

# **CLEANER PRODUCTION IN MICRO-TANNERIES IN VILLAPINZÓN AND CHOCONTÁ**

**Carolina Tobón<sup>1)</sup>, Bello Tatyana<sup>1)</sup>, Escamilla Carlos<sup>1)</sup>, Tania Santos<sup>1)</sup>, Laura Osorio<sup>1)</sup>, Mónica Sanz<sup>2)</sup>, Maarten Siebel<sup>2)</sup>**

**<sup>1)</sup>Universidad Nacional, Bogotá, Colombia**

**<sup>2)</sup>UNESCO-IHE, Delft, The Netherlands**

1	• OBJECTIVES
2	• CONTEXT
3	• CP & IWM
4	• METHODOLOGY
5	• RESULTS
6	• CONCLUSIONS

## GOAL:



To improve water quality of the Bogotá River

## OBJECTIVES:

- To facilitate CP implementation through training, advisory, conflict resolution in micro-tanneries in Villapinzon and Chocontá.
- To contribute to a sustainable tanning industry in Villapinzón y Chocontá.
- To bring a socially isolated population group back into the Colombian society.







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Generations of native Indian traditional tanners which, in the 80-ies get confronted with Chromium tanning

**2002**

Inadequate and inefficient processes  
Bad management of wastes  
Pollutant load surpassing regional limits

**2005**

Closing of most tanneries: legal measures because of contamination  
EMP Elaboration (66 tanneries. CCB)

**2006 – 2011**

SWITCH + Universidad Nacional + Acurtir  
Cleaner Production

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# Clean-up approach based on Cleaner Production

- Critical evaluation of need for products
- Better choice of raw (local) materials
- Optimization of processes and operation
- Internal reuse/recycling/recuperation
- Reuse of waste products by other industries
- Better trained, motivated and involved workers

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# METHODOLOGY





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## STAKEHOLDER IDENTIFICATION & SELECTION



Agreement and cooperation strategies. Institutions and 12 Pilot Tanneries



Others: Gobernación de Cundinamarca, Alcaldías, U. del Valle – CINARA, etc.

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# RESEARCH ON CLEANER PRODUCTION

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- Selecting of cleaner technologies.
- Study of success cases
- Determining environmental, social, economic benefits

- Environmental and productive diagnoses
- Training & definition of options
- Experimental practices.
- Follow up (GOP, process alternatives, waste management, EoP, modification of products)
- Indicators: production performance, waste generation (solid and liquid discharges)

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## TECHNOLOGY SELECTION

### PERFORMANCE

- Chemicals , energy, water consumption
- Generation of finished products

### Aqueous waste

- BOD, COD, TSS, Chromium, TN, Sulfides, Chlorides per volume of water discharged

### SOLID WASTES

- Unhairing, fleshing and shaving wastes
- Leather trimmings and muds

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## Technology implementation

## Training



## Monitoring

2009 – 30 tanneries learning CP

Tanneries Environmental Outlook (Monitoring system)



