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Fruit and vegetables processing company AGROSFERA-BM

Overview

AGROSFERA-BM is an agricultural enterprise established in 1997, located in Ungheni region in a picturesque area of Moldova covered by forests named Codru.

Its main activity is production and processing of cereal, corn and sugar beet, as well as fruit and vegetable processing and canning. The company owns 2000 ha of arable land with black fertile soil where it cultivates its raw material, a canning factory with a capacity of 5 million conventional jars per year and also owns a mill. The canning factory is located in close vicinity to its agricultural lands.

The company is a frequent participant at various national and International food exhibitions, showcasing their production which includes: canned peas, pickled cucumber, assorted pickled tomato and cucumber and marrow/zucchini stew. The company's products are commercialized both on the local and international markets, in particular in such countries as Romania, Russia and Belarus.



Benefits

Due to improved operational control, the company has achieved yearly savings of USD 11,777 with zero investment. Greater savings are expected with the implementation of a set of Resource Efficient and Cleaner Production options which require equipment modification and technological improvement.

Table 1: RESULTS AT A GLANCE

Absolute Indicator	Change (%) 2012	Change (%) 2013	Relative Indicator	Change (%) 2012	Change (%) 2013
Resource Use			Resource Productivity		
Energy Use	-7	279	Energy Productivity	2	-43
Materials Use	5	122	Materials Productivity	-10	-3
Water Use	-21	48	Water Productivity	19	45
Pollution generated			Pollution Intensity		
Air Emissions (global warming, CO2 eq.)	-14	228	Carbon Intensity	-9	53
Waste-Water	-26	-26	Waste-Water Intensity	-21	-65
Waste	-50	1	Waste Intensity	-47	-53
Product Output	-6	115			



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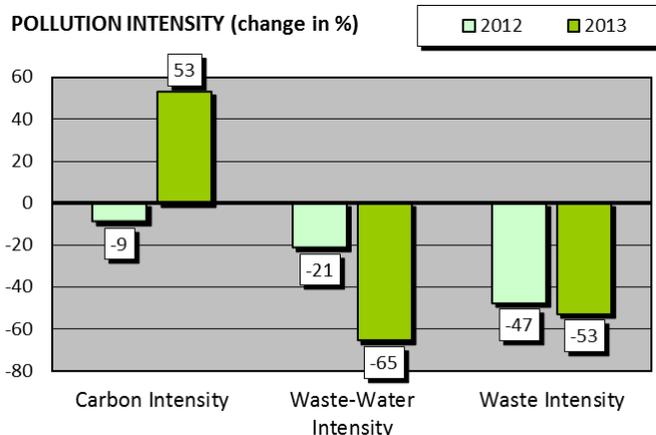
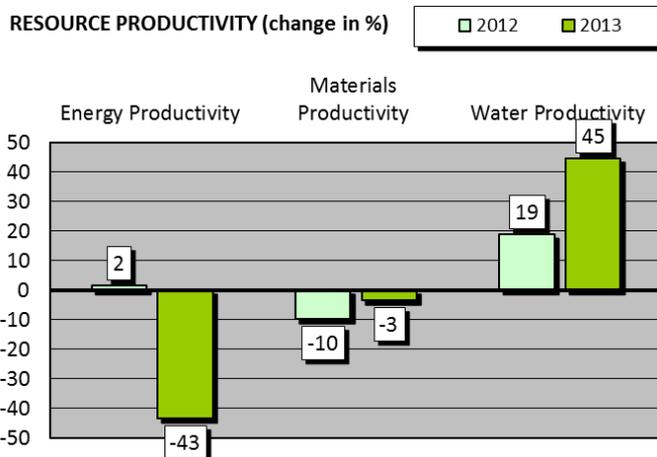


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AGROSFERA-BM RECP Profile¹



It should be noted that material productivity in 2013 is a 7% increase in 2013 as compared to 2012, being still lower than in the baseline year 2011. The water productivity has improved in both 2013 and 2012. An explanation is that in the baseline year 2011 the company processed a bigger variety of vegetables, which included conserved peas and pickles; while in 2012 and 2013 they produced only peas. On the one hand, a tonne of pickles as final product generally requires less raw materials, and more drinking water; while a tonne of conserved peas requires more raw materials and less water in the final product. A drop for material productivity and positive trend for water productivity is explained by variation in final output. Thus, the share of pickles in the overall production in 2011 is 72% and the share of conserved peas is only 28%; whilst in 2012 and 2013 the final product is 100% of conserved peas.

