

MED TEST II

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

Jordan

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 judgement 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.

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 is decoupled 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 more resource efficient and cleaner production does not only lead to a better environmental performance for the industry, it also enables businesses to operate with a better competitiveness while at the same time saving money, allowing businesses to invest and grow sustainably. But efficiency in production also contributes towards saving valuable resources, such as energy and water, 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 Jordan.



Partnering for a competitive industry in *Jordan*

Although the prevailing economic and social instability in the region neighboring to Jordan is setting back Jordan's own development, the country has in the past decades shown a consistent growth of GDP. Still, the industry of Jordan continues to face economic challenges as the country also remains reliant on expensive and carbon-intensive fossil fuels for energy, and an increasing water scarcity. Consequently, creating resource savings for the industry would not only improve the economic situation for the businesses but also contribute to ensuring resource availability to other parts of society.

The MED TEST II program, implemented in Jordan 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 Industry, Trade and Supply (MoITS) and the Ministry of Environment (MoEnv), the MED TEST II project in Jordan has been led by the Royal Scientific Society (RSS), in partnership with Amman Chamber of Industry (ACI). In collaboration with the Jordan Chamber of Industry (JCI) and financial institutions, such as the Jordan Renewable Energy and Energy Efficiency Fund (JREEEF) and Jordan Environment Fund (JEF), MED TEST II assembles influential organizations and institutions to mobilize funding and support for a sustained application and scaling-up of RECP in Jordan.

Institutional partners

Ministry of Industry, Trade and Supply (MoITS)
-
Ministry of Environment (MoEnv)
-
Ministry of Planning and International Cooperation (MoPIC)
-
Jordan Standards and Metrology Organization (JSMO)

Implementing partners

Royal Scientific Society (RSS)
-
Amman Chamber of Industry (ACI)

Civil society

Jordan Chamber of Industry (JCI)
-
Jordan Industrial Estates Corporation
-
Jordan Enterprise Development Corporation (JEDCO)
-
Association of Banks in Jordan (ABJ)

Financial institutions

Jordan Renewable Energy and Energy Efficiency Fund (JREEEF)
-
Jordan Environment Fund (JEF)
-
Central Bank of Jordan (CBJ)

The TEST approach for Jordan

Through creative thinking and effective collaboration UNIDO's TEST integrated approach targets all management levels of a company, involving people of 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.

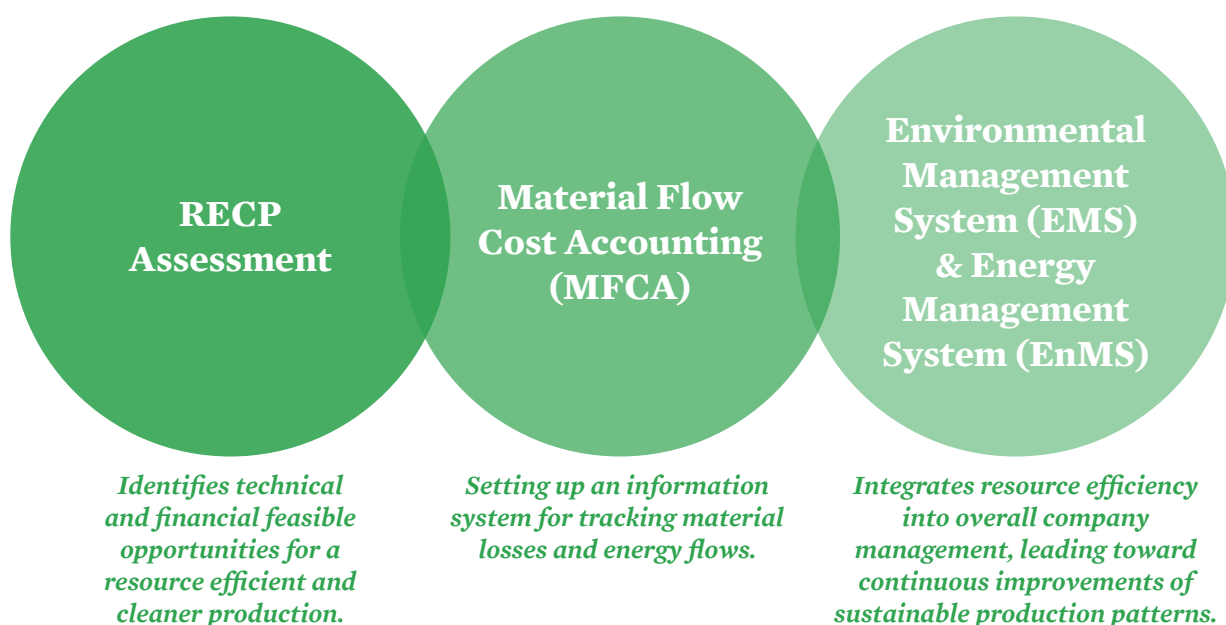
Identifying each and every business potential for resource efficiency requires a systematic assessment of the company production and the set-up of an information and management system that can monitor resource use in production for the continuous improvement of the performance of the business. The MED TEST II project in Jordan supported most of the demonstration companies by guiding them in taking the necessary steps to introduce proper 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 cross-cutting understanding and capacities within various management areas of a company enabling a holistic understanding and support for RECP within the business.

