



switchmed

MED TEST II


*Transfer of Environmentally
Sound Technology in the
Southern Mediterranean Region*

Palestine

SwitchMed is funded by
the European Union



Regional Activity Centre
for Sustainable Consumption
and Production



The SwitchMed Program is funded by the European Union and implemented by the United Nations Industrial Development Organization (UNIDO) in cooperation with UN Environment Mediterranean Action Plan (UN Environment/MAP), the Regional Activity Centre for Sustainable Consumption and Production (SCP/RAC), and the UN Environment Economy Division.

This publication has been produced with the assistance of the European Union.

The content of this publication is the sole responsibility of UNIDO and can in no way be taken to reflect the views of the European Union.

The designations employed and the presentations of material in this publication do not imply the expression of any opinion whatsoever on the part of the Secretariat concerning the legal status of any country, territory, city or area, or of its authorities, or concerning the limitations of its frontiers and boundaries.

Designations such as “developed”, “industrialized” and “developing” are intended for statistical convenience and do not necessarily express a judgment about the state reached by a particular country or area in the development process.

The mention of company names or commercial products does not imply endorsement by UNIDO.

This document has been produced without formal United Nations editing .

March 2018 by the United Nations Industrial Development Organization

For more information on the UNIDO activities within the SwitchMed initiative, please get in touch with us at:

[*c.gonzalez-mueller@unido.org*](mailto:c.gonzalez-mueller@unido.org)



Switching to a sustainable consumption and production

The EU funded SwitchMed Program is about changing the way goods and services are produced and consumed so that human development can decouple from environmental degradation. SwitchMed strives to assist the Southern Mediterranean Region to switch to more Sustainable Consumption and Production (SCP) patterns, enabling the actors in this region to realize their full economic potential. It supports industries, emerging green entrepreneurs, service providers, civil society, and policy makers through demonstration activities, policy development, and networking of incubators for eco innovation in order to catalyze progress towards low carbon and climate resilient societies, and gives rise to new economic opportunities.

Turning challenges into opportunities is at the core of the MED TEST II component, a unique and innovative part of the SwitchMed Program. The Transfer of Environmentally Sound Technology (TEST) methodology from UNIDO addresses rising energy and raw material costs by demonstrating how best practices in Resource Efficient and Cleaner Production (RECP), with an attractive return on investment, can be integrated into current business operations.

Enhancing productivity by integrating practices and technology that lead to greater efficiency in the use of natural resources, to a reduction of waste and energy consumption, and to opportunities for innovation and value creation, is central to the UNIDO TEST approach.

Adopting a resource efficient and cleaner production not only leads to better environmental performance for the industry, it also enables businesses to operate more competitively while at the same time saving money, and also providing businesses with the scope to invest and grow sustainably. Moreover, efficiency in production also contributes in saving valuable resources, such as energy, water, and raw materials for the national economy. Hence, the economic benefits of RECP extend far beyond lowering production costs for businesses as it also contributes to additional growth, a sustained job creation, and supports the long-term resource resilience of Palestine.

Partnering for a competitive industry in Palestine

For Palestinians, peace and prosperity are inseparably connected, but the stalemate in the political development of the region has had grave social and economic consequences and caused a shortfall in foreign investments, aid, and private consumption. This, along with a high unemployment rate and a restricted access to resources, has prevailed the much needed economic recovery, adding pressure on the companies to reduce costs while at the same time maintain their quality and competitiveness for the already heavily restricted export market. Power supply interruptions and dependency on expensive and carbon-intensive fossil fuels for energy, instigating high energy prices, are among the reasons why energy efficiency and a switch to renewable sources are top priorities for the national industries.

In common with the energy situation, water also continues to face distribution problems in Palestine. As one of the driest regions on earth, water remains a scarce resource both for the industry as well as for the community and with an estimated population growth the gap between water demand and supply is likely to intensify.

Apart from the challenges in water and energy, Palestinian companies must also cope with high transportation costs and impeding import/export restrictions, which coupled with increasing

prices for raw materials and the aforementioned socio-economic challenges, underpin the necessity for resource efficiency. Thus, a more resource efficient industry would not only improve the economic situation for businesses, but also contribute to ensure resource availability to other parts of the Palestine society.

The MED TEST II Program, implemented in Palestine from 2015 to 2017, addresses the challenges and the barriers national industries are facing in becoming more resource and energy efficient, non-polluting and safe, and assists in producing goods that are responsibly managed throughout their life cycle, while also increasing productivity and maintaining access to international markets with good quality products that comply with international standards.

