



UNITED NATIONS  
INDUSTRIAL DEVELOPMENT ORGANIZATION



جهاز شئون البيئة



# Industrial Energy Efficiency Proposed Strategies and Policies



اتحاد الصناعات المصرية

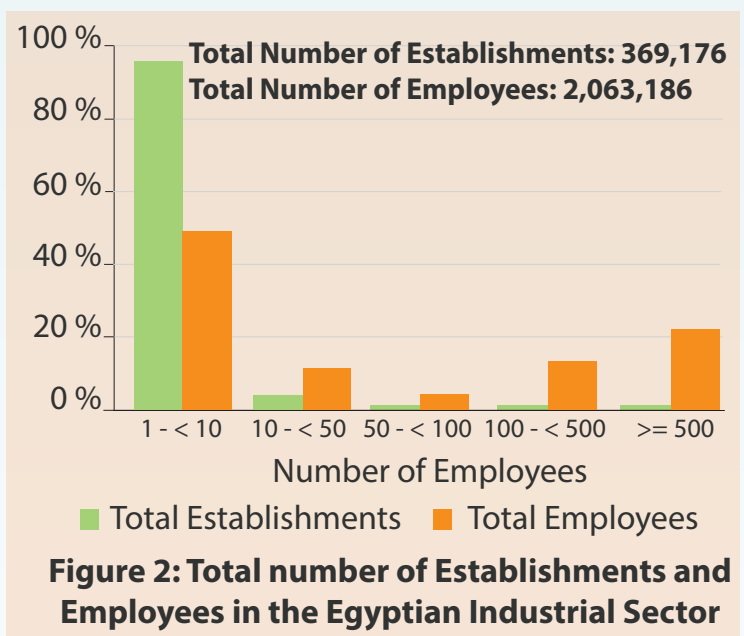
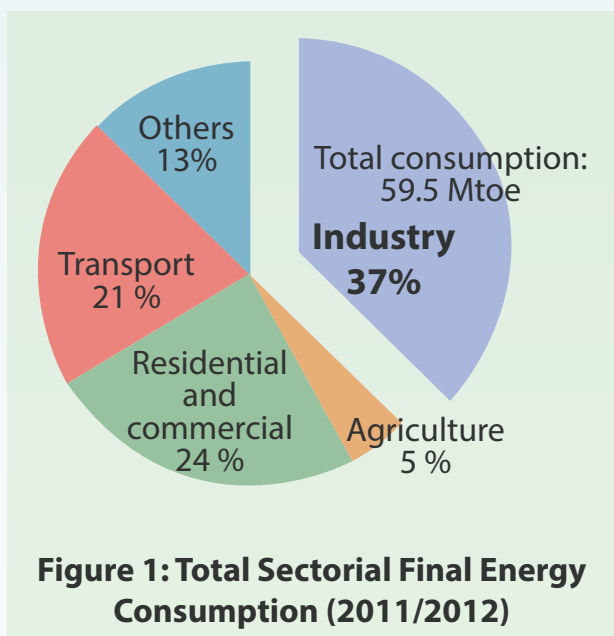


الهيئة المصرية العامة للمواصفات والجودة  
Egyptian Organization for Standardization and Quality



# Industrial Energy Efficiency Proposed Strategies and Policies

The Industrial Energy Efficiency Project in Egypt supported the preparation of a report containing a proposed package of strategies and policies addressing Industrial Energy Efficiency (IEE) as one of the main project outputs. An IEE vision, three strategic objectives and a set of thirteen policies were developed based on a thorough review of previous efforts, international best practices and strong stakeholders' engagement; in particular by the Egyptian Environmental Affairs Agency, the Ministry of Industry and Foreign Trade and the Federation of Egyptian Industries. The proposed policies address all three strategic objectives and are proposed to be implemented in packages to ensure the presence of necessary support and their success.



