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TOWARDS GREEN INDUSTRY

Hot-Spot & TEST

Transfer of Environmentally Sound Technology
in the Cambodian Mekong River Basin

Project Summary and Achievements



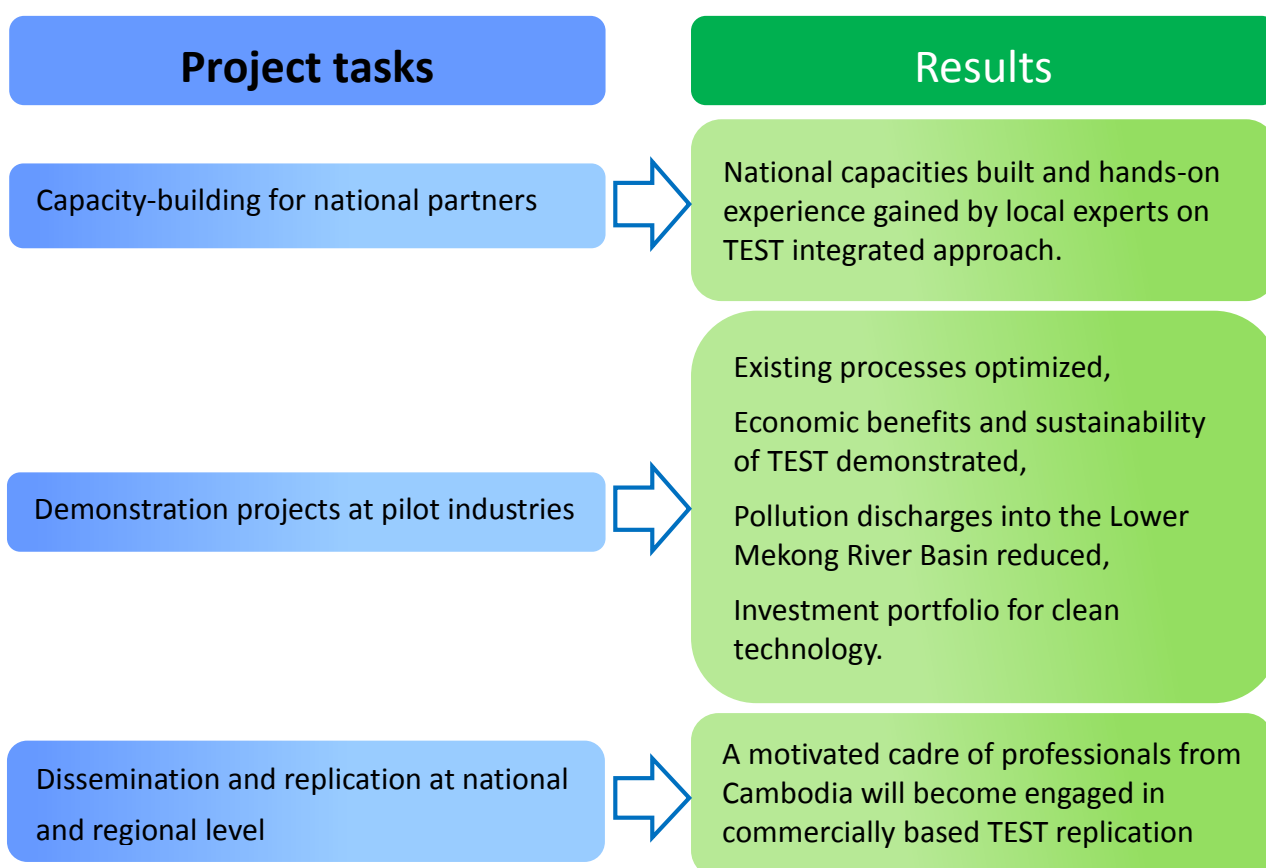
HOT SPOT and TEST Project

HOT SPOT and TEST project is a UNIDO green industry initiative which was implemented since February 2011 in close collaboration with the Ministry of Industry, Mines and Energy (MIME) and received generous financial supported from Korea International Corporation Agency (KOICA) to promote sustainability and competitiveness of Cambodian industry and SMEs. The project addresses the priority hot spots of industrial pollution, identified in the Cambodian section of the Mekong river basin.

