

Overview of Egypt's Energy Efficiency Regulations



Industry preference for hydrocarbons over renewable energy resources, heavy subsidization of fossil fuels, and a veritable gas crisis have entrenched Egypt's economy in a consumer culture where energy consumption is significantly higher than international averages (10% to 50% higher in the industrial sector, according to a 2012 renewable energy and energy efficiency report by FreeMe, a project of the European Union). Lack of awareness and conservation incentives enable wasteful consumption in households and industry; even the occurrence of regular blackouts is liable to instigate political unrest sooner than inspiring a sense of urgency to curb excessive energy use.

By Lily Leach and Laura Raus

While the political and economic climate in Egypt makes no easy task of teasing out the exact cause for lack of effective energy efficiency (EE) regulation, subsidies provide a direct link to the country's consumption woes. "The reason to have energy efficiency regulations is to lower energy

intensity in a particular economic sector," explains Oxford University expert Justin Dargin. That subsidies for fossil fuels also discourage "the necessary investments to drive forward reductions in energy intensity" exposes the conflicting interests therein. "[Subsidies and EE regulation] are both

governmental actions, with EE regulations working to drive down the very energy consumption that a subsidized market creates," Dargin adds.

Energy Efficiency Policies and Regulations, 2012 (FreeME, RCREEE)

Type	Description	Status	Year of introduction
Financial and/or technical assistance for voluntary energy audits	Several initiatives offer energy audits either free-of-charge or with partial contribution, including the Greenhouse Gas Reduction project, Industrial Modernization Centre and the Clean Production Centre.	Yes	Since 2000
Tax allowances	Various forms of tax deductions, allowances or rebates related to the purchase of EE equipment..	None	
Custom duties	Reduction and sometimes annulations of custom duty for energy efficiency components (customs duty on importing solar water heaters 2.5% and on importing compact florescent lamps 17%).	Yes	2006
Grants	Limited financial support for EE applications from the Industrial modernization Centre to medium and large industrial entities.	Yes	2010
Labels and standards	Minimum energy performance standards with mandatory labeling schemes have been adopted for refrigerators, freezers, washing machines, air conditioners, CFLs, and electric water heaters.	Yes	Since 2004
EE codes for new buildings	National building codes that include EE considerations issued for residential, commercial and administrative buildings.	Yes However, they are not yet applied.	Since 2007
EE fund	A fund to be financed by the government, donors and banks to give soft loans for bankable EE projects.	Under study	Not defined
Reduction of conventional energy subsidies	Prime minister's decree N. 2010/1953 concerning natural gas prices and decree N.2010/2130 concerning electricity prices.	Tariffs have been gradually increased particularly for energy-intensive industries.	Different years
Complimentary approaches	Incentives to encourage taxis to switch to natural gas, primarily for air pollution reasons. Progressive tax rate for car license renewal based on engine volume to encourage small cars. Vehicle emission limitations including CO2.	Yes	2002

Environment law has set limitations for combustion emissions that have an impact on combustion efficiency. However, energy efficiency has not been addressed directly by environmental law.

Overlapping Regulatory Bodies, Overlapping Mandates

Despite lacking a real legal framework, there is no shortage of energy efficiency agencies in Egypt. However, the lack of a centralized national body responsible for "EE strategic planning and policy making, setting of plans of action—[to] define paths of implementation and follow-up the status of realization compared to original targets—is hindering the build-up of an accumulated vision and experience on the national level," said the FreeME report.

EE Agencies in Egypt and institutional framework (information provided by EgyptERA and FreeME):

- Supreme Energy Council (SEC) established in 1979 and re-established in 2007. The SEC is responsible for overall strategic planning for both the oil and gas sector, and the electricity sector.

- The Electric Utility and Consumer Protection Regulatory Agency (EgyptERA) is responsible for regulatory issues for the electricity sector, established in 2000 under the supervision of Ministry of Energy and Electricity. It is important to note that no such regulatory agency exists for the oil and gas sector.
- The Ministry of Petroleum and the Ministry of Electricity and Energy regulate supply-end functions of the energy sector.
- The New and Renewable Energy Authority (NREA) was established in 1986.
- The Council of Electricity and Energy Researches in the National Academy for Science and Technology, energy conservation branch, established in 1987.
- Egyptian Energy Efficiency Council (EEC), established in 2000.
- The energy efficiency unit in the Supreme Council of Energy was established in 2009.
- The Development Research and Technological Planning Center (DRTPC), and the Energy Research Center at Cairo University.

- Tabbin Institute for Metallurgical Studies (TIMS)
- Organization of Energy Planning (OEP), established in 1983, was dissolved in 2006.
- No funding support agencies exist for EE activities.

