

Regional Technical Expert Meeting: Efficiency in Industry
African Climate Week, Nairobi, Kenya

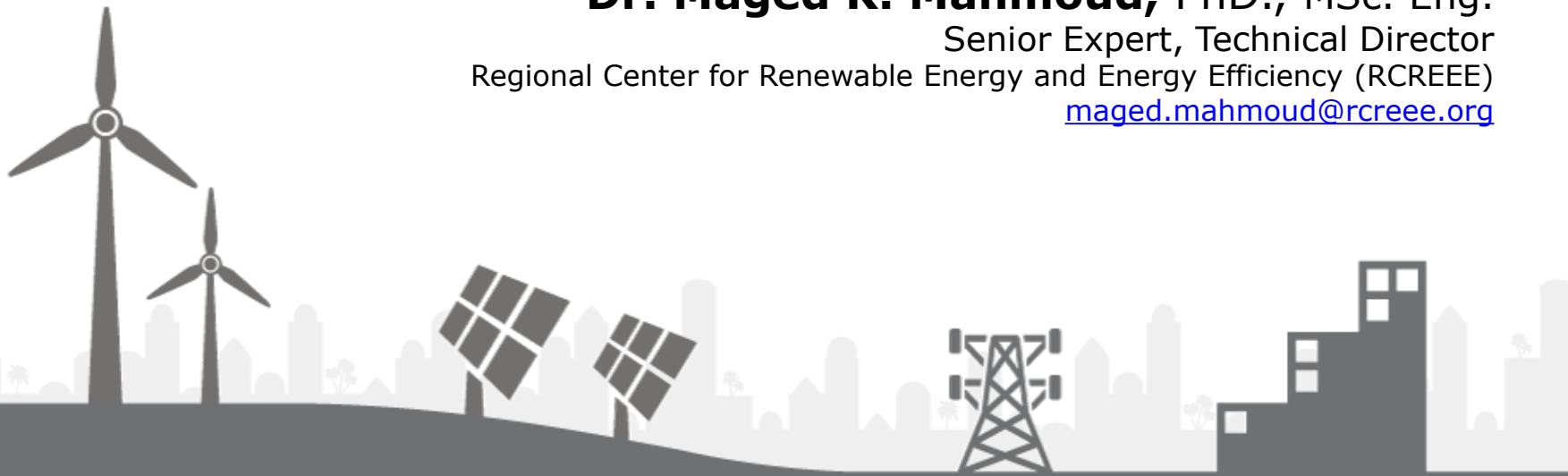
Role of Domestic Policymakers: Examples from Egypt

Dr. Maged K. Mahmoud, PhD., MSc. Eng.

Senior Expert, Technical Director

Regional Center for Renewable Energy and Energy Efficiency (RCREEE)

