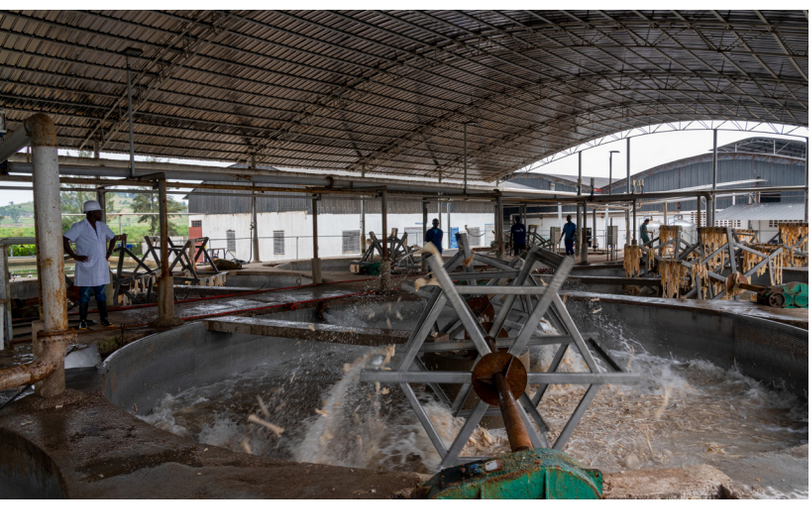
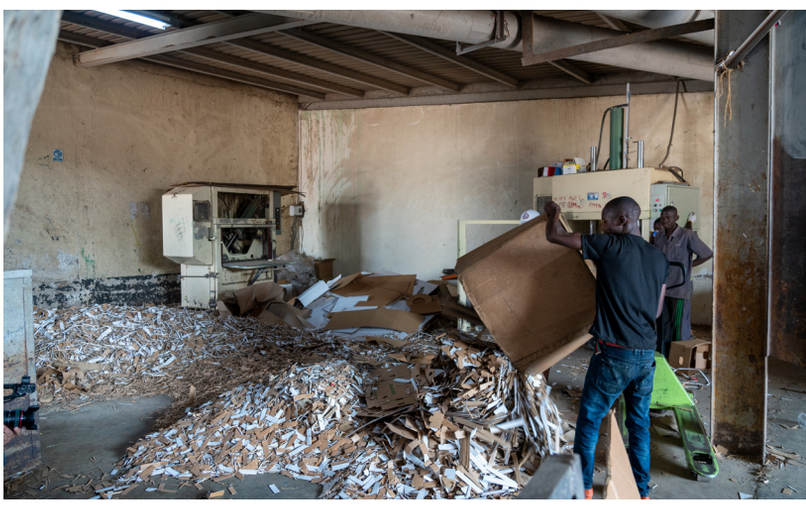
Funded by the European Union





Country: Uganda
Sector: Waste Management
Project: Enhancing Resource Productivity and Environmental Performance of MSMEs in Uganda through the concept of Industrial Symbiosis (IS)
Grantee: Uganda Cleaner Production Center (UCPC)
Partner: African Roundtable on Sustainable Consumption and Production

This impact sheet on *Enhancing Resource Productivity and Environmental Performance of MSMEs in Uganda through the concept of Industrial Symbiosis (IS)* provides a snapshot of results and achievements of the project under the Green Business Development Component of Phase I (2014-2019) of the SWITCH Africa Green Programme. This component supported micro, small and medium-sized enterprises (MSMEs) to apply and adopt SCP practices in their business operations.

Acknowledgements

The project was implemented by Uganda Cleaner Production Center (UCPC) in partnership with African Roundtable on Sustainable Consumption and Production (ARSCP) with the support of the SWITCH Africa Green National Focal Point Tom Okurut, National Environment Management Authority (NEMA), Uganda and National Coordinator Twine Teddy Nsubuga, United Nations Development Programme (UNDP), Uganda. The grants were managed by United Nations Office for Project Services (UNOPS) and coordinated by Celia Marquez with support from Mercy Gatobu.

Supervision and coordination for development of the impact sheet was done by Rhoda Wachira and Patrick Mwesigye and programme support was provided by Carolyne Kilel and Sylvia Munuhe, Africa Office, United Nations Environment Programme (UNEP).

The impact sheet was compiled by UNEP consultants, Sheila Karue and Mercy Mumo. Editing, layout and design was coordinated by Communications Division, UNEP.