The project aims at demonstrating the effectiveness of TEST integrated approaches in industries in reducing the consumption of raw materials, auxiliary ingredients, electricity, water, fuel and waste generated and to increases the productivity and quality of products and protects the environment. Consequently, the discharges of industrial effluents are reduced, improving thus the quality of Mekong River and its tributaries. A pool of 9 manufacturing sites, mostly SMEs, across 4 industrial sectors in Cambodia has actively participated in HOT SPOT and TEST during 2011-2012.

HOT SPOT and TEST project enabled extensive training and technical assistance to the staff of the 9 demonstration companies. As a result, local resources network is now involved in promoting the TEST approach and will serve to broaden the experience achieved to other industries in the Region. Staff of the demonstration companies actively participate in the training and in the implementation of the project ensuring the sustainability of all identified actions at company level as well as the development of the new projects.

National roadmaps for market uptake and upscale of TEST in Cambodia Mekong river basin have been designed: dissemination and replication activities targeting new industrial sites will be launched by HOT SPOT and TEST project's partner and their stakeholders with UNIDO support through provincial and regional workshops.



KEY FIGURES

9 Demonstration companies
528 Hot-Spot & Test trainees

RESULTS

1.7 Millions USD/yr economic savings
408 Thousands m³/yr water savings
3.8 Million kWh/yr energy saving

Legend

- Collective hotspot
- Individual hotspot
- Part of collective hotspot

PROJECT'S LEVERAGE

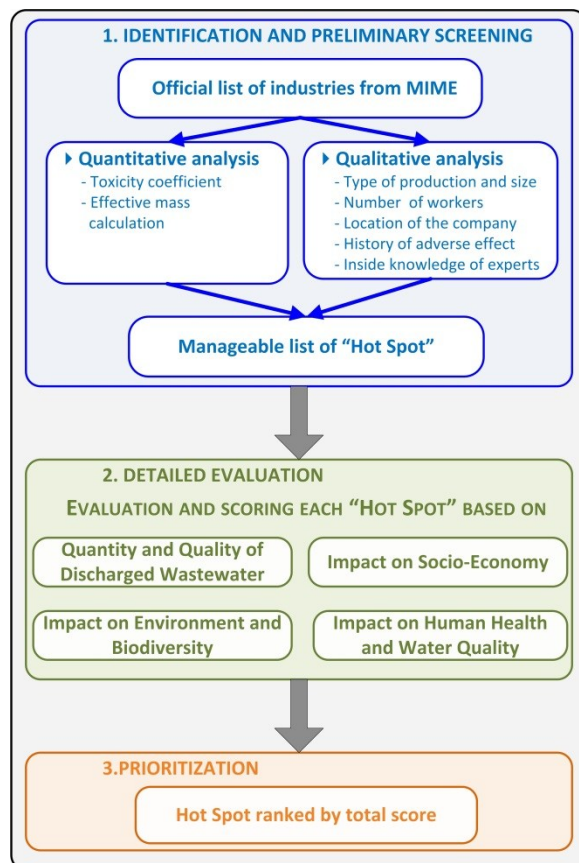
208 Thousand USD
Private sector investments portfolio for cleaner technology

HOT SPOT & TEST Approach

The project has two key components Hot Spot and Transfer of environmentally Sound Technology (TEST) methodology.

The Hot Spot methodology is designed to identify, evaluate, and prioritize pollution sources that are discharging their effluents in a common surface water body. Hot Spot, under this project, is defined as a point source of pollution/contamination.

The figure below summarizes the adapted Hot Spot methodology used for Cambodian context.

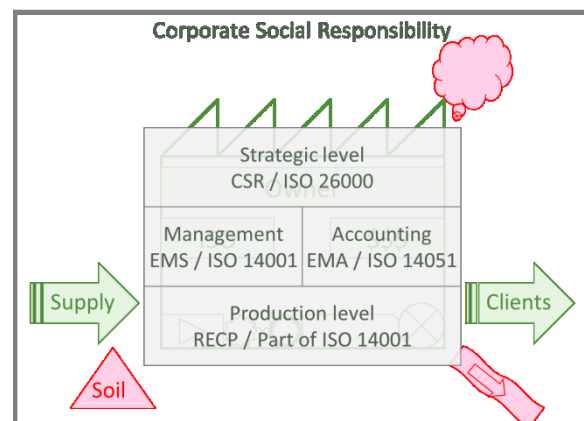


In total, more than five hundreds industry and three thousand SMEs had been screen down to forty four for the detailed evaluation. These forty four hot spots were evaluated based on the quality and quantity of their discharged wastewater, their impacts on environment and biodiversity, on human health and water quality, and on social-economy. Each hot spot were then scored and ranked. The hot spots are then prioritized to be TEST partners.