Under the patronage of the Ministry of National Economy (MNE) and the Environment Quality Authority (EQA) the MED TEST II Project in Palestine has been led by the Palestine Academy for Science and Technology (PALAST), in collaboration with the Palestinian Food Industries Union (PIAU), the Palestinian Federation of Industries (PFIU), and the Bank of Palestine (BOP) to mobilize funding and support for a sustained application and scaling-up of RECP in Palestine.

Partners for MED TEST II in Palestine

Implementing partner

Palestine Academy for Science and Technology (PALAST)

Institutional partners

*Ministry of National Economy (MNE)
Environment Quality Authority (EQA)*

Civil society

*Palestinian Federation of Industries (PFI)
Palestinian Food Industries Union (PFIU)*

Financial institutions

Bank of Palestine (BOP)

Supporting Institutions

*Palestine Polytechnic University (PPU)
Palestinian Energy and Natural Resources Authority (PENRA)*

The TEST approach for *Palestine*

Through creative thinking and effective collaboration, the UNIDO TEST integrated approach targets all management levels of a company, involving people with different professional backgrounds and operational responsibilities, in order to enhance and sustain the efficient use of production inputs and environmental performance, encouraging a business culture where eco-innovative business solutions can thrive.

“

We have learned that achieving significant savings requires that employees understand the value of the RECP approach. The company implemented most of the recommended measures, and current savings are substantial.

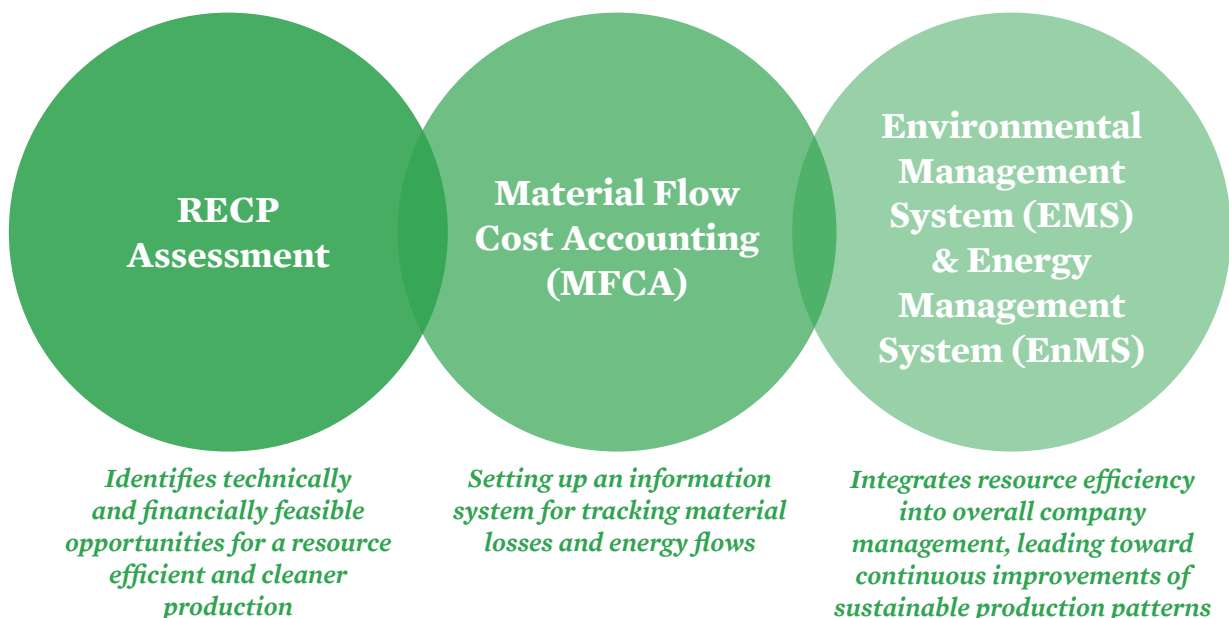
Tareq Al Qawasmi
General Manager
Al-Zara'oun

”

Identifying the potential of each and every business potential for resource efficiency requires a systematic assessment of the company production and the set-up of an information and management system that can monitor resource use in production for the continuous improvement of the performance of the business. The MED TEST II project in Palestine supported most of the demonstration companies by guiding them in taking the necessary steps to introduce effective monitoring systems and get prepared to obtain ISO certifications.

Connecting RECP assessments with present-day standards in environmental and energy management systems, together with the material flow cost accounting standard ISO14051, enables businesses to establish an integrated system to identify and track losses in energy, water, and raw material inputs. The TEST methodology builds across-the-board understanding and capacities within various management areas of a company enabling a holistic understanding and support for RECP within the business.

