



GREEN economy

EGYPT SUCCESS STORIES



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FOREWORD

CEDARE has prepared this report as a complementary publication to the "Green Economy Scoping Study for Egypt," in collaboration with the **Egyptian Environmental Affairs Agency (EEAA)** and the **United Nations Environmental Programme (UNEP)**. It is meant as a practical guide to depict Egypt's on-the-ground environmental efforts towards realizing a transition to a green economy.

Selected case studies in this publication demonstrate opportunities and challenges facing green initiatives. These initiatives and their successful implementation can act as a policy pointer for a more advanced government-supported dialogue to facilitate and implement a national integrated green strategy for Egypt. This is particularly relevant because at the time of preparing this publication, Egypt goes through a critical economic, social and political juncture that will ultimately determine its growth and development trajectory.

Moreover, the publication aims at highlighting the importance of business ventures and investments to support green policies, technologies, and environmental infrastructure. It redefines the dynamic relations between the Government and the private sector and reiterates that the Government should not be the sole custodian of development and growth. Rather, private businesses, public-private partnerships and international cooperation can be drivers of the much needed transition to a sustainable development path.

The publication builds on the concept of green economy, launched by UNEP in October 2008. **Green Economy** has become an important pathway towards achieving sustainable development. Many countries around the globe have been keen on developing national green strategies as a means for restructuring their economies to achieve green growth with an emphasis on investment in human and environmental capital. As defined by UNEP, green economy leads to "improved human well-being and social equity while significantly reducing environmental risks and ecological scarcities." **Green Economy** in practice provides opportunities to improve resource efficiency, reduce pollution, create new jobs, and improve human wellbeing.



EXECUTIVE SUMMARY

Green economy is increasingly recognized as a tool to achieve sustainable development. The concept is adopted by several countries across the globe. In Egypt, one of the main policy objectives is to achieve sustainable development with an emphasis on employment generation, poverty reduction, social equity, and environmental integrity.

Efforts to mainstream sustainable development in public policy and institutions have not been up to expectations. There are serious doubts about whether current policies can address climate change concerns and associated negative social, environmental and economic implications. In this light, moving towards a green economy, designed to meet Egypt's economic, social and environmental priorities and realities, can go a long way in addressing current challenges.

This publication showcases eight initiatives that highlight the benefits and possible implementations of green economy in the Egyptian context. The projects included in this publication provide success stories in a number of sectors: waste management, renewable energy production, pollution abatement, sustainable agriculture, cleaner industrial production, and eco-tourism.

KEY MESSAGES

- 1 The private sector has the means and expertise to support profitable and operational green initiatives which enhance human well-being, promote equity, and reduce negative environmental externalities.
- 2 The Government should assume the role of a regulator and facilitator that opens opportunities and provides incentives to encourage the process of such a transition.
- 3 Through sound fiscal policies and market incentives, the Government can support green initiatives by internalizing environmental externalities and encouraging social inclusiveness. Enabling conditions can support the shift of investments in human and natural resources, including clean and renewable energy.

ACRONYMS

CAIP	Cairo Air Improvement Project
CDM	Clean Development Mechanism
CEO	Chief Executive Officer
CERs	Certified Emission Reductions
CH ₄	Methane
CLP	Classification, Labeling and Packaging
CNG	Compressed Natural Gas
CO ₂	Carbon Dioxide
DEG	German Development Finance Organization
EEAA	Egyptian Environmental Affairs Agency
EIAs	Environmental Impact Assessment Studies
ENCPC	Egyptian National Cleaner Production Center
EPAP	Egyptian Pollution Abatement Project
ESTs	Environmentally Sound Technologies
ETTIC	Egypt Technology Transfer and Innovation Centers
GHG	Greenhouse Gas
GTZ	German Development Assistance
HU	Heliopolis University for Sustainable Development
ISO	International Organization for Standardization
MENA	Middle East and North Africa
MIFT	Ministry of Industry and Foreign Trade
MSW	Municipal Solid Waste
MSEA	Ministry of State for Environmental Affairs
N ₂ O	Nitrous Oxide
NBE	National Bank of Egypt
NEP	National Employment Pact
OHSAS	Occupational Health and Safety Management Standard
PoA	Program of Activities
POPs	Persistent Organic Pollutants
PPP	Private-Public Partnerships
R&D	Research and Development
RDF	Refuse-derived fuel
RECP	Resource Efficiency and Cleaner Production
REACH	Registration, Evaluation and Authorization of Chemicals
SDF	SEKEM Development Foundation
SMEs	Small and Medium Enterprises
TESTs	Transfers of Environmentally Sound Technologies
UNEP	United Nations Environmental Program
UNFCCC	United Nations Framework Convention on Climate Change
UNIDO	United Nations Industrial Development Program
USAID	United States Agency for International Development
WHO	World Health Organization

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Special thanks go to professionals who have been involved in gathering reliable information for this publication. Appreciation is due to all program, company, and initiative representatives who took the time and exerted effort to accurately respond to the survey specifically designed to gather data and information for this publication.

The authors appreciate the permission to present and publish the success stories granted by:

- The Ministry of Finance 'Egypt Vehicle Scrapping and Recycling Program'
- The management team of the 'Egyptian Pollution Abatement Project'
- Director and management team of 'Egyptian National Cleaner Production Centre'
- Mr. Abdel Nabi Sayed Awadallah, founder of 'El Masreya for Lead Smelting, Refining and Fabrication'
- Mr. Hisham Sherif, founder of 'ENTAG Company'
- The management team of 'The SEKEM Initiative'
- Mr. Ahmed Mousa, founder of 'Desert Lodge Resort'
- The management team of OneraSystems

Their successful stories showcase the positive outcome of going green and the significant role they play to support and facilitate Egypt's transition to a green economy.

The authors are especially grateful to **Dr. Fatheya Soliman** for her technical assistance and continuous guidance to draw the story of 'El Masreya for Lead Smelting, Refining and Fabrication' in brief words.

A word of gratitude goes to all those who validated the data on behalf of mentioned green initiatives and gave us their comments and reviews in a constructive participatory approach.



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INTRODUCTION

This publication presents eight green initiatives, spearheaded by different stakeholders (including ministries, companies, entrepreneurs, and international organizations). Its main objective is to depict new green innovative solutions utilized in addressing social and economic problems. It also aims to highlight cases of environmentally responsible behavior in a number of sectors including agriculture, industry, energy, waste, transport, and tourism.

The selection process of the initiatives included in this document is based on the following criteria:

- Showcase creativity and innovation for sustainable development through the introduction of a new technology/idea/process.
- Ensure local community mobilization efforts to empower local talents and promote inclusiveness.
- Preserve and protect ecosystems through promoting new integrated management systems for natural capital conservation.
- Ensure the diversity of chosen initiatives to include development programs for profit models and social ventures.
- Existence of clear measurable social, economic and environmental benefits, detected in chosen cases. Measurable social benefits for poor and vulnerable communities include: livelihood improvement, capacity building, gender equity, health benefits, and job creation. While measurable economic benefits include: output growth, natural resource efficiency, cost effectiveness, and improved productive capacity.

Finally, measurable environmental benefits include: emissions reduction, energy efficiency measures, and ecosystem conservation.

The publication starts with describing 'Egypt Vehicle Scrapping and Recycling Program' which is a public-private partnership (PPP) between the Ministry of Finance, the Ministry of Interior and the private sector. Then, it presents the 'Egyptian Pollution Abatement Project (EPAP)' which is an initiative spearheaded by the Ministry of State for Environmental Affairs (MSEA) and the Egyptian Environmental Affairs Agency (EEAA) in collaboration with international financial institutions, donor agencies and organizations. Next, the 'Egyptian National Cleaner Production Centre' is mentioned to highlight the importance and benefits of a joint national and international cooperation. Finally, the document focuses on the following private sector and entrepreneurial green initiatives:

El Masreya for Lead Smelting, Refining and Fabrication

Engineering Tasks Group - ENTAG

The SEKEM Initiative

Desert Lodge Resort

OneraSystems



1 EGYPT VEHICLE SCRAPPING AND RECYCLING PROGRAM

Old Taxi Models in the Storage Site



Launched in 2009, this national program aims at reducing greenhouse gas emissions (GHG) and air pollution, associated with aging taxi vehicles in Greater Cairo. The program is particularly significant, given the fact that Cairo is a highly polluted city. The transport sector is a major pollutant in a city characterized by high population density where automotive vehicles are the primary means of transportation.

PROFILE

Within the context of the program, taxis operational for more than 20 years qualify for voluntary replacements with newer models that meet Egyptian Environment Law specifications. The new models are also encouraged to be more energy-efficient and less polluting. Since the Ministry of Finance is the Government entity managing the program, all eligible replacements should be pre-approved by the Ministry prior to any processing. The Ministry has also signed a protocol with five dealers that assemble vehicles locally to supply the program with the required new vehicle models.

