

In this situation, the Institute for Agrarian Development in a joint effort with the inhabitants of the region decided to look for alternatives for developing the area. The main purpose was to improve employment and income, generating incentives for the families to stay in the region, instead of moving to other places. Palm oil was proposed as a good alternative. One option was

to develop the activity in the same scheme in the existent plantations, with strong participation of big firma, especially the Numar Group. However, this scheme was not the acceptable in terms of income distribution. The different actors went for a more difficult processes, but thinking about a more inclusive way of organizing the activity.

The process of development was long and is possible to be understood in several phases. The first phase began in 1979 with a small plantation. Later on, in 1980, some organized peasants proposed a palm oil project to the government. In 1983, considering the possibility of developing the project, the Institute for Agrarian Development prepared seeds for plantations in several farms. In 1986, the co-operative Coopeagropal was created, as a strategy for organizing the small farmers. This co-operative began to pressure for national and international support. After some months of negotiation, also in 1986, the Law No. 7062 was approved, creating the Agro-Industrial Palm Oil Project for Coto Sur. There was a lack of financial resources, but the institute for Agrarian Development was able to receive funding from The Inter American Bank of Development (US$ 31 millions), the Commonwealth Development Corporation (US$ 13 millions), and the government of Costa Rica (US$ 4 millions).

The main objective was to develop the area of Coto Sur through an expanding agro-industrial project in the hands of small farmers. The number of plantations was growing very fast. In 1988, 81 small farmers got credits for the plantation of 697 hectares5. In 1993, there were 4960 hectares under cultivation, and the project continued to expand. In 1999, approximately 10.000 hectares were cultivated by about 600 small farmers.

The long run intention of the palm oil project was to transform the farms towards the production of more stable products, expanding the exports of palm oil related products and consolidating the regional economy by increasing income and employment. In this way the main social target was to contribute to better living conditions in the region (Coopeagropal, 1999b).

Besides the issues of credits and land titles, the Coto Sur project included development of the infrastructure and the knowledge base. It included training of the co-operatives in organization and management as well as technology transfer. The main mechanism was the development of 28 farmer committees, covering the entire area of the project. The idea was that every farmer should be member of a committee. Participating in the activities organized by the committees, the farmers received information and training. The committees were also mechanisms for promoting participatory schemes for decision making in the co-operatives. The main issues to be decided in the co-operatives were discussed in the committees, giving all farmers the opportunities to participate.

The development of physical infrastructures was a key issue. The first challenge was related to roads, bridges, and drainage. The objective was to build or repair 72 km of main and 170 km of secondary drainage, clean-up 62 km of natural ditches, build or repair 87 km of roads in the main network and 35 km in the secondary network and also 587 m of bridges. The second component was the construction of an extraction plant for crude oil with 25 metric tons per hour of processing capacity. A third component was the building of a plant for generating electricity by the use of solid waste. The fourth component was the construction of a refining plant, including equipment for refined products, such as oils for cooking. This component was not part of the original plan, but a result of the discussions in the committees (Bolaños, 1988).

Coopeagropal was founded in 1986 as a requirement for the entire process. The idea was that this co-operative would be responsible for organizing the production processes. In 1993, the extraction mill began production. In the first phase from 1993 to 1996, the co-operative mainly produced crude oil. Other products with more value-added were included later on. In this phase most of the production was sold to the main competitor, and the co-operative did not develop its

5 Only a few farmers believed in the project from the beginning. Most farmers wanted more detailed information and formal guarantees about the stability of the project.

own capacity for direct sale to other clients. From 1996, the co-operative considered to increase the value-added by innovation in products and markets. In this phase the co-operative began itself to market crude oil as well as other basic products.

The analysis at the firm level indicates several innovation activities during the three phases of development. The innovations during the first phase can be classified mainly as organizational and institutional. During the second and the third phases, the firms also made several innovations, but some of them had little positive impact on performance. For many of the key performance issues, however, the co-operative did not develop any innovations (Orozco, 2004).

