switchasia GRANTS PROGRAMME

Funded by the European Union

EFFECTIVE WASTE MANAGEMENT AND SUSTAINABLE DEVELOPMENT OF MSME TANNING COMPANIES IN KOLKATA LEATHER CLUSTER

JULY 2020- DECEMBER 2023

Solidaridad

PISIE

CLC TANNERS ASSOCIATION
(We Care for the Environment)

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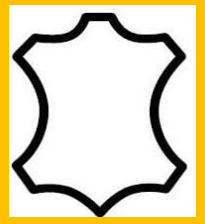
SIGNIFICANCE OF LEATHER SECTOR IN INDIA

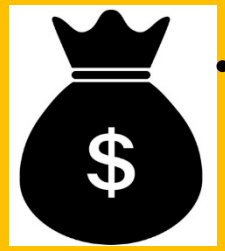
- **USD 12 Bn** size of the domestic Market in India



- **Accounts for 13%** of global production of hides/skins

- **3 Bn sq ft** of leather produced in India every year

- **2nd largest exporter** of leather garments



- **USD 5.74 Bn exports** of footwear and leather products in 2017-18

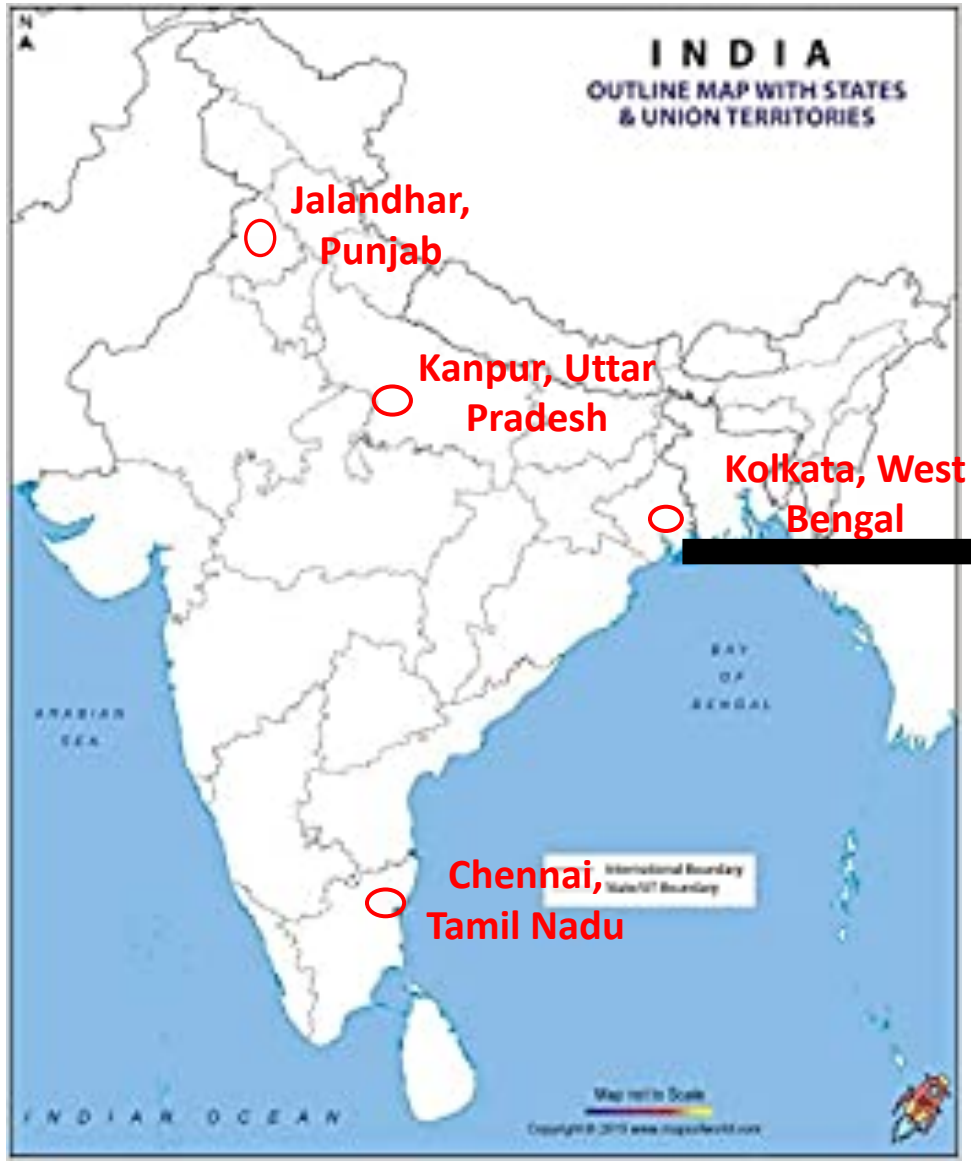
- Ready availability of Raw Materials – Home to **20% of world's cattle** population; **11% of world's goat and sheep** population