Once approved, replacements take place in exchange for financial incentives that are used for the purchase of newer car models. The replacement process happens in two phases. During the first phase, interested taxi drivers head to a "scrapping and intermediate storage site" for vehicle eligibility inspection. After passing the inspection, old vehicles are stored on site while their batteries are drained. Drivers are then given their entitled subsidies in addition to tax and customs waiver in exchange for their purchase of a new vehicle. In 2012, tax and customs exemptions reached 9,300 EGP per taxi.

CASE: HIGHLIGHTS

41,000 VEHICLES

HAVE BEEN REPLACED THROUGH THE PROGRAM.

IN 2012, TAX AND CUSTOMS EXEMPTIONS GIVEN THROUGH THE PROGRAM REACHED

1300\$ PER TAXI

AVERAGE FUEL EFFICIENCY ACHIEVED THROUGH THE PROGRAM IS

9.39 LITERS/100 KM

FOR FUELED CARS.

AN AVERAGE OF

60,000 TONS

OF CARBON DIOXIDE (CO₂) WILL BE REDUCED ANNUALLY.

THIS IS EQUIVALENT TO TAKING

10,000 VEHICLES

OFF THE STREET ANNUALLY.

Drivers can purchase a new vehicle from representatives of dealers available on site. Storage for newly acquired cars vehicles is also available on site while drivers are granted appropriate legal licensing in a short period.

During the second phase, old models are subject to recycling in a private sector facility where engines and chassis shredding take place. The Ministry of Finance issued a tender to contract a recycling company to operate the process. The Ministry of Interior supplied the land required for storage and licensing, while the Ministry of State for Environmental Affairs is given the role of environmental monitoring and overseeing the compliance of the program. Currently the program's focus is on Greater Cairo which includes Cairo, Giza and Qalyoubeya cities.

New Taxi Models in the Storage Site



In May, 2011 Egypt Vehicle Scrapping and Recycling Program became the first Program of Activities (PoA), to be registered by the United Nations Framework Convention on Climate Change (UNFCCC) as a "Clean Development Mechanism Programme" (CDM) globally in the transport sector. In the context of the CDM, the program is set to last 28 years, starting from the launching date. But under the stewardship of the Ministry of Finance, the project is expected to be mainstreamed as a continuous service.

FINANCIAL VIABILITY

The vehicle scrapping program is a public-private partnership (PPP). Private sector partners include five vehicle dealers, four participating commercial banks, and one insurance company. The dealers provide lower than market prices while commercial banks provide soft loans with low interest rates for drivers, applying for taxi replacements. All involved stakeholders signed a cooperative protocol to show intent and commitment as well as legalize the partnership agreement.

PROGRAM IMPACTS

Resultant environmental benefits include the reduction of CO₂ emissions. It is estimated that 350,000-470,000 in Certified Emission Reductions (CERs) over the period 2013-2018 will be registered. CH₄ and N₂O emission reductions are also expected – hence contributing to air pollution abatement and indirectly improving population health and wellbeing. Average fuel efficiency achieved through the program is 9.39 liters/100 km for fueled cars and 8.34 m³/100 km for cars using compressed

natural gas. The program has had a positive impact on traffic congestion and road accidents in the city through the removal of old vehicles. Socio-economic benefits include extending support for local vehicle and automotive component assembly industries. They encourage technology transfer and best practices for vehicle recycling and increase business opportunities and profits for involved dealers and commercial banks. The income of participating taxi drivers has improved through increased taxi fares due to longer working hours with better performing cars. The newer models also save the costs of car repair and maintenance. The program is creating new job opportunities for drivers, technicians and workers involved in storage, recycling facilities, and steel industries. Car dealers have already opened additional car services outlets to cater for the newly replaced vehicles.

CHALLENGES

Coordination between stakeholders was the biggest challenge, as a large number of stakeholders are involved. Diligent and continuous program management is required to orchestrate the process efficiently, especially that there was no previous experience in CDM Projects. Numerous UNFCCC requirements take a lot of time and effort to be met.

SUCCESS FACTORS

Efficient design has been the main success factor of the program that balances between local economic needs of taxi drivers, who often live under harsh economic conditions, and reducing air pollution. During the first year of the program the expected number of participants was about 7,000 to 10,000 taxis annually. However, actual demand surpassed projections and the number of participants reached 20,000 in the first year. Until now almost 41,000 vehicles have been already replaced through the project.

The use of market tools and incentives as part of program design has boosted participation rates. These instruments ranged from tax exemption, payable by the Government on behalf of vehicle owners, customs exemption, and low bank interest rates to low insurance premiums, lower retail prices for purchased cars and lower spare-part prices. The program represents a model that showcases the possibility of achieving an inclusive growth while preventing environmental degradation. The model is also replicable and expected to expand to other governorates in the country.

Accounting for fuel efficiency and environmental compliance has positively signaled Government commitment in addressing environmental challenges through improvements in the transport system. Regulations that have been previously put in place have supported the program. By virtue of Traffic Law #121 for 2008 owners of mass transport vehicles such as taxis that are older than 20 years will not be eligible for operating licenses. This has given program participants an additional incentive to participate in the programme.

Good governance and Public private partnerships (PPP) are also responsible for the smooth implementation of the program and its timely delivery. The PPP initiative demonstrates the importance of a participatory approach in development and policy making. It also highlights the importance of private sector experience and investments to support both profitable and environmental projects. Commercial banks involved in the program benefit from interest rates on loans while local car assemblers benefit from increased sales revenue. This is another aspect of the initiative that can also be successfully replicated in other locations.



LESSONS LEARNED

A Participatory approach in program design and implementation is important. It highlights the fact that community stakeholders, especially the Government, fully realize the benefits of environment-related policies. On another level, car dealers and banks have business-related interests that can minimize overall community resistance to change and garner required motivation to expedite a transition to green economy.

A solid regulatory framework, a strong institutional set up and effective market instruments are important enabling conditions that can facilitate participation and implementation of an initiative that addresses environmental problems while at the same time have positive social and economic impacts on green economy.



2 EGYPT POLLUTION ABATEMENT PROJECT (EPAP)

CASE: HIGHLIGHTS

EPAP II IS THE LARGEST INDUSTRIAL POLLUTION ABATEMENT PROGRAM IN THE MIDDLE EAST AND AFRICA. WITH TOTAL INVESTMENT OF

US \$182 MILLION

IN 2013

UNDER EPAP II, INDUSTRIAL COMPANIES ARE OBLIGED TO DECREASE THEIR FACILITY'S POLLUTION LOADS BY AT LEAST

50%

BY THE END OF DECEMBER 2012, THERE WERE 47 ACTIVE PROJECT APPLICATIONS FROM 37 COMPANIES WITH A TOTAL VALUE OF

US \$478.3 MILLION

AND LOAN REQUESTS, TOTALING

US \$250.8 MILLION

The Egyptian Environmental Affairs Agency (EEAA) is the program implementing party. Through the National Bank of Egypt (NBE) the main funding pool by co-financiers is made available. NBE and other partner banks offer funds to interested applicants in the form of soft loans.

Eligible industrial companies interested in applying are offered technical assistance from the project management unit within EEAA. Companies that have succeeded in joining the program receive a waiver corresponding to 20% of their loans. The waiver is reimbursed upon the successful finalization of their projects that had being approved and funded by EPAP II. The grant is only offered after being monitored for 12 months to ensure operational credibility and integrity. This implies that the bank is reimbursed for only 80% of the initial loan amount by the borrower.

To ensure loan payback and minimize default risks, the project's management has put in place a stringent eligibility criterion that requires compliance with the Egyptian Environmental laws. Applying industrial companies are obliged to decrease their pollution loads of their facility by at least 50%, and the procedure to do so should be technically and environmentally feasible.

The Egyptian Pollution Abatement Project (EPAP) reconciles environmental considerations with a financial credit mechanism. Access to funding is needed to support the expansion of the Egyptian industrial sector without jeopardizing the health of communities living in close proximity to industrial facilities. The project is an opportunity to address environmental implications of geographical locations of industrial ventures.

PROFILE

EPAP promotes pollution abatement in industrial facilities in hot-spots, located in Alexandria and Greater Cairo areas. It provides soft financing packages to support both public & private sector industries. The project is currently in its second phase which started in 2007, signaling its operational success. It also aims to institutionally strengthen the capabilities of the Egyptian Environmental Affairs Agency (EEAA) in the areas of environmental management, policy formulation and the participation of banks.

Another objective of the project is to improve public information and awareness as well as highlight industrial-related environmental problems in Egypt. EPAP II is the largest industrial pollution abatement program in the Middle East and Africa. It is co-financed by a consortium of international bilateral and multilateral financial and development organizations. (See Table 1).