Despite EgyptERA's efforts to promote regulatory structure, their "limited scope and ability to act independently" coupled with lack of incentive for end users to "incorporate energy efficient technology," renders the agency as generally ineffective, according to Dargin.

In addition to these vaguely specialized regulatory bodies, Dargin informs that individual ministries are charged with the task of regulating EE in their sector "such as the Ministry of Housing Utilities and Urban Communities... [Who have] issued a unified building law that incorporated many aspects of EE policy in the construction market."

Projects for Energy Efficiency, Past and Present

Last month, the Ministry of Energy and Electricity announced the awareness campaigns would commence this May to encourage Egyptians to mitigate electricity use, stating their plans to ration electric power consumption by

20%, reported Daily News Egypt, though it is unclear how this will be actualized.

The International Finance Corporation (IFC), among other international bodies that aid Egypt in promoting efficient energy use practices, has recently announced its interest in funding projects that diversify energy sources for industry.

The Efficiency Improvement and Greenhouse Gas Reduction project (EEIGGR), designed and implemented through a financial contribution from the World Bank Global Environment Facility and the Egyptian Electricity Holding Company (EEHC), aimed to improve EE market support through industry support, energy standards and labeling, introducing energy codes for new buildings, and establishing an EE center. The project conducted commercial energy audits, engineer training programs, public awareness programs, and encouraging NGOs to implement EE projects.

Some other related projects to promote energy efficiency in Egypt include:

- Energy Conservation and Environment Project "ECEP" (1989-1998)
- Energy Efficiency and Pollution Prevention Project "E2P2" (1999-2003)
- Energy Efficiency Improvement and Greenhouse Gas Reduction "EEIGGR" (1999 -2009)
- Energy and Environment Unit in the Development Research and Technological Planning Center at Cairo University (DRTPC)
- Efforts of the Energy Research Center in Cairo University
- Efforts of Foreign Relation Coordination Unit (FRCU) through its universities linkage projects
- Efforts of Tabbin Institute for Metallurgical Studies

However, according to the FreeME report, these initiatives have largely been scattered among different executing agencies, thus "after more than 25 years of ad-hoc programs and activities, no sustainable impact or true

market transformation can be cited." Despite current initiatives, lack of ministerial coordination, legislative mandates, awareness and market incentive are likely to inhibit effective EE practices.

Recommendations

Dargin believes a multi-pronged approach involving an "increase power and energy tariffs, as that would have a nearly immediate effect in driving down aggregate consumption and spur behavioral changes that would drive investment into energy efficient technology" could help promote EE, noting again that it would be difficult to implement "given the political and economic turbulence" and suggesting that "other EE initiatives could be created." Performance-based, market-based incentives, and information-based programs, are among the measures he suggests. "This would be able to assist the energy crisis in general as it [would] work to drive down aggregate and per capita energy consumption. It would foster a sense of awareness amongst the populace that they play a vital role in ensuring national economic sustainability, while also encouraging businesses and large SoEs [state-owned enterprises] to deploy the necessary investments from both the supply and demand side to utilize energy efficient technology."

Also, due to the distortion arising from the fact that opportunity costs of electricity are based on subsidized prices, "which assumes that natural gas reserves in Egypt are indefinite," Mohammad Bayoumi, UNDP Assistant Resident Representative and Environment and Energy Specialist in UNDP Egypt, believes that "there is a need to re-calculate the real costs of electricity generation and distribution, maybe based on the cheapest alternative to natural gas, and ensure that the real cost be communicated transparently to the public," adding that "the tariff should be revised to ensure that those who can afford it pay full cost while mechanisms to support those who cannot afford it should be developed, as a first step to rationalize consumption

and pave the road for investments in EE followed by renewable energy."

While implementation of EE initiatives and regulations on a global scale has obvious environmental implications, for Egypt, the stakes are higher, and socioeconomic and political consequences for continued institutional stagnation are imminent. As Dargin notes, "The case is clear in a country such as Egypt, development of a sustainable energy policy through a rational EE policy would stabilize the country and work towards stabilizing the region."



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+202 251 72053

ENERGY EFFICIENCY SUCCESS STORIES AND LESSONS FOR EGYPT

Experts continuously insist that Egypt's energy woes would be reduced significantly if the nation became more energy efficient. This could be accomplished mostly by reducing energy subsidies, so they stress, but decades of failures to decrease the subsidies significantly do not give hope that it will happen soon. However, experiences of other countries indicate that besides reducing subsidies, there are several other measures that can boost energy efficiency (EE). This article reviews a few successful EE policies, with particular attention on the lessons that could be learned from other MENA countries.

By Laura Raus

Tunisia: Comprehensive Long-Term Pursuit for Energy Efficiency

According to the Regional Center for Renewable Energy and Energy Efficiency (RCREEE) for Arab countries, Tunisia has the lowest energy intensity among its 13 member states. Already in 2000, Tunisia's energy intensity was lower compared to Egypt's. Recent years have widened the difference to above 40% since Tunisia's energy intensity has fallen, whereas that of Egypt has increased.