*“
The MFCA assessment that was carried out as part of the TEST methodology improved our understanding of Non Product Output (NPOs) costs, which resulted in the upgrading of our accounting and information system for resource use*

*Dr. Allayth Aldrabee,
Development and Export Manager,
Bahaa Eldeen Al-Bustanji & Partners Co.*

”



Stepping up Jordan's capacities for a green growth



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

One of the core objectives of the MED TEST II program is to reinforce the local capacities of service providers on resource efficiency tools and to develop local markets for sustainable production services. By the project's end 12 Jordanian professionals from 7 consultancy firms have been capacitated on the UNIDO TEST approach, and will now be able to continue to provide integrated resource efficiency services to the local industries. The extensive on-the-job training, combined with an evidence based best-practice methodology and technical assistance program, has been effective in bringing the industry closer to innovative knowledge networks and practitioners with hands on experience in resource efficient and cleaner production. This will enable the MED TEST II initiative to be scaled up beyond the duration of the project to the wider benefit of the industries in the food and beverage sector, and other sectors in Jordan, leveraging on the local capacities and expertise gained and adapted to guide the national diffusion of sustainable production solutions.

Following an extensive marketing campaign, entailing workshops and one-to-one company visits, 21 companies were selected for an initial assessment, out of which 12 demonstration companies from the food and beverage sector signed up for the MED TEST II project. The Jordanian demonstration companies range from SME's with 60 employees to large companies with 500 employees located in several areas of Jordan, and covered different industrial zones in Amman including Sahab and Marka. The food sector was selected for the high "replicability" potential of the results to other similar production sites, aiming to allow ripple effects from the TEST project in Jordan.

Companies were in the first place motivated by the expectation that the project could help them to reduce production costs related to raw materials, energy, and water savings, as well as enhance the awareness of their staff on RECP. Some companies were also motivated by the need to receive technical support to comply with the environmental national regulations.

Service Providers

Integrated Standard Solutions

Arabtech Jardaneh

Dar Al-Omran

Modern Arabia for Solar Energy (MASE)

Consolidated Energy and Economic Engineering

Hima for Environment and Management Consulting

Consolidated Consultant

Results of the *TEST* demonstration projects

Initial assessments in the 12 MED TEST II demonstration companies in Jordan showed clear potential to reduce consumption of raw materials, water and/or energy with an estimated potential of 10-20% savings on the total energy bill.

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 “finance” and “technical” company staff working together.

This results in putting a price tag on the losses and shedding light on the savings potential in monetary value. Analysis of the data showed that in some cases the annual cost of water and energy usage was lower than the cost of the raw material losses alone. This helps the plant to choose 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 measures in the 12 demonstration companies.

Company ¹	No. of employees	Investment Euro	Savings Euro / yr.	Avg. PbP yr.	Water %/ yr.	Material %/yr.	Energy %/ yr.
Food and Beverage sector							
Jordan Valley Food Ind. Co.	100	43,948	84,208	0.5	2.5%	0.2%	83%
Bahaa Eldeen Al-Bustanji & Partners Co.	50	21,980	38,050	0.6	34%	0.7%	13%
Farm Dairy Company	130	1,048,120	227,180	4.6	56.5%	0.11%	30.5%
Coca-Cola Bottling Company of Jordan	110	105,767	453,359	0.2	15%	2.6%	33.5%
Gulf Food Products Co.	61	48,330	44,400	1.1	22.6%	0.07%	31.4%
International Blue Diamond for Food Industries Company	70	33,827	37,197	0.9	-	1%	50%
The Saudi Jordanian Industrial Development Company (Jordina)	500	104,060	337,890	0.3	*253 m ³	-	22.7%
Al-Durra for General Trading and Investment Co. LTD ²	500	85,820	76,010	1.1	*632 m ³ Water	*2.9 tons Raw materials	*1,284 MWh
Nutridar	143	1,204,070	204,650	5.9	-	0.1%	16%
Yeast Industries Company	98	118,000	108,370	1.1	2.8%	*11.8 tons	9.6%
Jordan Poultry Processing & Marketing Co. PLC	450	805,340	484,687	1.7	*14,940 m ³ Water	-	*9,354 MWh
Al-Haj Mahmoud Habibah & Sons Co.	100	67,460	50,290	1.3	-	2.8%	27.9%
TOTAL	2,312	€3,686,722	€2,146,292	1.7 yr.			

