



UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION



Ministry of Trade & Industry
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GLOBAL ECO-INDUSTRIAL PARKS PROGRAMME



IS Opportunities in Robbiki Leather City

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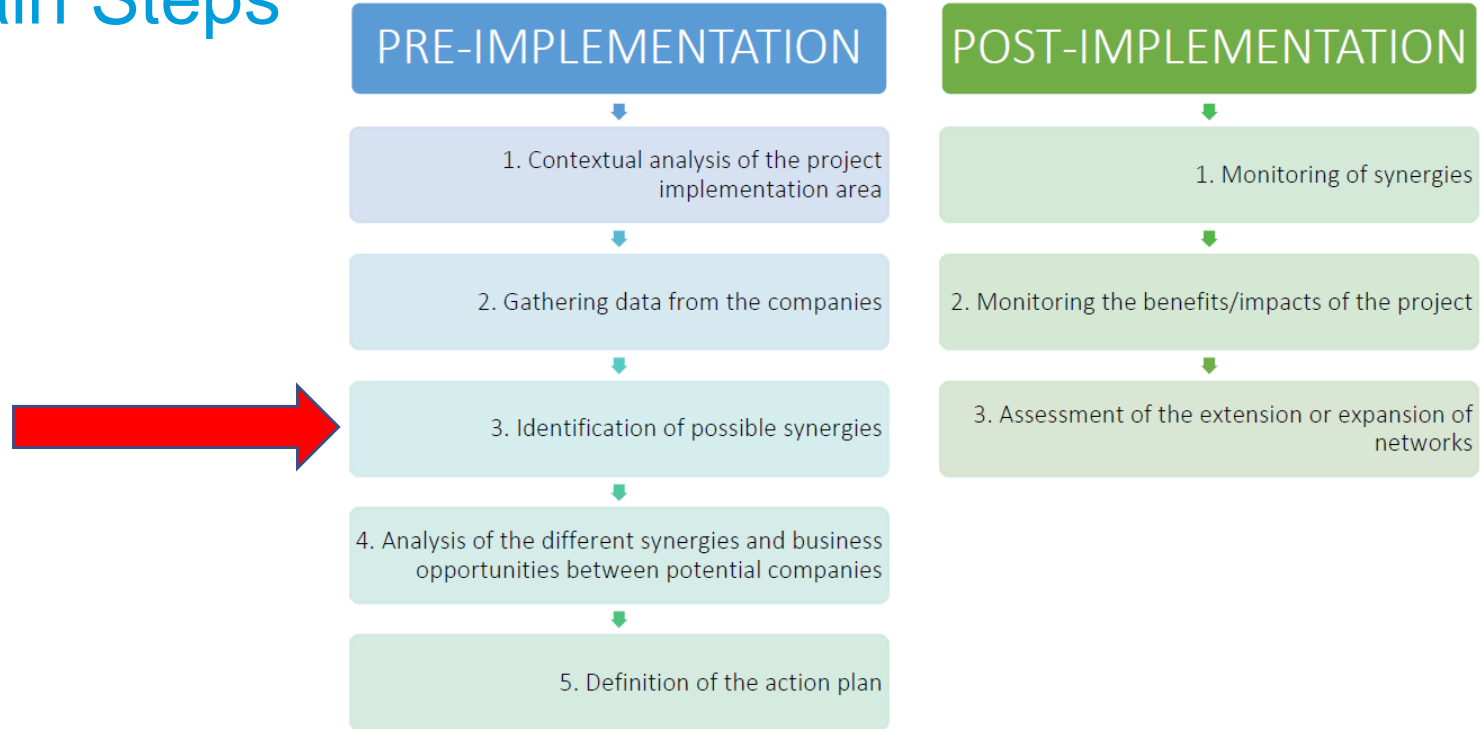
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Contents

- Main Steps
- Suggested IS Options (current status, drivers, barriers, stakeholders and necessary information)
- Implemented Options (current status, drivers, barriers, stakeholders and necessary information)
- Mutualization Opportunities (examples, requirements and benefits)