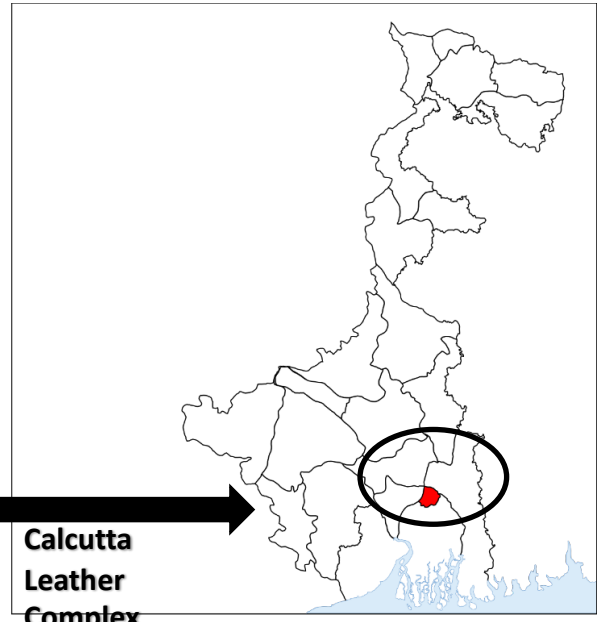
- **3rd largest exporter** of Saddlery and Harness

- **Major markets:** US, UK, Germany, Italy, France

PROJECT BRIEF

Major Leather Clusters in India





- Kolkata is the second most important tanning centre in the country. **Approximately a quarter of India's tanning is done in Kolkata.**
- 95% of India's total production of industrial gloves is done in Kolkata
- The cluster produces leather goods and accessories, for the domestic and EU markets.

Need for project

a. High discharge of effluent load in the waste water from tanneries

b. Large quantity of solid waste generated and lacks disposal mechanism.

c. The workers suffer from inefficient occupational health and safety practices and complain of skin and respiratory issues.

Project Objectives

a. Introduce and promote sustainable production practices in the tanning sector

b. Promote collaboration with the European partners on the transfer of green technology and practices

c. Create an enabling environment for efficient and effective public-private collaboration

Expected Outcomes

a. Sustainable production practices, improved technical capacities in tanneries

b. Enhanced competitiveness and reduction of production costs

c. Better effluent and solid waste management leading to opportunities for further growth

d. For employees: Reduced health and safety hazards

Demonstration of cost- effective green tanning technologies

Desalting Machine to reduce Total Dissolved Solids (TDS) in the effluent wastewater

Curing of Hides

Pre intervention

Conventionally, the salt used in the preservation process is dissolved in water and discharged as wastewater. Some obsolete and inefficient techniques employed are cleaning through manual shaking, manual brushing, etc to remove the extra salt present on the hides flesh surface

Post intervention

Desalting machine removes around 90 kgs of salt recovered from 100 hides

With the help of this **Desalting machine** (designed by Solidaridad), it is possible to remove the major portion of the salt applied on the surface of hide. It helps to reduce the Total Dissolved Solids by around 32%.

<u>Comparative analysis as per scientific assessment:</u>

Recorded TDS (Without intervention) = 25840 mg/L

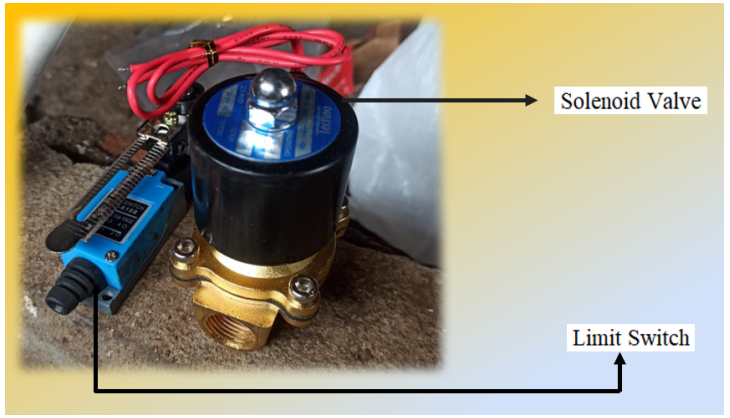
Recorded TDS (With Desalting machine) =17480 mg/L