Policies to promote the palm oil activity in cooperatives

During the first phase, the main innovations were related to local and sectoral policies for development, including programs for technology and knowledge transfer, financial schemes, co-ordination among state agencies, and formalization of property rights. These policies were designed to promote the palm oil activity in the Southern Pacific Region, more specifically, in Coto Sur. As part of the innovations, the government established an ad-hoc committee to co-ordinate different state agencies and other actors, in order to reach the aims of the critical variables in each key issue. During the second phase, most of the innovations were aimed to put in practice schemes for inclusive participation in the activity. The cooperative developed schemes of subsidies for promoting efficient use of fertilizers, schemes of incentives for farmers to motivate them to sell the fresh fruit to the co-operative, a financial system for members of the co-operative, promotion of new plantations, a scheme of fees for farmers in order to maintain the physical infrastructure, technical improvements to the equipment, a system of technical advice for farmers, and agreements with a big client to market the production.

Later on, the innovations were more organizational and aimed to improve the performance of the firm. The cooperative introduced command and control measures in order to increase the amount of fresh fruit, a joint venture project for new middle term investments, incremental technical improvements for cost reductions, adaptation of equipment for improvement of extraction productivity, improvements of the system of quality control, a scheme for performance evaluation, technical improvements for waste handling, and the introduction of command and control policies by state organizations to control environmental impacts.

The whole project developing this co-operative in the palm oil sector was designed as part of a regional and sectoral program, with support from the government. Industrial policies, including funding, technology transfer, training and development of the physical infrastructure were implemented. However, during the second and third phases there were contradictions in the public policies. During the second phase the lack of public policies hindered innovation at the sectoral level. Without a clear policy to stimulate the palm oil activity, there was a strong uncertainty about the future of the co-operatives in that activity, hindering the development of new planted areas and preventing more families from being included. During the third phase the lack of direct public policies hindered improvements of the performance of the sector. The decision of supporting the construction of a new extraction mill was not followed up by a systematic project as in the case of Coopeagropal. The government gave some support, but with isolated instruments, without considering all the critical variables of performance.

Financial facilities were part of a systematic approach in order to develop the cooperative in the first phase. Innovations were necessary in order to give the farmers access to credit facilities. During the second phase, the high profits also facilitated the financing of innovation. However, the improved financing conditions did not help the whole region but only the members of the co-operatives. The situation did not improve for the rest of the farmers. Neither the bank system nor the government policies compensated for this problem. During the second development phase of the sector, good financial conditions improved the possibility to innovate in terms of the collaboration scheme, which included several innovations for training, technical advice and

adequate use of fertilizers. It is clear, however, that the holistic view of the project in the first phase was weaker in the successive phases.

Who owns the profit was a critical variable to promote the inclusive strategies. A good performance, in terms of profits and high income due to extraordinary high prices of the crude oil during the second phase of development of Coopeagropal, facilitated some innovations. With extra profits the co-operative had funds to pay the innovative systems of incentives, technical advice, and financial schemes for the farmers. The same applied to the whole sector while the prices were high.

Table 4. Structure of the palm oil industry in Costa Rica, 2006

Sector	Hectáreas		Familias
Private	21,887	46%	2,405
Cooperatives	13,497	28%	979
Independients	12,423	26%	583
Total	47,807		3,968

Source: Escobar and Peralta (2007)

The processing of the palm oil fruit requires big mills and investments. This is one of the main causes of concentration of the activity in few hands. To develop a more inclusive scheme demanded for direct policies and the investment of big amount of resources that the farmer did not have. In Costa Rica this was possible. But even so, the amount of families involved in the palm oil industry is still low. Thanks to the cooperatives the activity is today less concentrated. Besides the cooperatives, many independent farmers has been able to enter to the palm oil activity (table 5).

A difference with respect to the coffee sector is that the R&D activities are concentrated in the private sector. However, the co-operative sector has not yet developed a R&D system. The interactions with external R&D organizations have also been poor, and the main innovations have not been the results of research and development projects. Furthermore, the lack of systematic interaction with other organizations in the area has hindered innovations, especially at the firm level. The firms have not been able to develop new products or to compete in new markets. There is still a big agenda for inclusive growth, including a stronger R&D system for the sector.