Table 1 Egyptian Pollution Abatement Project (EPAP) list of partners

Organisation	Component	Value
World Bank	INV	US\$20 million
European Investment Bank (EIB)	INV	€40 million
French Development Agency (AFD)	INV	€40 million
JICA	INV	¥4.72 billion
TOTAL Investment (US\$) at start (2006)		US\$160 million
TOTAL Investment (US\$) at March 2013		US\$182 million
Egyptian Government	Counterpart	LE 12 million
EIB FEMIP Technical Assistance	TA	€3.0 million
Finnish Technical Assistance	TA	€0.9 million
European Commission	Interest Subsidy	€10 million

The range of projects that EPAP II is willing to finance addresses pollution prevention such as emission reduction, environmental improvement, wastewater treatment, adoption of cleaner technologies, and generally enhancing environmental services.

Hazardous waste management, energy conservation, efficient resources management, and conversion to cleaner energy projects are also included. The application process includes a credit worthiness certificate to be issued by participating banks, an environmental audit and a financial feasibility study.

Table 2 below gives an overview of provided loans details.

Table 2 Overview of Loan details granted by EPAP

Terms	Details
Maximum loan	US\$15 million
Minimum loan	US\$100,000
Repayment period	5-8 years
Grace period	1-2 years
Company contribution	At least 10% of project cost including all taxes and duties
Grant (subject to meeting agreed target)	20% of loan
Interest rate on foreign loans	Libor/Euribor plus 2-3% plus up to 0.15% commission on highest debit balance
Interest rate on LE loans	Central Bank of Egypt mid corridor rate plus up to 3% plus up to 0.15% commission on highest debit balance

By the end of December 2012, there were 47 active project applications from 37 companies with a total value of US\$478.3 million and loan requests, totaling US \$250.8 million.

PROJECT IMPACTS

The project has pioneered a sustainable financial, technical and institutional mechanism for pollution abatement in selected hot-spot areas. It has enhanced local environmental conditions through improved air quality in Greater Cairo areas and water quality in Alexandria areas through the promotion of Cleaner production technologies. EPAP II has established an environmental performance benchmarking system to strengthen monitoring and enforcement; the system has had a wide impact on the environmental performance of beneficiary companies.

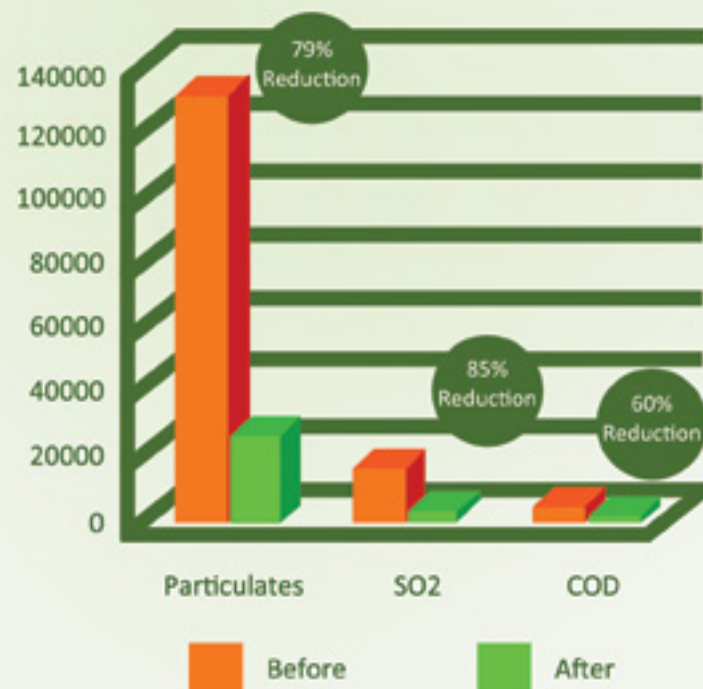


Figure 1 Accumulative Pollutant Reduction by EPAP II

Additionally, information dissemination and knowledge transfer through "The Technical and Institutional Support Component" of the project are provided to the industry for upgrading their environmental performance. Institutional support is also provided to improve the enforcement of environmental regulations and support of awareness efforts of the media and NGOs.

EPAP II provides institutional capacity building for the EEAA and all involved stakeholders concerning environmental management. It has also increased the economic competitiveness of the Egyptian industrial sector with respect to production efficiency, job creation, exports, quality, marketing, and corporate governance.

Furthermore, the project contributes to the mainstreaming and strengthening of technical capabilities for economic assessment of environmental policies. It also encourages the banking sector to embrace environmentally responsible investments.

CHALLENGES

A long history of decoupling environmental awareness from industrial operations has required extensive project marketing efforts with sufficient awareness and outreach to industrial companies. Many polluting companies are not creditworthy to benefit from financial packages on offer. This implies that different Government policy instruments are required to address their polluting facilities and harmful environmental impacts.

SUCCESS FACTORS

In April 2013, a third phase of EPAP has been initiated indicating its success and highlighting existing high demand by industrial companies to join. In addition, efficient management and implementation have ensured project sustainability and credibility.

The new phase of EPAP will expand current program objectives to include preferential treatment to SMEs, encourage the use of alternate fuels in industry, and improve energy efficiency. Expected outcomes of the third phase are even more ambitious with higher environmental accountability.

EPAP III outcomes include expanding local commercial banks environmental screening procedures in loans and their funding of other pollution abatement projects. Additionally, at least 30% of project funds are to be used by SMEs and at least 750,000 tons of municipal and agricultural waste will be used as alternate fuel in industry. Finally at least 1,000 new job opportunities are expected to be created.

Financial and banking expertise made available for the project has enabled the introduction of strong eligibility criteria, credit worthiness evaluation and environmental monitoring and screening mechanisms vital for its successful management. These instruments have minimized credit default and maximized environmental accountability and innovation. Also financial incentives in the form of the 20% grant and linking it to performance and project completion have also encouraged companies to apply for EPAP.

LESSONS LEARNED

Access to finance related to pollution abatement projects opens a new capital market niche in the field of environment in Egypt.

EPAP has successfully demonstrated that with appropriate enabling conditions; economically sound businesses and industries can also be environment friendly.

Environmental investment is a trend that has not been sufficiently explored in Egypt; however, it provides an attractive future business opportunity.



3 EGYPTIAN NATIONAL CLEANER PRODUCTION CENTER



Promoting cleaner production

CASE: HIGHLIGHTS

ENCPC WAS ESTABLISHED

A CLEAN PRODUCTION SERVICE PROVIDER

FOR THE EGYPTIAN INDUSTRY IN 2005

ENCPC AIMS TO BECOME

A CENTRE OF EXCELLENCE

FOR GREEN INDUSTRIES AND CLEANER PRODUCTION AND RESOURCE EFFICIENCY IN EGYPT

ENCPC'S RANGE OF SERVICES HAVE RESULTED IN

REDUCED GHG ESPECIALLY CO2 EMISSIONS

ENCPC SUPPORTED THE REHABILITATION OF BOILERS FOR SUGAR INDUSTRIES RESULTING IN TOTAL CERTIFIED CO2 EMISSION REDUCTION OF ABOUT

80,000 TONS PER YEAR

The services that the Centre offers cover the following areas:

I- Technical Assistance for the Egyptian Industry

- Cleaner Production and Resource Efficiency Programs,
- Energy Efficiency and Industrial Application of Renewable Energy,
- Environmental Impact Assessment (EIA) Studies,
- Clean Development Mechanism (CDM) and Carbon Footprint.

II- Technical Assistance for Chemicals Management:

- Chemical Leasing Services,
- EU Directive on Registration, Evaluation, Authorization of Chemicals (REACH),
- EU Directive on Classification, Labeling and Packaging (CLP),

- Persistent Organic Pollutants (POPs),
- Industrial Waste Management, Recycling and Zero Waste,
- Environmentally Sound Technology (EST) Transfer & Innovation.

III- **Financial Assistance:** The ENCPC supports interested Egyptian companies to follow procedures and secure financing for their projects from different sources such as the **World Bank, German Agency for Technical Cooperation (GTZ), etc.**

IV- **Applied Training Programs including on-the-job training.**

V- **The Centre is also involved in joint national and international projects as shown below:**

Table 3 Egyptian National Cleaner Production Centre (ENCPC) Portfolio of National & International projects

The Center's Portfolio Of National and International Projects
Egyptian Pollution Abatement Project (EPAP II) - World Bank
MED Test (Transfer of Environmental Sound Technology Transfer) in Mediterranean Region - GEF & UNIDO
Assessment and Capacity Building in Chemicals and Chemicals Waste Management / Responsible Production & Resource Efficiency and Cleaner Production Program UNEP/UNIDO
Invest in Med (Fostering Competitiveness for South Mediterranean Region)-EU
Persistent Organic Pollutant (POPs) in Egypt-World Bank
Resource Efficiency in Food Sector (REEF Project)-GTZ
Integrated Solid Waste Management in El Korba District, Cairo-UNEP
GRECO Initiative-CP-RAC,Spain
The African Beverage Industries Water Saving Initiative (ABIWSI)-UNEP

Other than **UNIDO** and **UNEP**, the Centre receives support from the Swiss and Austrian Governments. With an increasing portfolio of projects, **ENCPC** ultimately aims to become a Centre of excellence Green Industries and Cleaner Production and Resource Efficiency in Egypt. The clients of the Centre include major companies such as **Kandil, El Sewedy, Ezz Steel, SEKEM**, and services hubs including **Cairo International Airport**.

