

Rathkerewwa Desiccated Coconut Industry Benefits from Resource Efficient and Cleaner Production

Rathkerewwa Desiccated Coconut Industry initially saved USD 50,000 and succeeded to increase annual savings to USD 200,000 for an investment of less than USD 5,000. Resource Efficient and Cleaner Production (RECP) enabled the company to simultaneously decrease waste quantities and reduce the amount of greenhouse gas emissions to almost zero through the utilization of waste to energy.

Rathkerewwa Desiccated Coconut Industry has demonstrated that taking care of materials, energy, water, waste and emissions makes good business sense. 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.

Overview

Rathkerewwa Desiccated Coconut Industry was built in 1966 as a one of the first desiccated coconut mills in Sri Lanka. The factory is situated at Maspotha, 105 km from Colombo, in North Western Province of Sri Lanka within the Coconut Triangle. Resource Efficient and Cleaner Production (RECP) has helped Rathkerewwa Desiccated Coconut Industry to improve their raw material utilization efficiency and reduce the discharge of waste water. The options that were implemented improved their environmental performance beyond compliance. In addition these benefits, the company recovered most of the oil previously discharged with waste water thereby reducing the total pollution load.

Benefits

Rathkerewwa Desiccated Coconut Industry has applied RECP practices during past few years mainly to decrease raw material consumption, water consumption and energy consumption. After applying RECP practices, they have reduced raw material use by 390 tons per year and reduced water use by 5,400 kl per year. The company has also implemented a range of energy efficiency measures and replaced the fossil fuel by waste coconut shells pieces leading to significant reductions in greenhouse gas emissions.



Hand paring process (waste reduced from 53 grams per nut to 45 grams per nut)



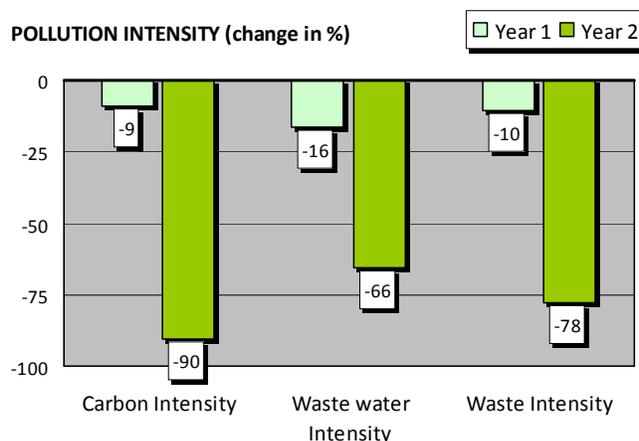
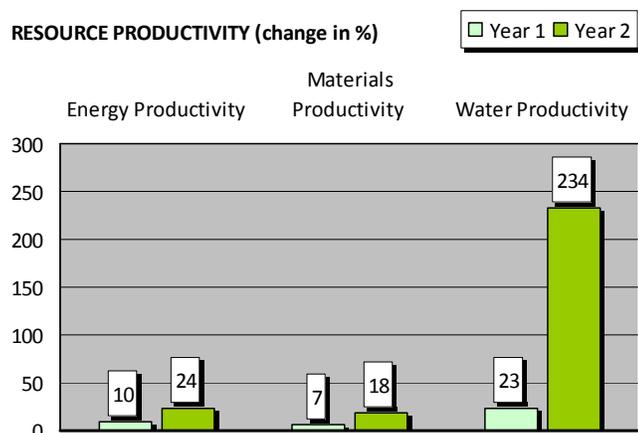
White meat cleaning where water consumption reduced in the washing process

Table 1: Results at a glance

Absolute Indicator	Change (%) year 1	Change (%) year 2	Relative Indicator	Change (%) year 1	Change (%) year 2
Resource Use			Resource Productivity		
Energy Use	-8	-12	Energy Productivity	10	24
Materials Use	-5	-8	Materials Productivity	7	18
Water Use	-18	-68	Water Productivity	23	234
Pollution generated			Pollution Intensity		
Air Emissions (global warming, CO2 eq.)	-8	-89	Carbon Intensity	-9	-90
Waste Water	-15	-63	Waste water Intensity	-16	-66
Waste	-9	-76	Waste Intensity	-10	-78
Production output	1	8			

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.

RATHKEREWVA DESICCATED COCONUT INDUSTRY 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. Year 1 measurements were made after the implementation of low and no cost options, while Year 2 measurements were made in 2008, after the implementation of further options including measures that required investments.