In order to get more people involved in the palm oil sector many effort had to be done by several organizations. There was a gradual evolution of a system of innovation based on institutional innovations and the evolution of the quality of interactions. In the first phase, the main actors were the small farmers, public agencies, the National Bank, the Inter-American Development Bank, the Commonwealth Development Corporation of England, and the Costa Rican Government. The main public agencies were the Ministry of Agriculture (MAG), the Institute for Agricultural Development (IDA), the Ministry of Transport (MOPT), and the Irrigation Department (SENARA). The co-operative organizations with an important role in the first phase were the Institute for Co-operatives Promotion (INFOCOOP) and the National Chamber of Co-operatives (CONACOOP).

The main institutional innovation was the design and application of a scheme for the collaboration of different actors. The collaboration scheme was based on the participation of several public agencies, co-operative organizations, and external agencies and on the co-

ordination of the efforts by an ad-hoc committee organized by IDA. The interactions were aimed to solve specific problems and challenges in the development process. The strategy was based on an ad-hoc committee who design the planning and action processes, with the participation of different actors. Comparing the structure of the sector with the one before of the cooperative project, it is clear that the institutional innovation resulted in a more inclusive growth. The results are not as well as in the coffee sector but better than the situation before the participation of cooperatives.

4. Conclusions

There have been several institutional innovations in the coffee and the palm sectors with positive impacts in several aspects of the general performance of the sectors. Both economic, social and environmental issues were improved. One relevant result is the movement towards a more inclusive growth. In the coffee sectors the institutional arrangements gave the opportunity to thousands of small farmers to continue in the activity. In the palm oil sector the changed is drastic if we compare the situation today with the one in the 1980s. From a concentrated situation the sector moved towards a more inclusive structure, with strong participation of cooperatives and small farmers.

However, both sectors are today in new challenging situation. Some policies and conditions of the global value chain are hindering the possibility to enter to the more value added products in the coffee sector, limiting the options of a more inclusive growth. It will be necessary to develop a new institutional arrangement able to manage the *trade off* between the protection to the farmers and the possibility to enter in the more value added sections to the local roasters. The government should consider some kind of incentives and strategies in collaboration with local actors, to manage the high concentrated power by transnational companies in the coffee value chain. Innovations to enter to final markets will be necessary for a more inclusive growth of the sector.

In the palm oil sector there are several challenges. One is a more developed R&D system aimed to an open participation of poor people. This will demand a more active participation of universities and public research institutes and the strengthening of collaboration networks. The cooperatives can play a relevant role in a new R&D scheme. There are relevant lessons from the coffee sector. In the palm oil sector is necessary also to guarantee the access to more small farmers. This will demand new investments in other areas and new mechanisms for collaboration among different state organization, the bank system and the cooperative organizations. Technological changes will be necessary to make small harvested areas a profitable option. It will be also necessary to promote innovation in the sector for more value added products with participation of small producers. This will demand a very coordinated effort and the strengthening of the sectoral system of innovation.

References

Ali, Ifzal and Juzhong Zhuang (2007). "Inclusive Growth toward a Prosperous Asia: Policy Implications". ERD Working Papers Series, No. 97. Asian Development Bank. Economic and Research Department.

Barbarie, Alain (1998). 'Indonesia`s national evaluation system', in Mackay, Keith, ed, (1998), Public Sector Performance; the Critical Role of Evaluation, WORLD BANK.

Bolaños, Marcos (1998). 'Proyecto de desarrollo agroindustrial de Coto sur', Instituto de Desarrollo Agrario, IDA.

Comisión del Sector cooperativo palmero (1999). 'Plan de Desarrollo: sector cooperativo palmero', Documento final, Febrero

Coopeagropal (1999a). 'Milenium', Documento final de planificación estratégica.