THE IMPACT OF THE CENTRE

ENCPC has a positive impact on the competitiveness and productivity of Egyptian industries through public environmental awareness and mainstreaming resource efficiency and cleaner production approaches. In addition, it aims at providing technical up-scaling and capacity building, tailored for companies in waste valorization, energy efficiency and environmental compliance to ensure sustainability.

Reduced GHG emissions and especially CO2 emissions are benefits that have resulted from the Centre's range of services. For example, it supports the rehabilitation of boilers to improve energy efficiency for sugar industries resulting in total certified CO2 emission reduction of about 80,000 tons per year for a ten-year period. Other benefits include enhancing industrial-related innovation, encouraging R&D, addressing water scarcity, promoting water conservation practices, and contributing to the renewal of natural resources.

CHALLENGES

According to **ENCPC's** management, some of the most notable hurdles facing the Centre include:

- Lack of environmental awareness among local industrial companies,
- Lack of concrete and clear policies, strategies and incentives which favor the adoption of resource efficiency, cleaner production tools, practices and methodologies,
- Lack of available management expertise needed to deal with the increased demand for resource efficiency, cleaner production and effective services for the industrial sector in Egypt,
- The private sector is reluctant to adopt cleaner production methodologies due to the misperceptions of high costs associated with implementing and maintaining cleaner production approaches,
- Inadequate technical skills and knowledge create an additional workload on the Centre to provide information, capacity building and outreach,
- Industrial companies are discouraged by the limited availability of financial resources to support their transition to resource efficiency and cleaner production practices,
- Lack of a sufficient regulatory framework and absence of enforcement and compliance have had a negative impact on resource efficiency and cleaner production.

SUCCESS FACTORS

International partnerships with donor agencies, international organizations and international centres of excellences in specialized areas, have provided the initial funds and expertise needed for the successful operation of the Centre. These partnerships supported designing a portfolio of **ENCPC** services, related to resource efficiency and cleaner production - as market driven services - taking into consideration adding new and innovative services, based on market needs.

The Centre maintains national and international networks for advanced technological developments, modern practices and knowledge transfer. It holds strong ties with UNEP, UNIDO, GIZ, the World Bank, USAID, and other development agencies.

It provides technical assistance to achieve zero waste, integrated chemicals management, energy efficiency and industrial renewable energy application. These technical services have gradually built up the reputation, transparency and credibility of the Centre.

ENCPC also supports companies to gain financial access by assisting them to meet credit requirements from institutions such as the German development bank and the World Bank. It also helps these companies in the bidding process including the issuance of tender documents, financial creditworthiness and evaluation in addition to environmental assessments to meet donor requirements.

The capacity and the expertise of ENCPC are maintained on national, regional and international levels through specific tenders on resource efficiency and cleaner production and the development of different partnerships with national and international consulting firms.

Finally, as a think-tank, the Centre contributes to policy advocacy for the Egyptian Government in areas related to resource efficiency and cleaner production.



LESSONS LEARNED

ENCPC can effectively contribute to a Government-supported policy for resource efficiency and cleaner production. It can act as a think tank with special focus on enhancing competitiveness of businesses, particularly SMEs. The Centre can also be instrumental in awareness raising and in the dissemination of good practices. Furthermore, it can function as a centre of excellence for promoting and developing environmental technologies as well as supporting their local production.

4 EL MASREYA FOR LEAD SMELTING, REFINING AND FABRICATION



Before remediation of the secondary lead smelter

This success story represents a self-driven industrial company that has made a revolutionary change in the Lead smelting field in Egypt.

This case is particularly important since lead is one of the most damaging pollutant agents to the Egyptian environment. It has been indicated that airborne lead levels for one smelter in Southern Cairo are 50 times greater than what is recommended by the World Health Organization (WHO).

Company owner, Mr. Abdel Nabi Sayed Awadallah has voluntarily pursued pollution abatement programs to contribute to a remediation program for the Awadallah secondary lead smelter at Shoubra El Kheima; he has also adopted innovative action to address industrial waste management issues.

PROFILE

Established in 1986, EL Masreya for Lead Smelting, Refining and Fabrication produces about 60% of Egypt's needs from pure lead through secondary lead smelting processes. Its main products include lead alloys of high quality, lead oxide, lead pipes and lead rolled sheets, used for insulation. It employs more than 1000 workers.

In addition to the company's substantial contribution to the industrial sector in Egypt, it disposes of a large amount of hazardous waste that could pose serious threats if disposed in landfills. It recycles more than 200,000 tons per year of used batteries that are considered hazardous waste.

As early as 1986, company owner built a large facility in the 10th of Ramadan Industrial City where he voluntarily invested in installing imported pollution control equipment that cost him as much as 50% of the

CASE: HIGHLIGHTS

EL MASREYA FOR LEAD SMELTING, REFINING AND FABRICATION

PRODUCES ABOUT 60%

OF EGYPT'S NEEDS FROM PURE LEAD

THE COMPANY

REALLOCATED

ITS SECONDARY LEAD SMELTER FROM SHOUBRA EL KHEIMA DUE TO INCREASE RATE OF ENVIRONMENTAL DEGRADATION AND NEGATIVE HEALTH IMPACTS

THE REALLOCATED FACILITY BECAME

THE FIRST TO COMPLY

WITH EGYPTIAN ENVIRONMENTAL LAW REQUIREMENTS WITH

99% REDUCTION

IN ITS EMISSIONS

THE REALLOCATION HAS ALSO CONTRIBUTED TO

DECREASING

THE LEVELS OF

LEAD IN THE AIR

BY MORE THAN

75%

IN SHOUBRA EL KHEIMA

investment cost in order to comply with environmental standards instituted by the Egyptian law.

In the vicinity of highly populated areas such as Shoubra El Kheima, The Company previously owned four large and medium secondary lead smelters. These smelters have directly caused considerable environmental harm and negative health impacts on its residents.

As a result, company owner supported the relocation of lead smelters initiative launched by Cairo Air Improvement Project (CAIP). He contributed in CAIP remediation program for all his old secondary smelting



After remediation of the secondary lead smelter

facilities at Shoubra El Kheima. In 2000, he moved his smelters to the new Industrial zone of El Safa at Abouzaabal, Qaliyoubia Governorate and adopted ways to innovatively address industrial waste management.

The relocated facility was designed by CAIP, using state-of-the-art production and pollution control equipment. The facility prevents random dumping and exposure of smelter waste material. As a result, it is considered the first secondary lead smelter facility that complies with the Egyptian environmental Law requirements.

The Egyptian Environmental Affairs Agency (EEAA) has installed an air quality monitoring station at the facility which never failed to comply with the set environmental standards. CAIP has also supported the training and capacity building of the facility staff. The company owner purchased land in the Qaliyoubia Governorate and signed an agreement with the governor to adhere to stringent environmental standards with the technical support of CAIP.

In turn, the Government partially funded selected infrastructure services - being a form of public-private partnership. The first phase of the new facility was inaugurated in August 2002, producing 6,000 tons of lead ingots annually. Later on, an expansion took place, increasing production capacity to 20,000 tons per year.

Currently the company's business activities are represented in two large facilities, located in well-established industrial estates to insure environmental compliance.

PROJECT IMPACTS

The smelter re-allocation and the efficient design of the new facility have had significant environmental and social benefits. According to a CAIP review report, the new reallocated facility achieved a 99% reduction in emissions.

As a result of these efforts and collaboration with CAIP, The relocation effort has also attracted attention to the area and has led to the exposure of other existing polluting facilities. For the first time, it has created environmental accountability pressures to defend local community wellbeing in the Shoubra EL Kheima area.

Levels of lead in the air have dropped by more than 75% in Shoubra El Kheima. This drop is expected to result in 500 fewer cancer cases, 4,500 fewer premature deaths, caused by cardiovascular disease, and \$30 million saved in health costs.

Innovative methods have also been introduced to dispose of 200,000 tons of hazardous waste per year that could negatively affect Egypt's environment. The move has also provided health related protection for workers. It upgraded their capacity and skills in quality control, environmental compliance and work safety conditions.

On the other hand, re-allocation has had economic benefits reflected in increased profits and productive capacity expansions. The company is now exporting high quality of lead alloys, representing about 30% of its production. The Company is considering further activities to add value to its current product. The same CAIP report has also indicated that the financial resources invested to achieve pollution and emission reduction, represents a 10-fold return to the economy.

The same report claims that the transfer of knowledge, achieved in the designing and operation of the new smelter has led to enhancing the potential for locally-manufactured pollution-control equipment and related technologies instead of importing them.

CHALLENGES

According to the owner, the main challenge that has aggravated industrial air pollution in the country and allowed the operation of non-environmental facilities in the lead industry is the absence of solid national strategies to handle that type of pollution.