Difference of TDS after intervention:(25840 – 17480) mg/L= 8,360 mg/L **(i.e. 32.35%)**

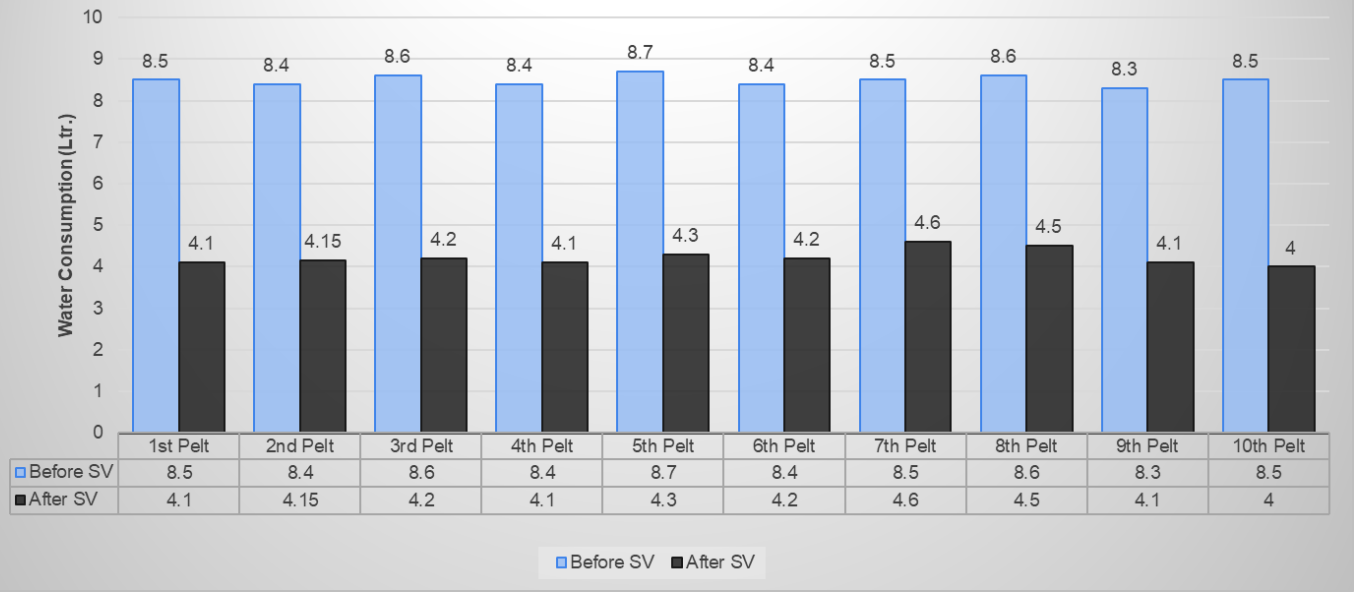
Demonstration of cost- effective green tanning technologies

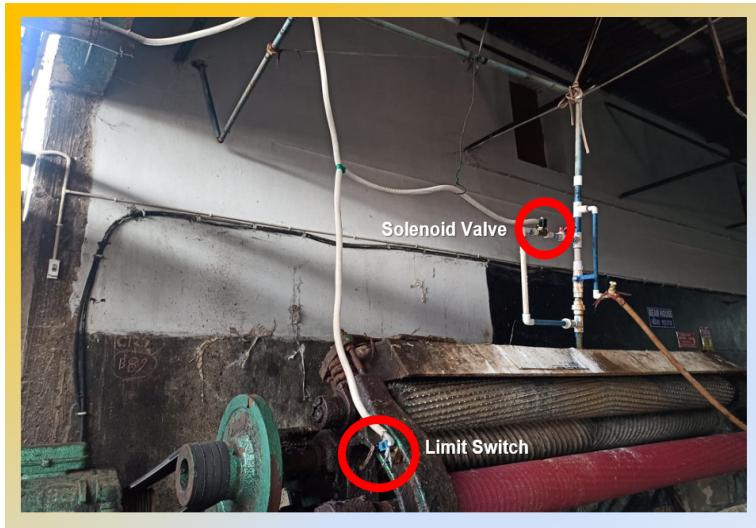
Retrofitting of the fleshing machine by installing **a Solenoid Valve** to the conventional machine, that auto cuts the supply of water. Installing it with a fleshing machine has many advantages proved in trials; such as:

- **Saves water upto 50% in a single sub process**
- Easy availability in the market
- Does not need skilled worker to fix it
- Friendly mechanism, Small & compact body



Comparative analysis of water consumption pre and post intervention (Solenoid Valve)





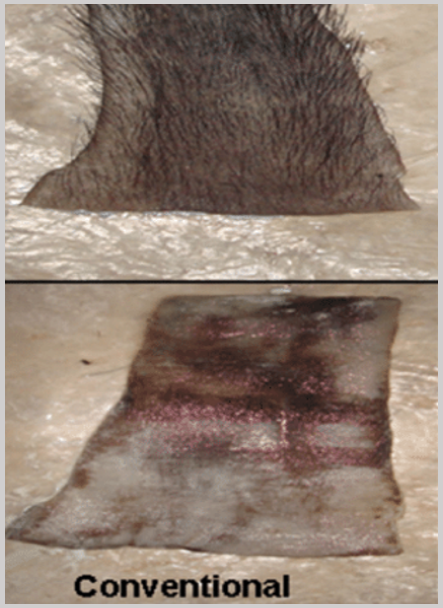
Demonstration of cost- effective green tanning technologies

Enzyme Assisted Un-hairing

In this process, hair are removed from raw hides with the help of enzyme during liming

- Amount of Sulphide used can be reduced by around 75%
- Also eliminates the **Hydrogen Sulphide Gas** formation at PETP
- Significant reduction in **Biological Oxygen Demand (BOD) and Chemical Oxygen Demand (COD)** in the waste water

Pre Intervention



Sodium sulphide used for unhairing the hides leads to Hydrogen Sulphide Gas emission and increase in BOD and COD in the effluent

Post Intervention

Solid Waste Management Solutions

Implementation of innovative solutions for converting waste to value

Paver Blocks are made out of the solid waste produced in tanneries and CETP sludge. These paver blocks can be used in roads, tannery floors and park bench

Dried Sludge

Pre Intervention

Currently the solid waste gets dumped in a safe dumping zone. This adds to land and air pollution and also its economic potential is not realized

Post Intervention

Solidaridad has introduced mechanism to convert the dried sludge into paver tiles that has various economic applications

Solid Waste Management Solutions

Implementation of innovative solutions for converting waste to value

Solidaridad has conducted pilot demonstrations to introduce ways to harness the economic yet eco-friendly potential of solid waste (leather trimmings and cuttings) generated from the tanneries.

Pre intervention: The leather trimmings and cuttings generated from the tanneries would find its place in the dumping zones

Post intervention: This solid waste is utilized and converted into **Bonded Leather (Leather like product).** These sheets can be used and re-used to make **several value added products** such as bags, wallets, etc. True example of **Circular Economy is demonstrated**

Solid Waste Management Solutions

Implementation of innovative solutions for converting waste to value

Fleshing waste to Animal Feed and Tallow oil

The Tallow is extracted/obtained from the animal fat which is used in many industries like paint, soap, leather, candles, rubber etc. After Tallow extracted protein rich remains are obtained which could be used as **Animal Feed**.

COLLABORATIVE ACTIVITIES

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Solidaridad

Lead Applicant: India-based not-for-profit organization.
Solidaridad has a strong presence in the Indian leather industry and uses its boots and brains to implement supply chain programs.

PISIE

Co-applicant: An Italian NGO and provides technical assistance and capacity building support to the Indian project partners.

CLC TANNERS ASSOCIATION
(We Care for the Environment)

Associate Partner: An umbrella organisation representing MSME tanneries of the Bantala Cluster. They will play an important role in coordinating project activities.

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Associate Partner: Globally working to promote sustainable practices and circularity and has proven green products and processes.

dugros

Associate Partner: A leading Dutch leather company involved in design and wholesale of leather products and will be contributing their technical support to the project.

THANK YOU