The TEST methodology builds on the following tools:



Stepping up Palestine's capacities for a green growth



professionals from academia, business associations, government institutions and industries received training on the TEST tools during the demonstration phase of MED TEST II in Palestine.

Following an extensive marketing campaign entailing workshops and one-to-one company visits, 15 companies were selected for an initial assessment, out of which 10 demonstration companies from the food and beverage sector signed up for the MED TEST II project. The Palestine demonstration companies range from SME's with 14 full time employees to large companies with 250 employees located in several areas of the West Bank and East Jerusalem. The growing food sector in Palestine was particularly selected because of the high "replicability" potential of the results to other production sites, and to specifically support this sectors ambition to compete on better term in national and international markets.

Companies were initially motivated by the expectation that the project could help them reduce energy related production costs and also enhance the awareness of their staff about RECP. Still, the significant water savings achieved through the MED TEST II project also indicate that the use of valuable and scarce water resources in Palestine can be optimized not only for the benefit of companies but for the whole community.

*“
For our company saving water or saving energy is not only saving money, we are also resourcing for the community.*

*Ismael Izhiman
Sales and Marketing Director
Siniora Food Industries Company*

”

*“
We made a team for the SwitchMed project and this team works together with all the workers and gather data. So, the workers change their culture to see the savings. This supports us and our company culture in becoming more competitive and innovative.*

*Tareq Yaqoub
Production Manager
Al Hijaz Chocolate*

”

Effectively transforming industries in switching to a production that uses less resources and reduces pollution, calls for a change in knowledge, attitudes and practices related to resource consumption in the production. The demonstration of RECP in the Palestinian food industry gave 32 industry professionals from the participating companies, the opportunity to join in RECP trainings, forming TEST teams and to undertake resource efficiency improvements within their own workplace. In addition, 15 professionals from industry associations, financial institutions, government administrations and academia, were also given training on how to produce more efficiently.

As a result from the project, innovative knowledge networks with an in depth understanding on how RECP saving measures can be identified, have been formed between Palestinian professionals from the food industry. Project partners will continue to promote RECP in Palestine, sharing the positive impacts of the MED TEST II initiative and expectantly scale up RECP beyond the duration of the project to the wider benefit of the industries in Palestine.

Results of the *TEST* demonstration projects

Initial assessments in the 10 MED TEST II demonstration companies in Palestine showed clear potentials for reducing consumption of raw materials, water and/or energy.

The TEST methodology introduced the Material Flow Cost Accounting tool (MFCA) as one of the major innovations. The MFCA analysis revealed to the company the real cost of raw material losses and inefficiencies. Through the TEST approach, both monetary and volume data related to production losses have been compiled leading to the “finance” and “technical” company staff working together.

This results in putting a price tag on the losses and shedding light on the economic saving potential. Analysis of the data disclosed that while companies are aware of their energy costs, they often underestimate the costs resulting from material losses and do not have an information

and management system to trace where these losses are occurring within the production process. The TEST approach helps the plant to identify and select the critical areas in which to focus its efforts to identify sources of inefficiency and improvement measures.

The table below summarizes the financial and environmental indicators of the total identified approved measures in the 10 demonstration companies.

“
Applying the TEST methodology in our company helped us to see our hidden costs and to move towards significant savings opportunities. We have applied most of the saving options reducing energy and water losses
 Jehad Al-Jebrini
 General Manager
 Al Jebrini Group for Dairy and Food Industries
 ”

Company	No. of employees ¹	Investment Euro	Savings Euro / yr.	Avg. PbP yr.	Water % / yr.	Material % / yr.	Energy % / yr.
Food and beverage sector							
Al Jebrini Group for Dairy and Food Industries ²	310	445,500	378,400	1.2	35	-	10
Alhijaz Chocolate Company ²	100	73,400	92,370	0.8	45	3	27
Al-Qasrawi ²	220	447,000	1,190,580	0.4	-	1.5	1.8
Al-Zara'oun ³	15	42,000	42,200	1	-	1.5	25
Haifa Food ³	14	47,500	43,600	1.1	33	8	26
Nakheel Palestine ²	71	39,600	27,855	1.4	-	-	22
Old City Coffee and Distribution ³	20	1,550	4,560	0.3	-	-	3
Pal Gardens ³	15	462,000	125,400	3.7	-	2	24
Siniora Food Industries Co. ²	220	72,370	104,696	0.7	27	1.8	16.4
Sinokrot Chocolate and Confectioneries ²	250	891,750	399,200	2.2	-	1	22
TOTAL	1,235	2,522,670	2,408,861	1.0			