maged.mahmoud@rcreee.org



RCREEE

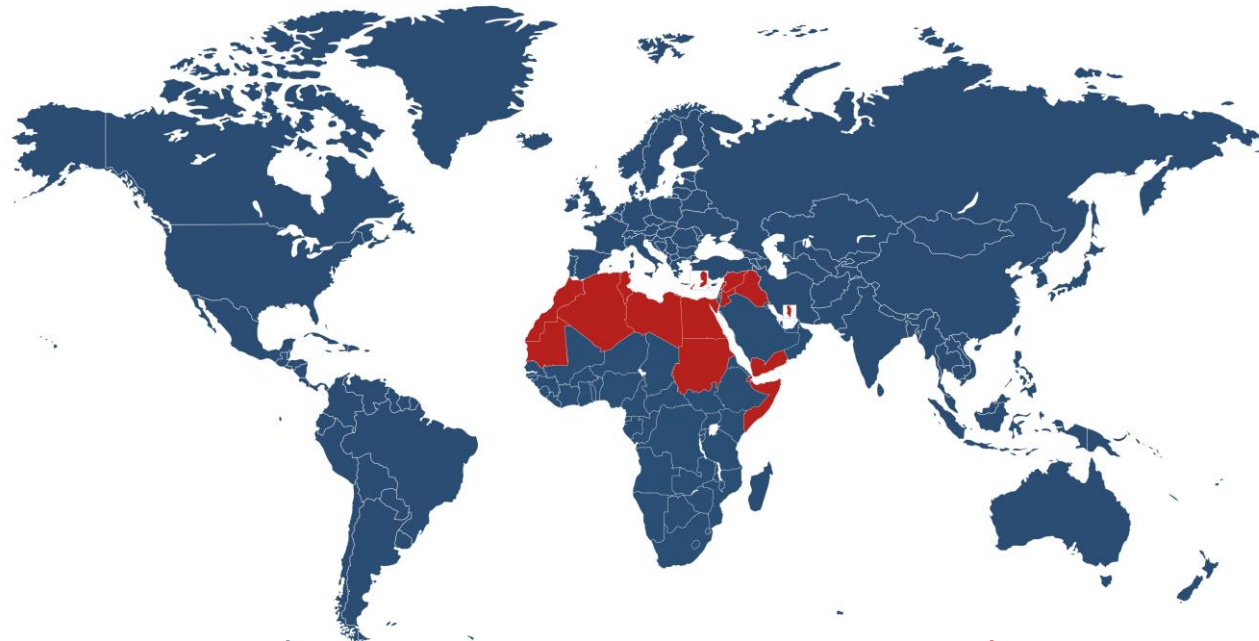


Regional Center for Renewable Energy and Energy Efficiency
المركز الإقليمي للطاقة المتجددة وكفاءة الطاقة

13 April 2018

Content

- Who's RCREEE and what is our work about?
- RCREEE engagement context for EE in Egypt
- Role of domestic policymakers: Examples from Egypt



Work in the **Pan-Arab Region...**
know how to navigate your way



RCREEE's Mission & Success Factors

*“We, the Regional Center for Renewable Energy and Energy Efficiency, are the strategic partner for the **Arab countries** driving energy transition for the prosperity of all our people.”*



(Pro/Re)Active

We are connected, accessible and responsive.



Variety

Our organizational structure is flexible, multinational and attractive for our stakeholders.



Trust

Our partners trust us to contribute to their competitive advantage.



Growth

We grow with our assignments.



Sustainability

Our business is sustainable.

RCREEE – Who we are



Intergovernmental Organization with 17 Member States



The technical arm of the League of Arab States



A leader in clean energy policy dialogues, strategies, technologies and capacity development



The first regional renewable energy and energy efficiency centers across the world



Secretariat in Cairo, Egypt with regional antennas and a pool of short-term experts

Technical Department – Working Areas

- 
- **Sustainable Energy Policies and Technical Support**

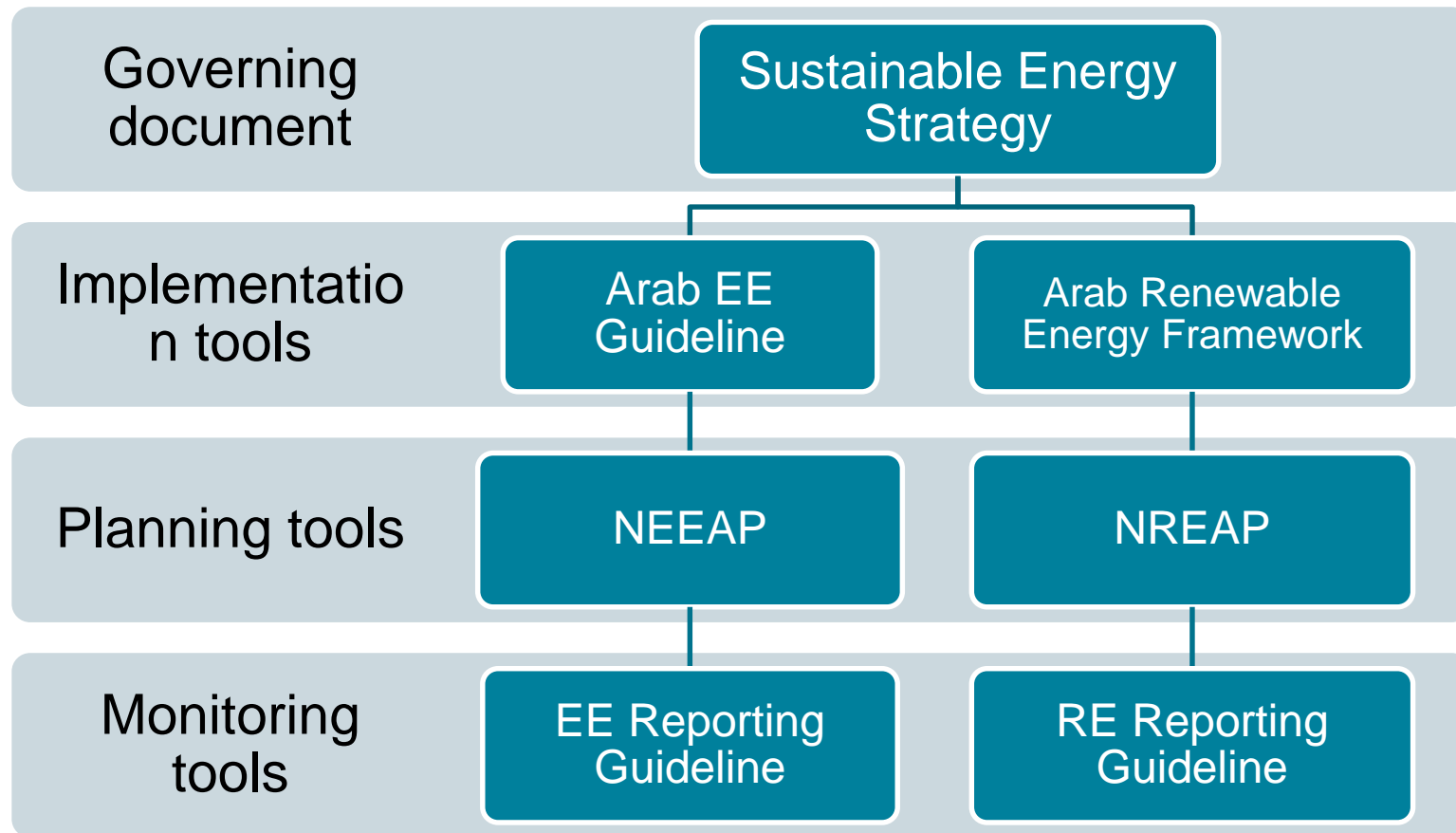
- 
- **Energy Market Research and Knowledge Management**