Energy Efficiency Agency

Tunisia's success in decreasing energy intensity is mostly attributed to its highly qualified EE agency, the National Agency for Energy Conservation (ANME) established in 1986. Its current responsibilities include conducting and supporting research, proposing legislation, participating in the creation and implementation of national EE programs, and managing the country's EE fund. ANME employs about 135 people.

Thanks to ANME, EE measures have been continuously developed and implemented in Tunisia over decades. In 1993, EE equipment that does not have locally manufactured equivalent was exempted from VAT and its import duty reduced to 10%. There also is no VAT for domestically produced EE equipment.

Voluntary Industry Agreements

Another significant breakthrough was the 2004 law dedicated solely to EE that sets a comprehensive framework for decreasing energy intensity through various measures in all sectors of economy. From that year, Tunisia also has multi-annual national EE programs that set improvement targets.

Tunisia introduced a number of policies in 2004 for improving EE in the industrial sector, including the system of mandatory energy reporting for large energy consumers. "Such reports enable to monitor energy consumption, do benchmarking within each industry and set EE targets for each industry based on the best performers," explains RCREEE's Policy Analyst Nurzat Myrsalieva. "As the next step, funding schemes were introduced to help companies reach the targets." Between 2000 and 2012, industry groups and the government signed 490 bilateral agreements for voluntary reduction of energy consumption.

Also other countries, Australia for example, have achieved success with such measures whereby only the assessment and reporting of energy use, not its reduction, is mandatory for companies. The success is based on the fact that energy auditing makes companies discover options for saving energy and once they know such options, they often act voluntarily to make use of these in order to lower their energy bills, explains IEA.

Energy Efficiency Fund

Since 2005, Tunisia provides financing for EE measures via the National Fund for Energy Savings. Its revenues come from taxes on the first registration of cars as well as on import and manufacturing of air conditioners, from the savings achieved by EE activities, and from private donations.

The fund subsidizes measures such as energy audits, power and heat co-generation and substitution of natural gas. It also assists in meeting the minimum EE specifications for residential and administrative buildings that were set in 2008-09.

Switch to Efficient Lighting

Tunisia's government has more capacity to invest in EE thanks to its fossil fuel subsidies being relatively low. Besides saving money for the state, low fossil fuel subsidies motivate Tunisians to save electricity and fuel. As an additional measure for saving electricity, Tunisia in 2011 banned the sale of incandescent light bulbs with power above or equal to 100 watt and voltage above or equal to 100 volt.

RCREEE highlights Tunisia's efforts to periodically monitor, adjust and tighten EE requirements. Such progress is set to continue. Among new measures, the government plans to set minimum EE performance specifications for hospitals and hotels.

Main differences between EE policies in Tunisia and Egypt

	Tunisia	Egypt
Designated agency for EE	Yes	No
EE law	Yes	No
Mandatory energy audits	Yes for large energy-consuming facilities	No
Regulatory phase-out of inefficient lighting technology	Yes	No
EE fund and subsidies	Yes	No
VAT benefits for EE equipment	Exempted from VAT	No
Electricity price subsidies	Average residential implied subsidy 25% and industrial 16% in 2011	Average residential implied subsidy 84% and industrial 75% in 2011

Source: RCREEE

Jordan: Gradual Removal of Electricity Subsidies

A good example of how to gradually remove energy subsidies can be observed in Jordan, informs RCREEE's Policy Analyst Nurzat Myrsalieva. This country recently adopted an electricity tariff schedule for 2013-17, which foresees that the tariffs will increase up to 15% annually depending on the type of consumers, so some prices will be as much as 75% higher within five years. "This is a good policy because it gives consumers, especially large consumers such as industries, time to adjust to the forthcoming changes, to integrate EE measures into their activities and pursue self-generation of energy from renewable sources," explains Myrsalieva.

Sudan, Palestine: Prepaid Electricity Meters

In Sudan, a successful EE measure is the use of prepaid meters for electricity. "This is similar to prepaid mobile phone services: households pay in advance for the electricity they plan to use," elaborates Myrsalieva. "This makes them careful not to exceed the planned amount because it would mean cut of electricity supply." She adds that customers can of course buy additional credit, but at a higher rate. The process of buying credit has been made very convenient. "For example, a customer can request distribution company to send the code number directly to his mobile number; in this case, money will be deducted straight from the customer's bank account," explains Myrsalieva. A similar system exists in several jurisdictions, including Palestine.

