

**Arab Guideline to Improve Electric
Power Efficiency and Rational Use of
Electricity of the End User**

**Energy Efficiency Plan in the Electricity
Sector**

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Introduction

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Introduction

The Energy Department of the League of Arab States prepared the Arab EE Guideline for the energy efficiency and conservation to the end-user in collaboration with the euro-Mediterranean energy market integration project "MED-EMIP" and the Regional Center for Renewable Energy and Energy Efficiency "RCREEE" guided by the Directive 2006/32/EC on energy end-use efficiency and energy services.

The Arab EE Guideline has been adopted in 26th meeting (November 2010) of the Executive Office of the Arab Ministerial Council for electricity. The Executive Office also approved at the same meeting that the Regional Centre for Renewable Energy and Energy Efficiency monitor the national plans in Arab countries and prepare the annual report on results achieved.

RECREE has prepared a template to help the Arab countries in preparing the first national plan for the energy efficiency. This model includes the programs and procedures being implemented or planned, savings achieved by the application of these programs, and the participating entities and its obligations in implementation of the plan so that follow-up the implementation steps and how to achieve the goals.

The Arab countries that adopt this framework identify an objective for the energy efficiency (guiding objective) to be reviewed annually and designate a national entity to be responsible for developing a national plan for energy efficiency every three years to achieve this objective.

The energy efficiency unit of Secretariat for the Council of Ministers has been identified to be the mandated entity for developing the national plan for energy efficiency. The electricity and energy sector prepared an energy efficiency plan for the sector (2012 - 2015). This plan included procedures for electrical energy efficiency to end-user in some sectors (household - public facilities and government agencies – touristic) as follows:

- Using the high efficiency lighting in the household sector (the distribution of 12 million bulbs).
- The second phase of program of energy efficiency standards and labeling for household appliances.
- Creating and activating a financing system in banks to facilitate having solar water heaters in the household sector.
- Energy saving in street lighting.
- Rationalization of energy use in public buildings.
- Energy conservation in drinking water plants and sewage plants.
- Energy conservation in hotels.

The savings expected to be achieved through implementing the mentioned procedures have been identified. These procedures include the participation of some ministries (industry and foreign trade, housing, local development, state for environmental affairs, and tourism).

The indicative target for expected energy savings that will be resulted from

Implementing all these procedures during the period from 2012 to 2025 has been calculated to reach up to 5% of the average rate of consumption of last five years.

The plan also includes some other procedures that will be implemented to improve electrical energy efficiency and energy conservation in the electrical grid and its equipment in addition to reduce loss in the electrical network in some distribution companies and to disseminate using the smart meters in the household sector.

The cabinet approved the plan on 11.07.2012 and then the electricity sector will start implementing this plan and coordinate with the ministries that participate in some actions.

The entry into force of this plan will allow taking advantage of financing, as well as the international technical expertise in the field of energy efficiency.

1- General framework: National Guiding Objectives

1.1 Key Indicators

1.2 National Indicative target for Energy Efficiency

1.3 The Mandated entity for the National Plans

1.1 Key Energy Indicators

No.	Indicator	Unit	2011	2020
1	Electric Energy Density	Gwh/Million L.E	1.51	1.62
2	Total annual electricity generation	GWh	145465	254126
3	The Imported electricity	GWh	----	----
4	The Exported electricity	GWh	----	----
5	The expected electricity demand growth rate	%	6.4	6.1
6	The primary energy consumption at national level	MToe	83	146
7	The share of electricity from primary energy consumption	%	30	----
8	The electricity consumption rate according to sectors			
	Household sector	%	39.9	40
	Industrial sector	%	32.7	32.5
	Others sectors	%	27.6	27.3
9	The Marginal cost of production for kilowatt-hours	\$/kWh	0.055	
10	The Enlightenment rate (the beneficiaries rate of the electric network)	%	99	Approximately 100

2.1 National Indicative target for energy efficiency

The Supreme Council of Energy selected the energy efficiency unit of the cabinet as the national mandated entity for coordinating and implementing the national plan for EE. As well as, a plan of EE has been prepared for the projects that the electricity and energy sector is assigned to be implemented until 2015 whether the new projects or under implementation.

Some of these projects include the cooperation of some ministries (Industry and foreign trade, housing, local development, state for environmental affairs, and tourism). This plan has been sent the EE unit of Cabinet in order to coordinate with the ministries that will participate in implementing the plan projects.

The indicative target for energy savings that will be resulted from implementing the targeted projects within The EE plan of electricity sector, has been calculated to the end-user by 5% of the total energy consumption.

The Indicative target of EE for the end-user

realized savings (GWH)	Savings until 2012	Savings until 2013	Savings until 2014	Savings until 2015
EE Programs				
Program Name	(GWH)			
Using the high efficiency lighting in the household sector (the distribution of 12 million bulbs).	360	1100	2210	3320
Using the high-efficiency household appliances (The second phase of program of energy efficiency standards and labeling for household appliances)	365	782	1220	1663
A mechanism for funding the deployment of solar water heaters in household sector.	0	10	40	67
Energy saving in street lighting.	21.3	225	450	450
Rationalization of energy use in public buildings. (the second phase: improving The efficiency of energy use in public buildings and public utilities)	9	19.8	32.4	46.6
Energy conservation in drinking water plants and sewage plants.	1.34	2.84	4.59	6.59
Energy conservation in hotels (supporting the deployment mechanism using the solar water heaters in hotels in Red Sea and south Sinai governorates EGYSOL)	1	3	8	12.5
Total savings achieved each year	757.64	2142.64	3964.99	5565.69

The consumption average during the last five years: (112162.8 GWH) the expected savings in 2012 (5565.69 GWH)