- 
- **Renewable Energy & Energy Efficiency Investments Promotion**

- 
- **Social & Environmental Socio-Economic Studies**

RCREEE Engagement Context for EE in Egypt

RE & EE Policy Governance System in Partnership with LAS



Arab Energy Efficiency Guideline Background

The Arab EE Guideline was approved by the Executive Bureau of the Arab Ministerial Council of Electricity in 23 November 2010.

Highlights on Framework

The framework requests:

- Effective **involvement of public sector** in EE activities.
- Governance of EE sector should be established.
- Ensure **accuracy of energy savings calculations**, based on clear methodology and robust data.
- Utility sector is responsible for providing data and operates according to the best practices to achieve energy efficiency in their systems.
- Training and capacity building.
- Availability of **incentives** to encourage the implementation of energy efficiency improvement projects.

Key Regional Developments

- **12** National Targets

Jordan, Bahrain, Egypt, Tunisia, Sudan, Syria, Iraq, Palestine, Lebanon, Libya, Qatar, Kuwait,

- **17** National Assigned Entities for EE

Jordan, Bahrain, Algeria, Egypt, Tunisia, Sudan, Syria, Iraq, KSA, Palestine, Lebanon, Libya, Qatar, Kuwait, Morocco, Djibouti, Yemen

- **18** NEEAPs in different stages

Jordan, Bahrain, Algeria, Egypt, Tunisia, Sudan, Syria, Iraq, KSA, Palestine, Lebanon, Libya, Qatar, Kuwait, Morocco, Djibouti, Mauritania, Yemen

- **11** Courtiers used the NEEAP template

Jordan, Bahrain, Algeria, Egypt, Sudan, Syria, Iraq, Palestine, Lebanon, Libya, Qatar.



**"He who fails to plan is
planning to fail"**

Winston Churchill

The Example of Egypt: National Energy Efficiency Action Plan (NEEAP)

RCREEE has supported Egypt to develop 2 NEEAPS:

Several programs were considered, these include;

- EE lighting (**distribution of 12 million CFL and LED lamps** by the electricity distribution companies).
- **EE standards and labeling program** for electric appliances.
- **Financing mechanism** in **industrial, commercial** and **tourism** sectors.
- EE in **street lighting**.
- 2nd Phase of the program for EE in **public buildings**.
- EE in **utilities** including water treatment and sewage plants.
- EE measures taken by electricity distribution companies, which include: (provision of **EE services**, awareness campaigns, minimize network loss, prepaid/smart meters deployment)

NEEAP Cont.

Development of EE Codes, Standards and polices:



- Minimum Standard for EE of electrical appliances.
- EE codes in buildings.
- Reduce the usage and production of low-efficiency lighting bulbs.
- Allocate financial resources for EE projects

NEEAP – Regulatory Framework

- **Electricity Law (No. 87/2015)**, which includes a chapter on improving energy efficiency in different sectors
- The **Executive Regulations** of the Electricity Law issued in May 2016 including details measures for EE.
- Issuance of the **Law for Encouraging Investments in the Production of Electricity from Renewable Energy Sources (Law 203//2014)**.



National Reforms

Measures Implemented (Contd.)