**The Egyptian industry is highly polarized  
in terms of size and energy intensity**

## Industry was categorized as follows

	LI	L-NI	SI	S-NI
Enterprise Attributes	<ul style="list-style-type: none"> <li>Have a large number of employees (&gt;100)</li> <li>Energy represents a significant part of their cost structure (&gt;10 %)</li> </ul>	<ul style="list-style-type: none"> <li>Have a large number of employees (&gt;100)</li> <li>Energy forms a minor part of their cost structure (&gt;10 %)</li> </ul>	<ul style="list-style-type: none"> <li>Have a limited number of employees (&lt;50)</li> <li>Energy represents a significant part of their cost structure (&gt;10 %)</li> </ul>	<ul style="list-style-type: none"> <li>Have a limited number of employees (&lt;50)</li> <li>Energy forms a minor part of their cost structure (&gt;10 %)</li> </ul>
Ex:	Ex. Steel, cement fertilizers, aluminum, petrochemicals	Food, textiles, engineering, garments, wood, etc.	Glass products, bricks, foundries, etc.	Wood, textile, etc.
Core Sector Issues	<ul style="list-style-type: none"> <li>Enjoy high political power</li> <li>May have international affiliations</li> </ul>	<ul style="list-style-type: none"> <li>Enjoy high political power</li> <li>A keen interest in export</li> </ul>	<ul style="list-style-type: none"> <li>Have antiquated/ outdated technologies</li> </ul>	<ul style="list-style-type: none"> <li>Large numbers</li> <li>Limited Skills</li> <li>Small energy contribution to costs</li> </ul>
Core Sector Issues	Energy intensive industries consume 65 % of the industrial energy			
	Represent 0.5 % of establishments and 35 % of industrial employment		Represent 99 % of establishments and 60 % of industrial employment	

**Figure 3: Industrial Categories**

\* no medium category is mentioned in this table as the upper medium will be closer to the Large category and the lower medium to small category to avoid over subdivision

**Multiple approaches** are essential in this polarized context, as well as multiple rationales for action; while addressing the large intensive industries could result in much needed energy savings, the government responsibility extends to the small non-intensive who are already suffering from the rising costs of energy.

**Phasing** between sectors, based on sector and regulator capabilities, as well as within sectors, expanding to cover a whole sector after building a critical mass.



**Figure 4: The value chain of creating an Industrial Energy Efficiency Policy**

## IEE Proposed Vision

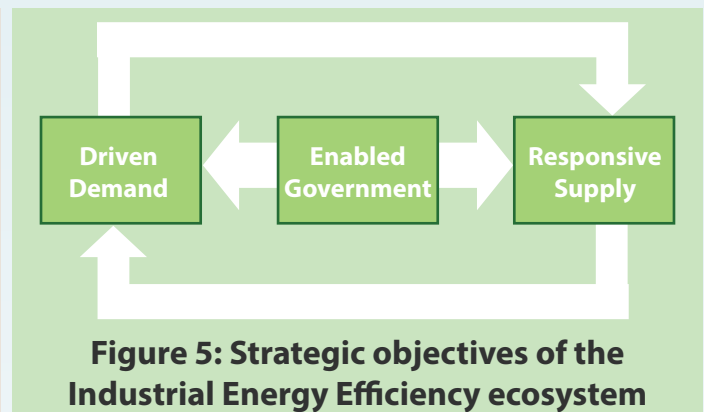
**“The Egyptian industry continuously achieves the optimum energy efficiency level economically viable for the Egyptian society”**

**Continuity** implies that means should be devised to elevate energy efficiency to become a core business issue, and ingraining related management systems in industrial enterprises

**Optimum** efficiency is pragmatically defined as the point beyond which investments will have a longer pay back than what is typically accepted financially by the enterprise.

## Three key strategic objectives address the three main pillars of the Industrial Energy Efficiency ecosystem

1. Drive industrial sector demand for Industrial Energy Efficiency
2. Ensure responsive supply in terms of services, equipment and finance
3. Enable government institutions to plan, regulate and monitor IEE ecosystem



Progress on these strategic objectives should be balanced and sustained while taking into account a number of major challenges

1. **GOVERNMENT FUNDING**, mainly reflected in limited ability to subsidize EE investments. Policies requiring intensive funding are screened out.
2. **DATA CHALLENGES** including; measurement, availability, accessibility, reliability and consistency. Policies relying on a high quality of data are not implementable in the short term.
3. **INFORMAL SECTOR**, This sector can hardly be targeted directly before it is formalized. Currently, the ministry of industry is considering viable approaches to formalize these entities. When formalized, they will add to the pool of micro-enterprises which have their own challenges.
4. **MICRO-ENTERPRISES** are challenging to address due to their large numbers, different affiliations, limited technical capacity, and non-bankability. The State can only address these enterprises through effective interfaces.

## Short Term Objectives

1. Substantial energy savings
2. Relaxing existing constraints, especially in terms of data and Government capacity
3. Infusing an energy efficiency culture in Egyptian industry

**Policies** are proposed to create demand for IEE and a corresponding set of policies to secure supply. Policies enabling the different government entities to manage the IEE ecosystem are also proposed.