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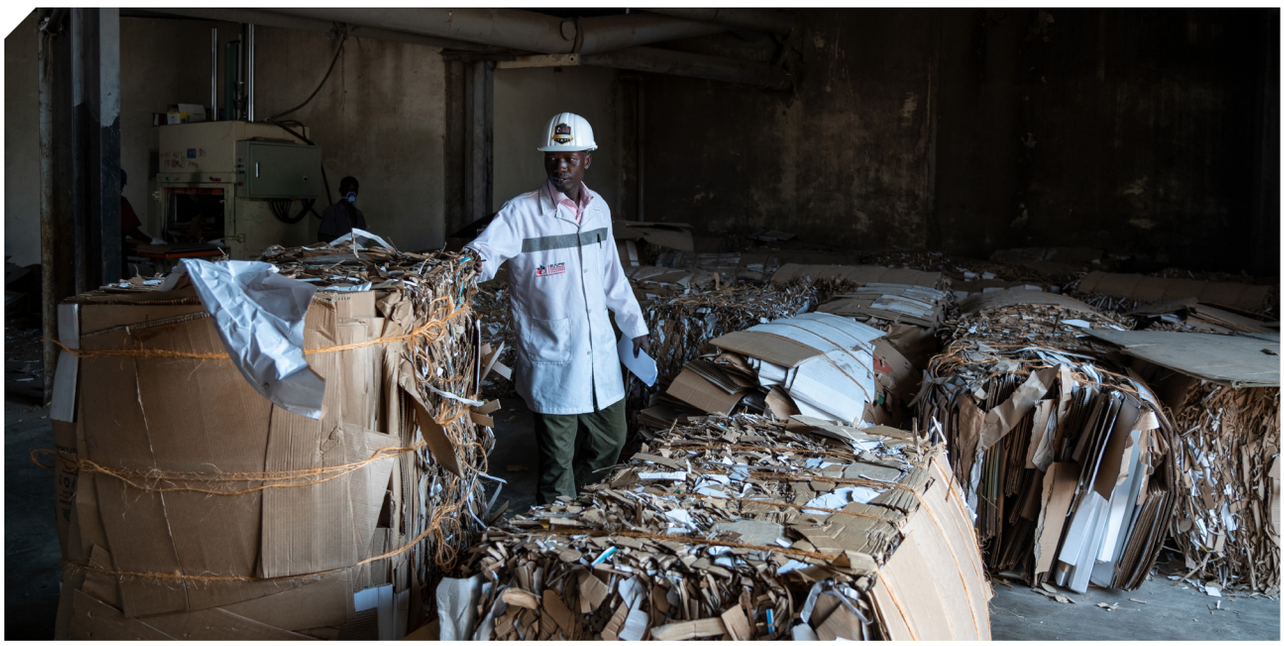


BACKGROUND

Uganda's manufacturing sector is estimated to have grown by 8.1percent in 2017 contributing to 21per cent of the GDP and providing 7 per cent of its labor force. In 2010, it was found that 90 per cent of the enterprises in the manufacturing sector were Micro, Small and Medium Sized Enterprises (MSMEs). The main challenges facing MSMEs include: low levels of awareness about appropriate waste management practices, lack of technology needed for waste collection and recycling, unskilled labor force, inefficient operating practices and unsustainable consumption and production of natural resources.

The project on *'Enhancing resource productivity and environmental performance of MSMEs through industrial symbiosis'* was developed mainly to assist countries in adopting industrial symbiosis, a collective approach to enhancing productivity which involves physical exchange of materials, energy, water, and/or by-products among different enterprises. The project focused on creating opportunity for waste and by-products of enterprises to be used as inputs by other collaborating enterprises.

The grantee supported identification of opportunities for symbiotic relationships between different enterprises through a process of data collection on the various needs of MSMEs in the Northern, Central, Eastern and Western regions of Uganda.