- **Electricity Tariff Restructuring Program** adopted in July 2014 for 7 years
- Adoption of the **Integrated and Sustainable Energy Strategy for Egypt until 2035** in October 2016.
- Launching the **National EE Media Campaign** for three years.
- Ambitious plans to expand electricity production, which will lead to **doubling the installed capacity in 2020 compared to 2015** leading to a qualitative change in the electricity production efficiency.



Integrated and Sustainable Energy Strategy for Egypt until 2035- EE component

Vision:

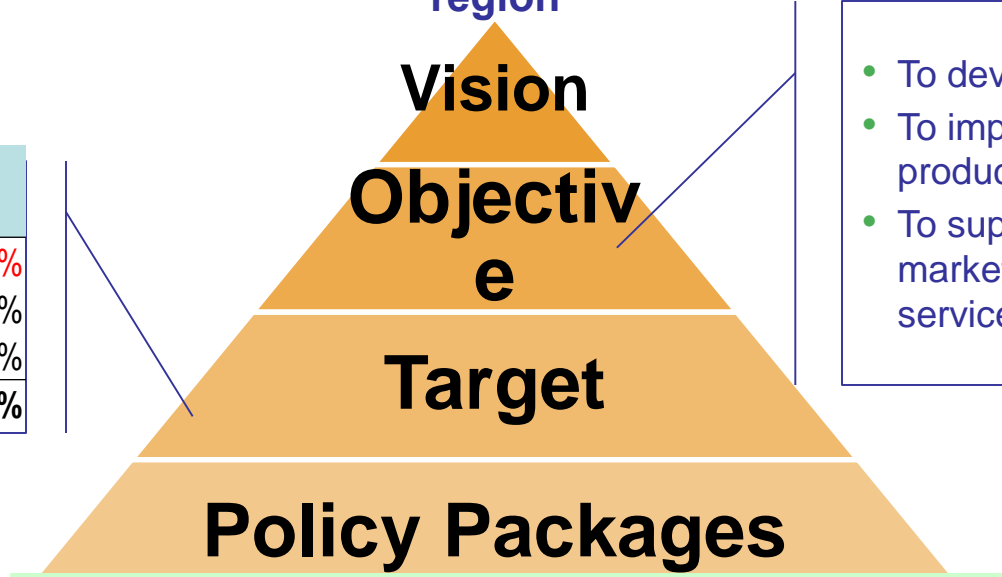
The Egyptian energy policy embeds energy efficiency inside the general energy framework and in the entire economic policy, so as to be able to “capture its multiple benefits”.

Objectives:

- **Achieve improved EE without affecting the growth or productivity** of the **industrial**, commercial, services and agricultural sectors or affecting the level of consumers welfare, whether in the domestic or public services.
- **Achieve the greatest and the highest possible EE savings** through applications ranked on the **basis of techno- economic feasibility** taking into consideration the **life cycle costing**
- **Achieve the sustainability** of the supply of energy for all aspects of use and affordable cost to consumers.

“Capture EE multiple benefits; reach a stable energy security; to keep a leading role in the region”

Economic Sector	Mtoe	%
Industry	6.8	-18%
Buildings	8.6	-16%
Transport	4.6	-23%
Total	20.0	-18%



- To develop a demand of EE;
- To improve the offer of EE products and systems;
- To support the creation of a market of EE products and services.

Sector	Policy Package (PP)
Institution	1. Institutional development for EE
Industry	2. Programmes in the largest energy-consuming industrial sectors 3. Programmes in cross-cutting technologies 4. Transforming the EE market for industry
Buildings	5. Replacement of existing electric appliances with EE ones. 6. Interventions on new buildings envelope & systems 7. Energy refurbishment of existing buildings envelope & systems
Tourism	8. Moving towards green tourism
Street lighting	9. Efficient street lighting
Transport	10. Energy efficient road vehicle stock 11. EE practices for the general public and the professionals 12. Fostering the use of EE modes for passenger transport 13. Fostering EE in freight transport and logistics

