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### RECP Experiences at Tanzania Breweries Limited Mwanza plant - Tanzania

The efficient and environmentally sound use of materials, energy and water - coupled with the minimization of waste and emissions - makes good business sense. Resource Efficient and Cleaner Production (RECP) is a way to achieve this in a holistic and systematic manner. RECP covers the application of preventive management strategies that increase the productive use of natural resources, minimize generation of waste and emissions, and foster safe and responsible production. Benefits are eminent in many enterprises, regardless of sector, location or size, as demonstrated by the experiences of **Tanzania Breweries Limited Mwanza plant in Tanzania**.

#### Achievements at a Glance

Execution of RECP at Tanzania Breweries has enabled the company to obtain an equivalent annual savings of USD 37,500 if it was to pay for water bills, more than USD 56,250 in energy consumptions, reduction of Carbon dioxide emissions by 50%, reduction of solid waste generation by 39% as well as reduction of waste water generation by 42%.



Before RECP-Security light (1000W)



After RECP-Solar light security system

#### Overview

Tanzania Breweries Limited Mwanza plant is one of the leading producers of alcoholic beverage in Tanzania. The company is located at Pasiansi, Ilemela Municipality in Mwanza City along the shore of the Lake Victoria. It was established in 1995 with a production capacity of 800,000 hl of clear beer. The company employs about 295 workers.

Tanzania Breweries Limited started RECP implementation in 2010 with the main objectives of, reducing water and energy usage, waste minimization, operational costs reduction, global sustainability compliance as well as improving business image. Since knowing that RECP is a basic tool for achieving financial savings and environmental benefits, the management of TBL committed effectively in the implementation of the RECP concept at the factory by formulating a RECP team which started implementing RECP immediately.

## Benefits

RECP options in energy management has enabled the company to achieve 44% reduction in total energy consumption, this was mainly achieved through replacing higher energy consuming lights with energy saver ones, insulation of steam and condensate lines, utilization of energy efficient motors, application of energy saving compressors as well as improved condensate recovery from 60% to 85%.

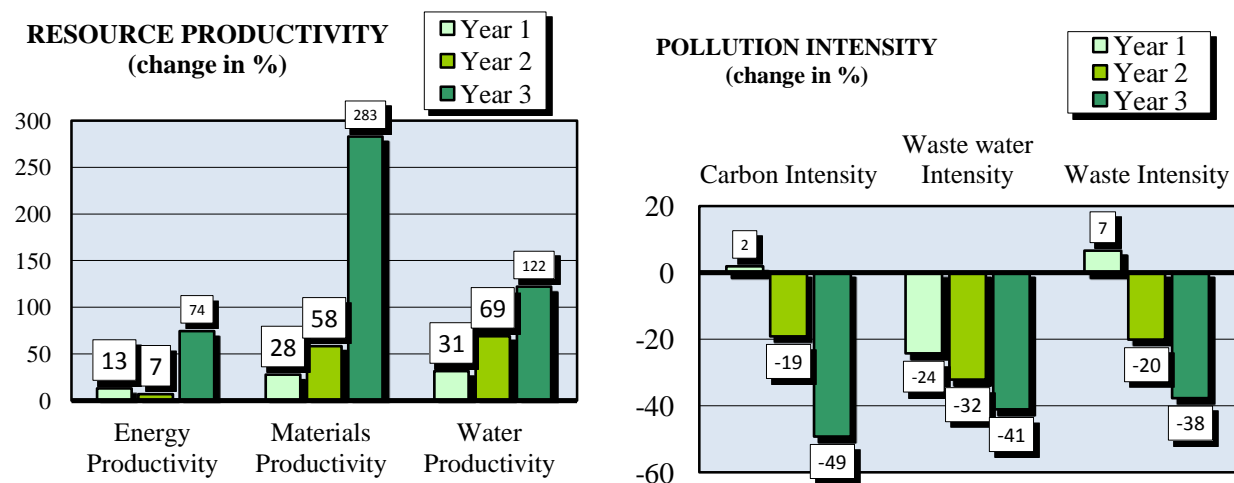
With regard to water usage, implementation of water management options like condensate recovery, installation of water sub-meters, backwash water recovery system, CO<sub>2</sub> Scrubber water recovery, vacuum pump water recycling, installation of water guns and weekly water leakages checklist has enabled the company to reduce its water daily consumption from an average of 5,804,639.00 Hectolitre/yr in 2011 up to an average 2,571,383.00 Hectolitre/yr in 2014 which is more than 50% reduction.

**Table of Results at a Glance**

Absolute Indicator	Change (%) year 1	Change (%) year 2	Change (%) year 3	Relative Indicator	Change (%) year 1	Change (%) year 2	Change (%) year 3
<b>Resource Use</b>				<b>Resource Productivity</b>			
Energy Use	-12	-11	-44	Energy Productivity	13	7	74
Materials Use	-22	-40	-74	Materials Productivity	28	58	283
Water Use	-24	-44	-56	Water Productivity	31	2	122
<b>Pollution Generated</b>				<b>Pollution Intensity</b>			
Air Emissions	1	-23	-50	Carbon Intensity	2	-19	-49
Waste Water	-25	-35	-42	Waste-water Intensity	-24	-32	-41
Waste	6	-24	-39	Waste Intensity	7	-20	-38
<b>Product Output</b>	-1	-5	-2				

**Note:** The *absolute indicator* provide a measurement of how much resource use/pollution output has changed in absolute terms e.g. units of energy used or tons of waste generated. A negative percentage indicates a decrease and a positive percentage indicates an increase. The *relative indicator* gives a measurement of changes in resource use/pollution in relation to production output. *Resource productivity* provides a measurement of how much product output can be produced relation to resource used, from a sustainability point of view, productivity should increase. *Pollution intensity* provides a measurement of how much pollution is generated per unit of production output, from a sustainability perspective, intensity should decrease.

