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RECP Experiences at Crown Beverages Limited

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 Crown Beverage Limited-Uganda

Achievements at a Glance

Crown Beverages Ltd (CBL) embraced RECP in 2010 through UCPC, and integration of the different CP concepts such as; Waste reduction and management, Material balancing, Material flow analysis, Water and Energy conservation, Modification of processes has made a contribution to the tremendous achievements of CBL over the past two years. These tremendous achievements include; Relative reduction in Water and Energy bills, growth in volumes by 25%, Continuous improvement in food safety as evidenced by the results of the annual AIB International Food Safety audits, Renewals of permits by local authorities, Scooping of awards such as; A Bronze in the Global Chemical Leasing Award 2014, Regional RECP Award i.e Overall 2nd runners up and Winner RECP Energy Management Award 2014, National RECP Award i.e Overall 2nd Runners up and Winner Water Management Award 2013 and the Quality Excellence Bronze award in 2012 which focuses on the 3 key dimensions of Food Safety. During the initial phases of the RECP programme in 2010 and, after the implementation of all the options identified up to 2014, CBL has achieved a total saving of USD 2,396,612.50 for a total investment of USD 1,491,901.00 and BODs and CODs have reduced from 43.860tons/yr and 293.862tons/yr to 6.420tons/yr and 13.494tons/yr respectively. RECP enabled the company to simultaneously decrease waste quantities and reduce the amount of greenhouse gas emissions.

Emissions from the Boiler Before RECP

Emissions after RECP Implementation


Waste water foaming has been eliminated after RECP implementation

Overview

Crown Beverages Limited (CBL) is one of the leading producers of soft drinks in Uganda with current annual production capacity of 3.12million hectoliters and currently operates under Pepsi-cola International franchise. CBL produces a variety of brands including; Pepsi-cola, Mirinda Fruity, Mirinda Orange, Mirinda Lemon, Mirinda Red Apple, Mirinda Pineapple, 7- Up, Evervess Club Soda, Evervess Tonic, Mountain Dew and Peak mineral water and employs 513 people directly and over 4,000 indirectly with a market share of 47% of Uganda market.

CBL has been in operation for 20 years in a highly competitive environment, and also working under stringent quality standard requirements by Pepsi-Cola International (PCI) the franchise providers, and by the local environmental bodies such as UNBS and NEMA. About 90% of the inputs CBL uses are imported and over the years there has been high inflation of the Uganda Shilling against the dollar, and in order to remain competitive, CBL emphasizes the concept of Cost Containment in all her operations and with this main objective, CBL decided to implement RECP.