At the same time, the increase of material productivity and the drop of waste intensity was possible due to the more effective use of raw materials and reducing waste. The improved areas refer to more effective process steps of bean peeling and pea jars filling.

Due to the improved process of brine pouring, the water productivity indicator has increased and the wastewater intensity indicator has been reduced. In absolute terms the amount of wastewater for 2012 and 2013 is the same on the background of doubled finished products, which has decreased the intensity of wastewater by 65%.

The energy productivity fell sharply in 2013 because of increased specific consumption of natural gas: from 126 m³/t_{product} in 2011 to 234 m³/t_{product} in 2013. This difference is explained by installation in 2013 of a new corrector for monitoring natural gas consumption, which adjusts the gas meter readings to the real condition. Thus, according to the data from the gas corrector, for 2013 a much higher consumption has been registered as compared to the previous years 2012 and 2011. Therefore, based on communication with the company's technical personnel, it is assumed that the previous years' data on gas consumption are erroneous. The increased consumption of natural gas has led to increased pollution; carbon intensity was by 53 % higher in 2013 than in 2011, while in 2012 this indicator was lower by 9%.

Although gas consumption has increased, the specific consumption of electricity has decreased from 84.5 kWh/t_{product} in 2011 to 52.8 kWh/t_{product} in 2013, due to improved operational control of electrical equipment. This means that the company has managed to save about 12,960 kWh in 2013.

¹ **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.



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Areas of improvement

In the course of RECP assessment at the company, the NCPP team have identified some areas with great improvement potential and made some recommendations which would help the company increase their productivity and minimize waste. Thus the following RECP measures have been recommended:

- Installation of water and electricity meters at significant consumers for a better monitoring and control in the future;
- Insulation of pipes and control of boiler blowdown to reduce energy and water losses;
- Better monitoring and control of production process;
- Heat recovery from sterilization process with double pipe heat exchanger;
- Installation of a separator to reduce BOD in waste waters and avoid sewage system failures.

In 2013 the company has implemented a daily monitoring of gas consumption related to product output as a RECP option that helps to analyse daily consumption and identify easily losses and improve input productivity.

Table 2: OPTIONS IMPLEMENTED

Principal options implemented	Benefits			
	Economic		Resource use	Pollution generated
	Investment USD	Cost Saving USD/year	Reductions in energy use, water use and/or materials use (per annum)	Reductions in waste water, air emissions and/or waste generation (per annum)
Improved operational control	0	1,690	12,960 kWh electricity	12 tonnes CO _{2eq}
Improved the pouring process of the brine and peas	0	87	76 m ³ of drinking water	76 m ³ of wastewater
Monitoring daily natural gas consumption and product output	0	-	-	-
Using the wasted pea instead of regular fertilizer for agricultural land purposes	0	≈ 10,000 from replacing fertilizer with wasted raw material		72 tonnes of waste reuse
TOTAL		11,777		



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Approach taken and acknowledgements

During the field trip to the canning factory in Ungheni region, the NCPP team studied the production of canned peas since the company processed only peas during 2012 and 2013. The key personnel of the factory have supported NCPP team during the site visits and have addressed all the questions raised. The key personnel of the company were very interested to learn about the findings and acknowledged the potential benefits and feasibility of proposed RECP options.

Business Case

The company is looking forward to increasing its production capacity and accessing new markets. To meet these goals, the company has prepared a development plan to modernize the production process and increase the productivity and production capacity. The development plan has emphasised at the same time the quality of final products to meet customers' demands. Therefore, implementation of RECP options will enhance productivity of the company's resources, give the possibility to reduce production costs, and will finally contribute to realisation of the strategic goals and objectives put forward by the company.