



- Country:** Ghana
- Sector:** Integrated waste management
- Project:** Enhancing Resource Productivity and Environmental Performance through Industrial Symbiosis
- Grantee:** Ghana National Cleaner Production Center (GNPCPC)
- Partner:** African Roundtable on Sustainable Consumption and Production (ARSCP)

Acknowledgements

The SWITCH Africa Green programme was developed by the European Commission to support African countries in their transition to an inclusive green economy. The main objective of the programme is to promote sustainable development. This is based on sustainable consumption and production (SCP) patterns, while generating growth, creating decent jobs and reducing poverty.

This impact sheet on Enhancing Resource Productivity and Environmental Performance through Industrial Symbiosis 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.

The project was implemented by Ghana National Cleaner Production Centre (GNPCPC) in partnership with African Roundtable on Sustainable Consumption and Production (ARSCP), with the support of the SWITCH Africa Green National Focal Point Lambert Faabeluon, Environmental Protection Agency (EPA), Ghana; GNPCPC and National Coordinator Kingsley Bekoe Ansah, United Nations Development Programme (UNDP), Ghana. The grants were managed by United Nations Office for Project Services (UNOPS) and coordinated by Celia Marquez with support from Mercy Gatobu.

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Background

The problem of collection and disposal of waste continues to feature in major urban areas across African countries. This has led to contamination of ecosystems and health hazards to human populations. MSMEs are often characterised by inefficient use of resources and poor waste disposal methods. The concept of industrial symbiosis (IS) provides a cross sectoral tool for promoting SCP and green business development.

The SWITCH Africa Green supported project was implemented in Ghana to promote resource efficiency and green business practices by repurposing underutilized resources and by-products, creating a demand pull on eco-innovation and an opportunity base for entrepreneurs. IS has the potential to generate immense profits, lower cost of production, increase

competitiveness and market share by diverting waste from landfills and increasing environmental compliance.

Beneficiaries

The project enabled about 119 MSMEs in Tema and Accra in Ghana to take up IS and therefore resource efficient and cleaner production practices.

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Objectives

- Promote resource efficiency and environmental performance in MSMEs in Ghana through the concept of IS
- To identify and develop new business models to create an industrial ecosystem
- To promote awareness creation on IS among policy makers and MSMEs

Outputs

- **Awareness Raising among policy makers**

In collaboration with the Association of Ghana Industries, GNCPG organized an awareness creation workshop for policy makers. The meeting attracted representatives from the Ministry of Finance, Ministry





A draft national strategy for IS was drawn up providing MSMEs in the industrial sector with an enabling framework and mechanism to stimulate and facilitate IS processes.

- **Increased networking among green businesses through a waste trading platform**

With project support, a waste trading platform was developed (<http://gncpcgh.org/>) where MSMEs can sell and buy various waste resources. The platform links generators, recyclers and reusers to waste resources, thus allowing for waste trading among these entities. National regulators can also obtain credible and reliable data on the quantities of waste being generated and its location as well as quantities of waste being diverted from landfill.

Outcomes

With project support, a waste trading platform was developed (<http://gncpcgh.org/>) where MSMEs can sell and buy various waste resources. The platform links generators, recyclers and reusers to waste resources

- **Improved capacity of MSMEs on IS**

A total of 130 enterprises were trained during the project implementation period. Of these enterprises, 30 of them were trained specifically in electronic waste. Their capacity was built on how to implement resource efficient and cleaner production in managing water, raw materials, electricity, waste and chemicals. They were also trained on the monetary value of waste, developing process flows and identifying waste streams.

- **Sixty-five (65) In depth assessments**

As a follow-up to the training, 65 in-depth assessments of the operations, inputs and waste streams of the MSMEs were conducted. The following waste streams were identified to present the most potential for industrial symbiosis: wood, plastic, paper, cocoa ash, cocoa shells, scrap metal and electronic waste.

- **Synergies for waste exchanges created among**

of Trade and Industry, EPA and educational institutions as well as various business associations such as Association of Ghana Industries, National Board of small-scale Industries, Ghana Chamber of Commerce, Private Enterprise Federation and financial institutions.

- **Draft national strategy for IS developed**

A draft national strategy for IS was drawn up providing MSMEs in the industrial sector with an enabling framework and mechanism to stimulate and facilitate IS processes. The strategy addressed factors that drive the implementation of IS, particularly at the micro level.



MSMEs

Following in-depth assessments of the respective MSMEs, 135 potential synergies were identified and 56 connections had been completed by the end of the project period. See Figure 1 above.

Impacts

Environmental impacts

Following project implementation, the MSMEs that were engaged reported savings of 804,924 kg CO₂e of GHG emissions.

Through IS, enterprises reduced the quantities of virgin material used by reusing waste and by-products, producing energy from waste and thereby minimizing the amount of waste going into landfill. The project reported a total landfill reduction of 98,107 Mt/month of waste.

Economic impacts

Net additional income to

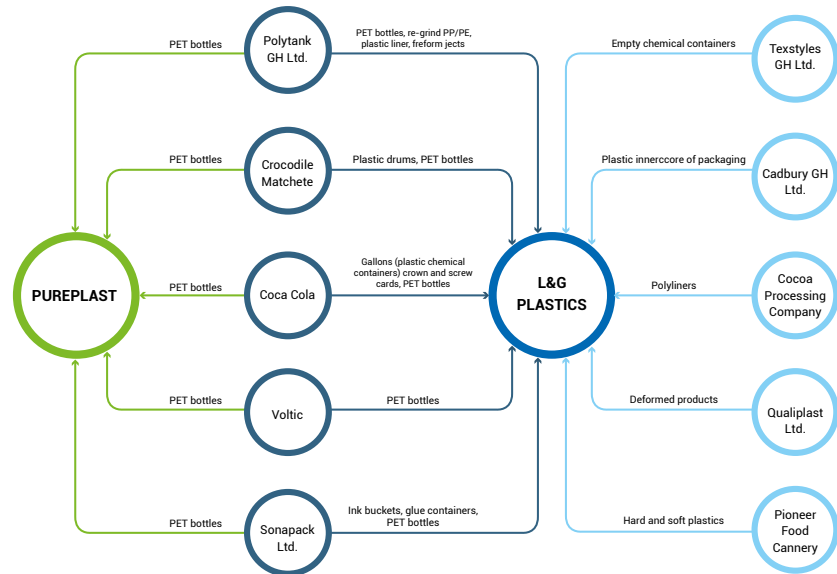


Figure 1: An example of synergies for waste exchanges identified

MSMEs increased, due to operations such as co-generation, waste-water treatment and reuse of inputs. MSMEs reported an increase in their savings amounting to over USD 890,000.

Social impacts

The project led to the creation of 1,623 jobs.



Net additional income to MSMEs increased.

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Lessons learnt

- In 2017, a monitoring and evaluation component was introduced into the project, producing quantitative data which determined the extent of changes achieved. Information on investments and trading volumes between similar MSMEs was also obtained.
- MSMEs that adopt reporting systems and record keeping are able to generate specific data on the actual volume of waste generated, reused, sold and disposed of in landfill.
- Regular in-house training among the staff of MSMEs on IS and SCP practices will ensure that even with high staff turnover, knowledge and capacity remains within the enterprises.

Regular in-house training among the staff of MSMEs on IS and SCP practices.



“I work with waste wood ... treated waste wood can be used for something meaningful in this part of our world,” Boateng explains. “I became part of SWITCH Africa Green because it was actually my first time to go into a programme like that in Ghana where they talked about waste in detail in a language that I could understand”.

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