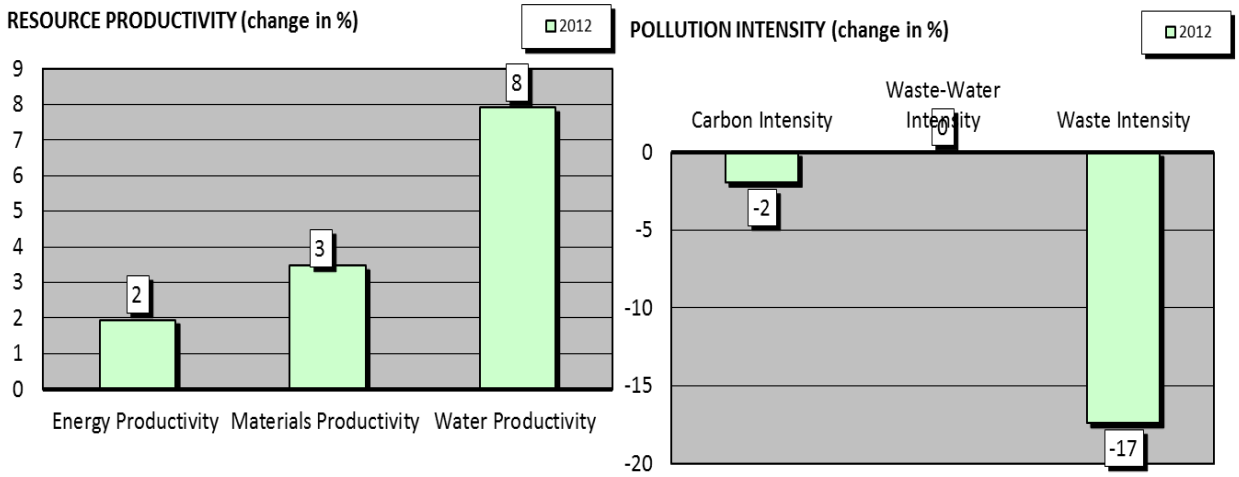
Benefits

RECP implementation in Crown Beverages Ltd has been associated with tremendous savings due to number of resource efficient measures which have been implemented. These include; changing of the Wet lubrication conveyor system to a dry which resulted in savings in terms of water and lubricants resulting into prolonged life span of the expensive floor, installation of a new beverage processor on line 2 which saves 500tones of CO_2 and 60,000 litres of beverage (which was going into the drain annually), tapping of resources such as light and rain water through rainwater harvesting and use of translucent sheets, changing of Diesel Forklifts to Electrical ones plus improved fleet management brought in more savings in addition to protection of the environment and pro-longed life span of the Iron sheets and Electrical panels plus better working environment for the workers and installation of intelligent inverter drives and changing of halides lights to low energy led ones in addition to adaption of auto switching off/on of security lights resulted into high energy savings. Retrieving of glass for reuse and control of breakages, recycling and re-use of water and condensate plus continuous monitoring of leaks and segregation of wastes has simplified the handling processes and improved the working environment and safety of the workers are some of the other RECP options which have resulted into economic savings.

Absolute Indicator	Change (%)	Relative Indicator	Change (%)
Resource Use		**Resource Productivity**	
Energy Use	12	Energy Productivity	2
Materials Use	11	Materials Productivity	3
Water Use	6	Water Productivity	8
Pollution generated		**Pollution Intensity**	
Air Emissions (global warming, CO2 eq.)	12	Carbon Intensity	-2
Waste-Water	0	Waste-Water Intensity	0
Waste	-5	Waste Intensity	-17
Product Output	14		

Note: The absolute indicators 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 indicators provide 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 per unit of resource use, from a sustainability perspective, 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.

Success Areas;

Resource Efficient and Cleaner Production (RECP)

Resource Efficient and Cleaner Production (RECP) entails the continuous application of preventive environmental strategies to processes, products and services to increase efficiency and reduce risks to humans and the environment.

RECP addresses three sustainability dimensions individually and synergistically:
- *Production efficiency*
  > Through improved productive use of natural resources by enterprises

- *Environmental management*
  > Through minimization of the impact on nature by enterprises

Human development
  > Through reduction of risks to people and communities from enterprises and supporting their development

Table 2: Some of the Opportunities implemented

Principal Options Implemented	Benefits			
	Economic Investments (USD)	Annual Economic savings (USD/yr)	Annual reductions in Resource Use	Environmental Impact
Water Management				
1- Changing to Dry lubrication the PET line.(Supplier installed own equipment and supplies lubricant.)	0	33,000	15,464m3	Reduced waste water and chemicals.
2- Backwash water recovery	27,692	8,889	10,800m^3	Reduced waste water.
3- Installation of bottle washer final rinse water Controls	950	2,962	3,969m^3 of water	Reduced waste water.
4- Installation of a Rain water harvest tank	18,495	5,400	4,433m^3	Reduced waste water. Storm volumes reduced.