This is further exacerbated by a lack of Government-introduced policy instruments and regulatory measures such as compulsory environment assessment audits, unified production, and disposal standards. Polluting penalties, tax reductions for compliance, access to information, and public awareness are also options that should be revisited by the Government.

SUCCESS FACTORS

Private sector participation and a profit driven business model are the main driving forces behind the success of the Awadallah story. It is evident from this case that mission-driven businesses can also be profit-making businesses.

Efforts by Mr. Awadallah to comply with environmental laws have introduced his company to the recycling market - through battery recycling - as a means of responsible hazardous waste disposal and a new business opportunity.

Similarly, being the first lead smelter in the region designed on environmental basis has had an excellent impact on the company's corporate image and has promoted exports and capacity expansion. The decision to reallocate out of concern for the local community in Shoubra El Kheima has earned the company the transparency and the credibility needed to nurture corporate citizenship.

Public-Private Partnership between the company and the Qaliyoubia Governorate has also facilitated cooperation. It has highlighted the potential for cost-sharing to support the environment. It has also publically signaled the importance of environmental accountability as a means for providing checks and balances for proposed activities in the absence of a well-designed overall industrial environmental mechanism.

Another factor contributing to the success of this initiative is international cooperation. The CAIP program through technical assistance and technology-related knowledge transfer has assisted the company to achieve optimum results and build a new smelter facility that can be replicated as a prototype throughout the region.



LESSONS LEARNED

Businesses can have a major role in promoting environmental accountability and compliance with environmental standards in their area of operation. The remediation program that the company has been part of shows that the private sector can accelerate a transition to a green economy through investing in green infrastructure. Moreover, these green investments can be profitable with economic, social and overall environmental benefits to the society as a whole.



5 ENGINEERING TASKS GROUP - ENTAG

ENTAG's manufacturing facility



The Egyptian Company "Engineering Tasks Group – ENTAG" is a regional industrial leader in the waste management field. Since its establishment in 1995 ENTAG has had the perceptive vision, entrepreneurial spirit and successful leadership to invest in environmental services, design and supply of systems and equipment for municipal solid waste (MSW) treatment and disposal projects. ENTAG's expertise and technical knowledge in the field of solid waste management has made it a lead institution not only in Egypt but also in the entire region. ENTAG's mission has been particularly challenging because it has delved into the waste-management sector, which is characterized by inefficiency and lacks institutional and Government support.

PROFILE

Established in 1995 with 10 employees, ENTAG was the first engineering and contracting firm in Egypt to operate in the field of solid waste treatment at that time. It develops turn-key projects covering waste sorting, recycling and disposal of municipal, agricultural and animal waste. ENTAG's main objective is to provide a comprehensive solution for solid waste treatment and management. ENTAG solutions are manifest in the following processes and services:

- System design including electromechanical design
- Construction, commissioning and initiating MSW recycling, compost production and land filling facilities
- Civil works, steel structure design and construction
- Technical support during operations, training and after-sale services

In addition, ENTAG enhances the production of solid fuel (Refuse-derived Fuel (RDF) from solid waste rejects, biomass management projects (collection, transportation and treatment) and the production of compost, animal feed, alternative fuel, pellets, and briquettes.

CASE: HIGHLIGHTS

ENTAG HAS DESIGNED AND SUPERVISED

56

MUNICIPAL SOLID WASTE SORTING AND COMPOSTING FACILITIES WITH A CAPACITY RANGE OF

160,320,640 AND 960 TONS/DAY

IN EGYPT

ENTAG HAS IMPLEMENTED PROJECTS IN VARIOUS COUNTRIES SUCH AS MALAYSIA, NIGERIA, LIBYA, QATAR, SAUDI ARABIA, SUDAN, OMAN AND SYRIA

WITH A CAPACITY OF UP TO

4200 TONS/DAY

THE COMPANY IS PROFITABLE WITH OVER

31% OF ITS REVENUES

COMING FROM OUTSIDE EGYPT (MAINLY LIBYA AND SAUDI ARABIA)

Currently, ENTAG has about 150 full-time employees, consisting of engineers, chemists, financial analysts, computer experts, and technicians with extensive knowledge and expertise in solid waste management.

ENTAG projects in Egypt include:

- Design and supervision of 56 municipal solid waste sorting and composting facilities with a capacity range of 160, 320, 640, and 960 tons/day,
- Turnkey project design and construction of agricultural residues and composting facilities with a capacity range of 50, 200 and 500 tons/day,
- Design and supervision of whole market waste composting facility with a capacity of 200 tons/day,
- Design and construction of engineering sanitary landfills with a capacity of 1500 tons/day,
- Rehabilitation and upgrading of sorting and composting facilities with a capacity range of 240 and 160 tons/day.

MSW sorting, recycling plant - Saudi Arabia



ENTAG has implemented projects in various countries such as Malaysia, Nigeria, Libya, Qatar, Saudi Arabia, the Sudan, Oman, and Syria with a capacity of up to 4200 tons/day.

ENTAG projects on the regional level include design and construction of five transfer stations with a capacity range of 140,400 and 800 tons/day.

FINANCIAL VIABILITY

The company is profitable with over 31% of its revenues coming from outside Egypt (mainly Libya and Saudi Arabia). Contracts that ENTAG accepts often range between US \$ 100,000 to US \$ 15,000,000. This is impressive, taking into consideration the limited size of the waste-related market niche in the region.

COMPANY IMPACT

ENTAG's impact on the waste management sector has been multi-faceted, ranging from job creation to increased business opportunities and increased livelihood of underprivileged communities. ENTAG also supports capacity building and skills development.

The company has had a significant impact in knowledge transfer of industrially-efficient and cleaner-production methods. It has extended technical expertise that benefits the waste management sector in many countries of the region.

ENTAG has provided economically viable technologies and compatible alternatives to the international community. It has ultimately facilitated access to waste sector services that has not been readily available in the region by creating a new market and demand - thus providing an example or similar companies and startups to competently operate and adopt innovative solutions in this field.

By offering environmentally-sound solutions for waste disposal, ENTAG has directly contributed to minimizing waste contamination, reducing green

house gas (GHG) emissions, and preserving ecosystems and scarce natural resources.

CHALLENGES

ENTAG's success journey has not been easy. The company has faced challenges that have jeopardized its cost-effectiveness and market competitiveness such as:

- Slow operationalization of the national strategy for the MSW sector in Egypt,
- Few adequate solid waste disposal programs,
- Unskilled labor and lack of spare parts,
- No stand-by sources of energy,
- Lack of access to finance in the industrial sector, leading to waste dumping,
- Limited availability of professional training programs,
- Inadequate quality control supervision, leading to poor product quality,
- Reluctance of the private sector to invest in MSW management due to the financial liability and the weak legal and institutional framework and guidelines.

SUCCESS FACTORS

An Entrepreneurial drive and a non-traditional business vision have characterized ENTAG's work in a sector that suffers from weak legal and institutional frameworks. ENTAG has embraced this risk factor with determination and patience.

As a result, ENTAG has carved a place for the private sector in the field of waste management and industrial production for waste disposal and recycling products and facilities that has often been reserved for the public sector. Another determinant that resulted in ENTAG's success is the integration of local innovation and related technologies for environmental services and design facilities and plants.

R&D and knowledge management is an important factor that constantly keeps ENTAG in line with global technological updates and locally adapts it to the benefit of Egyptian and regional markets. Finally, technical capacity building for ENTAG employees has also contributed to improving the efficiency and quality of designed facilities.

LESSONS LEARNED

ENTAG has proved that green technologies can be provided locally at competitive prices. It has also shown that Egypt's waste management constraints can be addressed through a participatory approach between both the private and the public sectors.

However, as ENTAG's CEO has indicated, "this requires a set of enabling conditions that are vital to lower existing market entry barriers for new startups and entrepreneurs".

The enabling conditions that have been highlighted include:



- Developing a national strategy and a plan of action for the MSW sector, using an integrated approach including legal, institutional and financial frameworks,
- Establishing pilot disposal programs to be replicated in other governorates,
- Establishing waste management systems within energy programs,
- Creating landfill regulations and standards,
- Providing training programs in MSW management for all levels of employees including quality control programs,
- Establishing good human resource unit to manage personnel and their professional development including promotion and incentives programs,
- Supporting NGOs in their recycling efforts, especially for plastics, papers, and rubber tires,
- Setting planning guidelines for recycling centres,
- Establishing technologically-sound collection and treatment procedures and facilities,
- Strengthening the role of EEAA to enforce environmental laws and regulations,
- Launching MSW public awareness programs.



6 THE SEKEM INITIATIVE

SEKEM's Social Development Efforts



"SEKEM" is a translation from an ancient Egyptian hieroglyphic word, meaning "vitality," and it is truly reflective of a holistic approach to life.