(1) Data from the production year 2015

(2) Data from the production year 2016

(*) Absolute annual value

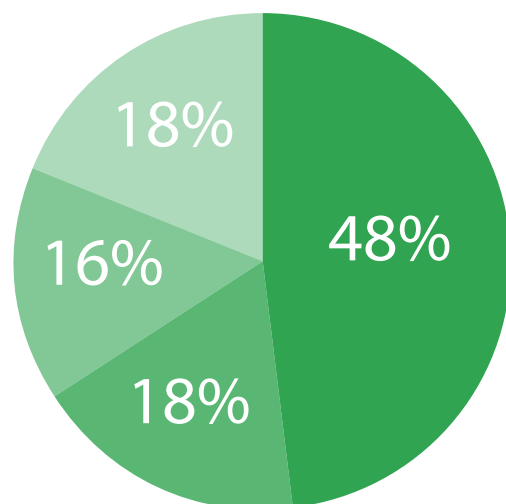
TEST a vantage point for Jordan's industry

Over a total of 214 resource efficiency measures were identified by the TEST team in the 12 demonstration companies, out of which 161 measures, corresponding to approximately 75% of the total, were approved by companies' management and incorporated into the action plan for implementation in 2017.

In the 12 plants a potential saving of over 1.6 Million JOD (2.1 million euros) annually was identified, resulting in energy savings of 22,181 MWh/yr; water savings of 63,844 m³/yr; 404 tons of raw material savings, and 83 tons of landfilled solid waste avoided.

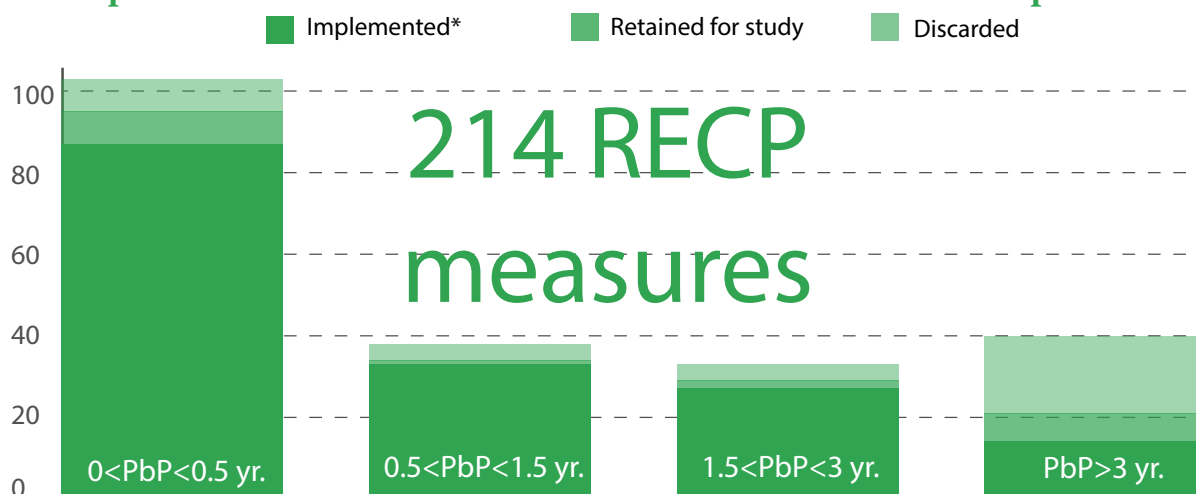
Whilst substantial savings were identified, the majority of the measures had a Payback Period (PBP) of less than half a year (48%), with a required investment below 7,000 JOD (9,300 euros), and around 23% of them are good housekeeping measures, showing the high profitability of these measures.

