



018530 - SWITCH

Sustainable Water Management in the City of the Future

Integrated Project
Global Change and Ecosystems

D6.3.2 Annex 1

Social inclusion at the micro-tanneries in Colombia

Start date of project: 1 February 2006

Duration: 60 months

Universidad Nacional de Colombia -UNAL

Revision [final]

Project co-funded by the European Commission within the Sixth Framework Programme		
Dissemination Level		
PU	Public	X
PP	Restricted to other programme participants (including the Commission Services)	
RE	Restricted to a group specified by the consortium (including the Commission Services)	
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SWITCH Deliverable Briefing Note Template

SWITCH Document:

Social inclusion at the micro-tanneries in Colombia

Deliverable reference:

Author(s) and Institution(s) This report was prepared by Consuelo Aragón with Alba Sánchez with the supervision by Mónica Sanz and Joep Verhagen . The results on CP implementation and competitiveness were obtained thanks to the team work lead by professor Laura Osorio at Universidad Nacional.

Publication date February 25th, 2010

Audience This document is targeted at researchers, practitioners, policy makers, tannery communities, environmental authorities that can be part of the decision making scenarios.

Purpose

The goal of this research was to contribute to the social inclusion of the tanning sector of *Villapinzón y Chocontá*.

The research objective was to describe the possible increase in the levels of social inclusion achieved by the tanneries on the basis of

- (1) Competitiveness and productivity with a sustainable environmental vision,
- (2) Participation in the leather production chain
- (3) Business legalization.

Background

In Colombia, the environmental degradation is equivalent to more than 3.7% of Colombia's Gross Domestic Product (GDP). Only 5% of the environmental authorities' budgets deals with pollution issues aside from investments in conventional wastewater treatment plants (Sánchez-Triana, 2007). IWM is not a common practice yet. Colombia has also one of the highest income inequality rates in Latin America (Gini is 0.59).

In this context there are underprivileged communities that have been put aside because of their special characteristics and because they are viewed as polluters belonging to the private sector. This group is constituted by the micro and small



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sized industries that represent as a whole 11% of the micro and small sized enterprises in Colombia (DNP, 2007).

Micro and small enterprises (MSEs)¹ - employ 81% of the nation's work force and represent 99.4% of the total number of businesses (DNP, 2007). The owners of these enterprises have limited opportunities to climb the social ladder. The MSEs belonging to the industrial sector impact the environment- some figures consider them responsible for 70% of the industrial pollution in developing countries.

Facing the environmental degradation caused by the smallest industries through innovative approaches is of the utmost importance while supporting a social inclusion process.

Aiming at social inclusion of these MSEs must be understood as a complex endeavor through social, technological, environmental, and economic measures. To seek *the competitiveness and productivity, the effective participation on the productive chain and the formalization* of the MSEs becomes an adequate tool to assist the social inclusion of the Colombian population.

MSEs as complex problems

Since MSEs are seen as complex problems in the developing countries, there have been uncertainties on policy, scientific and methodological domains with regard to dealing with them. The use of regulatory, market and persuasive policies often bypasses the MSEs because of their specific characteristics. They belong to the informal sector of the economy, have limited access to financial, educational and monitoring resources- and usually the only possibility left to deal with them is through legal actions from the adjudicatory² system. Successful cleaner production (CP) projects are not being broadly implemented; end-of-pipe approaches still dominate and entail high investments that can be unreachable for MSEs (Cloquell-Ballesteret *al.*, 2008; Montalvo and Kemp, 2008; Blackman *et al.*, 2007; Altham, 2007). As the viability of MSEs is threatened, social unrest results. Not surprising, MSEs are in frequent conflict with authorities.

[The tannery industry has been highly polluting in the area of Villapinzón in](#)

¹ MSEs have micro enterprises (1-9 employees) and small enterprises (10-49) employees

² Referring to the judicial system



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[Colombia for decades. Its discharges caused](#) water quality parameters to exceed the limits for the Bogotá River, which because of unsustainable uses cannot meet for the year 2020, *i.e.* 7 mg/L for BOD and 10 mg/L for TSS. The discharges of chromium sulphate were five to nine times higher than what is allowed by the Decreto 1594 on industrial discharges. For two decades the tanners have been virtually at war with the authority because no effective measures had been implemented and they were blamed for this.

Since the year 2004, a comprehensive approach based on conflict resolution and CP has been implemented in the area. A strategy built with the tanners has prioritized five main problems. This document focuses on building business opportunities for the tanners that after implementing CP must aim at competitiveness for long term results.

Potential Impact

Since the strategy on CP implementation, based on a systematic approach to social inclusion worked at improving both the river water quality and the environmental status of the micro-tanneries going through a crisis, lessons can be learned for science and for social practice. The implementation of IWRM benefits from an extreme case of pollution prevention for the recovery of the river. Other MSEs in the context of Colombia benefitted from the Bogotá process because of their shared special characteristics. Moreover, it seems likely that also MSEs in other developing countries may profit from the lessons learned in this process.

This research in the area of Bogotá with small enterprises has implications for cities around the world that are tackling the issues of environmental pollution on water systems and the sustainability of marginalized industries. This action research has proven the impact that can be realized when conflicts can be resolved for the benefit of all parties involved.