The SEKEM model has emerged from different philosophies and movements from both Egypt and the Western world. First and foremost, it was inspired from the Quran, Steiner's Anthroposophy, and Goethe's philosophy. It is a marriage between the occident and the orient. SEKEM aims at integrating social, economic and environmental aspects to achieve sustainable development and a sense of wellbeing - thus contributing to encompassing the needs of human beings, the community and the entire globe.

The SEKEM initiative is a successful social venture that addresses Egypt's main challenges of population growth, stagnant agricultural productivity, lagging education and marginalized cultural considerations.

PROFILE

Guided by the vision of Dr. Ibrahim Abouleish, SEKEM was founded in rural Egypt in 1977 in a 70-hectare farm, located near the rural town of Belbeis, northeast of Cairo. 30 years ago SEKEM had promoted and introduced organic and biodynamic farming. By 1983, crops of organic fruits, vegetables and spices were harvested.

Currently, the SEKEM group harbors a number of subsidiary companies (Libra, Hator, Sekem (Lotus), Isis, Conytex, Atos, and Mizan). All of these companies are working to consolidate the concept of a business venture with different aspects of sustainable development. This is mainly done through the production of high-quality food, phytopharmaceuticals, and textile. In addition to engaging in organic-agriculture farming and post-harvest processing, the SEKEM Group also markets its products both locally and globally.

CASE: HIGHLIGHTS

IN 2003, SEKEM WAS GIVEN THE
**ALTERNATIVE NOBEL PRIZE
'RIGHT LIVELIHOOD AWARD'**

60%
OF ITS OVERALL ANNUAL TURNOVER IS FROM THE
EGYPTIAN LOCAL MARKET

10%
OF ITS FINANCIAL REVENUES ARE REINVESTED INTO
SOCIAL & CULTURAL PROJECTS

SEKEM WAS FIRST TO INTRODUCE
BIODYNAMIC AGRICULTURE
IN EGYPT
30 YEARS AGO

THIS HAS RESULTED IN OVER
1 MILLION TONS
CO₂ SEQUESTRATION IN OWNED SOILS,
REDUCED PESTICIDE USAGE AND
20 TO 40% WATER SAVINGS

In 2003, the initiative was given the alternative Nobel Prize 'Right Livelihood Award' due to its successful balance between business, social and cultural considerations. In 2004, Dr. Ibrahim Abouleish was awarded the Schwab foundation prize for "Outstanding Entrepreneur".

In addition to employing over 1,700 workers, 10% of the financial revenues of the Group are reinvested into social and cultural projects.



The SEKEM Group has also created a social cooperative of SEKEM employees, the Egyptian Biodynamic Association, the SEKEM development foundation (SDF) and recently, in 2012, the Heliopolis University for Sustainable Development (HU).

The main business target of the Group has been the introduction of biodynamic agriculture in Egypt. Through it, SEKEM aims to encourage land reclamations and abate the extensive use of chemical fertilizers and pesticides. This is in addition to addressing environmental biodegradation and water scarcity concerns. Their biodynamic and organic agricultural practices include the extensive use of compost, to turn desert ground into productive and healthy soil.

Their agricultural production includes fruits, vegetables, cotton, and medicinal plants and herbs and is supported by strong international partners in the organic movement and beyond. All 600 SEKEM suppliers belong to the Egyptian Biodynamic Association that provides them with capacity building. In 2008, SEKEM started expanding its own farmland on different locations in the Egyptian desert.

FINANCIAL VIABILITY

SEKEM is continuously able to garner financial assistance from donor agencies and organizations such as the European Commission and USAID in order to support its developmental projects.

In 2002 SEKEM obtained a loan from the German Development Finance Organization (DEG) and the International Finance Corporation for Agricultural Expansions to support its activities.

The SEKEM Group is a rapidly expanding stand-alone profitable venture with increasing exports. However, 60% of SEKEM overall annual turnover is from the Egyptian local market.

SEKEM'S DEVELOPMENTAL BENEFITS

The initiative's holistic approach has significantly garnered positive environmental, cultural, and social impacts in Egypt.

Environmentally, ever since its establishment SEKEM has been among the first private sector companies to address agricultural waste disposal with environmental considerations. It has a long-term vision to contribute to the improvement of soil fertility through the use of composting and green manure with balanced crop rotation. This has resulted in over one million tons of CO2 sequestration in owned soils, reduced pesticide usage and 20 to 40% water savings.

Some of its activities are undertaken using renewable energy through their own small-scale projects. SEKEM is also engaged in several environmental development projects including EcoProfit, which deals with CO2 emission reduction and the reduction of carbon footprint through its EcoCity program, focusing on sustainable and energy efficient housing.

Nurturing cultural ties especially in rural communities has also been high on SEKEM's community agenda. The main focus of the SEKEM development foundation (SDF) is to celebrate cultural uniqueness and a sense of belonging among SEKEM's farmers and their immediate communities.

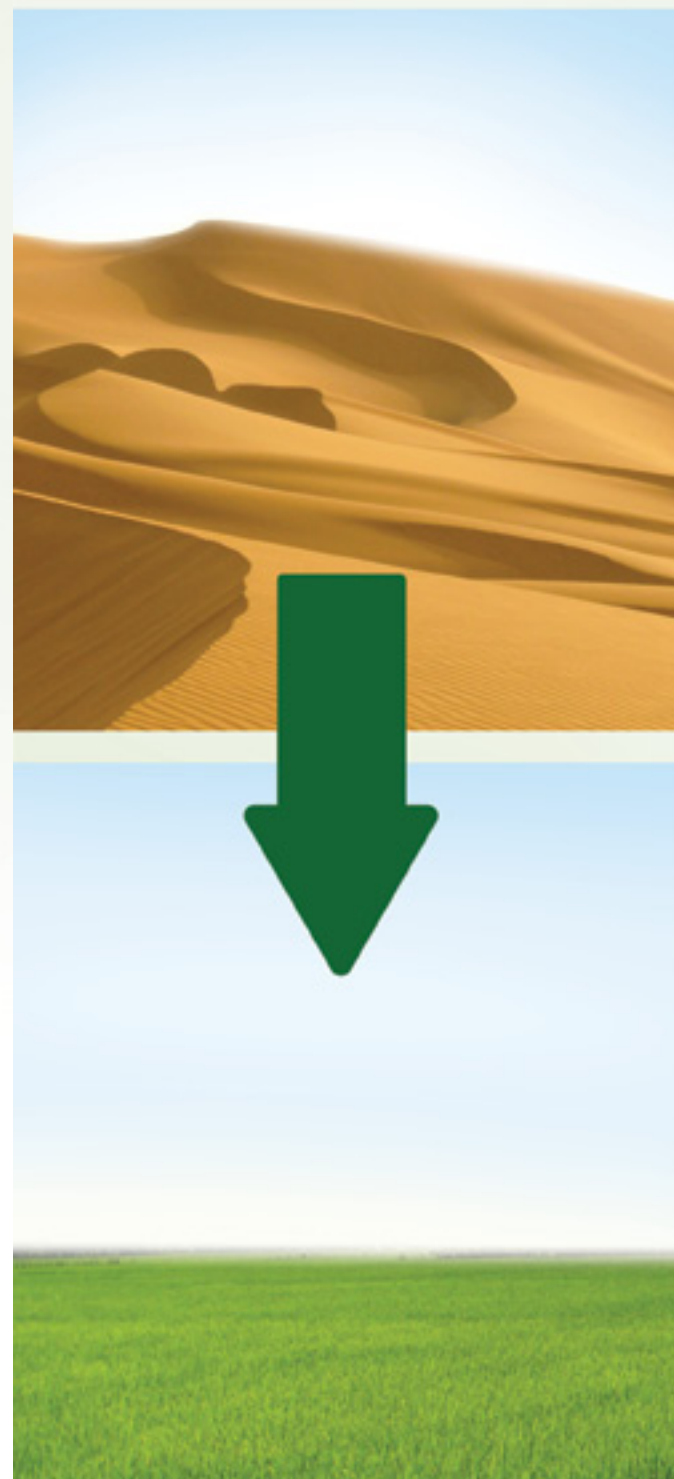
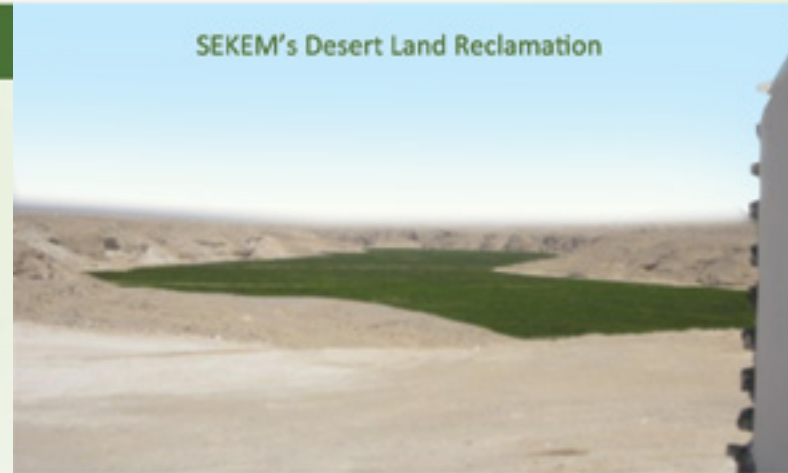
SEKEM also enhances educational and community development under the umbrella of SDF. It has established a community kindergarten, various schools, a vocational training centre, and an adult training centre for arts. Different research labs are currently operational.