The Indicative target (The rate of expected savings to be achieved) = 4.96 %

2- Electric Energy Efficiency Procedures in Different Sectors

2.1 First Sector (Household)

2.1.1 Table of Energy Efficiency Procedure

2.1.2 Detailed Information on Procedures

2.2 Second Sector (Public utilities)

2.2.1 Table of Energy Efficiency Procedure

2.2.2 Detailed Information on Procedures

3.2 Third Sector (Tourism)

2.3.1 Table of Energy Efficiency Procedure

2.3.2 Detailed Information on Procedures

2.1 First Sector (Household)

2.1.1 Table of Energy Efficiency Procedure

Procedures		The energy expected to be saved GWH (2012 – 21015)
1	Using the high efficiency lighting in the household sector (the distribution of 12 million bulbs).	3330
2	Using the high-efficiency household appliances (The second phase of program of energy efficiency standards and labeling for household appliances)	663
3	Creating and activating a financing system with a bank or several banks to facilitate having solar water heaters in the household sector	67

2.1.2.1 Using the high efficiency lighting in the household sector

On 24/07/2007, the decision of the Supreme Council of Energy on using the energy saving light bulbs and phasing out the incandescent light bulbs in the house hold, has been made so that The following procedures have been taken in 2010:

- Issuing the energy efficiency standards for high-efficiency lighting systems (energy-saving light bulbs - electric transformers).
- Providing the technical assistance and preparing the feasibility studies and technical for factories in order to encourage the local manufacturing of energy-saving light bulbs.
- There are currently 10 local factories including 3 factories manufactures parts of the bulb (one company manufactures the glass part and 3 companies manufactures the electric circuit of the bulb). The bulb parts are assembled in all these factories.
- Developing local manufacturing requirement when offering a tender for the sale of energy-saving bulbs through electricity distribution companies.
- Conducting EE tests on 20 - 23 watts energy-saving bulbs, and electrical tests include:
 - Capacity, voltage, power factor, harmonics rate, separation and connection tests and the impact of high and low voltage in addition to the photovoltaic test and resistance to heat and ignition tests.
- 10.25 million energy-saving bulbs have been sold through distribution companies as an initiative of the Ministry of Electricity and Energy, provided that the bulb shall be sold at half the price in cash or in installments, giving guarantee period of 18 months. More than one million bulbs are now distributing.
- Through the small grants program funded by the Global Environment Facility (GEF), a funding has been provided for NGOs to organize workshops for more than 50 workshops to promote a culture of use of energy-saving bulbs and to train technicians to install energy-saving bulbs and sell these bulbs.

S.	Procedure Name	Distributing 12 million bulbs
1	The motive for Applying the Procedure	On 24/7/2007, the Supreme Council of Energy has issued a resolution regarding the use of energy-saving bulbs and the gradual disposal of incandescent bulbs in the household sector.
2	Procedure Description	<ul style="list-style-type: none"> ▪ Implementing a program for conserving houses' lighting through the distribution of energy saving bulbs with a capacity of 20-23 W on the household sector participants in half price and with a guarantee that lasts for 18 months. This takes place via sale outlets in electricity distribution companies. ▪ It is targeted to distribute about 12 million energy-saving bulbs on participants through electricity distribution companies.
3	Mandated entity for implementation	Egyptian Electricity Holding Company and its affiliated electricity distribution companies.
4	Concerned Entities	All categories of participants in household sector.
5	Costs of implementing a procedure	About L.E 12 million
6	Total Costs	About L.E. 144 million
7	Cost of Saving	L.E. 0.05 / Kw.h
8	Source of Funding	Electricity distribution companies by 50%.
9	Incentive Financial Mechanisms	<p>Selling the bulbs with half cost.</p> <p>A guarantee on the bulbs for 18 months.</p> <p>The ability of installments on electricity bill.</p>
10	Awareness	Electricity distribution companies are making advertising campaigns regarding the usage of energy-saving bulbs and their effect in reducing lighting consumption, thus; reducing the electricity bill for the participant.
11	Evaluating saving all over the sector	Saving about 3330 GWh over (2012 – 2015)

2.1.2.2. Using high-efficiency household electric devices

2.2.1.2 Using the high efficiency lighting in the household sector

- The usage of household electric devices represents about 70% of total household consumption, which, in turn, represents about 40% of total consumption. This means that household electric devices consume 28% of total consumption all over the country.
- The application of programs, specifications and cards of energy efficiency may lead to save about 10% of total consumption of these devices.
- In order to execute this program, the following procedures, through cooperation with UNDP, have been taken:
 - A field survey has been made for household and commercial sectors to determine the most usage devices that may achieve more saving in energy consumption.
 - The abilities of domestic manufacturing have been evaluated through a field survey for manufacturers and producers of household devices in order to know the production volume, devices' specifications, technical abilities for manufacturing, exporting abilities of each company and the ability to be compatible with energy efficiency specifications.
 - The abilities of saving have been estimated after improving energy consumption efficiency through conducting applied studies, in cooperation with the manufacturers to estimate the expected saving while using the technologies of energy efficiency improvement and the required financial capital costs for each factory to abide by it.
 - The specifications of energy usage efficiency have been fixed via committees from all technically concerned entities; the same goes for the application phase for these specifications.
 - A (simplified) Egyptian card has been designed for energy efficiency. There have been a determination of five levels for energy efficiency which are A,B,C,D,E.
 - A lot of training programs for professionals have been carried out, in addition to the media awareness campaigns to present the importance of specifications, the energy efficiency cards and how to use it by the knowledge of the manufacturer, the producer or the consumer.
 - Three certified reference laboratories have been established according to the standard specifications ISO17025 to procedure the energy usage efficiency for refrigerators, washing machines and air conditioning in NREA in addition to light laboratories for energy-saving bulbs and signing laboratories management agreement with Standardization Authority and NREA usage and improvement. The cost of establishing laboratory tests reached \$420 million.
- The learned lessons and proposals for improving the program and facing hinders to activate a specification program and energy efficiency cards for household electric devices that have ministerial decrees through the following:
 - Amending the ministerial decrees issued regarding the abidance by standard specifications and energy efficiency cards to expressly stipulate on the penalties of non-abidance by what has been mentioned in it.
 - Tightening the internal control on production by the Ministry of Industry & Foreign Trade to confirm the matching of specifications and the existence of energy efficiency cards on the product in addition to the necessity of testing devices in reference laboratories of efficiency to determine its level of efficiency, the sampled percentage and periodic tests.