**Action Planning** should balance progress across different policies, to avoid bottlenecks and loss of credibility.

**Stakeholder engagement** was core to the policies development process throughout its different stages and was reflected in the series of interviews, workshops and think-tank meetings carried out to benefit from vast and diverse experiences as well as garner support. Moreover, one-to-one meetings were undertaken to confirm owners, outcomes and phasing of the policies.

**Table 1: IEE Proposed Policy Summary**

Drive industrial sector demand for Industrial Energy Efficiency	Ensure responsive supply	Enable Government
<ol style="list-style-type: none"> <li>1. Include EMS in export requirements</li> <li>2. EMS as condition for state procurement</li> <li>3. Establish system for grid connected combined heat and power (CHP)</li> <li>4. Phasing out selected equipment</li> <li>5. Reach out to SMEs through intermediaries</li> <li>6. Ensuring efficient energy performance of new facilities, operations and processes</li> </ol>	<ol style="list-style-type: none"> <li>7. Ensure Quality of Energy Management System Consulting Services through certification</li> <li>8. Link Qualified consulting Services to rising demand on Energy efficiency technologies</li> <li>9. Minimum Energy Performance Standards (MEPS)</li> <li>10. Create an awareness mechanism that leverages integrated information related to IEE</li> <li>11a. Capitalize on FEI fund to subsidize Industrial Energy Efficiency Projects</li> <li>11b. Augment cooperatives fund to finance IEE projects</li> </ol>	<ol style="list-style-type: none"> <li>12. Mandatory reporting for registered facilities as a condition to renew their license</li> <li>13. Ensure proper &amp; effective governance mechanism of all related IEE policies and procedures</li> </ol>

## Table 2: Description of the Proposed Policies

### Strategic Objective 1: Drive industrial sector demand for Industrial Energy Efficiency

#### Policy 1: Incorporate EMS in export procedures

This policy requires sectors exporting energy intensive goods (i.e. goods whose energy costs comprise more than a specific percentage of their cost structure) to have the following:

- An operative energy management system (EMS)
- Reported energy data
- Approved and implemented EE plan

Incorporating EMS for export can be carried out through an export duty waived on a product if it is produced from a facility fulfilling these conditions.

#### Policy 2: Incorporate EMS as a condition for state procurement

The government is a major buyer and has the right, and the power, to stipulate certain conditions on the materials they acquire or acquired by their contractors. The conditions are proposed to include that such material are sourced from manufacturing facilities with an operative EMS system, which report energy data and implement their plans to pursue EE.

The policy proposes the imposition of these conditions in multiple ways, including adding a condition in the project's tender documents that specifies that contractors should source specific raw materials from facilities with EMS having an acceptable implementation status.

#### Policy 3: Establish system for grid-connected combined heat and power (CHP)

Establish operational system for grid-connected combined heat and power (CHP) as stipulated by the electricity law. The operational system should be established such that the electricity prices encourage CHP and resolve any issues that might arise with regards to grid management; metering and accounting systems, etc. Although connection to grid is formally not energy efficiency, it should increase the viability of CHP, and most importantly reframe waste heat as a resource.

#### Policy 4: Phasing out selected cross-cutting equipment

Selected installed cross-cutting equipment should be replaced, over a specified number of years based on a set of criteria including nameplate performance specification, size and age.

Minimum Energy Performance Standards (MEPS), addressed in policy 9, are the reference against which equipment replacement could be made obligatory, such that equipment whose efficiency is e.g. 80% that of the MEPS or less (depending on the case) will be replaced. The percentage should be set such that, when replacing the majority of equipment, an acceptable payback period (less than 5 years) is achieved.

#### Policy 5: Strengthen industrial organizations to provide IEE support

Build-up and strengthen the capacities of industrial organizations (chambers and cooperatives) such that they can independently support their members on matters regarding IEE. These organizations thus become the interface through which SMEs receive assistance. The government will follow-up on the progress of these organizations and provide direct assistance to industrial organizations if requested.

This policy also proposes that the new entity catering for small and medium projects extends support on IEE to SMEs through creating guidelines to outline energy saving opportunities for each sector of SMEs, recognition programs as well as financial support.

#### Policy 6: Ensuring efficient energy performance of new facilities, operations and processes

Ensuring efficient energy performance of new facilities, operations and processes through limiting license provision to targeted facilities which:

- Production technology is at least at par with that of the most efficient decile of local manufacturing technologies
- Are committed to establish their EMS

If an industry does not have a precedent locally, international best practices should be the reference as there are no local plants to compare, and compete with. This policy will benefit from Benchmarking studies.