(1) Full time employees in production departments only

(2) Cost savings compared to the production year 2015

(3) Cost savings compared to the production year 2016

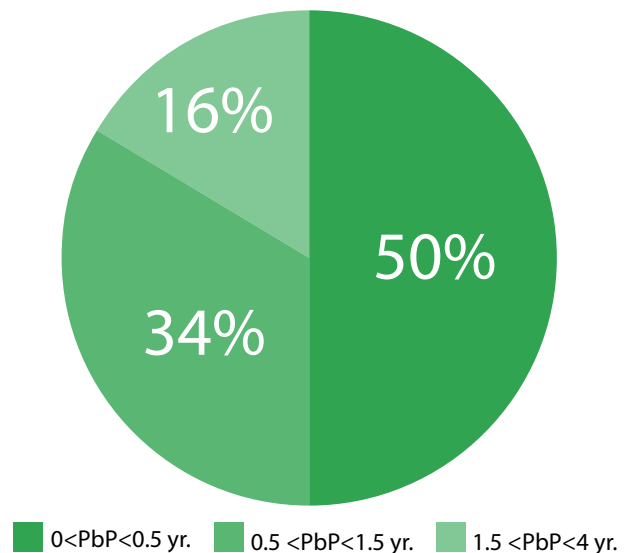
TEST a vantage point for Palestine's industry

A total of 92 resource efficiency measures were identified by the TEST team in the 10 demonstration companies. Of these 68 measures, corresponding to approximately 75% of the total measures, were approved by management in these companies and included in the action plan for implementation in 2017.

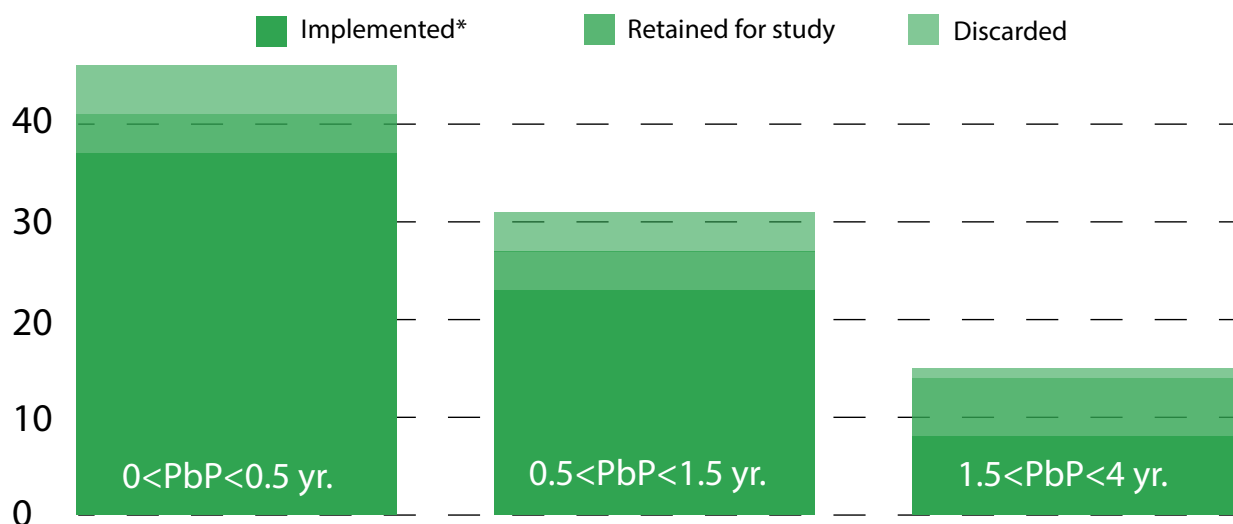
In the 10 plants a potential annual savings of over 2.4 million euros were identified, resulting in energy savings of 5,312 MWh/year; water savings of 244,850 m³/yr.; 297.6 t of raw material savings, and more than 250 t of landfilled solid waste avoided.

While substantial savings were identified, the majority of the identified measures had a payback period (PBP) of less than half a year (50%), showing the high profitability of resource efficiency.