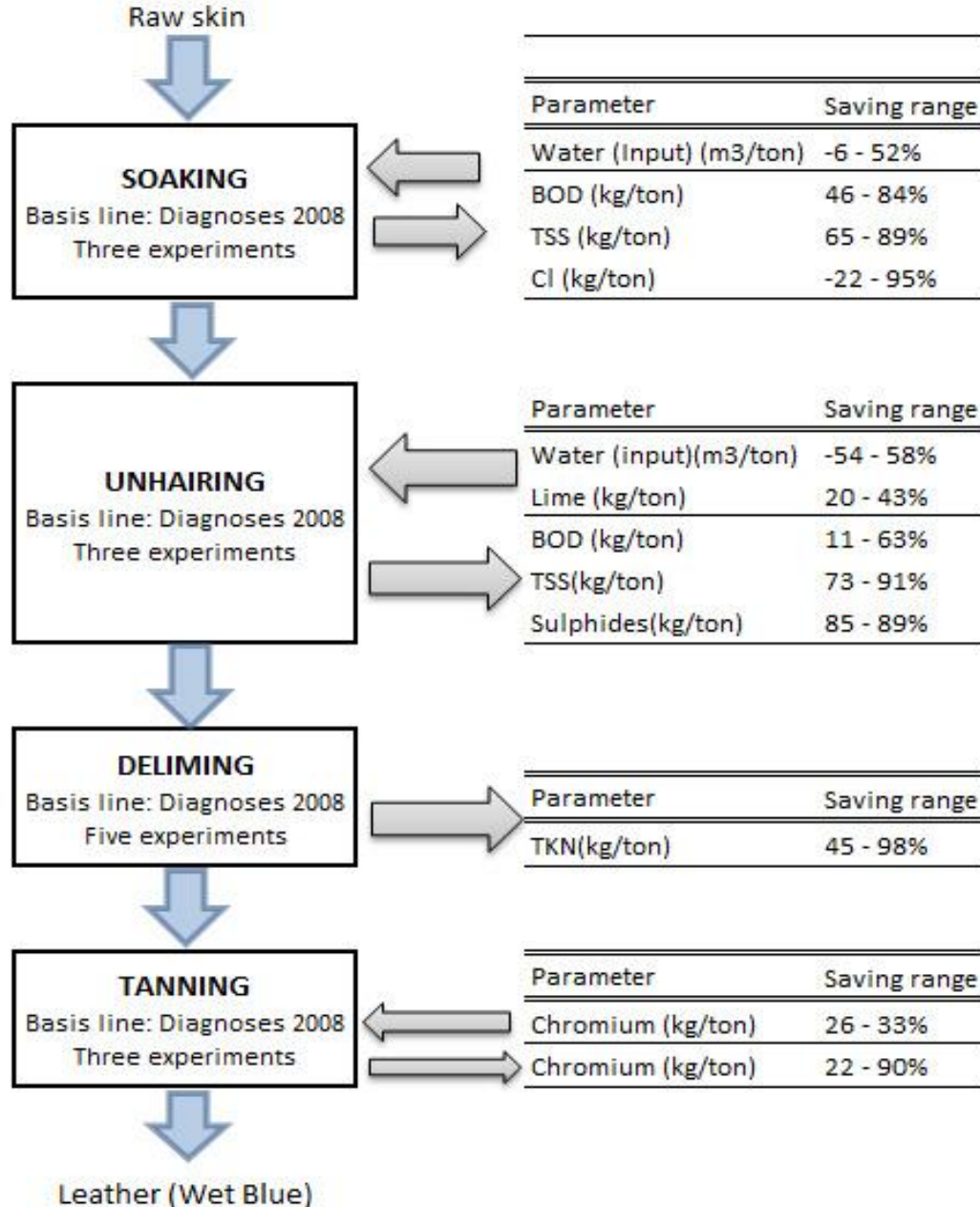
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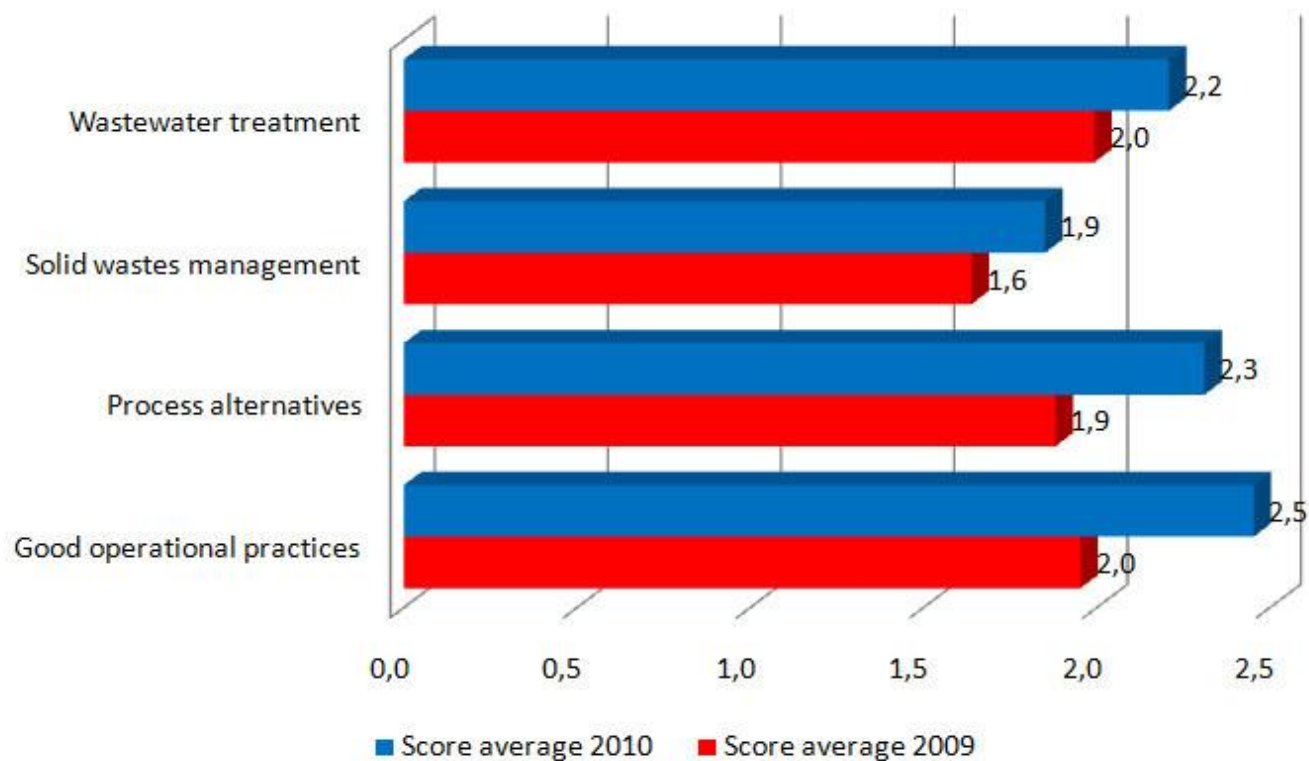
## IMPLEMENTATION





