

As part of the SwitchMed programme, UNIDO supports industries in the Southern Mediterranean through the transfer of environmental sound technologies (MED TEST II) to become more resource efficient and to generate savings for improved competitiveness and environmental performance.

Jordan

Coca-Cola Bottling Company of Jordan

Food and beverage sector

Context

Number of employees:	Madaba - 104 Supply chain - 152
Key products:	Carbonated soft drinks and drinking water
Main markets:	Local & Regional
Management standards:	ISO9001, ISO14001, OHSAS 18001 and FSSC22000

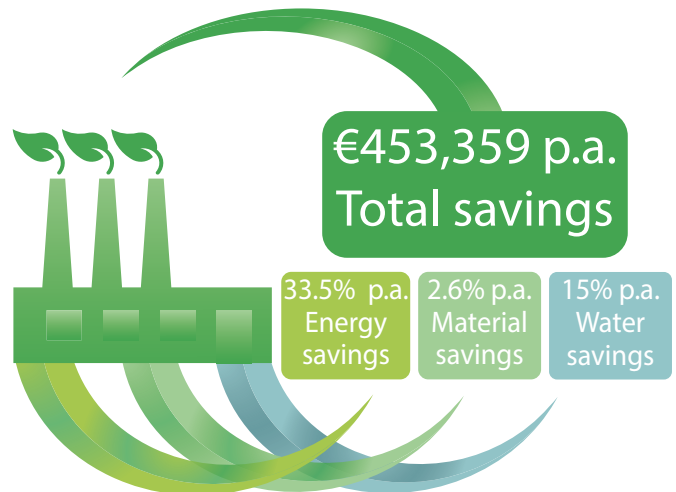
The Coca-Cola Bottling Company of Jordan (CCI Jordan) is a medium-sized enterprise that was established in 2005 for producing carbonated soft drinks and drinking water for the local and regional markets.

CCI Jordan is part of the Coca-Cola İçecek group based in Turkey operating in 10 different countries within the Middle East, Pakistan, and the Central Asia region.

“CCI Jordan aspires to integrate sustainability into every aspect of the way it does business and it needs to collaborate with civil society, governments, academia and international organizations on the global sustainability agenda. One of the main motivations for us to join the MED TEST II project was to have a new tool that could enable us to achieve our business goals and improve the environmental performance of the company, while at the same time reduce operational costs.”

Eng. Mohammed Wasfi,
Operations Manager

Benefits



Graphic: UNIDO

The MED TEST II project identified total annual savings of 453,359 euros in energy, water, and raw, auxiliary, and packaging materials, with an estimated investment of 105,766 euros and an average pay back period of 0.2 year. A total of 30 measures were identified, out of which 77% are already implemented.

Consumption of raw materials will be reduced by 2.6%, energy by 33.5%, and water by 15%. Additionally, the emissions of CO₂ will be reduced by 29.4%, (BOD₅ & COD) 11%, respectively, and the solid waste by 15.3%.

After implementing Material Flow Cost Accounting (MFCA) as part of the TEST project, the company realized that a large share of non-product output costs is generated in the Returnable Glass Bottle (RGB) production line. This led the company, in line with market strategies, to reduce the operating hours of the RGB line by 77% in 2017, utilizing the line to produce NRGB only.

The identified RECP measures were integrated into the existing ISO 14001 system to upgrade to the 2015 version of the standard. Enhanced operational control and quality testing of the wastewater discharge as per Jordanian Standards (JS 202/2007) is expected to enable the company to provide treated wastewater to farmers in the region. This option is currently under study and will be regarded as a socially responsible action, addressing water scarcity and contributing to the sustainable development of the country.

Saving opportunities¹

¹ Numbers based on production value from 2015

Action	Economic key figures			Resource savings & Environmental impacts per year		
	Investment euro	Savings euro / Yr.	PBP Yr.	Water & Materials	Energy MWh	Pollution reduction
Optimization of CIP	€6,600	€27,755	0.2	8,160 m ³ Water	276	Total: 1,190 t CO ₂ 35.9 t Solid waste 677 kg BOD ₅ 1,221 kg COD 40,000 m ³ Recycled wastewater
Water conservation	€10,133	€225,060	0.1	18,210 m ³ Water, 329.6 t & 40.5 m ³ Raw materials	886	
Raw materials savings	€2,933	€20,744	0.1	12 m ³ Water 4 t of sugar & 1.3 t of preform as Raw materials	1	
Lighting and cooling systems	€23,860	€108,555	0.2	-	866	
Steam and compressed air systems	€62,240	€71,245	0.9	-	616	
TOTAL	€105,766	€453,359	0.2	26,382 m³ Water, 334.9 t & 40.5 m³ of Raw materials	2,645 MWh	

Optimization of CIP

Water use at CIP can be reduced by: re-activating the existing pre-rinse collection tank to reuse the last rinse for the 1st pre-rinse, using turbidity transmitters to end flushing of pipes when the product has been washed out; optimizing production planning to reduce product changeovers and related number of CIP; recycling the warm water used during cans and PET bottle washing.

Water conservation

Several measures were identified: treating the cooling towers' blowdown by RO system for reuse; installing water-efficient devices (i.e. taps, shower heads, toilets, trigger operated hoses, etc.); modifying the existing RO3 to treat all water disposed from RO1 to be reused; using sterilized compressed air at 3 bar, instead of water, to purge the concentrate residues in the pipes before starting the CIP process; reducing operating hours at the RGB line by 77% to produce NRGB only.

Raw materials savings

The losses of sugar can be minimized by setting up a monitoring system to identify faults in the weight of bags and losses during handling operations before being transferred to the syrup preparation process; and by implementing an automatic early warning system for controlling the sugar and water mixing operation. Defective filled cans can be reused internally i.e. to the staff in the Cafeteria, while waste of preform can be reduced by: controlling the temperature of the hall and the inlet preform as well as the quality of preform, preventing malfunctioning of the preform heater, and applying regular calibration and maintenance of the air conveyor in the PET Production Line (before filling). CO₂ consumption would be minimized by eliminating leakages

and recalibrating the control system (of the tanks' level and the speed of response).

Lighting and cooling systems

Electricity can be saved by retrofitting the lighting systems, improving the refrigeration station by well-insulating the ammonia cycle components (ammonia drums, pipes, and heat exchangers); insulating the glycol cycle components (glycol tank, pipes, and glycol-soda heat exchangers).

Steam and compressed air systems

Thermal energy can be reduced by lowering the setting point in the steam distribution system from 6 bar to 2 bar. The compressed air system has good potential for savings by implementing a leakage detection program at low and high pressure networks, reducing the set point of compressors from 35 to 24 bars when producing 500 ml CSD and 500 ml Arwa bottles, and implementing the "AFS retrofit cabinet" project for the PET AF high pressure compressor.

"MED TEST II enabled CCI-Jordan to explore opportunities to minimize the operational costs by implementing simple reviews, calculations and brainstorming to find applicable solutions with a short Payback Period, setting action plans and ending by verifying and realizing those solutions. CCI- Jordan is very satisfied to have taken part in this project, considering the expected positive benefits on all operational, financial, and environmental aspects."

Eng. Mohammed Wasfi,
Operations Manager

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