- Preparing the specifications of energy efficiency for the components of the final production for refrigerators, washing machines and air conditioning – that has an issued energy efficiency specifications- such as engines and compressors in addition to the components of energy saving bulb which are imported to get the benefits of less custom on production requirements.
- Obliging the governmental entities when calling for tenders of purchasing electric devices to abide by purchasing high efficiency electric devices.
- Preparing database of the market current condition and the quantity of annual sales of electric devices that has an issued ministerial decrees to control and evaluate program results.
- Updating and developing the laboratories of energy efficiency tests and increasing their absorptive capacities in order to perform more tests on devices.
- Developing standards for measuring the saving volume expected from the usage (replacing) household devices.
- In order to activate this program, the following ministerial decrees have been issued:
 - The first decree issued by the Minister of Industry and Technical Development was decree No. (266) on 16/2/2002 to oblige producers and importers by production according to the Egyptian Standard Specifications of refrigerators, deep-freezers and air conditioning (window & split types).
 - The second decree issued by the Minister of Industry and Technical Development was decree No. (180) on 30/7/2003 to oblige producers and importers by production according to the Egyptian Standard Specifications of household washing machines of cloths. The same decree stipulated that producers and importers shall be obliged to affix (stick) energy consumption cards in an obvious place on devices, in addition to grant a period of three months to settle conditions and abide by affixing consumption cards on devices.
- The different reduction in electricity consumption for the year 2009/2010 is estimated, as a result of updating energy efficiency specifications as of 2010, by 1641,2 KWh.

S	Title of Procedure	The Second Phase of the specifications and energy efficiency cards program for household electric devices
1	The motive for Applying the Procedure	<ul style="list-style-type: none"> - The grant provided by both Global Environment Facility and the United Nations Development Program to the Egyptian Electricity Holding Company (EEHC) (the energy efficiency improvement project for lighting systems and electric devices to activate the program of specifications and energy efficiency cards of household electric devices and prepare energy efficiency specifications for more electric devices.
2	Procedure Description	<ul style="list-style-type: none"> - Preparing energy efficiency specifications for more electric devices in the light of a field survey and standards of choosing (the more spread devices that may achieve more saving in energy consumption) in cooperation with the Egyptian Organization for Standardization and Quality. - Developing a control mechanism in cooperation with Control Authorities affiliated to the Ministry of Trade & Foreign Trade on one side; on the other side with laboratories of energy efficient affiliated to the Ministry of Electricity to enable inspectors to choose random samples of domestic products, perform energy efficiency tests and confirm the data mentioned in the energy efficiency card. - Preparing a database of electric devices sales in the light of energy efficiency levels to procedure the spread percentage of this devices and the ability to procedure the program effect.
3	Mandated entity for implementation	<ul style="list-style-type: none"> - Egyptian Electricity Holding Company and the project of energy efficiency improvement. - The Egyptian Organization for Standardization and Quality. - The General Organization for Export and Import Control. - The Organization of Industrial Control. - Supply investigations and the Control Authorities affiliated to the Egyptian Organization for Standardization and Quality. - Ministry of Industry & Foreign Trade.
	Entities Participating in Implementation	
4	Concerned Entity	All sectors that use electric devices.
5	Costs of implementing a procedure	\$ 2 million
6	Total Costs	
7	Cost of Saving	
8	Reducing Fund	
9	Source of Funding	<ul style="list-style-type: none"> - An available funding from donor and supporting entities for this

S	Title of Procedure	The Second Phase of the specifications and energy efficiency cards program for household electric devices
		<p>procedures.</p> <ul style="list-style-type: none"> - Ministry of Finance. - Revenue of issuance fees.
10	Financial Incentive Mechanisms	<ul style="list-style-type: none"> - Incentive mechanisms for manufacturers to improve the product of each, and adjusting some of its components to improve the energy consumption efficiency. - Impose an issuance fee for each card which its cost is gradually from EGP 1 to 5 according to the device efficiency, so that the higher fees shall be for less efficiency devices. This is to finance awards for the inspector of controlling markets to confirm the existence of cards and their matching to devices in addition to determining consumers. - Giving awards to sellers distinguished in selling more efficient devices. This can be financed via the fees imposed in issuing cards. - Providing more flexible financing conditions for devices with high efficiency such as increasing the time for installments, decreasing the interest rate or granting a discount (Rebate) for more efficient devices. This can be financed via the fees imposed in issuing cards.
11	Awareness	<ul style="list-style-type: none"> - Coordination with domestic manufacturers to prepare and distribute advertisement bulletins to identify the importance of purchasing high efficiency electric devices. - Launching a website to identify the manufacturers and the energy efficiency of manufactured devices. - Training the employees working in electric devices sale centers to inform them of programs of energy efficiency specifications and cards, provided that they play their roles in educating consumers. - Holding forums and workshops, training technicians, preparing and distributing bulletins, training electric devices sellers.
12	Evaluating saving all over the sector	Saving about 663 GWh over the period (2012-2015).