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Recommendations

- This research proposes a paradigm shift in dealing with MSEs. Technical solutions are better worked out once the impending social challenges are faced and consensus has been built with all the stakeholders involved about resolving the challenges.
- The entrepreneurial development of the tanners as a tool to overcome social exclusion, suggests not only improvements in the processes that lead the industries towards becoming increasingly competitive in the market, but to undertake joint activities within the formal economy and to strengthen themselves as an association in the production chain.
- The use of indicators that can monitor the social inclusion of MSEs can be a useful tool as it can help keeping the pace of the change process over long periods of time.
- The results showed that the access to financial resources that are adjusted to the true conditions of the tanning sector should be a priority by the governments.
- Academia can take the lead in social inclusion processes provided a right attitude and awareness regarding the social challenges are present.



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Social Inclusion
VILLAPINZON AND CHOCONTA TANNERIES
Final Report

UNESCO IHE, UNIVERSIDAD NACIONAL DE COLOMBIA
Instituto de Estudios Ambientales IDEA



Project Director: Laura C. Osorio M.

Technical Coordination: Tania Santos

Technical Team: Consuelo Aragón, Alba Sánchez, Maryluz Rodríguez, Carlos Escamilla, Tatyana Bello, Carolina Tobón, Guillermo León.

UNESCO-IHE Supervision: Maarten Siebel, Mónica Sanz

February, 2011

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1. INTRODUCTION

A human being's fulfillment depends on the integration with the society to which he/she belongs. That same community either allows the individuals' participation in the activities it undertakes (inclusion), or it does not allow it at all (exclusion); making difficult the full and integral development of the human being (Rawls, 1971)³.

Social exclusion is a multidimensional phenomenon, given its social, economic, political and cultural impact. *Economic exclusion* is understood as the inability to generate enough income to meet basic needs; *social capital exclusion*, when it refers to the limited social participation mechanisms available; *human capital exclusion*, alludes to the lack of access and quality in education and health services; and *political exclusion* when political and civil rights are violated, and the person is excluded from making use of the rights he/she has as a citizen (Garay, 2002).

As a consequence of the exclusion, the economic gap has globally increased - further distancing social classes-, increasing the underprivileged and excluded population whose social, political and economic rights are easily violated by sectors of society considered dominant because they have greater political and economic power. In Colombia the Gini co-efficient (*an indicator about income inequalities where 0.0 is the minimal inequality and 1 is the maximum inequality*), is 0.59 a figure that has remained stable over the past six (6) years, maintaining one of the highest income inequality rates in Latin America (DANE 2009)⁴.

In developing nations, there exists a type of exclusion that corresponds to the opportunities that numerous social groups lose by not having access to the society of knowledge, access to information and to participation in technological changes. "The problem of the exclusion is such, that maybe at present, the most relevant issue of the global, political and social agenda is the search for an adequate conciliation between economic competitiveness in an even more global growing competitive environment; along with equality in terms of distributive justice and social solidarity..." (Garay, 2002 p. 80). In this sense, it can be concluded that social inclusion/exclusion centers on the opportunities for the economic growth of persons and of countries. Therefore, offering these types of opportunities to disadvantaged groups becomes a priority.

³ **John Rawls**, (1921 – 2002) Probably the most important political philosopher of the XX Century, profoundly revolutionized contemporary political philosophy and had a considerable influence in social theory, political science, law and normative economics, with his work, *Social Justice Theory 1971*.

⁴ According to the Report of the Mission for the *Conveyance of the Series Employment, Poverty and Inequality (MESEP)*. Carried out in 2009 by the National Statistics Administrative Department (DANE, by its Spanish initials) and the National Planning Department DNP.

Socially excluded groups in the water sector are not only poor communities without basic services, marginalized communities in the informal sector that are polluters can also be socially excluded. Those groups in Colombia have been put aside from pro-poor policies and governmental support because they are heavily impacting the environment and because they belong to the private sector (Sanz *et al.*, 2011). They are constituted by the micro and small sized industries that represent 11% of the micro and small sized enterprises as a whole in Colombia (DNP, 2007).

Colombia has a vast majority of micro and small sized enterprises (MSEs)⁵ - employing 81% of the nation's work force and representing 99.4% of the total number of businesses (DNP, 2007) but their contribution towards the Gross Domestic Product is not that significant (not more than 30% of the GDP).⁶The owners of these enterprises have limited opportunities to climb the social ladder. The MSEs belonging to the industrial sector impact negatively the environment- some figures consider them responsible for 70% of the industrial pollution in developing countries (Le Van Khoa, 2006; Soni, 2006 ; Hillary, 1997).

MSEs as complex problems

Since MSEs are seen as complex problems in the developing countries, there have been uncertainties on policy, scientific and methodological domains with regard to dealing with them. The use of regulatory, market and persuasive policies often bypasses the MSEs because of their specific characteristics. They belong to the informal sector of the economy, have limited access to financial, educational and monitoring resources- and usually the only possibility left to deal with them is through legal actions from the adjudicatory⁷ system. Successful cleaner production (CP) projects are not being broadly implemented; end-of-pipe approaches still dominate and entail high investments that can be unreachable for MSEs (Cloquell-Ballester *et al.*, 2008; Montalvo and Kemp, 2008; Blackman *et al.*, 2007; Altham, 2007). As the viability of MSEs is threatened, social unrest results. Not surprising, MSEs are in frequent conflict with authorities.

The present work focuses on the micro and small industries that since their especial characteristics are not recognized, lack clear institutional support frameworks. Facing the environmental degradation caused by the smallest industries through innovative approaches is of the utmost importance (Sanz *et al.*, 2011).

