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RECP Experiences at BOVIN Winery Negotino

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 Bovin Winery Negotino.

Achievements at a Glance

The Resource Efficient and Cleaner Production (RECP) project in BOVIN Winery Negotino included the winery facilities in Negotino. RECP implementation in the BOVIN Winery led to annual savings of EUR 19,320, by investing EUR 36,180 and payback time of 22 months.
By application of the RECP measures, energy consumption has been reduced by 11 %, the consumption of water was reduced by 42% and the total savings of CO2 emissions are in amount of 20000 kg per year.

Packing and labeling equipment

Wine cellar

Wine chillers

Overview

BOVIN Winery was established in 1998 as a private enterprise to produce wine. It is located in the Tikves wine region, at the outskirts (industrial part) of the town of Negotino. The winery possesses 60 hectares of its own vineyards located in the Tikves region. Currently, approximately 80% of the entire amount of wine produced at Bovin is from own vineyards. The plan for the next year is that almost 100% of the entire amount of wine will be produced from their own vineyards. Winery's production capacity is about 1.2 million liters per year. There are 30 permanent employees. BOVIN Winery produces high-quality, bottled wines from the following grape varieties: Chardonnay, Rheine Riesling, Sauvignon Blanc, Pinot Noir, Merlot, Pinot Noir, Cabernet Sauvignon, Vranec and Chiraz; approximately 20 different types of products (wine varieties). State-of-the-art processing equipment (grape crusher, pneumatic press, cooling equipment, fermentation and stabilization tanks, etc.) is used.

Benefits

The LC Team has identified 4 alternatives which will result in lowering the costs for electricity, lowering the consumption of water,

improving the waste utilization and lowering the company's CO2 emissions.

BOVIN uses two sources of water: water for sanitary purposes and equipment washing is supplied through connection to the public water supply network of Negotino. The winery also has its own water supply well, equipped with electric pump and pressure water tank (flow control unit). Water from the well is used for floor cleaning/washing and garden irrigation. The equipment is located outside of the winery building, in a special concrete duct. Wastewater from sanitary facilities (domestic) and from equipment and floor cleaning is discharged into the public sewage system for the town of Negotino. The first RECP option is regarding the irrigation process. The vineyards owned by the winery are irrigated using water taken from a public irrigation system and flooding over cropped areas. The RECP team did analysis for installation of a drip-feed irrigation system. By implementing this system the water consumption is going to be reduced by 34%.

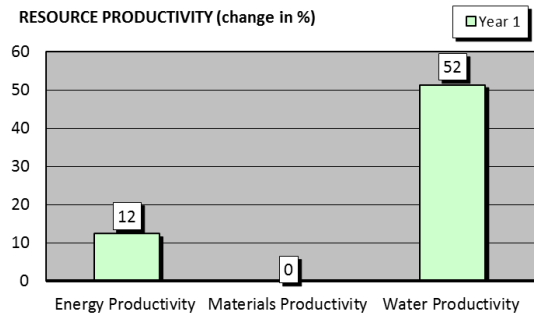
The second RECP option is regarding the cleaning-in-place process. By reorganizing the process of cleaning the tanks and using the last rinsing water from a tank and reusing it for the first washing of another tank the company can save up to 8% in water consumption.

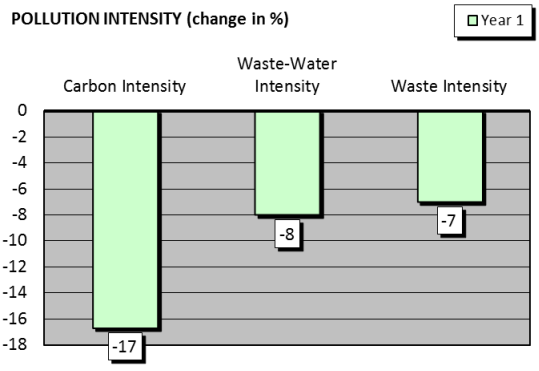
The third RECP option is regarding install photovoltaic that will supply electrical energy for the lightning and completely replace the standard lights with energy efficient lights. The estimated savings are 1600-1700 euros per year and it will reduce the CO2 emissions by 15000 kg per year.