## Strategic Objective 2: Ensure responsive supply

### Policy 7: Ensure quality of energy management system consulting firms through certification

Establish a certification mechanism for consulting firms and individuals in the field of Energy Management System to be renewed based on active operation in this field. This mechanism also allows for categorizing the consulting firms based on a point system that aids in having structured clusters of different levels of consultancies.

EMS consulting firms should be able to submit an executive summary of auditing reports to the certifying body for the number of industrial facilities served allowing for data gathering and analysis to build knowledge on sectorial trends and know how.

### Policy 8: link qualified consulting firms to rising demand on energy efficiency technologies

The policy aims to provide the market with qualified technical consulting firms / individuals in different engineering fields (mechanical – electrical – chemical- engineering). This qualification process includes:

- Registration
- Setting the technical standards for the consultant's know-how
- Technical assessment by a central accreditation body that will ensure compliance to international standards in this field
- Awarding consultants the certificate to be able to operate in the market.

The renewal processes for accreditation holders should ensure that they are actively operating in their respective fields.

### Policy 9: Minimum Energy Performance Standards (MEPS)

This policy requires Minimum Energy Performance Standards (MEPS) to be developed with a focus on equipment that comply with the following prioritization criteria:

- Have high potential energy saving, where priority is to those with highest potential
- Are used across a large number of industries, where the most cross-cutting are given priority
- Are imported, where priority will be for imported equipment rather than the ones manufactured locally

### Policy 10: Create an awareness mechanism that leverages integrated

Establish a mechanism/platform responsible for raising awareness on the benefits of energy efficiency in Egypt, targeting both direct and indirect stakeholders. This including banks, government, industrial sector, with its various sizes and activities, and energy consulting services, in addition to all owners indicated across the other policies.

Awareness is also raised on topics including IEE financing options, technologies and announcing relevant strategies and policies.

### Policy 11a: Capitalize on FEI fund to subsidize industrial energy efficiency projects

This policy aims to capitalize on the Federation of Egyptian Industries funds in order to subsidize Industrial Energy Efficiency Projects with special focus on small and medium enterprises (SMEs).

In order to ensure that these funds are being put to best use, a ceiling can be set (i.e. maximum amount of money per facility). This ceiling will be more attractive to smaller facilities (as larger ones may need larger amounts).

### Policy 11b: Augment cooperatives fund to finance industrial energy efficiency projects

Direct the Productive Cooperative Union to finance industrial energy efficiency projects for its members. Funds are proposed to be provided by the ministry of finance (MOF) within the framework of a cooperation protocol with the Cooperative Union to finance its members in order for them to undertake EE projects and interventions based on certain terms and conditions. The flow of funds will only be sustained if data is provided, audits are undertaken, transparent criteria are set, relatively long payback (more than 3 years) is proven.



### **Strategic Objective 3: Enable government institutions to plan, regulate and monitor IEE ecosystem**

#### **Policy 12: Mandatory reporting for registered facilities as a condition to renew their license**

This policy aims at creating robust data (i.e. reliable and consistent) to enable effective decision making through mandatory reporting for registered facilities as a condition to renew their license. This will be implemented for Energy intensive industries in the short term in preparation for climate change commitments. For other sectors, it should be preceded by incremental build up through requirements of other policies.

Data collection includes: General data and information, data on industrial production, data on energy consumption. Means for data verification are proposed.

It will require the establishment of strong data storage, processing and analysis capabilities in the relevant government authority. It should provide the basis for extending the policy tool box, as needed, in the medium term. On the short term, it should feed into existing policies.

#### **Policy 13: Ensure proper and effective governance mechanism of all related IEE policies and procedures**

Each policy has its owner, supporting and facilitating institutions identified. The need for coordination is addressed through this policy aiming to ensure proper and effective governance mechanism of all related IEE policies and procedures.

The ministry of industry is the main party to handle industrial energy efficiency. That is; its policy unit should own the strategy, detail it and update it as well as oversee, monitor and assess implementation. The unit will report directly to the minister with the majority of its members recruited internally, from the ministry of industry. It will coordinate actions with the other stakeholders identified for each policy to insure smooth implementation and feedback. In due time, it should report to the Egyptian Authority responsible for Energy Planning, when established, that will identify the status of energy efficiency on the national level.

Policies proposed are to be implemented as “packages” to ensure the presence of necessary support and their success. The “packages” can be carried out in parallel, with the priority given to those needing the least prerequisites for implementation.