The TEST methodology is an integrated approach combining conventional transfer of technologies identified during Resource Efficient and Cleaner Production (RECP) assessment with three management tools, namely Environmental Management Accounting (EMA), Environmental Management System (EMS) and Corporate Social Responsibility (CSR).

The TEST methodology helps companies improving their environmental management and competitiveness. The combined tools aim to change the production processes, management practices and strategic vision of a company in a manner that will ensure the sustainable search for green practices and process optimization. The coordinated implementation of the tools ensures the success and sustainability of the changes.

The principle of the methodology is summarized in figure below.



The main advantage of this integrated approach is the complementary of each tool. The EMA component provides the financial justification to invest in the options identified during the RECP assessment while the EMS introduction enables a company to monitor and systematize its processes. CSR as an umbrella tools provides the strategic approach as well as social dimension required to achieve continuous improvements.

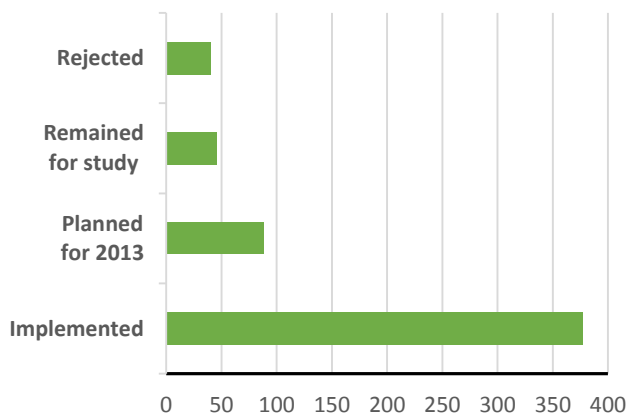
TEST demonstration project: highlight

TEST integrated approach has demonstrated its effectiveness through the participation of the 9 companies in implementing of a number of resource efficiency measures and cleaner technology investments.

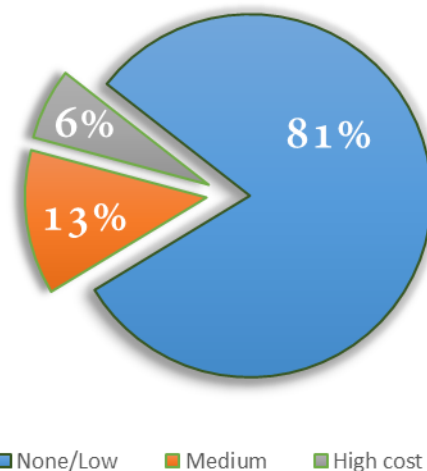
A total of 551 measures have been identified, 68% of which have been implemented, while other 16% have been planned for implementing in 2013, another 8% remained for additional technical and economic studies, yet 7% have been rejected at the demonstration sites. Most of the identified measures required none/ low cost on investment, which is account for 81%. 13% of which required medium investment cost, while the remains 6% required high cost for investment.

The project has identified an increase in quality and productivity of each participating company's product through reducing the water, energy, and raw material consumption, which lead to reduction in production cost. It is estimated that totally the company could save of about 1.7 million USD annually with a portfolio of approximately 208 thousands USD of private sector investments in improved processes and cleaner technology. The investments do not include end-of-pipe technology to reduce the impact other pollutions to the environment. In addition, the total annual water and energy savings about 400 thousands m³ and 3.7 million Kwh.

Number of measures implemented, planned for 2013, rejected, remained for study



Investment cost of identified measures at the demonstration sites



Companies' motivation for joining TEST

- Decreasing production losses & costs through a more resources (energy, water, raw materials) consumption
- Introducing best practices and clean technology
- Identifying opportunities for waste minimization and opportunities for their valorization
- Reducing investment and operational costs
- Achieving environmental compliance and enhance relationship with stakeholders
- Improving environmental compliance and enhance relationships with stakeholders
- Improving the company's overall environmental management culture and obtain an EMS certification
- Training their staff on cleaner production

CAMBODIA

Country framework conditions for implement HOT SPOT & TEST

In the 2000s, the Cambodian industry in general, and the small- and medium-sized enterprise (SME) in particular enjoyed a rapid growth and contributed to a sustained growth rate of the country's economy. However, with the 2008/2009 global financial and consequently economic crisis, the industry was severely affected, especially garment export industry which is the main industrial sector of Cambodia. To sustain high economic growth rate and cope with external risks, the Cambodian government is looking to diversify the current industrial basis and increase the competitiveness of local SMEs.