Pay-back period of identified measures at the demonstration companies



■ 0 < PbP < 0.5 ■ 0.5 < PbP < 1.5 ■ 1.5 < PbP < 3 ■ PbP > 3

Distribution of identified measures by pay-back period and implementation rate in the Jordanian demonstration companies



€2,146,292
Annual savings

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

A profitable solution for industry and environment in Jordan

Thanks to the strategic partnership with financial initiatives in Jordan which was initiated within the scope of the MED TEST II project, companies were assisted in accessing green financing instruments for the high investment needing solutions. For instance two demonstration companies applied for the Jordan Renewable Energy and Energy Efficiency Fund (JREEEF). Also, all the companies prepared their EMS policy statements and were provided with specific guidelines to integrate RECP in their EMS system. And during the project implementation period, one of the companies designed

RECP integrated EMS system, conducted the environmental audit/measurments, and applied for Lloyd's audit to get ISO 14001 certification. Moreover, companies with high potential for water savings but did not have meters, realized the importance of monitoring water in a systematic way, and have decided to install meters for key water consumers. Additionally, three companies changed their accounting systems to achieve better tracking of materials and losses.

“
Implementing SCP practices is crucial to ensure we preserve a planet good enough for our children. The project was a huge success and achieved very important results in energy, material, and water saving and reduced greenhouse gases, which reduced production costs and increased local industries' competitiveness with imported similar products while having a positive social and economic impact.

Basel Alnobani/National Focal Point-Ministry of Industry, Trade and Supply

”

Estimated environmental benefits

Water Savings (M ³ /yr.)	Energy Savings (MwH/yr.)	CO ₂ Reductions (tons/yr.)	Waste Reduction (tons/yr.)	COD Reductions (tons/yr.)	BOD Reductions (tons/yr.)
63,844	22,181	8,086	82.64	1.2	0.7

“
In our work, we aim to power the national economic development, social progress and environment protection, accordingly our areas of work shall support the long-term sustainable development of Jordan by providing relevant technical services such as implementing MED TEST II project in the Jordanian industries.

Royal Scientific Society – Cleaner Production Unit

”

Scan the QR code or visit www.switchmed.eu to download the individual company case studies from the MED TEST II project:



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 Jordan has revealed that with the integrated approach of TEST, additional economic or environmental benefits can be gained from the RECP methodology, without interfering in the business operations of the industries.

Moreover, the MED TEST II project has reinforced the capacities of the local RECP Service Providers, to help develop solutions for Jordan that increasingly decouple production from the consumption of finite resources

“The astonishing findings and figures that appeared in the 12 Jordanian participating companies lead to one positive fact: TEST methodology is one of the best approaches that our industries should adopt as a tool for reducing costs and increasing competitiveness.”

Amman Chamber of Industry

National Team

Core TEST Team: Rafat Assi/ Project Manager and Coordinator, Jehan Haddad/RECP and Policy Expert, Muhieddin Al-Tawalbeh/Energy Efficiency and Policy Expert, Nidal Abdallah/Energy Efficiency Expert, Nisreen Eid / EMS Expert, Husam Kilani/ EMS Expert, Rawia Abdullah /RECP Expert, Rose Smadi/Policy Expert, Fadel Allabadi, Mohammad Tillawi/ MFCA Expert

Supporting Technical Team: Salah Abu-Salah, Ahmad Abu-Safa, Sawsan Bawarsh, Abdallah Abu Sada, Mohammad mosleh, Mohammad Alhasani, Tareq Alzubi, Sohaib Ababneh, Thaer Qasim, Baraa Matalqah, Thabit Bani Ata, Abdelhafez Sandoqa

International Team

Carolina Gonzalez-Mueller (Project Manager), Roberta De Palma (Chief Technical Advisor), Vladimir Dobes (Senior TEST expert), Christine Jasch (MFCA expert), Karsten Ollesch (Food Sector Expert), Jaap van der Meer (Food Sector Expert), Tobias Peselmann (Energy Efficiency Expert).

Implementing partners:



United Nations Industrial Development Organization

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



الجمعية العلمية الملكية
Royal Scientific Society

Royal Scientific Society

P.O.Box: 1438 Amman, 11941 Jordan
Telephone: +962 6 5344701
Fax: +962 6 5344806
Email: rafat.assi@rss.jo
Web: www.rss.jo



غرفة صناعة عمان
AMMAN CHAMBER OF INDUSTRY

Amman Chamber of Industry

P.O.Box: 1800 Amman, 11118 Jordan
Telephone: +962 6 4643001
Fax: +962 6 4647852
Email: info@aci.org.jo
Web: www.aci.org.jo