## FOLLOW UP AND QUALITATIVE ASSESSMENT

- Twelve tanneries
- Information gathered in 2009 and 2010
- CP components combined with one end-of-pipe alternative
- Behavioural changes towards prevention.



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# MONITORING

- Three dimensions: Environmental, Social and Economic
- Three moments (1,2,3) of analysis defined between 2004 and 2010
- Preliminary results of monitoring system integrating all dimensions
- Scale for indexes: 0 to 1. 1 Indicating one ideal scenario.

## ENVIRONMENTAL

1- 0,45  
2- 0,54  
3- 0,56

## SOCIAL

1 - 0,00  
2 - 0,26  
3 - 0,48

## ECONOMIC

1 - 0,00  
2 - 0,16  
3 - 0,19

## SUSTAINABLE DEVELOPMENT

1 - 0,15  
2 - 0,32  
3 - 0,41



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# CONCLUSIONS

- CP allows, also at the level of micro-tanneries, to greatly reduce water and chemicals consumption and improved product quality.
- CP, at the level of micro-tanneries, can not be implemented without empowering the tanners who are to drive the process of change.
- There is an urgent need for familiarizing the concerned institutions (e.g. EPA's, Environmental Ministries) with the benefits and potential of the CP approach.
- Cleaned up processes, improved operation, motivated workers, knowledgeable institutions, and awareness of the importance of and cooperation between each stakeholder in the “chain” are essential ingredients to ensure improved water quality of the Bogotá river.

# CONCLUSIONS

- The tanners are gradually improving from the most economic and feasible changes to more elaborated and technology-driven adaptations.
- The tanners are successfully adopting behavioural changes towards prevention. These behavioural changes has proven to lead to creative outcomes and innovation.
- Through this project, the role of academia has not been restricted to technical advice but has instead, taken a leading role through a comprehensive approach that started with a conflict resolution process.



**... AND THIS IS JUST THE BEGINNING!!!**



**¡Gracias  
por su atención!**



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## BOGOTÁ RIVER BASIN

Tanneries area  
Villapinzón and Chocontá

Bogotá  
River

Bogotá city  
Population 7 million