Main Steps





IS Options

Suggested Options

- Green fleshing waste (post tanning) to fertilizers and eco-paper factories
- Buffing particulates/dust to fillers in plastic industry
- Chromium recovery
- Recovery of treated salt wastewater
- Wastewater sludge to cement plants

Implemented Options

- Pre-tanning fleshing waste to glue and gelatin factories
- Shavings of sheep's hides to wool industry
- Final leather trimmings (post tanning) to ropes, accessories, eco-paper, Khayameya and leather blended fabrics/yarn

Green fleshing waste (post tanning) to fertilizers

Main characteristics	Current status	Drivers	Barriers	Possible stakeholders	Necessary Info
Organic waste containing protein and chemicals (Cr)	Collected by contractors	<ul style="list-style-type: none"> Valuable waste Saving collector's cost Commercial technology Cr is also recoverable 	<ul style="list-style-type: none"> Mixed with other wastes 	<ul style="list-style-type: none"> Tanneries Waste collectors Fertilizer factories 	<ul style="list-style-type: none"> Amount/t product or raw hide Final disposal by contractors? Selling price Disposal cost

Buffing particulates/dust to fillers in plastic industry

Main characteristics	Current status	Drivers	Barriers	Possible stakeholders	Necessary Info
<ul style="list-style-type: none"> • Very fine particulates • Combustible 	<ul style="list-style-type: none"> • Collected through dust collectors and disposed by contractors • Pressed as cubes in few tanneries 	<ul style="list-style-type: none"> • Recyclable waste • Easy handling after pressing 	<p>None</p>	<ul style="list-style-type: none"> • Tanneries • Filler manufacturing factories • Waste collectors 	<ul style="list-style-type: none"> • Amount/t product or raw hide • Market study (possible recipients) • Final disposal by contractors? • Selling price • Disposal cost

Chromium recovery

Main characteristics	Current status	Drivers	Barriers	Possible stakeholders	Necessary Info
High Chromium content, with removable impurities	Solidified and landfilled	<ul style="list-style-type: none"> Valuable Savings ES benefits Internationally applied (e.g. Turkey and Italy) 	<ul style="list-style-type: none"> Chromium effluents are not separated Small and insufficient amount of received effluents causing non feasible operation of the recovery station 	<ul style="list-style-type: none"> WW company Tanneries IDA & CID Chromium suppliers 	<ul style="list-style-type: none"> Effluent separation Feasible operation of the recovery station Tanneries acceptance (piloting by technology center)

Treated salt wastewater to the tanneries

Main characteristics	Current status	Drivers	Barriers	Possible stakeholders	Necessary Info
<ul style="list-style-type: none"> High TDS Impurities 	Treated and disposed to evaporation ponds	<ul style="list-style-type: none"> Savings ES benefits 	Quality (might need more treatment)	<ul style="list-style-type: none"> WW company Tanneries IDA & CID 	<ul style="list-style-type: none"> Quality Tanneries acceptance (specs) Recycling price Construction of recycling infrastructure

Wastewater sludge to cement plants

Main characteristics	Current status	Drivers	Barriers	Possible stakeholders	Necessary Info
High calorific value	Landfilling	<ul style="list-style-type: none"> Recyclable Profitable 	None	<ul style="list-style-type: none"> WW company IDA & CID Cement company/ waste recycler (e.g. Geocycle) 	<ul style="list-style-type: none"> Amount Quality Technical study Agreement with RDF producers Storage and transportation

Pre-tanning fleshing waste to glue, gelatin, soap or animal fodder

Waste characteristics	Current status	Drivers	Barriers	Possible stakeholders	Necessary Info
<ul style="list-style-type: none"> Organic waste containing collagen, fats, protein, hair, and pre-tanning chemicals Some tanneries outsource the fleshing process 	Sold to glue & gelatin factories	<ul style="list-style-type: none"> Valuable waste Profitable Widely applied 	None	<ul style="list-style-type: none"> Tanneries Glue & gelatin factories Soap factories Animal fodder Waste collectors 	<ul style="list-style-type: none"> Amount/t product or raw hide Investigating additional recycling market (soap & animal fodder) in anticipation of market and price variables Depending on the price and quality