While developing, Cambodian industries and SMEs are facing significant challenges in terms of environmental and social impacts. Some industrial and municipal effluents are being discharged directly into the rivers without prior treatment or with only partial treatment. With the current diversification of industries, the toxicity and volume of effluents varies greatly and implies greater risk of contamination of the river and its ecosystem.

It is worth noting that the city of Phnom Penh does not have any proper wastewater treatment

plant yet. In addition, the number of industries and SMEs located on the banks of the main tributaries of the Mekong River in Cambodia has increased dramatically, adding pressure on the environment.

In response to the large number of companies discharging pollutant loaded effluents and emitting excessive Green House Gases, the Government of Cambodia needed a tool to assess and prioritize these industries and SMEs in order to minimize the impacts of its activities. With the essential support of the international donors, KOICA, UNIDO in close cooperation with the Ministry of Industry, Mines and Energy (MIME) tackle this issue by using UNIDO's Hot-Spot & TEST methodology.

HOT SPOT and TEST had identified and selected 9 SMEs industry, across 3 different sector including: Textile, Food and Paper, which contributing potential industrial pollutant to Mekong River Basin.

HOT SPOT & TEST partners

The HOT SPOT and TEST project in Cambodia was implemented by UNIDO in close cooperation with Ministry of Industry, Mines and Energy (MIME) with essential financial support from Korean International Cooperation Agent (KOICA)

CAMBODIA

Results of the demonstration project in Cambodia

9 companies were highly motivated to join the project after an extensive marketing campaign workshop. At the start of the project, various training on resource efficiency were conducted by experts to the staffs and workers of the company, in addition to the comments and advice on cleaner production technologies provided. The project identified a wide range of opportunities to reduce the investment cost and its adverse impact to the environment through implementing resources and raw material efficiency measures, as well as effective management by properly monitoring system for water & energy consumption.

The table below provides a summary of the financial figures and the water/energy savings associated to the identified measures in the demonstration companies.

Company	Size (*)	Investments [USD]	Saving [USD/yr]	Water Savings%	Energy Savings%
Food & Beverage Sector					
Anco Karem Tokta & Pheschak Co., Ltd.	38	25,313	71,571	50.2	14.2
Cambodia Beverage Company Limited	450	43,400	65,113	17.9	0.2
Thai Hongkiet	35	4,978	11,234	10.0	8.7
Chemical Sector					
Maestria Cambodia Co., Ltd	9	680	24,077	30.6	6.0
Pulp & Paper Sector					
Mondial Cartons Manufacturing Co., Ltd	70	90,410	156,683	50.6	6.2
Textile Sector					
GDM Enterprise Co., Ltd.	1500	10,959	20,993	4.6	8.9
GDM (Cambodia) Branch	640	10,501	75,944	4.8	8.9
New ARCHID Garment Factory Limited	3800	2,850	42,110	22.2	8.8
TAK SUN Enterprise (Cambodia) Co., LTD	1745	18,870	1,218,908	47.7	53.1
Total		207,961	1,686,633		

(*) n. of employees, 2011

Estimated Environmental Benefits			
Water Saving [m ³ /yr]	Energy Saving [kWh/yr]	Wastewater Reduction [m ³ /yr]	CO ₂ Emission Reduction [ton/yr]
407,671	3,791,366	450,667	70,738

During the TEST project implementation with the demonstration companies, various technical support and trainings were provided by the expert team to assist in integrating resource efficiency into existing management systems and to adopt international management standards.

The Hot Spot and TEST project in Cambodia aims at increasing the sustainability and competitiveness of Cambodian industry and SMEs. The TEST integrated approach includes tools like Resource Efficiency and Cleaner Production, Environmental Management System, Environmental Management Accounting, and Corporate Social Responsibility.

Learn more about the project at <http://www.unido.org/index.php?id=1001703>

Hot Spot & TEST is sponsored by Korea International Cooperation Agency



United Nations Industrial Development Organization

Vienna International Center, P.O. Box 300, 1400 Vienna, Austria

Telephone: (+43-1) 26026-0; Fax: (+43-1) 26926-69

Email: unido@unido.org; Website: www.unido.org