3.2.1.2 Establishing and activating funding system with any bank or many banks to facilitate obtaining the solar heaters in household sector:

S.	Title of Procedure	Establishing and activating funding system in a bank or many banks to facilitate obtaining solar heaters
1	The motive for Applying the Procedure	<ul style="list-style-type: none"> – Supreme Council of Energy resolution No. 9/11/05/12 upon Establishment of funding system with a bank or many banks to facilitate possessing solar heaters. – Increasing the national income by the following: <ul style="list-style-type: none"> ▪ Providing the conventional fuel consumed in heating water process at household sector, to be used in development projects or to be exported. ▪ creating opportunities to export the Egyptian product of solar heaters to Arab World and Africa. – Diversification of energy sources and investment of natural distinguishing actors (powerful sun ray) in Egypt. – Creating new industries and providing a lot of job opportunities.
2	Procedure Description	<ul style="list-style-type: none"> – The aforementioned funding system aims at facilitating the possession of solar water heaters in household sector, according to the following: <ul style="list-style-type: none"> ▪ Installing 35-thousand solar heaters (appendix 1) during 2013-2015 in the residential compounds of new cities, due the easiness of integrating solar heaters as basic elements in the building. ▪ Substitution of five-thousand solar heaters instead of traditional electrical heaters which are being used recently in the buildings during 2013-2015, according to the availability of required area to install them on the building roofs. – The funding system which are proposed to facilitate possession of solar heaters includes the following: <ul style="list-style-type: none"> ▪ Contracting with citizens who want to possess the solar heaters in return for payment of 10% as advance payment of the solar heater value, and to stagger the residual value on monthly basis for 5 years. ▪ Making agreement with a national bank to facilitate soft loans for citizens, which cover 70% of the total solar heater value. ▪ Covering the value of the 20% residual value – of the solar heater solar value – through the national funding institutes, such as Renewable Energy Support Fund or regional and international funding institutes. ▪ Studying the ability to cover bank interest of the aforementioned loans is possible through regional and international funding institutions (grants). – Contracting with the solar heaters' importers which are authorized in the project to provide the solar heaters (with high quality) of 150 liter/day in coordination with the selected national bank to fund the project. – The importers of the authorized solar heaters will be selected via public tender according to the following specifications:- <ul style="list-style-type: none"> ▪ Valid certificate for the solar heaters in accordance with the standard technical specifications. ▪ Including installation and maintenance in the contract along the staggering period (5 years)
3	Mandated entity for implementation	<ul style="list-style-type: none"> – Energy Efficiency Unit – Secretary General for Cabinet of Ministers .
4	Concerned Entities	<ul style="list-style-type: none"> – Ministry of Electricity and Energy, represented in New and Renewable Energy Authority and electricity distribution companies

		<ul style="list-style-type: none"> – National banks (National Bank of Egypt – Banque Misr). – National, Regional and international institutions. – Ministry of Finance. – New cities (New Cairo/ 6 October City/ Shorouk/ urban extensions of cities and governorates). – Residential units standing according to the availability of the required area to install therein.
5	Costs of implementing a procedure	About LE. 140 million (appendix 1)
6	Total Costs	About LE. 145.6 million (appendix 1)
7	Source of Funding	<ul style="list-style-type: none"> – National banks. – Regional and international funding institutions. – State Public budget. – Renewable Energy Support Fund (by collecting dues for the electrical heaters made locally of internationally). – The expected value of procurement to be fulfilled as a result of substitution of solar heaters instead of electrical heaters. – Grants from funding institutions.
8	Incentive Financial Mechanisms	<ul style="list-style-type: none"> – The motivating financial mechanisms that applied currently: <ul style="list-style-type: none"> ▪ Customs' exemption of the equipments and components of renewable energy systems – Proposed financial mechanisms: <ul style="list-style-type: none"> ▪ Providing facilitated funding systems to the users of solar heaters and providing the government support to the manufacturers. ▪ Giving the priority of having social fund support to the projects of renewable Energy usage development. ▪ Deducting the investment cost through 5 years from the income tax of the solar heater users. ▪ Enacting the necessary laws to use solar energy in heating water in residential compounds in new cities.
9	Awareness	<ul style="list-style-type: none"> – Expanding the establishment of outlets to offer and sell solar heaters in markets and exhibits such as the other types of traditional water heaters. – Organizing advertising campaigns in the visual and printed mass media to indentify the citizens with mentioned funding system and the expected features of using solar heater and procurement in electricity consumption. – Giving control to the civil society institutions to transform and settlement of technology of solar energy usage to heat water
10	Evaluating saving all over the sector	<ul style="list-style-type: none"> – The annual procurement is about 67 GW/H (2012-2015)

2-2 Second Sector (Public Utilities and Government Agency)

2-2-1 Energy Efficiency Procedures' Schedule.

Procedures		Energy expected to be procured GW/H (2012-2015)
Public utilities and government agencies	Rationalization of energy in public lighting	450
	Rationalization of energy in government buildings (second phase: improving the efficiency of using energy in government buildings and public utilities)	46.6
	Rationalization of energy in potable water and waste water plants	6.56

1-2-2-2 Energy Rationalization in public Lighting

Procedure Name	Energy Rationalization in public Lighting
The motive for Applying the Procedure	<ul style="list-style-type: none"> – Energy Supreme Council of Energy resolution as at 11/3/2009, which includes establishing a unit in the Secretary General of the Cabinet of Ministers with a number of individuals for collection, revision and coordination in connection with the different programs to rationalize energy. – Ministries of Finance, Electricity and Trade and Industry shall conduct preparing number of programs in field of improving energy efficiency – with regard to starting with government buildings – include the following: <ul style="list-style-type: none"> ▪ Street lighting rationalization program. ▪ Energy rationalization program in public facilities. ▪ Energy rationalization program in public utilities ▪ Energy rationalization program in households.
Procedure Description	<p>Installing about one million high quality lamps to lighting streets, the following has been executed:</p> <ul style="list-style-type: none"> – Launching a tender by some local authorities to buy energy efficiency equipments in public lighting through its financial allotments. – Substituting high power street lamps (such as Sodium lamps 400 watts) or low efficiency (mercury lamps and Incandescent bulbs) with other lamps which are high efficiency and with appropriate power (such as energy saving lamps 85, 120 watts or sodium lamps 100, 150 watts) which may produce the standard levels of lighting and their regularity in streets according to the kind of street as applicable worldwide. – Launching tenders to import high efficiency lamps to be installed in streets all over the country.
Mandated entity for implementation	<ul style="list-style-type: none"> – The Egyptian Electricity Holding Company and electric distribution Companies – Local authorities in governorates.
Concerned Entities	<ul style="list-style-type: none"> – Ministry of Finance (Funding) – Ministry of Electricity and Energy (Technical support) – Ministry of Local Development (execution)
Costs of implementing a procedure	<ul style="list-style-type: none"> – Le 260 million
Total Costs	<ul style="list-style-type: none"> – Le 260 million
Cost of Saving	<ul style="list-style-type: none"> – Le 0.09 /kilowatt. H
Source of Funding	<ul style="list-style-type: none"> – Ministry of Finance
Incentive Financial Mechanisms	<ul style="list-style-type: none"> – Decreasing electricity bill for public lighting which incurred by Ministry of Finance
Awareness	<ul style="list-style-type: none"> – Informing all local authorities in all governorates with all required procedures when making substitution and renewing of lighting systems and best designing of the new streets besides the specifications of high efficiency lighting equipments in addition to holding courses for the staff about how to deal with high efficiency equipments, installation is included.
Evaluating saving all over the sector	<ul style="list-style-type: none"> – Procuring about 450 GW/H.