Areas of improvement

Major issues faced by the company were related with raw material and water consumption.

A considerable amount of nuts were rejected daily due to mishandling when loading to trucks at the collection points and when unloading at the mill premises. The damage due to unloading was reduced by re-laying rubber carpets on cemented floor. This measure saved the mill USD 11,750.

To reduce the wastage at paring stage (removing the brown outer peel of kernel) the wastage was quantified first and the peelers were made aware of the value involved. This measure gave the highest financial benefit with savings in the range of USD 94,500.

Water was used heavily in the factory for the cleaning purposes. Water was purchased from outside in tankers. Taking steps to control water use in operations and cleaning in the mill resulted in the reduction of water usage by almost 70% corresponding to savings in the range of 5,400 kl per year. The reduction of wash water drastically reduced the pollution load of the treatment system (by 42%) and saved USD 6,600.

The recovery of oil from the coconut water accumulated in the waste water pits brought an additional income of USD 49,500 to the company. The fuel switching in the boiler from furnace oil to coconut shell saved USD 165,000 and reduced CO₂ emissions by almost 900 tons. Material use was decreased by 390 tons and waste was decreased by almost 400 tons.

Table 2: Options implemented

Principal Options Implemented	Benefits			
	Economic		Resource Use	Pollution generated
	Investment [USD]	Cost Saving [USD/yr]	Reductions in energy use, water use and/or materials use (per annum)	Reductions in waste water, air emissions and/or waste generation (per annum)
Reduction of coconut kernel during peeling	< USD 100	USD 94,500	Waste of coconut kernel reduced by 50% (30 kg per 1000 nuts) and increase in DC output.	Waste generation reduced by 18 tons.
Reduction of water consumption through improved processes and cleaning	< USD 500	USD 6,600	Reduced water consumption by 5,400 kl.	Waste water volume was reduced by 50%.
Recovery of oil from coconut water in wastewater pits	USD 2,200	USD 49,500	Recovered oil which has economic value.	Reduced BOD and oil in waste water.
Switching fuel from fossil fuel to coconut shells	USD 1,450	USD 165,000	Reduced use of fossil fuels and utilization of wasted coconut shell pieces from the DC process.	Reduced GHG emissions by almost 900 tons of CO ₂ equivalent.

Note: In total, waste water was reduced by 5,520 kl per year and waste was reduced by 397 tons per year.

Approach taken

Rathkerewwa DC Industry was a traditional desiccated coconut (DC) mill; which operated at very low efficiency using unskilled employees from the neighbourhood. The company was purchasing water from external sources at a very high cost. Also the company generated high levels of waste of coconut meat which was sent to make copra, a product with low value addition. Upon participation in a Cleaner Production awareness programme the proprietor invited Sri Lanka National Cleaner Production Centre (NCPC) to help them to reduce their wastes. Sri Lanka NCPC conducted a comprehensive audit and held many training sessions for the workers and demonstrated how to use less water in washing and cleaning. The facilitators showed the workers how to recover oil from the coconut water accumulated in waste water pits and demonstrated how to reduce the paring loss to reduce waste.

"I am pleased to endorse the contribution of Cleaner Production to improve our desiccated coconut output and reduce the waste. The reduction in water consumption helped us to save purchase of water and also cut down the necessity for extra waste water treatment and waste water became an income earner for us. I recommend that CP can do wonders to all DC mills".

Mr Sarath Jayalath- Proprietor, Rathkerewwa DC Industry

Business case

The company saved at least USD 50,000 during the initial phases of the RECP programme and, after the implementation of all the options, the savings were in excess of USD 200,000 for an investment of less than USD 5,000. Today, Sri Lanka NCPC uses Rathkerewwa DC Industry as a model to show the other DC millers in the region how to integrate RECP successfully into the desiccated coconut making process.

ABOUT THESE SUCCESS STORIES

The United Nations Industrial Development Organization (UNIDO) and the United Nations Environment Programme (UNEP) cooperate in their joint Resource Efficient and Cleaner Production (RECP) Programme. The RECP Programme aims at improving the resource productivity and environmental performance of businesses and other organizations in developing and transition countries. The Programme is implemented in partnership with a network of National Cleaner Production Centres (NCPCs) that have currently been established in some 50 countries. This series of enterprise success stories documents the resource productivity, environment 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 the global RECP Network 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. A Primer for Small and Medium Sized Enterprises, published by UNIDO and UNEP in 2010. The primer with accompanying calculator tool and further case studies are available at www.unido.org/cp and www.unep.fr/scp/cp.

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