⁵ MSEs have micro enterprises (1-9 employees) and small enterprises (10-49) employees

⁶The National Council of Economic and Social Policy (CONPES, by its Spanish initials) 3484 National Planning Department. 2007

⁷ Referring to the judicial system

2. RELEVANCE OF THIS RESEARCH

To seek *the competitiveness and productivity, the effective participation on the productive chain and the formalization* of the MSEs becomes an adequate tool to assist the social inclusion of the Colombian population.

The entrepreneurial development of the tanners as a tool to overcome social exclusion, suggests not only improvements in the processes that lead the industries towards becoming increasingly competitive in the market, but to undertake joint activities within the formal economy and to strengthen themselves as an association in the production chain.

Through this work, certain factors related to social inclusion are taken into consideration in order to monitor the process in three different moments.

This research is framed by the work developed in the region of Villapinzón, Colombia as part of a conflict resolution process that started in 2004 with 120 micro-tanneries.

A box on the history of the conflict is presented below.

Case study

Year 2004

At only 6 km from the source of the Bogotá river, which is used for the water supply of Bogotá and for crop irrigation, lies a community of 120 tanners with a native Indian background. The community has just primary education, lives on a subsistence economy and uses obsolete technology. The industries have existed for decades, spread over an area of 7 km along the river and south of the village of Villapinzón.

Natural tanning agents were used until 1984 when the Regional Authority CAR (not yet Environmental), taught the use of synthetic tanning agents and was absent for more than 10 years (CAR, 1994). Today, tanning entails two basic processes that impact upon the environment: the classical dehairing with sodium sulfate and the tanning process itself using chromium sulfate.

The effluents of these industries are discharged into the Bogotá River with disastrous consequences for river water quality. According to Regional Authority (CAR) Ruling 043 of 2006, these values make impossible to meet the water quality parameter limits of the Bogotá River, for the year 2020, *i.e.* 7 mg/L for BOD and 10 mg/L for TSS. The discharges of Chromium were five to six times the allowed by decree 1594.

For over 20 years, the Regional Environmental Authority has tried to solve the environmental problems of the community of Villapinzón. However, 67 potential solution proposals remain still today on the shelves (CAR, 1998). Since the agency has always had a focus on end-of-pipe solutions without a CP branch, only one of the presented proposals was directed towards the prevention of the polluting flow (Cleaner Production). None had been implemented and the tanners were the ones to be blamed for. The conflict had not benefited the economic livelihood of the tanneries, whose owners all have been sued by the authority, banned from credits and face fines that they are unable to pay. As a result, all tanners are literally joining the growing group of Colombian residents living below the poverty line of 52% as a national average (El Tiempo, 2004a).

Realizing that no environmental rehabilitation project was being implemented, in February 2005 the Regional Environmental Authority closed 58 tanneries (El Tiempo, 2005b).

Year 2009

After a comprehensive process of six years aiming at fighting social exclusion and a mainly technical end-of-pipe approach, the tanners and the authorities are on speaking terms. The authority has supported the SWITCH project on CP implementation. The tanners built strategic alliances for every issue at stake that needed support. They have been successfully adopting preventive measures that fit their needs and the authority' interests.

Efforts supporting their social inclusion are targeted towards increasing competitiveness and productivity through associative work and their participation in the formal economy.

3. GOAL OF THE RESEARCH

To contribute to the social inclusion of the tanning sector of *Villapinzón y Chocontá*.

4. OBJECTIVE OF THE DOCUMENT

To describe the possible increase in the levels of social inclusion achieved by the tanneries on the basis of

- (4) Competitiveness and productivity with a sustainable environmental vision,
- (5) Participation in the leather production chain
- (6) Business legalization.

5. METHODOLOGY

5.1. THEORETICAL FOUNDATION

The methodology to be applied is based on *Action Research* (Lewin 1946, Shein 1996), where the researcher and the community form part of the same team and because of this there is not the conventional separation of researchers -experts and target group, in this case the community of tanners of Villapinzón and Chocontá. The methodology shall be developed starting from the forming of the work teams integrated by members of the community and professionals of the inter-disciplinary research team of the Instituto de Estudios Ambientales IDEA⁸.

In Action Research the system is learned about through the intervention in it and the approach is permanently participative in generating changes. On the basis of this orientation it is sought that tanners interiorize their process and understand it within the scheme of a guided and supported comprehensive change learning process. The fundamental element of this process that will allow progress is the *development of trust networks and the permanence* of the multidisciplinary team support in the medium and the long term achievement of the continuity of the strategies set jointly (UNAL, 2007).

The fundamental focus is based on the empowerment of the community, encouraging it to participate in technical, social, economic and legal solutions. The process allows a high

⁸ Professionals involved with the project: "*Strategic plan in the Villapinzón tanneries: competitiveness and innovation in the leather production chain*" (Cleaner production, association building and strengthening and the development of management alternatives and utilization of SR)." *Colciencias – ACURTIR –IDEA, 2009 – 2010*.

degree of participation for paradigm shifts, and transforms the realities that currently affect the community.⁹

The present focus is framed within the general strategy derived from conflict resolution, which was created and carried out with the micro-tanners from Villapinzón from the year 2004 where the component of the search for competitiveness constitutes point 5 (Table 1.) (Sanz and Siebel, 2010)