2-2-2-2 Energy Rationalization in Government Buildings

- The project aims at rationalizing electricity consumption whether for lighting or powering equipments and devices in government buildings. For this sake, this equipments has been targeted to limit the amount of wasted electric energy and increasing the efficiency of use.
- Procedures of rationalizing electric energy consumption has been executed in 6310 government buildings, the procedures include substituting the lighting system with another power saving lighting systems and installing condensers to improve the power factor.
- Power efficiency improving project, in cooperation with some government agencies, has executed rationalization projects to improve energy efficiency in their buildings (Ministry of Irrigation Building), which fulfilled total decrease in the value of electricity bill of 17% as a result of installing 1020 new torches.
- Electric distribution companies executed projects of power energy improvement in building of the sector and the buildings located in geographical range of the distribution companies.
- A study in rationalization of energy consumption has been prepared in the government buildings and public utilities.
- Energy efficiency codes have been prepared in the government buildings and the ministerial decree to enforce it has been issued.
- Staff of administrative body of the state have got training about rationalization procedures of energy consumption in government buildings and determining the duties of energy officer to be recruited in the government buildings.
- Determining the officer of energy efficiency in charge in each government building to follow up the procedures of rationalization of energy in government buildings.

S.	Procedure Name	Second phase: improving energy usage efficiency in governmental buildings and public facilities via improving lighting systems and power factor
1	The motive for Applying the Procedure	<ul style="list-style-type: none"> - The decision of the Supreme Council of Energy No. 1/09/03/11 issued on 11/3/2009, and the directions of Prof. Minister to activate the procedures of energy conservation in buildings and public facilities and whatever is equal to them, which contribute in lessen loads in peak times. - The decision of the Board of Governors in the session thereof No. (2) on 29/2/2012 concerning the usage of energy-saving bulbs by Mrs. Ministers and Governors in all public buildings, all government departments and coordination with Prof. Minister of Electricity.
2	Procedure Description	<ul style="list-style-type: none"> ▪ Paying attention to increase the awareness of all energy power consumers in governmental buildings and sticking labels that motivates conserving the consumption of electric power in the important location in each building. ▪ Training the workers in the Administrative Body of the State on the procedures of conserving energy efficiency consumption of the governmental building. ▪ Recommending the determination of the responsible for EE in each governmental building to supervise the procedures of conserving energy consumption in governmental buildings. ▪ Determining opportunities and procedures of conserving electric power consumption (high efficiency lighting system- improving the efficiency performance of air conditioning devices – managing loads – improving power factor....) and studying its technical and economic feasibility. ▪ The project of enhancing the efficiency of lighting systems and electric household devices will execute a <u>guiding project</u> in a governmental building affiliated to the Ministry of Communication to be a model that shall be applied in all governmental buildings via a mechanism that will be studied so that each governmental department shall take the necessary

		<p>procedures to conserve energy consumption of these buildings.</p> <ul style="list-style-type: none"> ▪ Measuring energy consumption of the targeted buildings before and after application.
3	Mandated entity for implementation	Electricity distribution companies to execute projects of enhancing EE in the sector's affiliated buildings.
4	Concerned Entities	Governmental buildings and public facilities.
5	Costs of implementing a procedure	EGP 12.5 Million
6	Total Costs	-----
7	Cost of Saving	23.54 million KWh
8	Reducing Fund	EGP 1.8 million / 23.54 million KWh
9	Source of Funding	
10	Financial Incentive Mechanisms	-----
11	Awareness	- Awareness and training programs for EE officials in governmental buildings similar to the training held by the project of enhancing EE and reducing the emissions of global warming gases to 220 trainee from all of governmental departments.
12	Evaluating saving all over the sector	Saving about 46.6 GWh over (2012 – 2015)

2.2.2.3 Drinking Water and Sewage Pumping Stations

Procedure Name	Second phase: improving energy usage efficiency in governmental buildings and public facilities via improving lighting systems and power factor
<p>The motive for Applying the Procedure</p>	<ul style="list-style-type: none"> - The decision of the Supreme Council of Energy on 11/3/2009, which included establishing a unit in the Cabinet Secretariat that consists of individuals to collect, review and coordinate regarding the different programs of energy conservation. - The Ministries of Finance, Electricity, Commerce and Industry shall develop a number of programs in the field of enhancing EE – taking into consideration to start with governmental – including the following: <ul style="list-style-type: none"> o The Program of conserving streets lighting. o The program of conserving energy in public buildings. o The program of conserving energy in public facilities. o The program of conserving energy in houses. - The Energy consumption in public facilities (including water drinking stations and sewage pumping stations) has reached about 5.6 billion KWh in 2009/2010, representing about 4.7% of total energy consumption all over the state. Many of water drinking stations and sewage pumping stations is characterized of low power factor.
<p>Procedure Description</p>	<ul style="list-style-type: none"> - Limiting and determining water drinking stations and sewage pumping stations that has a power factor lower than 0.9, in addition to arrange stations with low power factor according to energy consumption and power factor. - Starting the execution of enhancing power factor in stations with higher consumption and lower power factor, with a contracting capacity more than 500 KW. - Studying the ability of substituting low efficiency pumps and motors which its expected life has ended with others that are high efficient. - The EEHC, through affiliated electric distribution companies according to its geographic range, shall provide the technical experience necessary