Coopeagropal (1999b). COOPEAGROPAL: Motor de desarrollo de la región, Revista.

Edquist, C. and Johnson, B. (1997). 'Institutions and organisations in systems of innovation', in C. Edquist (ed.) Systems of Innovation: Technologies, Institutions and Organizations. London and Washington: Pinter/Cassell Academic.

Edquist, Charles (ed) (1997). System of Innovation: Technologies, Institutions and Organizations. Pinter, London and Washington.

Escobar, R y F Peralta (2007). La industria de la Palma Aceitera en Costa Rica. En ASD, Oil Palm Papers, No. 31, 21-24.

FAO Commodity and Trade Division 2003: Commodity Market Review 2003-2004

Gary Gereffi John Humphrey Timothy Sturgeon 2005: The governance of global value chains in Review of International Political Economy, Volume 12,issue 1 February 2005 78 - 104

Gregersen, Birgitte and Björn Johnson (1998). 'How do Innovations Affect Economic Growth? – some Different Approaches in Economics' in Herlitz, Lars (ed.) Mellem Ökonomi og Historie, Historiestudiet, Aalborg Universitetsforlag.

Gunningham, Neil & Darren Sinclair (1997). Barriers and motivators to the adoption of cleaner production practices. Australian Centre for Environmental Law, The Australian National University.

Hallam, David 2003: Falling Commodity Prices and Industry Responses: Some Lessons from the International Coffee Crisis, in FAO Commodity and Trade Division: Commodity Market Review 2003-2004

Kaplinsky, Raphael 2002: Spreading the Gains from Globalization: What can be Leaned from Value Chain Analysis? IDS Working Paper 110, University of Sussex, UK, 2000

Lewin, Bryan, Daniele Giovannucci and Panos Varangis 2004: Coffee Markets, New Paradigms in GlobalSupply and Demand, The world Bank Agriculture and Rural Development Discussion Paper 3

Munda, G., Nijkamp, P. and P. Rietveld (1994). 'Qualitative Multicriteria Evaluation for Environmental Management', in: Ecological Economics, No 2, 97-112.

Nelson, Richard R. ed (1993). National Innovation Systems. A Comparative Analysis. New York: Oxford University Press.
Orozco, Jeffrey (1997). 'Gestión Tecnológica y Desarrollo Sostenible: Deficiencias del Marco Institucional y de Políticas en Costa Rica', en Economía y Sociedad. No. 3, Abril.

Orozco, Jeffrey y Keynor Ruiz (2002). Uso de Instrumentos Económicos para la Gestión Ambiental. Serie Medio Ambiente y Desarrollo No.51. CEPAL, Chile.

Orozco J, D. Flores, R. Mena, L. Amaya e I. Guevara (2003). Barreras y Motivadores para la Introducción de Tecnologías más Limpias: análisis comparativo de casos. SUDESCA Research Papers.

Orozco, Jeffrey (2004). Innovation and performance improvements in the cooperative sector, Costa Rica. SUDESCA Research Papers No.38. CINPE and Aalborg University.

Orozco, J and Diaz, R (2008). "Moving from a catching up position towards international leadership: lessons from the coffee sector in Costa Rica". Paper for the Sixth Globelics Conference, *Mexico*, September 22-24.

Osorio, Néstor Executive Director of ICO, 2002: The Global Coffee Crisis: A Threat to Sustainable Development, Submission to the World Summit on Sustainable Development, Johannesburg,

Remmen, Arne (1995). 'Pollution Prevention, Cleaner Technologies and Industry', in Rip, Arie Thomas J Misa and Johan Schot (eds). Managing Technology in Society. The Approach of Constructive Technology Assesment. Pinter Publisher, London, UK.

Remmen, A (2001). 'Greening the Danish Industry. Changes in Concepts and Policies', in Technology Analysis and Strategic Management, vol 13, No.1.

Segura, O (1999). Sustainable Systems of Innovation: The Forest in Central America. Ph.D Thesis. Aalborg University, Denmark.

UNIDO 2002-3 Industrial Development Report