Table 1. Strategy for the solution of the Villapinzón's problematic

#	ISSUES	AIMING AT	ACTIONS TO BE TAKEN
1	United tanners willing to change	Empowering tanners in order to give them negotiating power and improve the outcomes of a negotiation Social inclusion	Tanners are aware and wanting to change Motivating allies Motivate Media Better Public Image Following 6 STEPS process OST AI applied Broadcasting on the media Reliable technical information and support
2	Process of Legalization	Social and economic inclusion: Financial support becomes a possibility	Motivate the environmental authority CAR, control authorities (Public Prosecutor and Attorney General) and the judge (magistrate) in charge of the court order on the Bogotá river. Motivating the local judge to switch penal fines for environmental recovery work
3	Inter-related issues	Reaching sustainable solutions by integrating land and environmental issues	Motivating Ministerial and regional environmental authorities to participate in conflict resolution meetings. Following a 6 steps process Public condemnation through the newspapers
4	CP PROJECT SWITCH	Environmental sustainability and social inclusion through education and technology:	Motivating academia, and environmental authorities to support change. Academia becoming an ally trusted by the

⁹ A comprehensive document on the systematic approach for social inclusion is found on Sanz et al., forthcoming. A systematic approach to conflict resolution as a *way out of Social exclusion. The case on CP implementation at the micro-tanneries from Villapinzon, Colombia*

		Reaching a technical solution for SMEs in accordance with the requirements from the law, that supports prevention, and recognizes the interests of the tanners.	authority International and national support <ul style="list-style-type: none">• Technical support• Political Support• Financial support
5	Business Development program	Social inclusion through economic opportunities	Searching new markets Growth prospects Competitiveness through associative strategies on the leather chain International and national support <ul style="list-style-type: none">• Technical support• Political Support• Financial support

5.2. GENERAL METHODOLOGY COMPONENTS

Relationships that build communities arise with the acknowledgment of the actors involved and the relationships woven among them. For this reason, the methodology was structured around four (4) components: **a. *Internal* strengthening**, **b. *Liaison with production chain actors***, **c. Development of an *Agreement for the competitiveness and productivity of the chain through a common effort*** and **d. *Monitoring of social inclusion***. Figure 1 shows a general scheme of the components of the proposed methodology:

The **Internal Strengthening**, makes reference to the accompaniment of the internal management processes for the establishment of the Strategic Plan of the ACURTIR association period 2009-2013.

The **Liaison with Actors** refers to the integration with direct actors (leather production chain) and indirect ones, whose mission impacts the development of the sector.

The **Agreement for the competitiveness and productivity of the chain** makes reference to strategic alliances among actors of the leather chain, following the evaluation of the levels of development reached by the industries.

The **Monitoring of social inclusion** is oriented towards the construction of indicators that were developed with the actors and that will serve for purposes of monitoring the social inclusion process.

The details of the components is found in Annex 1.

Figure 1. Methodology Components.



Source: IDEA Team. 2010

5.3. SOCIAL INCLUSION MONITORING

A series of indicators were proposed in order to monitor the progress of social inclusion, they are part of the *Monitoring of the sustainability of the tanneries of Villapinzón and Chocontá* (Pérez *et al.*, 2009).

For the analysis a monitoring of the indicators was carried out at three moments: **Moment 1.** Performed with 6 industries between the years 2004 and 2007, when there existed a traditional production process highly contaminating and the tanners had reached agreements with the environmental authority through a conflict resolution process. This process by itself established a research based on in-depth interviews seeking to identify the level of participation and the quality of the existing relationships; **Moment 2.** carried out with the industries between the years 2008 and 2009, when some progress begins to be witnessed oriented towards a cleaner production (CP); and **Moment 3.** carried out with the industries in the year 2010 when the application of good operational practices GOP and CP in production processes becomes significantly evident.

The indicators were developed jointly with the actors and involve measurements of the following issues:

Competitiveness and productivity: Indicators that show the progress in industrial performance, product development and innovation, in addition to access to commercial and of joint provision alliances.

Liaison to production chain: Indicators that show the progress with respect to the negotiation of commercial and joint provision alliances, in addition to the level of integration with regard to promotion.

Business legalization: Indicators that show progress with respect to the level of compliance with the business legalization requirements contemplated in the environmental and Colombian commercial regulations, access to the system of social security, access to spaces of participation, quality of relationships, gender equality and level of education.

The indicators are specified in Table 2.

Table 2. Social Inclusion Indicators

ISSUES	INDICATOR	OBJECTIVE OF THE INDICATOR	VARIABLES
Competitiveness and productivity	Indicator of industrial performance	Points out the level of dependency of variable costs in the determination of prices, which affects the level of competitiveness of the tanneries.	(Fpd) Final Price per Decimeter (UVCd) Unitary variable cost per decimeter (Ntann _{p1}) Number of tanneries that produce each type of product (LoP) Level of productive efficiency
	Indicator of variation in sale Prices	Identifies improvements in the product and segment changes, which lead to oscillations in prices denoting competitive aspects in the sector.	(APp) corresponds to the average price participation (IdealP) corresponds to the ideal price (TaP) Tanneries that achieved price improvements
	Indicator of the level of satisfaction	Measure the level of satisfaction of buyers with respect to product quality.	(TComB) Corresponds to the total commercialized production batch (Cr) percentage of complaints received
	Indicator of product innovation	Measure the capacity of the tanneries to offer in the market different options in type and quality of leather.	(NPport) new products in the portfolio (PaC) corresponds to the participation of the tanneries that achieved product developments
Liaison to production chain	Indicator of joint commercial alliances	Measure the capacity for self management of the association and its associates, to jointly become integrated into new commercialization channels.	(NjA) corresponds to the participation of the new joint alliances (PaC) corresponds to the participation of the tanneries that achieved joint alliances.
	Indicator of the level of integration with regard to promotion	Measure the level of integration of the tanneries with regard to promotional activities.	NTPj Number of tanners who participate in joint product portfolio NTFe Number of tanners who attended fairs or events at the association's expense NTjP Number of tanners who developed other joint promotional