Pay-back period of identified measures at the demo companies



Distribution of identified measures by pay-back period and implementation rate in the Palestine demo companies



€ 2,408,670
Annual savings

*Implemented, under implementation or planned at the time of this publication

A profitable solution for industry and environment in *Palestine*

With a growing population and demand for already scarce resources such as energy and water will likely rise in Palestine. The active participation of the company staff in identifying and implementing RECP measures, was decisive for the success of the project in Palestine and indicates the willingness of industry professionals to contribute in preserving resources not only for their businesses, but also for the communities. Three demonstration companies, that are located in the Jordan Valley, can now thanks to the project produce with a better environmental performance and contribute in protecting the unique biodiversity of the area.

“

My message to the companies is to go for the RECP concept in order to promote good products, in order to compete in the market, not only in the local market, but also in the regional and international market.

Prof. Imad Khatib
Secretary General

*Palestine Academy for Science and Technology
(PALAST)*

”

Formulating an RECP policy, and the recommendation to improve accounting systems (MFCA) for managing material, energy and water losses, will continue to facilitate companies' adoption of environmental and energy management standards and also enable them to have continuous improvements in resource efficiency as a routine practice in future.

In order to respond to high investment requirements, companies were assisted by the MED TEST II project to access the existing green financial incentives that have been developed by the Bank of Palestine as part of its strategic policies to support the Palestine economy. In addition, initiatives were conducted within the scope of the project to develop integrated RECP loans for industry in the future. Furthermore, all the companies prepared their EMS policy statements and were provided with specific guidelines to integrate RECP in their management system.

“

We are located in a very arid region with a lot of social and political challenges. With RECP we can overcome these challenges and achieve a much more developed economy.

Nada Majdalani
MED TEST II Policy Expert

”

*Estimated environmental benefits**

Water savings 244,805 (m ³ /yr.)	Energy savings 5.3 (GWh/yr.)	CO ₂ reductions 4,197 (t/yr.)	Waste reductions 261 (t/yr.)
---	------------------------------------	--	------------------------------------

*Of approved measures

Partners for RECP in Palestine

To share our vision of a system wide change towards sustainable consumption and production in the Southern Mediterranean requires the efforts of all society actors. The MED TEST II demonstration project in Palestine has revealed how additional economic or environmental benefits can be gained from the RECP methodology, by using the integrated approach of TEST and without interfering in the business operations of the industries.

Moreover, the MED TEST II project has together with project stakeholders and the government of Palestine, developed a roadmap for scaling-up resource efficiency throughout the Palestine industries. However, reinforcing the capacities of local service providers, that offer RECP competence to Palestinian industries, still remains one of the key priorities in developing solutions for Palestine that can increasingly decouple production from the consumption of finite resources.

National team

Imad Khatib (Energy Efficiency and Policy expert), Tawfiq Oodeh (Food Sector- Food Industry and processing experts), Aiman Soltan Tamimi (Clean Production and Policy expert, Aref Herbawi (Energy Efficiency and ISO 14001 expert, Nada Majdalani (Support Expert, Environment and policy) Razan Awawdeh (Support expert), Muhannad Nassar (Support expert, industrial water efficiency), Ayman Al Haj Daoud (Project coordinator)

International Team

Carolina Gonzalez-Mueller (Project Manager), Roberta De Palma (Chief Technical Advisor), Vladimir Dobes (Senior TEST Expert), Christine Jasch (MFCA Expert), Mohamed Ghoul (International Food & RECP Expert), Michael Barla (Communication Specialist), Vladimir Anastasov (Headquarters Project Coordinator). Karsten Ollesch (Food processing and Resource efficiency expert), Jaap Van Der Meer (Senior Consultant International Responsible Business), Chris Arvanitakis (Food Processing and Energy Efficiency Expert), Bo Kuraa (Food Processing and Energy Efficiency Expert).

Acknowledgment

The project team would like to thank the partners and stakeholders of the SwitchMed MED TEST II project in Palestine led by PALAST and Prof. Imad Khatib for the valuable input provided during its implementation, including PENRA for energy auditing reports from the companies. Particular thanks are also due to Mr. Tafwiq Odeh, who has proved to be a vital asset, not only for the project, but also for RECP in Palestine.

Implementing partners



United Nations Industrial Development Organization (UNIDO)

Department of Environment
Vienna International Centre, P.O. Box 300
1400 Vienna, Austria
Telephone: (+43-1) 26026-0, Fax: (+43-1) 26926-69
E-mail: c.gonzalez-mueller@unido.org
Web: www.unido.org



Palestine Academy for Science and Technology (PALAST)

Jerusalem Ramallah Road
Ramallah, Palestine
Tel: +9722 2960524/6 Fax: +9722 2960525
E-mail: ikhatib@palestineacademy.org
Web: www.palestineacademy.org