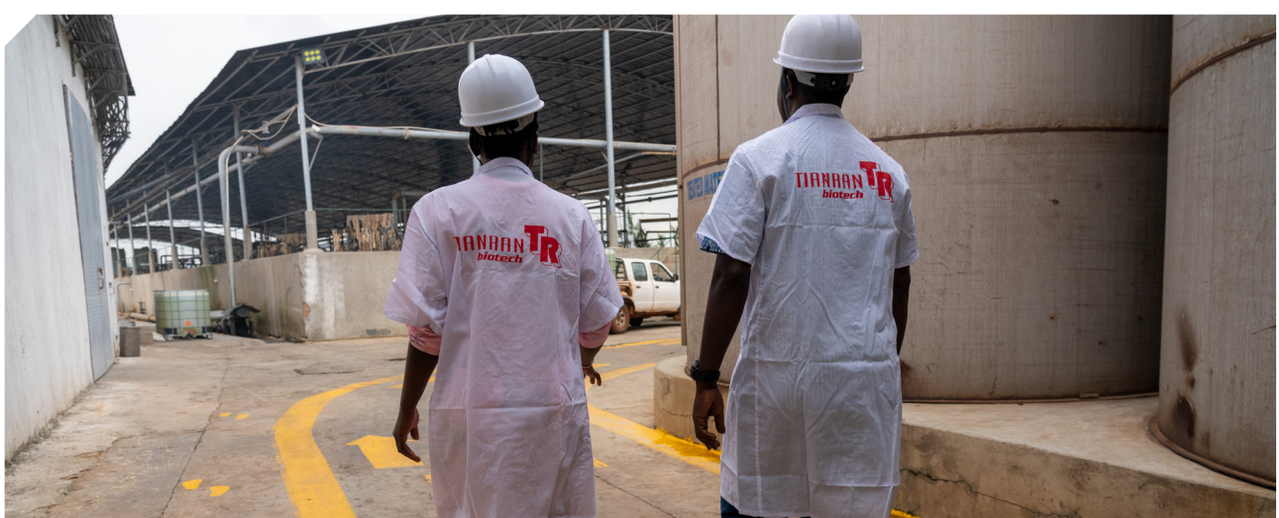
The project emphasized MSMEs could avoid additional production costs by obtaining mutual environmental and economic benefits through waste exchanges.

OBJECTIVES

The main objective of the project was to enhance resource productivity and environmental performance of micro, small and medium-sized enterprises in Uganda through the concept of industrial symbiosis.

Specific objectives were to:

- Improve resource productivity and competitiveness in the identified MSMEs, through material tracking used in industrial symbiosis.



- Reduce industrial pollution as the MSMEs sought to reduce use of virgin material and energy used by re-using waste products and by-products.

BENEFICIARIES

The project engaged 124 MSMEs who benefited from training on cleaner production practices, resource efficiency and industrial symbiosis. The beneficiaries developed 18 new products through mutual environmental and economic relationships.

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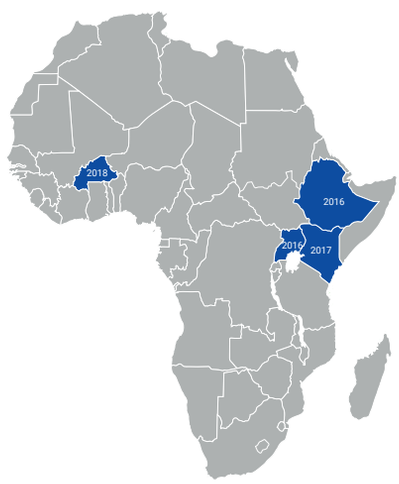
OUTPUTS

Increased networking among green businesses

Networking events and workshops

Technical staff from Uganda Cleaner Production Centre participated in the 'training-of-trainers' workshop on *industrial symbiosis*, organized by the African Roundtable on Sustainable Consumption and Production (ARSCP) and held in Pretoria South Africa. Technical staff from UCPC also participated in a knowledge sharing event organized by ARSCP in Mauritius.



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This created an opportunity to network with other SWITCH Africa Green Programme grantees.

Project beneficiaries participated in the SWITCH Africa Green Regional Networking Forums in Uganda (2016) and in Burkina Faso (2018) Third Session of the UN Environment Assembly in Kenya (2017) where they exhibited and showcased their products.

Improved capacities of workers in green sectors

Training programs developed

The project provided training to the beneficiaries on the the concept of industrial symbiosis, resource efficiency, and cleaner production practices thereby enhancing their capacities working in their respective sectors. Regional training forums were held in the four regions where the project was implemented to enhance the capacity of MSMEs to take up SCP practices. Over 393 participants were trained on resource efficiency techniques such as energy and water conservation measures, waste management, eradicating and reducing air emissions by using sustainable measures of waste disposal.

The MSMEs recorded an average of 797,115 USD revenue generated from implementing sustainable consumption practices and the adoption of industrial symbiosis strategies.