In 2011, 46 children were enrolled in the SDF kindergarten, 167 students in the elementary school, 89 in the middle school, 43 in the high school, and 27 in the special education program.

It also operates a medical centre that provides primary care and some specialized services such as surgery and pediatric care along with Labs. Centre services also include an x-ray unit, an endoscopy unit and a dental clinic.

In the same spirit, SEKEM's Microcredit fund has assisted 314 men and 283 women to achieve financial independence through successful small projects such as raising animals and small-scale grocery products. Today total credit has almost reached EGP 2.9 million.

Finally, SEKEM has contributed to gradually opening up consumer-demand-driven local markets for organic food and has created jobs through its continuous business venture expansions. Within the context of the National Employment Pact (NEP), SEKEM pledged to create 200 jobs until summer 2012.



CHALLENGES

On its path to success, SEKEM has faced several challenges. These hurdles include: Market constrains and lack of public policies to support sustainable agricultural practices.

In addition to existing lack of skilled labor, unpredictable financial support, and limited market demand at first (no awareness for the importance of organic products).

Other constraints relate to Government subsidies for energy and water which favor conventional agriculture in spite of the fact that organic agriculture uses less water and less energy.

Entrepreneurial vision and a determination to implement such a vision are perhaps the key success factors behind the SEKEM initiative. The introduction of biodynamic agriculture for the first time in Egypt has created the need to address farmers' lack of awareness, lack of information and lack of skills related to this nontraditional agricultural practice. It has also required the adoption of creative marketing strategies and continuous communication links, targeting both public authorities and possible consumers in order to create market demand and raise public awareness.

Innovative internal management, on the other hand, is integral in maintaining SEKEM's rate of operational expansions and increased involvement in development projects. Every morning, employees meet in a circle, to discuss planned work activities. Similarly, supporting employee wellbeing and rights is also another factor that SEKEM highly values. As such, each company within the Group has an administrator responsible for the wellbeing of the workers. She/he is also accountable for the quality of work environment, capacity building, career development, and health care program. The Co-operative of Sekem Employees strives to ensure that rights and values of employees are duly observed. It has also introduced a recognition and reward system.

The adopted vigorous quality management from cultivation to the final product helps SEKEM to maintain its corporate brand, build customer loyalty, promote human well-being, and create export opportunities. The management is very keen on gaining local and international accreditation and certification. It has also introduced online traceability programs.

Finally, in order to replicate SEKEM's experience it has entrusted the Heliopolis University for Sustainable Development through its 'Social Innovation Centre' with the mission of establishing sustainable communities in Egypt's desert as a solution for social chronic problems such as the lack of food, water, and energy as well as an unhealthy urban environment.

LESSONS LEARNED

The new element that **SEKEM** introduced is the holistic approach to development. **SEKEM** follows a three-fold approach in its business model and corporate culture. This means that economic, cultural and social activities work hand in hand to achieve **SEKEM**'s broader sustainable development vision for Egypt.

Broadly speaking, and through local collaborative efforts, **SEKEM** has been able to adopt a green economy and a sustainable development approach. Emphasis in undertaking their activities has been laid on the integration of the three pillars of sustainable development (economy, society and the environment).

Moreover, **SEKEM** has demonstrated the economic and business viability of going green. Enabling conditions that **SEKEM** finds essential in supporting its model include:

- Clear desert land reclamation policies,
- Access to adequate finance with very low interest rates,
- Reflecting actual costs for energy and water,
- Providing incentives for human development initiatives, such as building schools, universities or employee training centres.



7 DESERT LODGE RESORT



The Desert Lodge

Egypt has a myriad of naturally endowed locations that qualify it to be an attractive ecotourism destination. However, this new emerging trend is yet to reach its full potential.

Mr. Ahmed Mousa, the founder of 'Desert Lodge' is an entrepreneur that has delved into this relatively new area and has successfully demonstrated that ecotourism' is the way forward to re-enlist Egypt on the global touristic map with the post 25th January revolution decline in the sector.

PROFILE

With a 25 year-experience in nature care, and concern for Egypt's deteriorating natural resources, the founder of **Desert Lodge Resort** has had the idea of integrating environmental accountability within an appealing business model.

This has resulted in building an eco-friendly hotel/lodge in Dakhla oasis which is the farthest oasis out of Cairo. Dakhla oasis is considered one of Egypt's most beautiful oases.

This project is intended to couple sustainability and tourism into a 'Sustainable tourism' model to save Egypt's ecological heritage and highlight its community-based culture. As a result, a holding company **Wildlife Association for Development and Investment (WADI CO)** was created to manage and build 'Desert Lodge'.

Running under a joint Egyptian and Swiss management, the lodge employs about 45 workers and has been operational since 2003.

The architecture of Desert lodge is designed to comply with environmental standards and the surrounding desert ecosystems. It was constructed by local workers, using local and natural materials.

CASE: HIGHLIGHTS

IN 2007, DESERT LODGE WAS AWARDED
THE FIRST PRIZE
FOR
BEST ENVIROMENTAL TOURISM
GERMAN TRAVEL ASSOCIATION

100% OF STAFF
IS LOCALLY RECRUITED TO
EMPOWER SURROUNDING COMMUNITIES
AND PROMOTE INCLUSIVENESS

50%
OF THE LODGE'S NEEDS
FROM WATER AND ELECTRICITY ARE FROM
RENEWABLE ENERGY RESOURCES

100%
OF PRODUCTS AND MATERIALS USED
AND PROVIDED TO GUESTS ARE
LOCALLY-MADE AND GROWN

DESERT LODGE MANAGEMENT HAS INITIATED A
SOLID WASTE MANAGEMENT
PROJECT FOR THE OASIS WITH A POPULATION OF ABOUT
7,000 PEOPLE

The management follows a minimal-waste-disposal policy, and has created a sorting system for waste recycling. All provided amenities by the Lodge are compliant with the environment and promote resource efficiency.

Tap water is filtered with hi-tech filters and is offered to guests in glass bottles to reduce the amount of waste of plastic bottles and minimize transportation costs. All cleaning products used are environment friendly.



It has supported the local ecotourism industry by setting the criteria for eco lodge construction and management as a baseline for future lodges and hotels in the New Valley Governorate. About 90 % of the lodges in the region (Qasr El Bawity, Siwa Paradise, Siwa Shalli, Adrel Amellal Siwa, Tarfa lodge, Bdawya-Dakhla) have followed suit and developed similar structures.

Eco lodges promote the **efficient use of natural resources and energy as well as sustainable consumption**. Eco-friendly management practically demonstrates to guests that not only does sustainable consumption cuts living costs but a simple lifestyle can also be enjoyable.

The Desert Lodge encourages Egyptian industries through the use of locally-made and locally-grown products and materials. Other positive impacts include local community development through the support of local schools, oasis cleaning campaigns and job creation. In addition, Desert Lodge management has initiated a solid waste management project for the oasis with a population of about 7,000 people.

CHALLENGES

Lack of local awareness and understanding of ecotourism has pushed management to doubling their marketing efforts. There is a constant need to introduce the concept and explain its cultural and environmental function. Moreover, the absence of public policies and the lack of a clear national strategy have also forced management to lobby for public support and endorsement.



Furthermore, vegetables are organically grown for guests from a small garden adjacent to the lodge while bed linen and all related materials are made of 100% cotton, grown in Egypt. Guests are diligently encouraged to minimize water, energy and waste consumption and disposal. Employees are also trained to use energy and water efficiently. Every two years energy and water saving schemes for the Lodge are revised and updated to face new realities and meet fresh needs.

Renewable energy, generated by a hybrid of hydro-electrical and solar systems, is used as a source for heating more than 50 % of the Lodge needs of water and energy. The staff is employed locally in order to develop capacities and generate income for surrounding communities.

In February 2003 the Lodge received a medal by the Arab League for "Green tourism" for community-based desert-related activities. Two years later, in 2005 the Egyptian Ministry of Tourism gave the Lodge a 'certification for high standing quality'. It is the only award given to an eco-lodge in Egypt.

In 2007, it was awarded the first prize for 'Best Environmental Tourism' by the German Travel Association.

FINANCIAL VIABILITY

The Desert Lodge is a profitable and an independent stand-alone business model with environmental and social dimensions. Green lodges and eco-lodges offer rates that are much higher than standard hotels; yet, they still attract a lot of clients. The initial investment of the project has reached EGP 6.5 million with an expected rate of recovery and profitability.