## RECP Profile



**Note:** The RECP profile provides a visual overview of resource productivity and pollution intensity shown as change in % compared to the baseline values. Environmental performance is improved when resource productivity increases and when pollution intensity decreases.

## Table of Options implemented

Principal Options Implemented	Benefits				
	Economic			Resource Use	Environmental Impact
	Investment [USD]	Cost Saving [USD/yr]	Payback period	Reductions in energy use, water use and/or materials use (per annum)	Reductions in waste water, air emissions and/or waste generation (per annum)
<b>Water Management</b> Condensate recovery, wash room upgrade, Backwash water recovery, water meters installation, water guns, domestic water main ring upgrade, CO <sub>2</sub> Scrubber water recovery, Bottle washer new sprayers, Vacuum pump water recycling.	USD 112,500	USD 37,500	3 years	Reduction in water use by 3,233,256.00 Hectolitres	Reduction in waste water generation by 3,233,256.00 Hectolitres
<b>Wastewater Management</b> Recycling water, daily water consumption reduction, waste water metering	Included in the water management investment costs				Reduction in waste water generation by 1,612,909 Hectolitre (eq. to 42% reduction)
<b>Materials Management</b>	Normal operational			Reduction in material use by 426,461.41	Reduction in waste generation

Principal Options Implemented	Benefits				
	Economic			Resource Use	Environmental Impact
	Investment [USD]	Cost Saving [USD/yr]	Payback period	Reductions in energy use, water use and/or materials use (per annum)	Reductions in waste water, air emissions and/or waste generation (per annum)
Proper material storage, process optimization, better quality materials usage.	cost			tones	
<b>Energy Management</b> LED lights installation, process optimization, steam and condensate line insulation, improved condensate recovery, utilization of energy efficient Motors, application of energy saving compressors, proper control of energy equipment during day time and during off days.	USD 104,375	USD 61,250	1.7 years	Reduction in energy use by 57,170,856.40 MJ	Reduction in carbon dioxide emissions (4,458 tons-equivalent to 50% reduction)
<b>Solid Waste Management</b> <ul style="list-style-type: none"> <li>Machine replacement</li> <li>Bottles replacement</li> <li>Goal setting</li> </ul>				Reduced bottle breakages  Reduced machine downtime	Reduction in solid waste generation by 2,895.20 tons  Reduced solid waste caused by bottle breakages
<b>Air emissions</b> Technological changes from heavy furnace oil to biomass boilers				Reduced heavy furnace oil usage	Reduction in Carbon dioxide emissions (4,458tons-eq to 50% reduction)
<b>Process Optimization</b> <b>Management System installation</b> -Montage tool  <b>Quality Parameters Control</b> <ul style="list-style-type: none"> <li>SIC</li> <li>PMC</li> <li>PIMS&amp;POMS</li> </ul>	USD 54,000		1 year		
<b>Total</b>	<b>271,675</b>	<b>98,750</b>			

### Approach Taken

In 2010, TBL realized the importance of adopting RECP concept in order to acquire potential techniques and approach on how to handle water usage, energy and materials consumption more efficiently and reduce air emissions and waste generation.

In collaboration with the CPCT, the company started implementing RECP by first training two key staff in RECP concept, its implementation and benefits. The two trained staff formed a RECP team which comprised 10 members drawn from various sections/departments. The main task of the RECP team was to analyze the present operational status in terms of resource (water, energy and materials) consumption by conducting waste and lose analysis and mass balance using the RECP toolkit.

After realizing the benefits of RECP, the company decided to dedicate some funds for the implementation of RECP projects and established a special task force called Sustainable Development Team to strategically oversee the activities of the RECP team.

### Business Case

Achievements obtained from the implementation of RECP have enabled the company to improve its operations by increasing its resource productivity, getting high quality products and reducing pollution load. The benefits realized by implementing RECP options have made the company more competitive in business, and have enabled it enhance its Corporate Social Responsibility contribution, environmental compliance and overall image in the community.

### Testimony

The Cleaner Production Centre of Tanzania (CPCT) is an autonomous not -for-profit Trust which was registered under the Trustees Incorporation Ordinance, Cap 375 in April 2005. The CPCT evolved from two projects: the worldwide UNIDO/UNEP National Cleaner Production Centres (NCPCs) project which started in October 1995 and the NORAD funded five-year programme on “Cleaner Production for Ecologically Sustainable Industrial Development in Tanzania”, that was implemented by the Centre, under the Vice President’s Office, from December 1999. CPCT provides training, information, assessment and policy advice to a wide range of clientele in the country mainly industries, service businesses, government ministries, public and private sector institutions, academia, and NGOs/CBOs on issues related to environmental management and RECP concepts, methods, policies, practices and/or technologies.

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