The MSMEs benefited from training on identifying their respective types of waste, waste segregation and recycling techniques, waste treatment, and management practices.

OUTCOMES

Improved business performance of MSMEs supported

Savings and Increased turnover

Through the industrial symbiosis project, 45 symbiotic relationships were established among MSMEs in the four regions where the project was implemented, who recorded savings of over USD1,500,000.

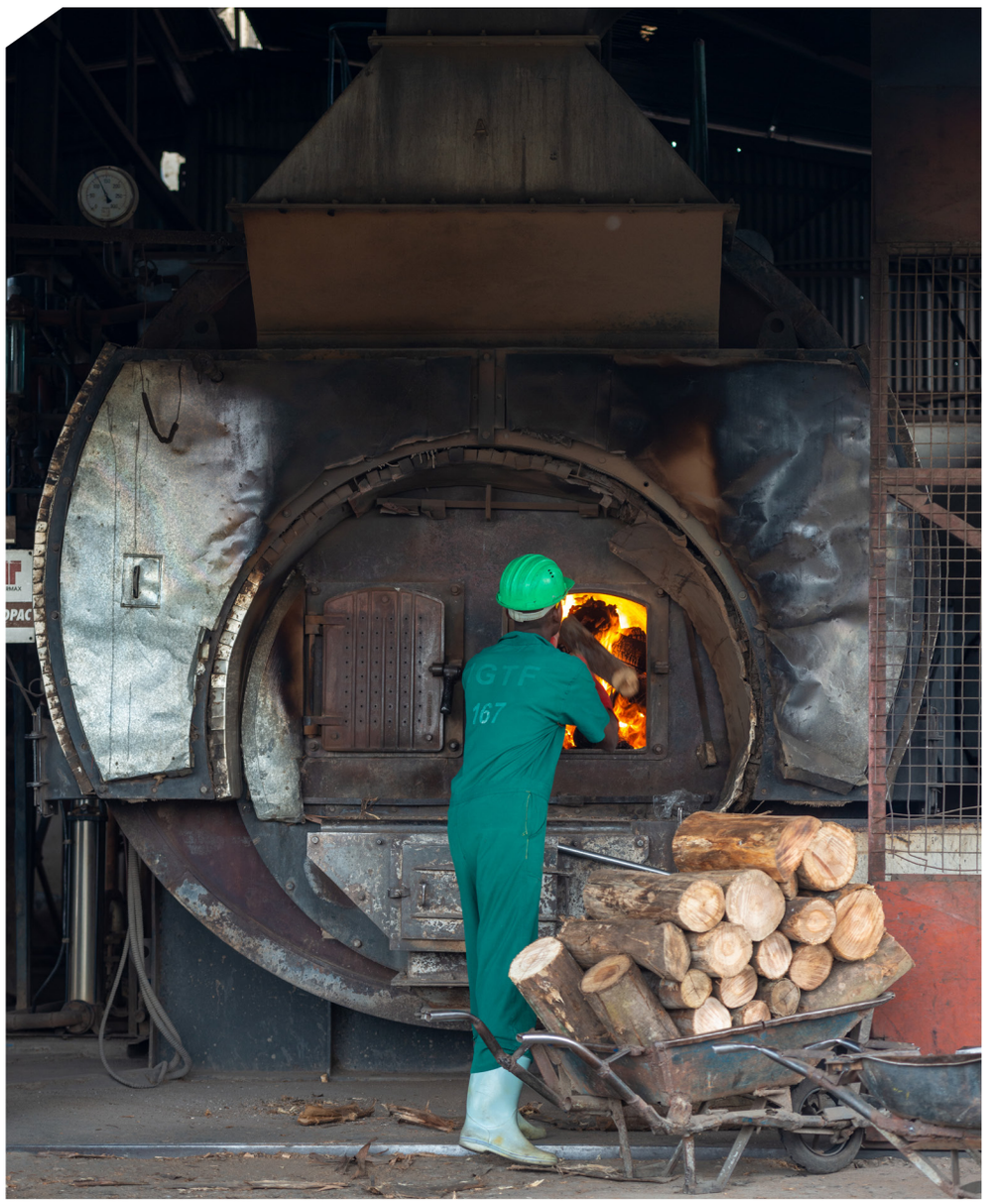
Following the significant changes in savings, an additional USD 1,400,000 was invested by the private sector to promote industrial symbiosis among industries. Century Bottling Company Ltd invested USD 207,191.21 and installed a decanter that processes sludge by dehydrating it to form manure.