The forth option is regarding the organic waste of the wine production process. At this stage the Bio waste is returned to the vineyards, meaning organic solid waste including pressings is used as fertilizer in the winery's own vineyards. The RECP team investigated an option for reuse of this organic waste in the pharmaceutical industry. By joining the organic waste from several wineries in the Tikves region a real possibility for selling the waste to a pharmaceutical company for Q10 extraction is possible. This will result in savings for Bovin in amount of 12.360 euros annually for collection, transportation and dislocation of the organic waste. In addition, this option will generate income from selling the organic waste in amount of 4.850 euros annually.

Absolute Indicator	Change (%) Year 1	Relative Indicator	Change (%) Year 1
Resource Use		**Resource Productivity**	
Energy Use	-11	Energy Productivity	12
Materials Use	0	Materials Productivity	0
Water Use	-34	Water Productivity	52
Pollution Generated		**Pollution Intensity**	
Air emissions (global warming, CO_2 equivalent)	-17	Carbon Intensity	-17
Waste-water	-8	Waste-water Intensity	-8
Waste	-7	Waste Intensity	-7
Production Output	0		

RECP Profile





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

Success Areas

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)
Installation of a drip-feed irrigation system	24.000	7.200	Reduction of water consumption by 34% (≈ 5.100 m^3)	
Reorganizing the process of cleaning the tanks	/	900	Reduction of water consumption by 8% (≈ 1.200 m^3)	Reduction of waste water in amount of 1.200 m^3
Installation of photovoltaics	21.000	1.700	Reduction in electricity consumption by 12% (≈ 22.000 kWh)	Reduction in CO2 emissions by 15000kg
Reuse of organic waste in pharmaceuticals	/	12.360		Reduction of the organic waste

Approach taken

In order to realize RECP project, BOVIN signed a contract with the NCPC-MK. A CP team was formed to implement the project and the Director held an introductory meeting on which all the executives familiar with the objectives of the project were present. Assignments were given to all team members and they were trained in RECP. The assessments made at the beginning of the project were to prepare a material balance, an energy balance and balances of water consumption and wastewater according the UNIDO RECP Toolkit. In developing the proposed RECP options, BOVIN focused on current problems.

Business case

BOVIN winery is currently carrying out an investment project for expansion of its wine product assortment with barrique (oak-aged) wines. The project includes: building of infrastructure (annex to the existing production building), purchase of equipment, purchase of oak barrels, and personnel training. The building of the infrastructure is finished. The rest of the expansion plan will be finished by the beginning of the next season. The new equipment will be energy efficient and will improve the cleaner production in the company. The new equipment will include control of humidity and temperature control.
A drip-feed irrigation system is planned to be installed next year. The winery is certified under the HACCP standard since 2005. They implement ISO9000:22000 standard. The company has acquired all regular permits for its functioning, such as: building permit, fire-protection and workers health and safety permits, etc. BOVIN Winery holds several prestigious international and national awards for its wines

Testimony Box
National Cleaner Production Centre (NCPC)
In 2007 the NCPC - Macedonia was established at the Faculty of Mechanical Engineering from the University "St. Cyril and Methodius" in Skopie, Macedonia. This was following the proposal of the Ministry of Environment and Physical Planning to nominate the Faculty as host institution of the NCPC Macedonia. Since then, the NCPC has successfully established itself as national focal point for providing RECP services to SMEs, coordinating RECP initiatives, partnering with public and private institutions at national and regional levels and enhancing capacity building with main aim to increase their competitiveness on domestic and global market. NCPC Macedonia is a part of the UNIDO global Programme for RECP. Macedonian NCPC was established with funding support from the Federal Ministry for European and International Affairs of Austria, and implemented by UNIDO CP department. Since it was established, NCPC objective is to build national capacities for RECP assessment and to assist companies in selected sectors with the identification, evaluation and implementation of RECP options. Since then the Center has trained more than 40 RECP and 15 LC experts, organized several RECP conferences, Low carbon trainings and assessments, workshops and awareness seminars, established a cooperation with ADA, USAID, Norsk Energy and other organization with main aim to continue providing RECP and Low carbon services to SME's to increase their competitiveness. NCPC Macedonia is also the coordinator of the activities for training and networking among NCPC in the region of SEE for the Low carbon production project.
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English Abstract (where applicable)

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.