EE Measures as per the Electricity Law

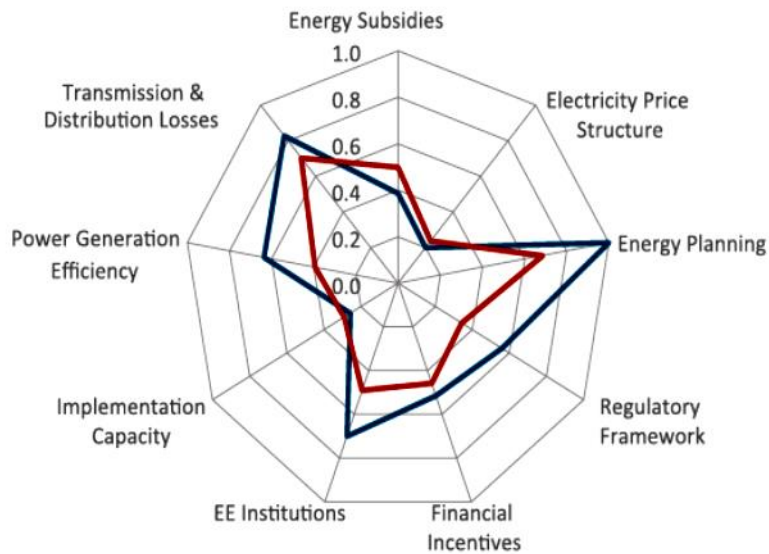
- Support **cogeneration and energy recovered** from secondary sources through **mandating the transmission and distribution companies to purchase** the energy from these source, which has a **capacity less than 50 MW** at feed in tariff as well as do **necessary expansion to accommodate this supplied energy**
- **Each facility with a contracted **capacity equal or above 500 kW** shall have a **energy manager** as well as **energy register****
- Both EETC and distributors has the right to issue **demand side management bids**
- The government is required to **set policies** and programs for the following:
 - Expand the **energy labels** for energy equipment and appliances
 - **Phase out inefficient equipment** and appliances
 - **Support** energy efficiency activities in **industrial** and commercial systems

Energy Efficiency Governance

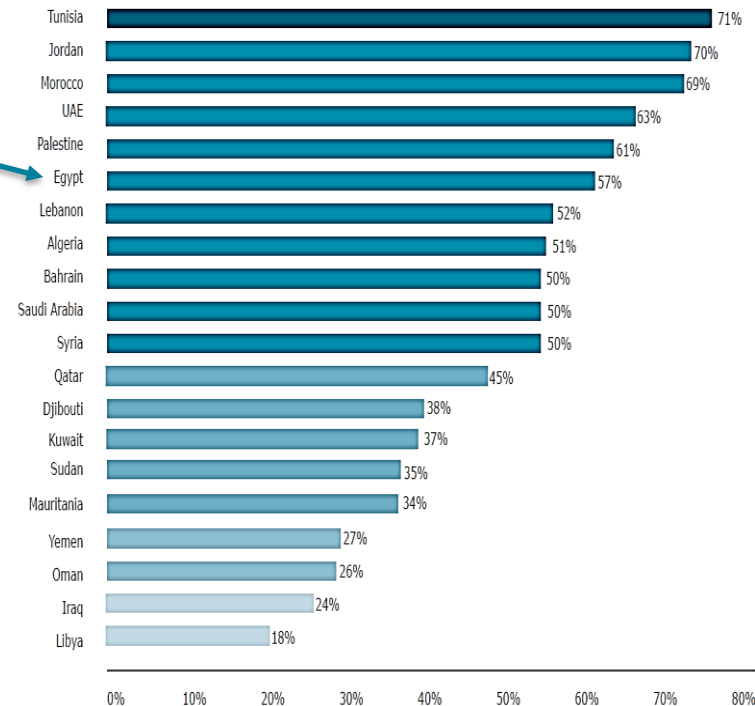


EGYPT

SCORE 57



RCREEE



Addressing the Challenges



Financial

Resources/Instruments

- ~~Central Bank of Egypt, CBE~~ Initiative for M-SMEs offers cheap loans at **5%, 7%, and 12%** to be used for CAPEX or as working capital
- Green Economy Finance Facility; GEFF (**USD 5M ceiling, 10-15% grant**) supported by the Southern and Eastern Mediterranean (SEMED) Multi-Donor Account (MDA)
- Egyptian Pollution Abatement Programme - EPAP (**EUR 15M ceiling, 10-20% grant**) supported by several development partners
- Environmental Compliance Office - Federation of the Egyptian Industries; ECO-FEI (EGP 7M ceiling, 2.5% interest rate)

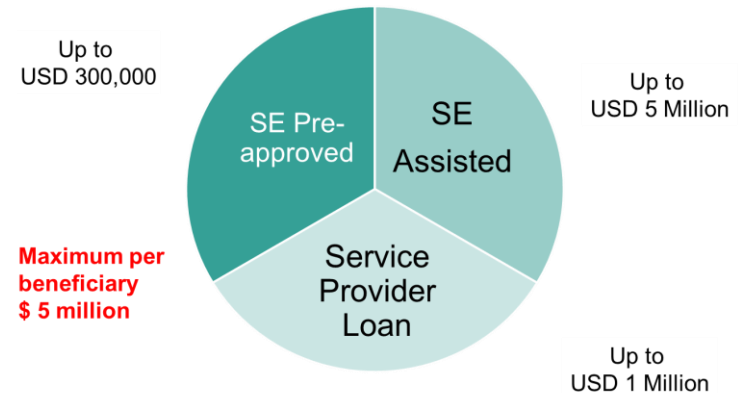
Addressing the Challenges

Technical know-how/Acess to technology

e.g. 