From the total exchanges among the enterprises that implemented the project, 67,309 tons of waste was exchanged.

The MSMEs recorded an average of USD 797,115 revenue generated from implementing sustainable consumption practices and the adoption of industrial symbiosis strategies. Sky Fat Tannery Company Ltd earned an annual revenue of USD 1,080,800 from the sale of hide offcuts and splits. Hides offcuts are limed, baled and exported to South Africa for gelatine production and the splits are processed and exported to China.

Green Belt Resources Ltd recorded annual revenue of USD 220,540 from recycling used oil into consumable oil products and proper oil management practices.

East African Packaging Solutions Ltd, who implemented IS in waste paper management recycles 50% of the waste paper into the production of egg trays. This led to a USD 30,000 increase in annual revenue.



...28 Metric tons of limed and raw fleshings were collected from the Leather Industries of Uganda (LIU) for composting into organic manure every week

...a total of 313 green jobs were created, 93 per cent of which went to the youth

IMPACTS

Environmental Impacts

Reduction in greenhouse gases

Upland Rice Millers (U) Ltd reduced greenhouse gases emissions by shifting from the use of fossil fuel to rice husks as fuel and recorded an annual savings of USD 22,588.

From the total exchanges among the enterprises that implemented the project, 67,309 tons of waste was exchanged. This translates to the avoidance of the equivalent of 320 tons of CO_2 annually.

Improved resource efficiency and waste minimization

In addition to the promotion of industrial symbiosis, energy and water efficiency was also enhanced. Waste management was also improved as biomass waste, which is the largest percentage of waste in Uganda, was used as an input for other enterprises that produced manure and boiler fuel.

Waste treatment

Through the intervention of SWITCH Africa Green Programme, 28 Metric tons of limed and raw fleshings were collected from the Leather Industries of Uganda (LIU) for composting into organic manure every week. SkyFat tannery limited was also compliant with the national environmental standards in Uganda following project implementation.

Economic impacts

Creation of green jobs

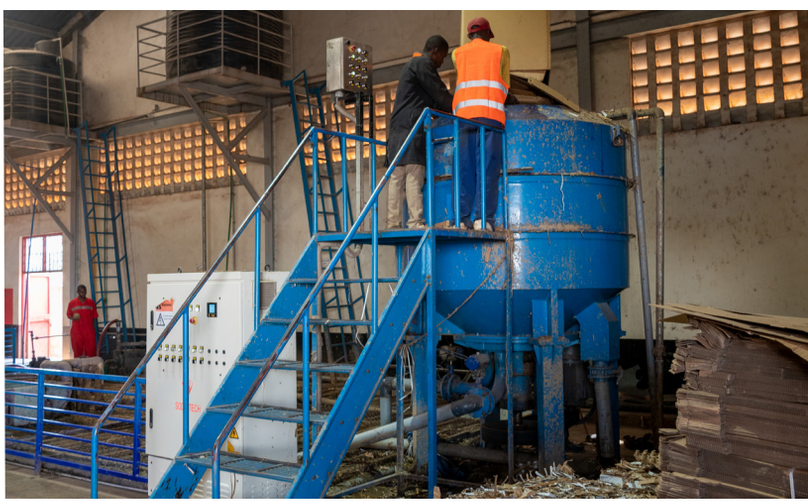
Through the project, a total of 313 green jobs were created, 93 per cent of which went to the youth. Among the youth employed, 167 were female and 124 were male.

LESSONS LEARNT

- Creation of standards for specific products facilitates sale of recyclable materials and products from recycled materials.
- Fiscal measures are needed to encourage the uptake of industrial symbiosis and discourage waste disposal.
- Development of a common identification tool and web-based platform enabled input-output matches that aid businesses and stakeholders' investment in industrial symbiosis development.
- Facilitating exchange of knowledge, information and lessons learned among relevant actors eased the adoption of sustainable consumption and production measures.

" Initially, the drying process of grains was by the using fossil burner that used 28lts of diesel per hour operates for 8hrs a day and 10 days a month. This translated into the consumption of 2,240Lts per month, representing a potential annual savings of USD 22,588 due to a shift from using diesel in the burner to rice husks as a source of energy."

An employee of Upland Rice Millers (U) Ltd,
a company that deals with agricultural business activities



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