	<p>in the field of enhancing power factor. This may include installation and maintenance works. After the execution is completed, supervising and evaluation shall be carried out to make sure that there is no power factor penalty after executing the program; this is carried out by following up the consumption of electric bills in targeted station, in cooperation with the Holding Company for Water and Waste Water. In addition to that, the officials of water drinking and sewage pump stations shall be educated by the technical and economic benefits of using high efficiency pumps and turbines.</p>
Mandated entity for implementation	EEHC and the affiliated companies thereof.
Concerned Entities	<ul style="list-style-type: none"> - The Holding Company for Water and Waste Water and its regional companies. - EEHC and the affiliated companies thereof.
Costs of implementing a procedure	The cost of increasing the power factor for 350 station is about EGP 20 million (installing about 100).
Source of Funding	Regional companies affiliated to the Holding Company for Water and Waste Water according to its affiliated water stations.
Financial Incentive Mechanisms	Facilitating the projects of enhancing EE of the holding companies to overcome the financial; problems and paying them in installments.
Awareness	<ul style="list-style-type: none"> - Electric distribution companies shall hold forums, in which it presents the methods of conserving energy in water drinking and sewage pump stations and the proposed procedures in the presence of the representatives of regional companies of drinking water and sewage pumps.
Evaluating saving all over the sector	Saving about 6.56 GWh over (2012 – 2015)

2.3 Third Sector (Tourism)

2.3.1 Table of EE Procedures

Procedures	Expected Saved Energy GWh (2012-2015)
Conserving energy consumption in hotels (supporting the mechanism of spreading the usage of solar heaters in hotel facilities in both Red Sea and South Sinai Governorates EGYSOL)	12.5

1.2.3.2 Conserving energy consumption in hotels

- In the framework of activating the procedures of energy conservation on the hotel and tourist villages level, the distribution companies have been divided according to the maximum load in hotels and tourist villages that have less and more than 500 KW as follows:

- Companies of South Delta & Middle Egypt; the maximum load of hotels and tourist villages is less than 500 KW.
- The rest of electric distribution companies (North Cairo, South Cairo, Alexandria, Canal, North Delta, Albuhaiera, and Upper Egypt), the total number of hotels and tourist villages which its maximum has exceeded more than 500 KW is 327 hotel and village with a total of 640M.W.
- The companies of North Cairo, Canal and Upper Egypt, it is found that the hotel's administration that is located within the companies range is applying conservation on its own way.
- The companies of South Cairo, Alexandria, North Delta and Albuhaiera are coordinating with companies of energy services.
- The opportunities of conserving energy in hotels and tourist villages which its maximum load exceeded 500 KW has been determined on using energy conservation card, replacing normal bulbs with other ones of energy-saving type, replacing magnetic brakes with electronic ones, air-conditioning systems, and enhancing power factor. The amount of energy saving reached 14.4 million KWh annually.
- Cooperation among energy services companies and distribution companies to execute projects of conserving and enhancing EE in hotels and tourist villages by replacing lighting systems with another saving ones.
- There was a passing on hotels and tourist villages administrations and obliging them with a schedule to change their lighting systems while observing them and measuring their maximum loads.
- There was a saving of about EGP 1.1 million as a result of saving 14.4 million KWh.
- It is expected to save 8.2 million KWh over the years 12-13.
- An EGP / TO 0.7 has been saved.
- The procedures of conserving via hotels and tourist villages administration have been funded.

1.2.3.2 Supporting a mechanism of spreading the usage of solar heaters in hotel facilities in both Red Sea and South Sinai governorates EGYSOL

S.	Procedure Name	Supporting a mechanism of spreading the usage of solar heaters in hotel facilities in both Red Sea and South Sinai governorates EGYSOL
1	The motive for Applying the Procedure	<ul style="list-style-type: none"> - In the framework of the memorandum of understanding on mutual cooperation signed among NREA, IMELS and UNEP, with the participation of the Tourism Development Authority, to circulate the usage of water solar heaters in hotel facilities in both Red Sea and South Sinai Governorates. - It was planned to install about 6000 m² of solar collectors.
2	Procedure Description	<ul style="list-style-type: none"> - Through that mechanism, a financial subsidy is provided to each hotel by 25% of the total cost of solar system, in addition to a partial subsidy to the maintenance costs lasts for 4 years. - Technical evaluation and delivery of solar heater systems of water for 12 hotels with a gross area of 1360 m² of solar collectors.
3	Mandated entity for implementation	Ministry of Electricity & Energy (NREA)
4	Concerned Entities	Tourist facilities in both Red Sea and South Sinai Governorates.
5	Costs of implementing a procedure	\$ 500 thousand
6	Total Costs	\$ 2 million
7	Cost of Saving	An energy saving of 4.5 GW annually
8	Reducing Fund	-----
9	Source of Funding	Italian Government – Domestic Fund
10	Financial Incentive Mechanisms	<ul style="list-style-type: none"> - Providing a subsidy of 25% of capital cost. - Contributing in the cost of maintenance for the first four years. \$4 for each meter square for the first two years – then \$2 for the following two years.