			activities. TNTa Total number of associate tanners
	Indicator of provision alliances	Witness the capacity of the tanneries to generate provision alliances with chemical houses.	(NPa) corresponds to the participation of new provision alliances (PaC) corresponds to the participation of the tanneries that achieved new provision alliances
Business Legalization	Indicator of business legalization	Identify the degree in which the tanneries comply with legalization requirements.	(RTc) Requirements that the tanners must comply with (R) Requirements really complied with
	Indicator of accessibility to the social security system	Evaluate the access of workers in the tanneries of Villapinzón and Chocontá to the social security system.	(TPw) Number of workers with pension contributions (TARPw) Number of employees with ARP (profession risks) coverage (CSat) Number of employees with basic health care coverage
	Indicator of access to spaces of participation	Witness the access that tanners have in sector decision settings	Number of possible spaces to participate in Number of spaces in which the tanners participate.
	Type of relationship with the actors involved	Establish the type of existing relationship between institutional and support actors with whom tanners frequently relate to.	Number of harmonic relationships Number of tense relationships Number of hostile relationships
	Indicator of gender equality	Measure the level of professional and technical development of women who work in the tanneries.	Number of women with tanning jobs. Number of women employees with high levels of participation.
	Personal education level	Establish the education level of the person who works in the tanneries, which responds to the technical needs that this industrial activity requires.	Number of employees with a technical, professional, high school and elementary school level of education.
	Indicator of production behavior changes	Measure the progress tanneries have achieved in the implementation of GOP and CP and its incidence in production processes.	Number of tanneries with cleaner production technologies implemented. Number of tanneries with residue value appreciation processes that receive revenues for that.

6. RESULTS

6.1. In competitiveness and productivity

The competitiveness and productivity reached by the tanneries is made evident from the monitoring of three indicators, two with regard to the component of internal Strengthening: *Indicator of industrial performance*, and *Level of innovation*; and a component that refers to the Liaison with chain actors: *Level of satisfaction*. See Figure 2.

The arithmetic average of these indicators shows the levels of competitiveness and productivity achieved by the tanneries at the three moments, the levels to be achieved as a goal is 1. Thus the level reached by the tanneries at moment 1 was of 0.24 points, at moment 2 the level achieved was 0.30 points, and at moment 3, 0.33 points. See Figure 2.

These results are explained according to findings in the monitoring of the following indicators:

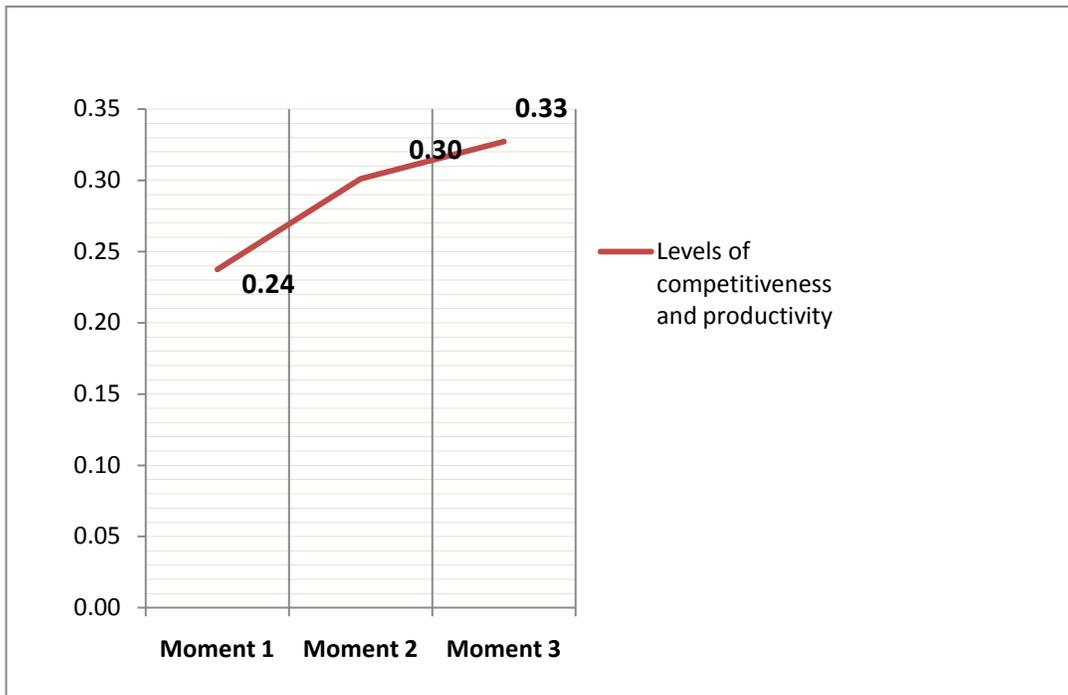
(a) The indicator of industrial performance of the tanneries presented a very slight growing behavior, since at moments 1, 2 and 3 reached the following levels: 0; 0.01; and 0.06 respectively.

(b) The indicator of sale price variation presented a growing and very significant behavior, as at moments 1, 2 and 3 it reached the following levels: 0; 0.13; and 0.19 respectively.

(c) The indicator of satisfaction presented a decreased behavior as at moments 1, 2 and 3 it reached the following levels: 0.95; 0.95; and 0.93 respectively.

(d) The indicator of product innovation presented an improving behavior at moments 1, 2 and 3 it reached the following levels: 0; 0.11; and 0.13 respectively.