1. Provision of (**free/semi-Free**) **technical support** through different initiatives and projects such as

- GEFF technical support
- USAID technical support
- UNIDO IEE project
- MOI-ENCPC free technical assistance
- Others ..



2. Using **web-based tools** to support decision making process

- “Eligible”/“Qualified” solutions
- Supplier’s info
- Service providers
- Financial tracks (fast-normal!)

Loans/Leasing Available for Capital Investments

System	Technology	Sub Technology	Manufacturer / Supplier	Model
All	All	All	All	All

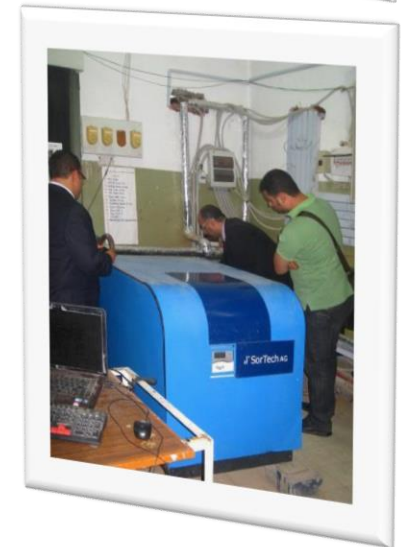
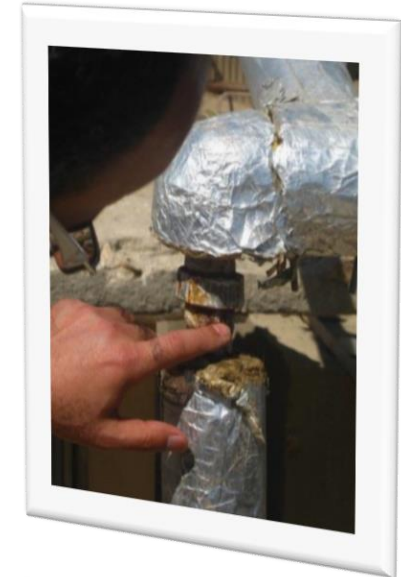
System	Technology	Sub Technology	Manufacturer / Supplier	Model	Website	Phone Num.	E-mail
Building system	Windows	Double-glazing type window	ARABCO Egypt		Go to site	20224022222	sales@arabcoegypt
Building system	Windows	Double-glazing type window	ECO House		Go to site	0020 12 11 000 101	
Building system	Windows	Double-glazing type window	ENTRA		Go to site	1220122400	