5- Crate Washer Uses water from B/Washer rinse	1000	11,176	13,578m^3	Reduced waste water.
6- Recirculation of Sugar dissolver pump cooling water	200	1,423	1,944m^3	Reduced waste water.
7- Condensate return to the Boilers	5,000	8,473	11,575m^3 of water	Reduced waste water.
8- Sub metering end user	5,632 for a new Heat exchanger			Reduced waste water and Boiler fume emissions.
Materials Management				
1- CO_2 saving by installation of a new Paramix on line2, and sub-metering of usage	323,019	215,172	500T	Reduced CO_2 emissions.
2- Reduced start-up losses of beverage by installation of the new Paramix on line 2.		12,679	60,566 Litres of beverage	Reduction in BOD and COD
3- Reduced Sugar sweeping from 5kgs per day in 2010 to 3Kg in 2012		631	672Kgs	Reduction in BOD and COD
4- Reduced syrup sample sizes from 500ml to 100ml		Sugar; 4,403 Water; 1,285	Sugar; 4689Kgs Water; 1722m^3	Reduction in BOD and COD
Energy Management				
1- Changed from Halogen bulbs to LED lights.	20,151	23,047	3,230 KW of Energy	Reduction on air emissions
2- Install Inverter drives 36 Pcs	169,231	133,269		
Air emissions				
1- Replaced 3 Diesel Forklifts with Electrical one	173,207	51,509	46,800 litres 72 Oil filters 72 Fuel filters	Reduced emissions Reduced waste generation

2- Improved fleet logistics management	0	7,826	7826 litres	Reduced emissions
3- Reduced Boiler fuel by recycling of condensate.	Replace valve(USD 1200)	7590	9677m3of water and boiler fuel	Reduced emissions

Approach taken

CBL was introduced to RECP by UCPC staff in 2010, and in October of the same year CBL signed a Memorandum of understanding with UCPC. A CP team was formed at CBL and this team was taken through a series of trainings by UCPC on RECP. In order to identify and quantify opportunities for improvement, the UCPC team and the CP team for CBL conducted an in-depth RECP assessment in the entire factory UCPC and presented the findings of the assessment to the top management and CP team for implementation. In order to facilitate smooth implementation of the identified RECP options, UCPC further organised an awareness raising seminar for the shop floor workers. UCPC team has always continued providing technical assistance to CBL in addition to involving CBL in workshops and seminars for more knowledge acquisition.

Business case

Productivity improvement has led to growth in production volumes by 25%, Continuous improvement in food safety as evidenced by the results of the AIB International Food Safety audits carried out annually, Renewals of permits by local authorities, Scooping of awards such as the Quality Excellence Bronze award in 2012 which focuses on the 3 key dimensions of Food Safety, Plant Quality and Trade Quality plus other awards from local bodies such as UMA and KACITA, better working environment for the employees, Compliance with legal requirements and enjoying good working relationships with local authorities plus good public image, and creation of job opportunities for 566 people.

Testimony Box
National Cleaner Production Centre (NCPC)
UCPC was established in October 2001 as part of the UNIDO-UNEP Cleaner Production Programme. UCPC is part of a family of over 50 National Cleaner Production Centres (NCPCs) worldwide and operates under the auspices of Trade, Industry and Cooperates. In 2010, the Centre in partnership with Lake Victoria Basin Commission embarked on promoting RECP as a tool for Sustainable Consumption and Production in enterprises within the Lake Victoria Basin and has worked with over 140 enterprises.
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ABOUT *RECP EXPERIENCES*

Through the joint Resource Efficient and Cleaner Production (RECP) Programme, the United Nations Industrial Development Organization (UNIDO) and the United Nations Environment Programme (UNEP) cooperate to improve the resource productivity and environmental performance of businesses and other organizations in developing and transition countries. The Programme is implemented in partnership with the Global Network for Resource Efficient and Cleaner Production (RECP*net*). This series of enterprise success stories documents the resource productivity, environmental and other benefits achieved by enterprises in developing and transition countries through the implementation of RECP methods and practices.

These successes were achieved with the assistance of the National Cleaner Production Centres, which are part of RECP*net* established with support of the UNIDO and UNEP. The success stories employ the indicator set described in *Enterprise Level Indicators for Resource Productivity and Pollution Intensity*, UNIDO/UNEP, 2010. The primer with accompanying calculator tool and further case studies are available at www.recpnet.org, as well as on www.unido.org/cp and www.unep.fr/scp/cp