Morocco: Cash Award for Electricity Savings

Morocco has a special tariff called 20/20 for motivating households to reduce electricity consumption. "20/20 tariff incentive awards households that reduce electricity consumption by 20% compared to the same month in the previous year with an additional 20% of the value of the saved consumption," explains Myrsalieva. Accordingly, a 20% reduction of consumption will slash electricity bill by 40%. No wonder that consumers have made use of the tariff and thousands of gigawatts have been saved as a result. However, as Myrsalieva points out, "In general, price-based EE schemes only have significant impact if electricity prices are high enough, which is not the case in Egypt."

Libya: 24-Hour Electricity Indicator on TV

Libya offers a good example of how to raise awareness about EE. "There is an indicator displayed on the coroner of TV screen on the national television showing the current electricity load in the plants for 24 hours. This indicator shows the actual electricity consumption in Libya at the time as well as generation," explains Myrsalieva. "Another tool is a line that appears at the bottom of the TV screen. This line presents key messages and advices to citizens such as turning of the electricity when leaving the house." At times of high load, the indicator changes from green to orange. When consumption ex-

ceeds generation capacity, it turns red to inform that people should reduce their electricity consumption immediately to avoid complete power cuts. "It is difficult to achieve any significant energy savings with such a measure in Libya where electricity prices are even lower than in Egypt, but at least this measure made people discuss the topic," noted Myrsalieva.

Turkey: Energy Managers for Buildings

The EE law adopted by Turkey in 2007 stipulates that industrial plants and large residential units must appoint or contract an energy manager to ensure that efforts to save energy are undertaken, informs IEA. The government, universities, as well as companies organize programs to train and certify energy managers. Turkey also implements many other measures that promote energy conservation such as the annual EE week for increasing public awareness, and overall liberalization of markets that increases competition and hence the motivation of companies to save energy.

Thailand: Funding Efficiency With Petroleum Taxes

Also Thailand has undertaken significant effort to increase EE, notes University of Oxford energy expert Justin Dargin. It includes a fund financed by taxes on petroleum products that offers credit lines to local banks for giving loans to EE projects. To encourage the banks to familiarize themselves with these kinds of projects, the credit lines were initially offered at no interest. Energy savings worth dozens of millions of dollars have been achieved annually thanks to this measure, informs the World Resources Institute. Thailand's EE development plan 2011-30 expects particularly large savings from a switch to more energy efficient air conditioners and states that introduction of air conditioning by solar energy (solar cooling) should be considered.

US: Keeping It Simple With Energy Star Label

Some jurisdictions such as the UK have mandated the public sector to take into account life-cycle costs when choosing which products to purchase, so that energy efficient products would not be in a disadvantaged position compared to cheaper but more wasteful goods, informs the European Council for an Energy Efficient Economy. But for an individual it can be difficult to determine which products have high EE. To overcome this challenge, the US government in 1992 launched the voluntary standards and labeling scheme Energy Star. Products can earn the Energy Star label by meeting the specifications set by the US Environmental Protection Agency. By now the program covers over 60 product categories, even whole buildings can earn Energy Star certification. Appliances with Energy Star label can be easily found in many countries, including Egypt, and some jurisdictions outside the US such as the EU, Japan, and Australia have adopted the scheme officially.

Italy, France, UK: White Certificates' Market

Some European countries like Italy, France and the UK have in recent years introduced White Certificates schemes to boost EE. These programs oblige electricity and gas distribution companies to reduce energy consumption of their customers by a predetermined rate each year by using measures of their own choice, such as building insulation programs and energy efficient lighting. White Certificates are given against energy savings achieved. If a company has not met the target, it can either buy the certificates from those who have over-achieved or must pay a penalty, informs the World Bank. The trading feature ensures that in principle energy savings occur where they are economically most efficient, explains IEA.

Japan: Standards above Best Performers' Level

Japan's Top Runner program sets EE standards for several appliances at higher levels than best-performing products, and obliges manufacturers to meet those standards in 3-10 years, informs IEA. This drives manufacturers to innovate. As a result, fuel efficiency of vehicles has improved by 50% from 1995 to 2010 and EE of refrigerators by 43% from 2005 to 2010, just to bring a few examples.

Conclusion

Tarek Tawfik, Vice President of the Federation of Egyptian Industries, recently said that Egypt could "theoretically avoid" blackouts this summer simply by educating the public on saving energy and fixing inefficiencies—which are caused by low prices—such as needlessly transporting power station fuel oils to Red Sea towns by truck, reports the International Business Times. However, especially given the de-motivating force of low energy prices, Egypt's EE unit at the Council of Ministers Secretariat is far too weak to achieve that, considering that as per RCREEE's 2013 report, it includes one person only. If Egypt really wants to see EE success and make constant summer blackouts and fuel shortages a phenomenon of the past, then based on experiences of other countries, as a first step it needs to set EE higher on its agenda and devote significantly more human resources to it.