Shavings of sheep's hides to wool industry

Main characteristics	Current status	Drivers	Barriers	Possible stakeholders	Necessary Info
<p>Main input to wool, carpets and shoes industries and heat insulation</p> <p>Few tanneries are working in Sheep hide</p>	<p>Exported to international wool companies</p>	<ul style="list-style-type: none"> Valuable byproduct Easily used in wool industry 	<p>None</p>	<ul style="list-style-type: none"> Tanneries producing Sheep leather Exporters International companies Waste collectors 	<ul style="list-style-type: none"> Amount/t product or raw hide Investigating local market in anticipation of market and price variables companies Quality Selling price

Tanned leather trimmings to ropes, accessories, eco-paper, Khayameya and leather blended fabrics/yarn

Main characteristics	Current status	Drivers	Barriers	Possible stakeholders	Necessary Info
Semifinished and finished trimmings Different sizes	<ul style="list-style-type: none"> Recycling of adequate sizes Disposal of very small size 	<ul style="list-style-type: none"> Large amount Valuable 	Mixing very small size trimmings hinders recycling	<ul style="list-style-type: none"> Tanneries Recyclers Waste collectors 	<ul style="list-style-type: none"> Amount/t product or raw hide Quality Selling price Disposal cost

Mutualization: Plastic Tent for Leather Drying

Drivers/Benefits	Barriers	Possible Stakeholders	Necessary Info
<ul style="list-style-type: none"> • Simple design • Overcoming the climate conditions in Robbiki • Good drying conditions (temp, humidity, illumination) 	<ul style="list-style-type: none"> • Available area • Changing the top cover needs control during summer and winter 	<ul style="list-style-type: none"> • Mainly small tanneries • Investor responsible for construction, operation and maintenance • Supervising organization 	<ul style="list-style-type: none"> • Adequate size • Interested tanneries • Available area (CID to identify) • Technical specs (size, conditions, material,) • Manufacturer

Plastic tent for leather drying



Zippered door can be completely opened and rolled up



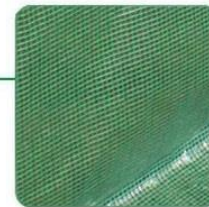
Ventilated windows for air flow change



Rain-proof and UV protection



Butterfly nut for easy installation



Mutualization: Splitting, staking, vacuum drying, plate pressing, dry milling

Drivers/Benefits	Barriers	Possible Stakeholders	Necessary Info
<ul style="list-style-type: none"> Adequate solution for small tanneries (area and investment) Integration of leather cluster 	<ul style="list-style-type: none"> Available area Relatively high CAPEX 	<ul style="list-style-type: none"> Mainly small tanneries Investors responsible for construction, O&M Supervising organization 	<ul style="list-style-type: none"> Interested tanneries Equipment provider (large tanneries or central providers) Possible role of the technology center

Mutualization: Rooftop PV Panels

Drivers/Benefits	Barriers	Possible Stakeholders	Necessary Info
<ul style="list-style-type: none"> Clean and sustainable source of power Savings in power cost 	<ul style="list-style-type: none"> Load on the roofs Power storage (if needed) Mutual agreement of tanneries 	<ul style="list-style-type: none"> Construction and operation company Electricity company Coordination party (CID/IDA) 	<ul style="list-style-type: none"> Identify the interested tanneries Communicate with PV companies Agree on prices, timeframe, participants, etc. Discuss with the electricity company the sharing conditions Licensing, construction and operation



Requirements of Successful Mutualization

- Technical study to identify the best technology
- Feasibility study, with CAPEX and OPEX
- Benefits for all stakeholders
- Established organization (cooperative association or NGO is necessary)
- Signed agreement by all parties (stakeholders)
- Group responsibility
- Facilitation by IDA and CID



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Thank You

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