

# Greening Industry, Saving Water in North Africa

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[Igor Volodin](#) introduces a programme demonstrating the benefits of adopting best available techniques, cleaner production technology, and appropriate environmental management and accounting practices



Green industry is an approach that realizes the potential for industries to decouple economic growth from excessive and increasing resource use, thereby reducing pollution and generating additional revenues. It foresees a world where industrial sectors will minimize waste in every form, use renewable resources as input materials and fuels, and take every possible precaution to avoid harming workers, communities, climate, or the environment. Green industries will be creative and innovative, constantly developing new ways of improving their economic, environmental and social performance.

Enterprises in developing countries and countries with economies in transition are facing numerous challenges in their effort to maintain or increase their competitiveness on the local market and access to international markets with good-quality products, comply with environmental standards and reduce operational costs. In order to assist companies in dealing with such challenges and to direct them towards the “green industry” paradigm, the [United Nations Industrial Development Organization](#) (UNIDO) designed a specific methodology, the Transfer of Environmentally Sound Technology (TEST), which exists as both an integrated approach and a global programme.

TEST combines the essential elements of tools like [Resource Efficiency and Cleaner Production](#), Environmental Management Systems and Environmental Management Accounting, and applies them on the basis of a comprehensive diagnosis of enterprise performance. As a result of the customized integration and implementation of these tools and their elements, the key output is the adoption of best practices, and new skills and management culture, as well as corporate social responsibility, enabling the company to carry on the improvement journey towards sustainable entrepreneurship.

The [first TEST pilot programme](#) was launched in 2000 in the Danube River Basin. Since then, TEST has been replicated in several regions worldwide within industrial hot spot areas, contributing to the prevention of the discharge of industrial effluents into international waters (rivers, lakes, wetlands and coastal areas) and thereby protecting water resources for future generations.

In 2009, UNIDO launched the [MED TEST initiative](#) with the financial support of the [Global Environment Facility](#) (GEF) and the Italian government to promote the transfer and adoption of cleaner technology in industries in three countries of the Southern Mediterranean region: Egypt, Morocco and Tunisia.

The project aimed to demonstrate the effectiveness of introducing best practices and integrated management systems in terms of cost reduction, productivity increase and environmental performance. A pool of 43 manufacturing sites – mostly small and medium-sized enterprises – across seven industrial sectors in Egypt, Morocco and Tunisia actively participated in MED TEST during 2010-2011.

A core objective of the MED TEST initiative was building national capacity. This was achieved by extensive training and a technical assistance programme that targeted six national institutions and service providers and 30 local professionals, in addition to the staff of the 43 demonstration companies. As a result, a network of local resources is now engaged in promoting the TEST approach and will be able to extend the experience gained to other industries in the region. The active participation of the staff of the demonstration companies in the training and in the implementation of the project ensures the sustainability of all identified actions at company level, as well as that of newly developed projects.

### **Demonstration project highlights**

The effectiveness of the TEST approach has been demonstrated in the 43 participating companies through the implementation of a large number of resource-efficiency measures and cleaner technology investments. The benefits of TEST at the management and strategic levels have resulted in the adoption of new vision and policies by top management, as well as in the implementation of management systems (e.g. [ISO 14001](#)) that integrate the environmental dimension.

A total of 765 measures were identified, of which 76% have been implemented, 14% retained for further technical and economical investigations and only 10% discarded. Approximately 54% of the total identified measures had a return on investment of less than half a year, with the rest

equally split among measures with a payback period of between six months and one and a half years, and between one and a half and four years.

In the three countries involved, the project identified total annual savings of approximately US\$17m in energy, water, raw materials and increased productivity, corresponding to a portfolio of around US\$20m of private sector investments in improved processes and cleaner technology. These investments do not include end-of-pipe solutions, which in some companies have also been launched in order to achieve full environmental compliance with national laws.

The total annual water and energy savings are, respectively, 9.7 million cubic metres and 263 gigawatt hours.

### **Some examples of water savings**

#### **Egypt**

- EL-NILE SOFT DRINKS COMPANY (Crush) produces different types of soft drinks for the local market: Hi-Spot lemon, Crush orange and Sport cola. The company joined MED TEST to identify opportunities for increasing resource efficiency and productivity, reduce pollution loads so as to comply with environmental legislation and minimize investment and operating costs of the planned wastewater treatment plant. Water costs are being reduced by more than 85% as a result of the installation of new Clean-in-Place (CIP) technology, good housekeeping, and preventive maintenance measures and process water recycling. The new CIP unit uses Electro Chemical Activation technology that dramatically reduces water, energy and chemicals consumption during the cleaning and disinfection of bottles and bottling equipment, as well as increasing productivity due to a reduction in time needed for cleaning.
- ATEF EL-SAYED TANNERY joined the MED TEST project to identify opportunities for increasing resource efficiency and productivity and reduce pollution loads to minimize investment and operating costs of the planned wastewater treatment plant. Water costs will be reduced by 30% through the application of good housekeeping measures, implementation of a monitoring and controlling system for water consumption and the recycling of pickling bath. The latter measure reduces the salinity of discharged wastewater, and will achieve a 15% reduction in water costs and lead to a reduction in chemical use of 23 tons per year.

#### **Morocco**

- BOYAUDERIE DE L'ATLAS is a company in the agro-food sector, specialized in the production of salted and tubular casings in various calibres. It joined MED TEST in order to identify opportunities for resource efficiency (water and energy), water recycling, recovery of production waste, and minimization and treatment of liquid effluents. Energy savings represent 26% of the annual energy bill, while the water costs reduction amounts to 48% of the annual bill. The latter will be achieved through recycling wastewater from the calibration and soaking processes, optimizing the washing of floors and crates, and better monitoring of water consumption per production unit.

- CERAMICA DERSA produces ceramic tiles of various designs and patterns. The company joined the MED TEST project in order to identify opportunities for effective use of resources (heat, water, electricity and chemicals), reduction of production costs, recovery of solid waste and minimization of waste water effluents. All the effluents are now recycled on site. They are collected in a decantation pit, filtered, and reused for cleaning and within the process (watering). Dyes and enamel residues are recovered, filtered and reused within the first treatment layer of the tiles.

## **Tunisia**

- COMPANY CAP-BON–SCAPCB processes fresh tomatoes. The company joined the MED TEST programme in order to identify possibilities to increase efficiency in resource management and productivity, reduce the pollution costs and minimize investments and operational costs of the used-water processing plant. Water costs have been cut by 44% by the retrieval of 50,000m<sup>3</sup> of well-water that was previously discharged, and its reuse for the pre-washing of fresh tomatoes; the optimization of water sprinkling on conveyor belts used for tomato washing; and the installation of a water tank with a 300m<sup>3</sup> capacity which has allowed for a more efficient distribution and a more economical use of drilling water.
- TEINTURERIE FINISSAGE MÉDITERRANÉENNE (TFM) specializes in textile dyeing and finishing. TFM was among the first companies to implement the MED TEST project in order to improve productivity, resource efficiency and waste minimization, and ultimately to reduce waste treatment costs. TFM consumes water at the average rate of 650m<sup>3</sup> per day. The company will be able to reduce the cost of water by 56% thanks to the installation of a treatment and recycling system for wastewater, which subsequently will be reused in the process at a rate of 80%.

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