IMPACT OF THE DESERT LODGE ECO-MANAGEMENT

The Lodge has increased local and international appreciation for nature and the environment. It has also contributed to spreading awareness of environmental problems and resource constraints. It provides tourists with firsthand experience of the beauty of nature and the environment.

SUCCESS FACTORS

Through an Entrepreneurial vision to tap into Egypt's hidden natural treasures the Desert Lodge has taken the first steps to create a market niche for ecotourism in the country. By utilizing international managerial expertise, the Resort was able to comply with international standards and meet global customer's expectations. This has consolidated the credibility and the image of the Lodge that has gained international recognition.

On the economic and social front, supporting the local community has instilled a sense of loyalty and ownership among the local population. It has created an interdependent relationship between the management and the people.

This initiative is particularly important because it enhances local customs and cultures. The 'Local' dimension that the lodge embodies facilitates its replication. The Lodge's local design, eco-management and sustainable operational system can be easily replicated and scaled-up by interested businesses and entrepreneurs.

LESSONS LEARNED

The tourism sector could be an ideal platform to accelerate a successful transition to green economy in Egypt. This is particularly significant since investing in green infrastructure is not as costly as originally thought. The private sector can profit from investing in the Ecotourism as demonstrated by the Desert Lodge success story. According to Mr. Ahmed Mousa, the founder of the Desert Lodge, there is a need for Government support to avoid the challenges that he faced when starting the business. Some of these enabling conditions that can be provided by the Government include:

- Introducing green subsidies,
- Marketing for ecotourism, led by the Government, hotels and associations,
- Facilitating international partnerships and modes of cooperation,
- Engaging local communities in decision-making,
- Supporting the use of renewable energy,
- Encouraging organic farming,
- Initiating environmental awareness campaigns.



8 ONERA SYSTEMS



Products Range

CASE: HIGHLIGHTS

ONERASYSTEMS IS A FULL SERVICE MANUFACTURING AND DISTRIBUTING COMPANY THAT PROVIDES CLEAN, EFFICIENT & RELIABLE ENERGY TO THE MIDDLE EAST

IT HAS BEEN A MARKET LEADER IN INTRODUCING INNOVATIVE OFF THE GRID SOLAR SYSTEM

IT INITIALLY STARTED WITH A MODERATE INVESTMENT CAPITAL OF EGP 250,000 NOW THE COMPANY HAS A CAPITAL OF EGP 35,000,000

30% OF ONERASYSTEMS SUPPLY CHAIN COMPONENTS ARE LOCALLY MANUFACTURED

The Company has been a market leader in introducing innovative off-grid solar systems. It has also introduced wind-powered systems to provide hybrid systems and compensate for the night-time consumption of solar energy.

In this context, OneraSystems has introduced solar energy and supplied billboards and photovoltaic systems for telecom sites. It has also supplied energy and desalinated water to the South Sinai protectorate, and installed photovoltaic systems to run high-way ambulances, solar backup systems and solar-powered highway traffic signs.

FINANCIAL VIABILITY

It is currently active not only in Egypt, but also in the MENA region and some other areas in Africa. The company has been steadily profitable and rapidly expanding.

It initially started with a moderate investment capital of EGP 250,000; now the company has a capital of EGP 35,000,000.

ONERASYSTEMS DEVELOPMENTAL BENEFITS

Growing concerns over climate change, caused by excessive fossil fuel consumption and the resultant CO2 emissions, further encouraged management to aim for a wider consumer outreach. The company also aims to promote clean, emission-free, environmentally-friendly energy, generated from renewable sources.

Through its demonstrated success, the Company is gradually pushing for changing Egypt's energy mix. The Company products facilitate the implementation of the Government's objective of increasing the share of energy generation from solar and wind sources by 2020.

The Company is well-positioned to address rural energy challenges in Egypt where villages and communities lack access to affordable energy sources. This is mainly due to geographical considerations and lack of off-grid electricity generating systems.

OneraSystems is gradually contributing to the upgrading of local manufacturing capabilities by encouraging the manufacturing and assembling of system components locally. It is setting an example for interested entrepreneurs and business owners to endorse a profitable and cost-effective model to manufacture and distribute renewable energy applications.



CHALLENGES

Limited market demand has been the greatest challenge that the company has faced. It has threatened its profitability and continued operation. Furthermore, lack of public awareness regarding environmental cost benefits of renewable energy has drastically restricted consumer-driven market demand. On the supply side, renewable energy generation has not reached its full potential due to the existence of a complex regulatory environment and lack of appropriate public policies. The absence of a national strategy to promote renewable energy or encourage local manufacturing of solar and wind systems has greatly constrained market potential. Moreover, the company has experienced implementation, operational and maintenance-related obstacles due to the lack of available expertise and a skilled labor pool.

SUCCESS FACTORS

OneraSystems operates through a strong business model that is supported by vigorous and continuous scoping of local and regional market demand. Management strives to understand competition and monitor customers' changing needs and tastes. This is coupled with the continuous introduction of new green technologies to promote affordable use of renewable energy and gradually alter consumption behaviors. Therefore, it contributes towards expanding and creating the market for renewables both locally and regionally. The Company is engaged in extensive research and development efforts to increase local manufacturing components and to upgrade its quality. In addition, it supports the buildup of local expertise in this field. The Regional outreach and international network of partners that the Company holds have also contributed to promoting its brand, enhancing its credibility and facilitating the continuous inflow of up-to-date green technologies.

LESSONS LEARNED

OneraSystems has revoked the misconception that green technologies are too costly or hard to adapt to local needs and conditions. Rather, the Company has demonstrated that the private sector can be a main agent of change.

With the right conditions, entrepreneurs and businesses can operate environmentally responsible business ventures, even in the absence of a more proactive Governmental role. Company management stipulates that success requires a solid business model with an understanding of the dynamics of the market through:

- Studying market demand and consumer behavior trends,
- Setting a strategic plan for sales and marketing,
- Recruiting skilled labor and building a pool of expertise,
- Promoting extensive research and development in this field.

THE WAY FORWARD



Success Stories profiled in this publication reflect a growing trend of public and private led green initiatives, programs and businesses in Egypt. They show that green investments and clean technologies are not only good for the environment but they also make economic sense.

Commercializing 'off-grid renewable energy generation systems' in the case of **OneraSystems** exhibits the applicability and adaptability of green technologies within local context. Adopting sustainable and organic agriculture by **SEKEM** highlights the importance of human development, inclusiveness and local community mobilization.

Cultural representation and its reconciliation with nature in the **Desert Lodge** case indicate the importance of preserving cultural ties and unique social features towards adopting a green economy.

While, knowledge dissemination and extension of technical support for cleaner production, provided by **ENCPC**, underscore Government role in supporting private sector efforts to green the economy.

Providing financial accessibility to local industrialists for pollution abatement by **EPAP** shows that the Government has the means to provide and design credit facilities crucial in facilitating a green transition.

Similarly, **Egypt Vehicle Scrapping and Recycling Program** represents the Government's ability to use market instruments to expedite national efforts for environmental accountability and pollution abatement. **ENTAG's** integrated waste management solutions and voluntary environmental compliance efforts by **El Masreya for lead smelting, refining and fabrication** both foster an entrepreneurial drive and creative management.

These cases, as seen throughout the publication, have faced common challenges and constraints that threaten their success, profitability and expansion opportunities. This is mainly due to a lack of a national public policy framework conducive to investment in environmental infrastructure and enhancing a transition to **green economy**.

In order to support similar good practices and increase the number of green initiatives, concerted efforts from relevant stakeholders, especially the Government, are crucial.

The Government should provide essential enabling conditions including a strong regulatory framework that ensures compliance and penalizes polluting activities. Institutional capacity building is also important to ensure successful implementation and monitoring of green policies. Other measures and market tools that the Government can adopt to support the private sector include removing trade barrier, providing green subsidies, and tax rebates.

It should also target education through upgrading various curricula to take into account environmental considerations and provide certifications /accreditation, training and capacity building. It should also support developing, transferring, and localizing knowledge as well as developing expertise and encouraging research and development.

Moreover, outreach campaigns and continuous communication efforts by the Government are necessary to educate the public and inform them of existing successful green initiatives. Promoting information exchange between stakeholders is essential in disseminating good practices and exchanging knowledge and expertise in environmental investments as well as the opportunities and challenges associated with them.

Finally, Government policy interventions including public-private partnership can go a long way in encouraging private sector involvement in environmental and green investments. Responsible business investments are profitable, when adopting innovative and creative business models and approaches. Taking into account environmental and social considerations in business operations can build long term customer loyalty, create market demand and responsible marketing as well as nurture corporate citizenship.

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- <http://www.mof.gov.eg>
- <http://www.eeaa.gov.eg/epap>
- <http://www.sekem.com>
- <http://www.entag.net>
- <http://www.onerasystems.com>
- <http://www.encpc.org/en>
- <http://www.desertlodge.net>
- <http://cdm.unfccc.int/ProgrammeOfActivities>
- <http://www.awadallah-leadmetal.com>

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