Figure 2. Progress in competitiveness and productivity



Source: IDEA Team. 2010

6.2. Production chain linkages

The progress made in liaison with the production chain were made evident on the basis of the monitoring of three indicators referring to three methodology components; one of Internal Strengthening: *Indicator of level of integration with regard to promotion*, the second corresponds to the Agreement for competitiveness and productivity of the chain: *Indicator of joint commercial alliances*, and the third corresponding to the liaison with chain actors: *Indicator of provision alliances*. See Figure 3.

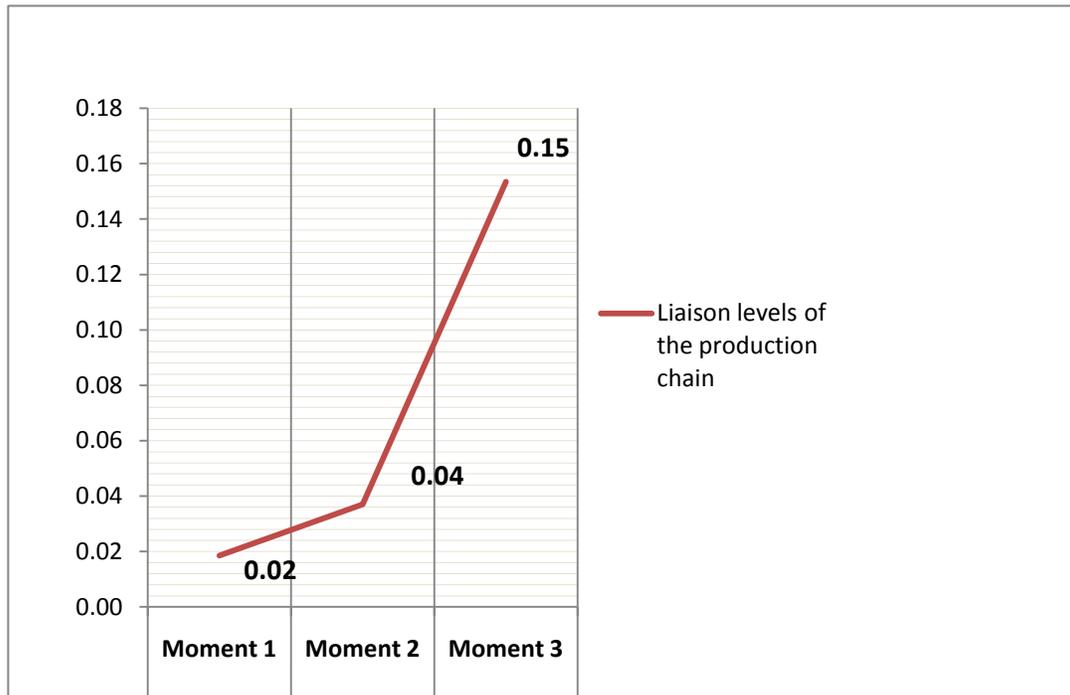
The arithmetic average of these indicators show the liaison levels of the production chain reached by the tanneries at three moments in time. Thus, at moment 1 they reached 0.02 points, at moment 2, 0.04 and at moment 3 they reached a level corresponding to 0.15 points. See Figure 3.

These results are explained according to findings in the monitoring of the following indicators:

- (a) The level of commercial alliances presented an improving behavior, given that at moments 1, 2 and 3 it reached the following levels: 0; 0; and 0.09 respectively.
- (b) The level of integration with regard to promotion presented an improving behavior as at moments 1, 2 and 3 it reached the following levels: 0;0; and 0.20 respectively.

- (c) The level of provision alliances presented an improving behavior, given that at moments 1, 2 and 3 it reached the following levels: 0.06; 0.11; and 0.17 respectively.

Figure 3. Progress in Liaison of the Production Chain



Source: IDEA Team. 2010

6.3. Business Legalization

The advances gained in business legalization were made evident from the monitoring of seven indicators referring to two methodology components; the first of the Internal Strengthening component: *Indicator of business formalization*, *Indicator of access to the social security system*, *Indicator of gender equality*, *Indicator of level of education*, *Indicator of change of behavior in production*, and the second of the liaison with chain actors: *Indicator of access to spaces of participation*, *Indicator of type of relationship with actors*. See Figure 4.