Addressing the Challenges

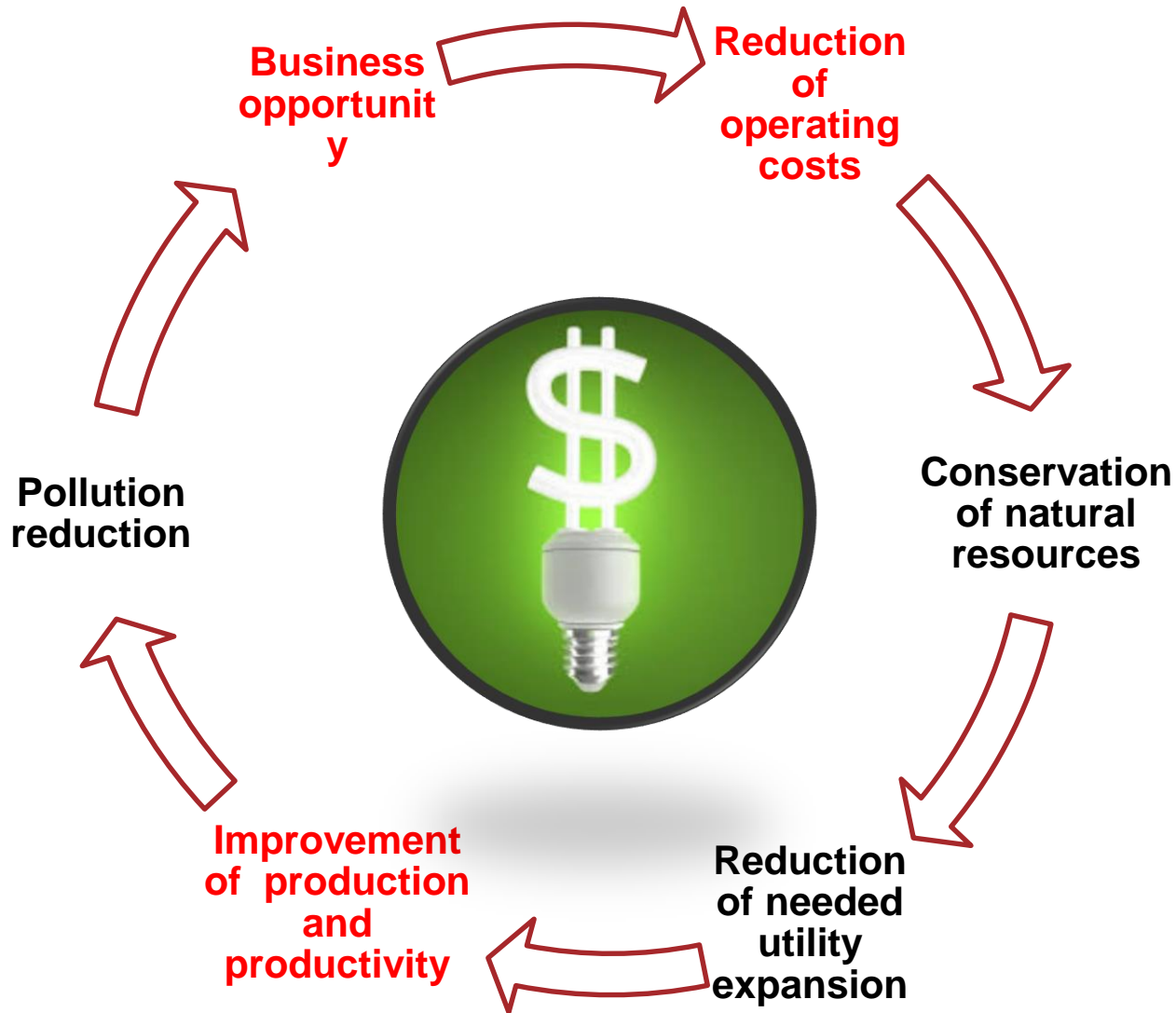
Lack of awareness

Addressed through different initiatives (ENCPCP, IMC, GEF, UNIDO, MoERE, ...)

- Concrete **marketing and awareness components**
- Technical support **for the banking sector**
- Technical assistant and capacity building **for industry and ESCO's** on technical and financial assessment of EE and RE solutions, energy management systems, motor system optimization, compressed air system optimization, solar heating industrial process and others



The Selling Propositions of Importance to Industry



Measuring the EE Projects' Success

- Energy Input (kWh) after investment less than before investment and;
- Energy Input (kWh) per unit output after investment less than before investment

Example: Output **capacity increases by 60%** and **gain in efficiency by replacing old equipment of 12.5%**. Then the energy savings will be 20% per the unit of production as the following equation