11	Awareness	- Organizing programs for building technical cadre capacities that operates in the field of water solar heating regarding the installation, operation and maintenance of solar heaters.
12	Evaluating saving all over the sector	Saving about 12.5 GWh over (2012 – 2015)

3. Complementary energy efficiency procedures

3.1 Energy efficiency procedures in the public sector: the leading role

3.1.1 Table of energy efficiency procedures in the public sector.

3.1.2 Detailed information relating to the procedures.

3.2 Responsibilities of electric energy distribution companies

3.2.1 Table energy efficiency procedures taken by the distribution companies

3. 2.2 Detailed information on procedures

3.3 Procedures of Electricity Sector

3. 3.1 Table of energy efficiency procedures in the electricity sector

3. 3.2 Detailed information on procedures

3.1 Energy efficiency procedures in the public sector: the leading role

3.1.1 Table of energy efficiency procedures in the public sector.

S.	Procedure	Expected to be provided during 2012-2015
1	Winds station with a capacity of 120 MW in Gulf of Suez	115 thousand TOE
2	Project of establishing winds station (private sector) with a capacity of 120 MW in Gulf of Suez	115 thousand TOE
3	Establishing wind station with a capacity of 200 MW in Oil Mountain	191 thousand TOE
4	Establishing wind station with a capacity of 220 MW in Oil Mountain	210 thousand TOE
5	Establishing solar plant for electricity generation with a capacity of 100 MW in Kom Ombo	50 thousand TOE
6	Setting up a project for photoelectric cells with a capacity of 20 MW in Kom Ombo	17 thousand TOE
7	Setting up a project for photoelectric cells with a capacity of 20 MW in Hurghada	16 thousand TOE
8	North Giza Station (1,2,3) Combined Cycle	1093.2 thousand TOE
9	Banha Station Combined Cycle	364.4 thousand TOE
10	Dirout Station Combined Cycle	1093.2 thousand TOE
11	Development and updating project of High Dam Power Station and Aswan (2)	270.4 thousand TOE
12	Raising efficiency and environmental improvement in thermal generating stations In Ataka – Walidia – Damanhour Generating Stations	261.6 thousand TOE

S.	Procedure Name	Required Information
1	The motive for Applying the Procedure	decision of the Supreme Council of Energy No. 8/2/8/1 - Plan of the Ministry of Electricity to renewable energies and strategy aimed at increasing the proportion of energy generated from renewable energies to 20% in 2020, including 12% of wind power and 8% from hydropower.
2	Procedure Description	Establishing wind station with a capacity of 120 MW in Oil Mountain area in cooperation with Government of Spain.
3	Mandated entityfor implementation	NREA – Ministry of Electricity & Energy
4	Concerned entities	Egyptian Company for Electricity Transmission
5	Source of Funding	Local Finance – Government of Spain
6	Incentive Financial mechanisms	<ul style="list-style-type: none"> - Granting the land to the investor for usufruct. - Set a goal to increase the local component of the equipment and wind turbine stations. - Exemption from sales tax and customs. - Provide facilities include a commitment to purchase generated power (20 - 25 years) and providing network connect services with preferential prices.
7	Evaluating saving all over the sector	Saving energy by 115 thousand TOE annually / avoiding emission of CO2 245 thousand ton annually

3.1.2.2 Project of establishing a wind plant (private sector) capacity of 120 mw. in the Gulf of Suez

S.	Procedure Name	Project of establishing a wind plant (private sector) capacity of 120 m. in the Gulf of Suez
1	The motive for applying the procedure	<ul style="list-style-type: none"> ▪ Decision of the Supreme Council of Energy No. 1/9/70/12 for approving the strategy of the private sector alternatives as a first phase within the dual agreements. ▪ Completing the procedures of implementation of the Project of a wind plant by Italgen company with a capacity of 120 MW in Oil Mountain area.
2	Procedure Description	Establishing a wind plant with a capacity of 120 MW in corporation with Italgen company in Oil Mountain area
3	Mandated entity for implementation	Ministry of Electricity and Energy - renewable energy authority
4	Concerned Entities	Egyptian Company for Electricity Transmission
5	Source of funding	Local funding-Government of Spain
6	Financial Incentive Mechanisms	<ul style="list-style-type: none"> - Giving the land to the investor in exchange for the usufruct. - Determining a goal to increase the local stockpile of the equipment and turbines of wind plant - Exemption from sales tax and customs - Providing facilitation containing purchasing the generated energy (20-25 years) and provision of services of connection to the net in preferential prices
7	Evaluating saving all over the sector	Saving energy by 115 thousand TOE annually / avoiding emission of CO2 245 thousand ton annually

3.1.2.3 A wind plant with a capacity of 200 MW in Oil Mountain area

S.	Procedure Name	Required Information
1	The motive for applying the procedure	Decision of the Supreme Council of Energy No. 1/8/2/8 – the plan of the Ministry of electricity for strategy of the renewable energy aiming to increasing the percentage of the generated energy to 20 % in the year of 2020; 12 % of it from the wind energy and 8% from the water energy
2	Procedure Description	Establishing a wind plant with a capacity of 200 MW in Oil Mountain area in corporation with KFW and European Investment Bank and the European Union
3	Mandated entity for implementation	The renewable energy authority REA - ministry of electricity and energy
4	Concerned Entities	Egyptian Company for Electricity Transmission
5	Source of funding	Local funding – KFW- European Investment Bank – European Union
6	Financial Incentive Mechanisms	<ul style="list-style-type: none"> - Granting the land to the investor for usufruct. - Set a goal to increase the local component of the equipment and wind turbine stations. - Exemption from sales tax and customs. - Providing facilities include a commitment to purchase generated power (20 - 25 years) and providing network connect services with preferential prices.
7	Evaluating saving all over the sector	Saving energy by 119 thousand TOE annually / avoiding emission of CO2 400 thousand ton annually

3.1.2.4 A project of establishing a wind plant (private sector) capacity of 120 mw. In Oil Mountain

S.	Procedure Name	Required Information
1	The motive for applying the procedure	Decision of the Supreme Council of Energy no.1/8/2/8 – the plan of the Ministry of electricity for strategy of the renewable energy aiming to increasing the percentage of the generated energy to 20 % in the year of 2020; 12 % of it from the wind energy and 8% from the water energy
2	Procedure Description	Establishing a wind plant with a capacity of 220 MW in Oil Mountain area in corporation with Government of Japan
3	Mandated entity for implementation	The renewable energy authority REA - ministry of electricity and energy
4	Concerned Entities	Egyptian Company for Electricity Transmission
5	Source of funding	Local funding – government of Japan
6	Financial Incentive Mechanisms	<ul style="list-style-type: none"> - Granting the land to the investor for usufruct. - Set a goal to increase the local component of the equipment and wind turbine stations. - Exemption from sales tax and customs. - Providing facilities include a commitment to purchase generated power (20 - 25 years) and providing network connect services with preferential prices.
7	Evaluating saving all over the sector	Saving energy by 210 thousand TOE annually / avoiding emission of CO2 450 thousand ton annually