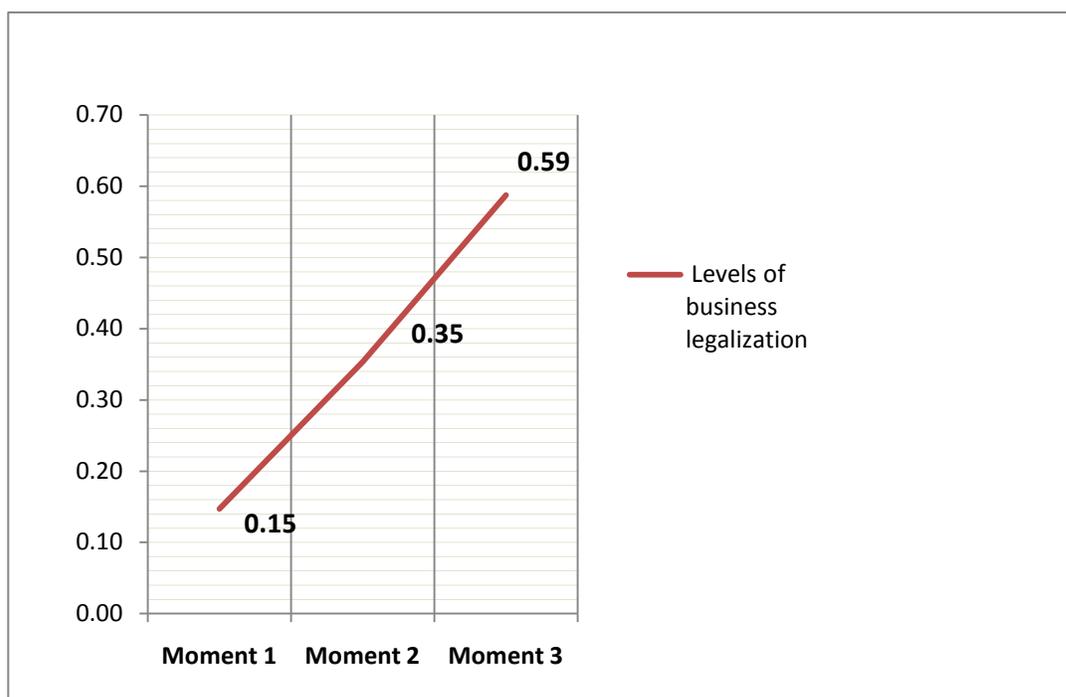
The arithmetic average of these indicators shows the level of Business Legalization accomplished by the tanneries at three moments. Thus, at moment 1 the tanneries reached 0.15 points, at moment 2 they reached 0.35 points, and at moment 3 a level corresponding to 0.59 points. See Figure 4.

These results are explained according to findings from the monitoring of the indicators of Table 3:

Table 3. Indicators in business legalization

Indicator	1	2	3	Behavior
Business formalization	0.25	0.52	0.72	improving
Access to social security system.	0.03	0.03	0.22	improving
Access to spaces of participation	0.00	0.41	0.82	improving
Type of relationship with chain actors	0.13	0.58	0.76	improving
Gender equality	0.40	0.40	0.64	improving
Personal level of education	0.21	0.21	0.44	improving
Changes in production behavior	0.00	0.31	0.52	improving

Figure 4. Improvements in Business Legalization



Source: IDEA Team. 2010

7. DISCUSSION

7.1. In competitiveness and productivity

Although the tanneries have made progress with respect to productivity and competitiveness, implementing some process improvements, drawing closer to new developments and diversifying the portfolio, these still present difficulties to maintain the development of products and to assure the quality demanded by reputed purchasers in the sector, since:

As evidenced by the indicator of industrial performance, the tanneries still present a high costs structure due to: Production processes without standardization, the participation of high unitary variable costs, which do not leave a contribution margin, low skin negotiating capacity, low yield in areas of finished product (decimeters), and low product innovation that limits the access to better paying segments of the market.

The high satisfaction percentages, in relation to the low level of industrial performance, evidences how the products produced by the sector have receptivity in a segment that demands conservative shoes and bags, of mid level quality at low prices. Likewise, this evidences how tanneries do not undertake the due follow-up of their clients' satisfaction, for which reason, they do not have reliable information to back the levels of satisfaction.

It was possible to make progress in competitiveness and productivity on the basis of the implementation of approximately 45 workshops on product development and value chain integration. See photos.



Photo: Technical workshop carried out in Tauroquímica.



Photo: Technical workshop undertaken in Villapinzón – Química IT.

With respect to the sector process towards competitiveness and productivity, it can be considered that it is slow, explained by:

1. Not counting with installations that facilitate the implementation of new process technologies, to the benefit of the quality of the product.
2. Not counting in the zone with training programs at the technical and administrative levels on the part of the government or private institutions that allow the education of a trained human collective in the tanning of animal skins.

7.2. Production chain linkages

The level of integration of the associated tanners around promotional activities is observed from the participation of five (5) tanners in the development of the first joint portfolio, in the attendance at two (2) business fairs by 10 and 2 tanners respectively, for an average of six (6) tanners who attended business fairs, and finally in the autonomous interest of two (2) tanners in carrying out joint management and commercialization actions.

With respect to provision alliances the tanneries have remained distant from the chemical houses for two reasons:

- a. as a result of their low purchasing capacity, reason for which throughout the three moments we found the presence of intermediaries that sell chemical supplies in bulk with credit facilities, but without guarantee, nor technical accompaniment, which has placed the quality of the products at risk.
- b. as a result of their short-term business vision, given that although the chemical houses have offered exceptional benefits to the tanneries of Villapinzón from the start of the project, the tanneries continue without accessing the benefits from the chemical houses in terms of training, accompaniment, product guarantee, purchase discounts, use of laboratories for development and product endorsement by clients.

Thus, throughout the intervention in the project, three chemical houses PROCUR, CHL and TAUROQUIMICA, have achieved the consolidation of provision alliances with only four tanneries of the sample.

With respect to the integration with other actors of the leather chain, the tanneries have improved notably, given that they have achieved relationships with support institutions, purchasers and providers. Nevertheless, in describing the relationships with the leather chain, it should be pointed out that these continue being superficial, and have not reached sufficient depth to continue evolving.

Although there have been advances, the tanneries still present a low competitive level, denoted by their low capacity of business insertion in the markets, as the technological

changes implemented are not sufficient, nor completely correspond to the quality demanded by the market, impeding their becoming competitive in the sector. This supposes the need for the sector to realize investments in machinery, in order to improve processes such as pre-defleshing, vacuum drying, and trimming, thus allowing the improvement of the quality of the leather and at the same time a reduction of material loss.