12.5%



160%

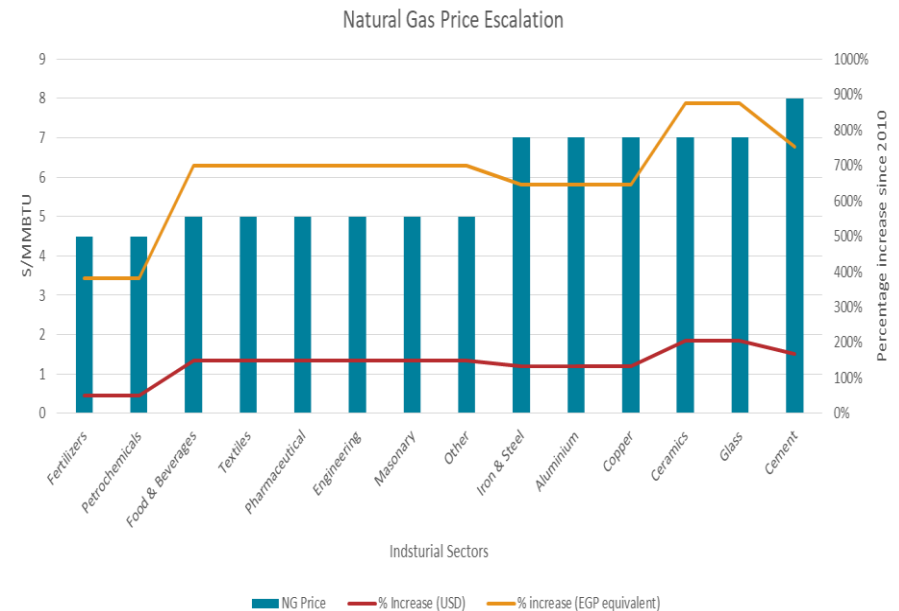
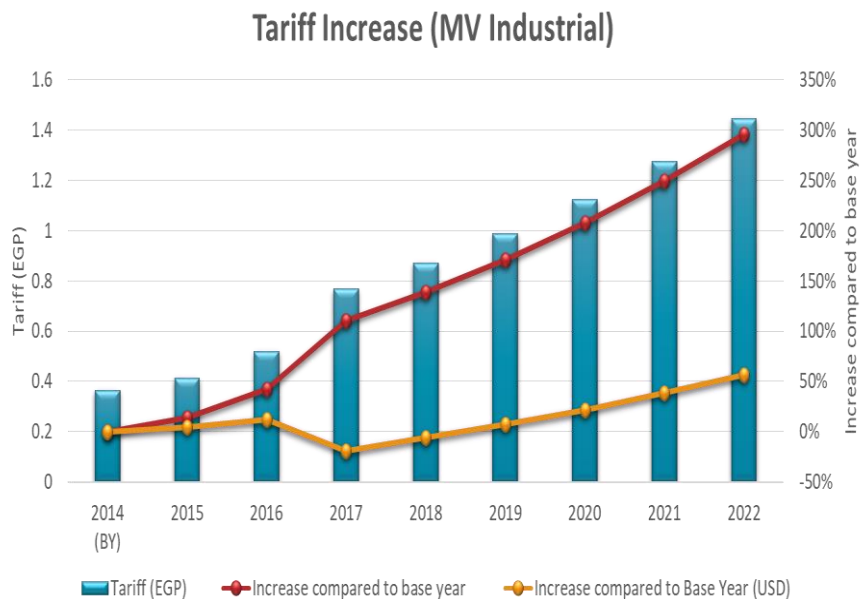


20%

Addressing the Challenges

Lack of motivation/low priority

1. Transparent subsidy reform plan by 2022



2. Showcasing replicable success stories

Showcasing Success Stories

Process Machine Replacement

Energy Intensive, Glass Manufacturer

One of the leading Glass manufacturers in Egypt. Aspiring to competitively meet their demand, the Client replaced their old furnace with a newer systems that saves 67% of the required energy for operation, which also lead to an overall savings of the factory energy by around 43.5%.



Investment Type: Energy Efficiency

Industry Type: Glass Manufacturing

Product Type: Process Machine Replacement

Investment Amount: \$1.2 mio

EgyptSEFF Financing Amount: \$1.2 mio

Capacity Increase: 1.3

Energy Savings: 148,660 MMbtu/year
(43,601.6 MWh)

Reduced Carbon Emissions: 8,723 tCO₂eq/year

Showcasing Success Stories

Waste Heat to Power Generation

Energy Intensive, Fertilizers Manufacturer

The production process results in a considerable amount of thermal energy released and converted into steam in a Waste Heat Recovery Boiler. The Client embarked on a Waste Heat Recovery Project that addresses their key business objectives with an attractive payback period of less than 2.5 years.



Investment Type: Renewable Energy

Industry Type: Fertilizers

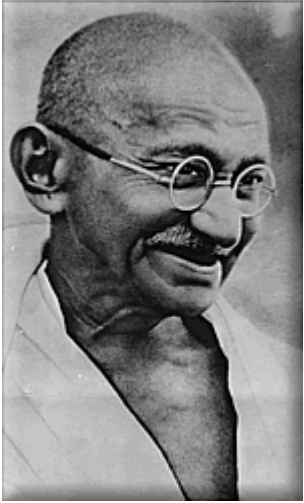
Product Type: Waste Heat to Power Generation

Investment Amount: \$7.2 million

EgyptSEFF Financing Amount: \$7.2 million

Energy Savings: 54,022 MWh/year

Reduced Carbon Emissions: 24,310 tCO_{2eq}/year



"Speed is irrelevant if you are going in the wrong direction."

Mahatma Gandhi

Thank You



Dr. Maged K. Mahmoud
Technical Director

**Regional Center for Renewable Energy and Energy Efficiency
(RCREEE)**

Hydro Power Building (7th Floor)
Block 11 - Piece 15, Melsa District
Ard El Golf, Nasr City, Cairo, Egypt

maged.mahmoud@rcreee.org

www.rcreee.org