7.3. Business Legalization

The findings in the business legalization indicators show an improving behavior, explained by:

A slight increase in the level of participation of women in the tannery activities, and an improvement in incomes. Thus, it can be pointed out how at moment 3, out of the 127 employees that work at the tanneries, 41 of them are women, and of these, 73% achieved an income corresponding to a minimum salary wage.

The increase in the level of participation of personnel with a high school degree.

Participation of employment with indefinite contracts where before these were non-existent.

The important increase in the implementation of environmental permits, given that in the year 2004 none of the tanneries had an approved Environmental Management Plan, and at the end of 2005 50% of those surveyed already had an approved Environmental Management Plan.

The significant advance in production behavior changes, expressed in the implementation of CP techniques. The implementation of a cleaner production on the part of the tanners of Villapinzón reaches 50% of the industries, primarily centering on process alternatives such as ecologic dehairing without destroying the hair, recycling of dehairing water for various cycles. Based on measurements in two tanneries involved in the SWITCH-UNAL project in 2009 the following stands out: savings in water use between 24-68%, reductions between 32 to 68% in Chromium use and between 60 to 72% on BOD₅, in all the processes resulting in liquid discharges onto the river compared with measurements in the year 2004.

The significant increase in access to spaces of participation as the tanneries went from having a limited access to support space settings, that is 0 at moment 1, 0.82 at moment 3, when they already have access to spaces in institutional settings like the CAR, the Mayor's Office, the Governorship of Cundinamarca, the Chamber of Commerce, Universidad Nacional, National Comptroller's Office, Trade Organizations, Providers, Purchasers, and Designers.

The significant improvement in the harmonious relationships between chain actors, starting from the significant reduction of tense relationships that existed at moment 1 primarily from the tanneries of Villapinzón and Choconta with the CAR.

The conflict resolution process has produced on the one hand behavioral change and empowering of the tanners and on the other hand, awareness from authorities in terms of the specific needs of these MSEs. Substantial increases on the opportunities for participation and improving the quality of the relationships has kept an improving tendency.

The tanners have incorporated in their association, principles based on the conflict resolution and lessons learned through their own process since 2004.

8. CONCLUSIONS

From the accompaniment realized by the researchers from the Universidad Nacional to the tanners of Villapinzón y Choconta in the search for the achievement of social inclusion, it is possible to conclude that:

- (a) Resistance to change is evident on the part of the tanning sector of Villapinzón and Chocontá. This can be explained by a deeply rooted culture established by the exercise of an inherited productive activity realized in a family and informal manner through three generations. This in the present makes difficult the conversion towards more structured business schemes regulated by commercial and environmental norms that have been implemented by the government over the course of time.
- (b) The business culture of the tanners of Villapinzón and Chocontá, has the following predominant characteristics: a short-term business vision, an activity that does not transcend beyond the local; productive processes without standardization nor with an orientation towards a continuous improvement; products that present a low level of innovation; and the tendency towards business individualism, which inhibits the forming of clusters.
- (c) To date, the tanneries have gained new technological knowledge and market experiences that has allowed them to acknowledge their weaknesses and to identify the threats foreseen for the sector. There is now a more structured vision, based on knowledge and on the experience of a demanding and dynamic market.
- (d) The practical product development workshops increased the confidence of the tanners towards the development processes in their tanneries, reducing the resistance to change that is widespread in the sector. Likewise, this allowed raising their awareness about the benefits of adequately controlling the chemical inputs, water and process times and the value of the selection of raw skins.

- (e) The first ACURTIR portfolio, allowed the tanners to jointly present their products for the first time to potential manufacturing clients.
- (f) The tanneries increased the capacity to associate in order to jointly manage the integration with new channels of commercialization, as they contributed to the association on the basis of their participation in fairs, trainings, and commercial visits. Through solid valuation from the dehairing and grease residues they are learning to work collectively.
- (g) The perception that the different institutional settings have of the tanneries on the basis of the commitment that the tanners have shown in terms of compliance with the Environmental Regulations has positively changed.
- (h) Instead of the environmental conflict of years back, there is now the interest in progressing in the development of a stronger and more organized sector making their own the transformation process from the productive, social and economic spheres, which UNESCO-IHE and IDEA-UNAL have been leading in this zone of Cundinamarca through the SWITCH project. They are slowly moving to their own social inclusion.
- (i) The use of indicators that can monitor the social inclusion of MSEs can be a useful tool as it can help keeping the pace of the change process over long periods of time.
- (j) The results showed that the access to financial resources that are adjusted to the true conditions of the tanning sector should be a priority by the governments.
- (k) Academia can take the lead in social inclusion processes provided a right attitude and awareness regarding the social challenges are present. The methodology allowed to foresee the requirements for the social inclusion of this specific community.

9. RECOMMENDATIONS

A greater effort in integrating the liaison of the chain in charge of the breeding and raising of cattle, as well as in the party in charge of commercializing the meat, given its importance in the quality of full grain leather, and in the exploitation of the grease residues is also needed.

To undertake negotiation actions in governmental institutions, for the access to financial resources that are adjusted to the true conditions of the tanning sector, so that the financial capacity of each business owner is taken into consideration is a must.

To keep with the consolidation of the strategic relationships established with institutions like CEINNOVA, ACICAM and IDEA - UNAL, with the aim of giving continuity to the work that began to consolidate a chain agreement. These institutions propose a common work

to bring the sector to competitive levels along with training, technology and access to new markets that recognize the value of CP.

To support the processes of accompaniment, training and social and technical advisory to the tanners, decidedly including the tannery employees, since they are the ones who should increase their technical capacities and reduce their resistance to change.

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