3.1.2.5 Establishing solar plant for electricity generation with a capacity of 100 mw in Kom Ombo

S.	Procedure Name	Required Information
1	The motive for applying the procedure	Decision of the Supreme Council of Energy No. 1/8/2/8 – the plan of the Ministry of electricity for strategy of the renewable energy aiming to increasing the percentage of the generated energy to 20 % in the year of 2020; 12 % of it from the wind energy and 8% from the water energy
2	Procedure Description	establishing solar plant for electricity generation with a capacity of 100 mw. In Kom Ombo
3	Mandated entity for implementation	The renewable energy authority REA - ministry of electricity and energy
4	Concerned entities	Egyptian Company for Electricity Transmission
5	Source of funding	Local funding – African Development Bank - KFW
6	Financial Incentive Mechanisms	<ul style="list-style-type: none"> - Granting the land to the investor for usufruct. - Set a goal to increase the local component of the equipment and wind turbine stations. - Exemption from sales tax and customs. - Providing facilities include a commitment to purchase generated power (20 - 25 years) and providing network connect services with preferential prices.
7	Evaluating saving all over the sector	Saving energy by 50000 TOE annually
8	Reducing Fund	
9	Source of funding	
10	Financial Incentive Mechanisms	
11	Awareness	

3.1.2.6 Establishing a project of PV cells with a total capacity 20 megawatts in Kom Ombo

S.	Procedure Name	Required Information
1	The motive for applying the procedure	Decision of the Supreme Council of Energy no.1/8/2/8 – the plan of the Ministry of electricity for strategy of the renewable energy aiming to increasing the percentage of the generated energy to 20 % in the year of 2020; 12 % of it from the wind energy and 8% from the water energy
2	Procedure Description	Establishing a project of PV cells with a total capacity 20 megawatts in Kom Ombo
3	Mandated entity for implementation	The renewable energy authority REA - ministry of electricity and energy
4	Concerned entities	Egyptian Company for Electricity Transmission
5	Source of funding	
6	Financial Incentive Mechanisms	
7	Evaluating saving all over the sector	Saving energy by 210 thousand TOE annually / avoiding emission of CO2 450 thousand ton annually
8	Reducing Fund	
9	Source of funding	Local funding - African Development Bank - KFW
10	Financial Incentive Mechanisms	<ul style="list-style-type: none"> - Granting the land to the investor for usufruct. - Set a goal to increase the local component of the equipment and wind turbine stations. - Exemption from sales tax and customs. - Providing facilities include a commitment to purchase generated power (20 - 25 years) and providing network connect services with preferential prices.
11	Awareness	

3.1.2.7 establishing a project of PV cells with a total capacity 20 megawatts in Hurghada

S.	Procedure Name	Required Information
1	The motive for applying the procedure	Decision of the Supreme Council of Energy no.1/8/2/8 – the plan of the Ministry of electricity for strategy of the renewable energy aiming to increasing the percentage of the generated energy to 20 % in the year of 2020; 12 % of it from the wind energy and 8% from the water energy
2	Procedure Description	establishing a project of PV cells with a total capacity 20 megawatts in Hurghada
3	Mandated entity for implementation	The renewable energy authority REA - ministry of electricity and energy
4	Concerned entities	Egyptian Company for Electricity Transmission
5	Source of funding	
6	Financial Incentive Mechanisms	
7	Evaluating saving all over the sector	Saving energy of 16 thousands TOE annually/ avoid the emission of CO2 39 thousand tons per year tons annually
8	Reducing Fund	
9	Source of funding	Local funding - African Development Bank - KFW
10	Financial Incentive Mechanisms	<ul style="list-style-type: none"> - Granting the land to the investor for usufruct. - Set a goal to increase the local component of the equipment and wind turbine stations. - Exemption from sales tax and customs. - Providing facilities include a commitment to purchase generated power (20 - 25 years) and providing network connect services with preferential prices.
11	Awareness	

3.1.2.8 North Giza Station (1,2,3) Combined Cycle with a capacity of 2250 M.W

S.	Procedure Name	Required information
1	North Giza Station (1,2) Combined Cycle with a capacity of 2250 M.W	The generation plan (2012-2017) will include Al Kuraymat (1,2,3) combined cycle that generates third of electric power without using fuel. It uses Gas Turbine Exhaust which lead to save the energy used in generating electricity , improve the economics of generating electric power and reduce the environmental emissions.
2	Procedure Description	Establishing a generation plant at north Giza (1,2,3) combined cycle.
3	Entities responsible for implementation	Under the supervision of Upper Egypt Electricity Production Company (UEEPC).
4	Concerned Entities	Egyptian Electricity Transmission Company (EETC).
5	Costs of implementing a procedure	
6	Total Costs	The project investment costs are EGP 6983 million, EGP 1890 million of which are domestic component + \$ 863 million that are foreign components.
7	Cost of Saving	
8	Reducing Fund	
9	Source of Funding	World Bank – European Investment Bank – OFID
10	Financial Incentive Mechanisms	
11	Awareness	-----
12	Evaluating saving all over the sector	Saving about 1093.2 TOE annually.

3.1.2.9 Banha Station Combined Cycle with a capacity of 750 M.W.

S.	Procedure Name	Required information
1	Banha Station Combined Cycle with a capacity of 750 M.W	The generation plan (2012-2017) will include Banha Station Combined Cycle that generates third of electric power without using fuel. It uses Gas Turbine Exhaust which lead to save the energy used in generating electricity , improve the economics of generating electric power and reduce the environmental emissions.
2	Procedure Description	Establishing Banha Station Combined Cycle.
3	Entities responsible for implementation	Under the supervision of Middle Delta Electricity Production Company (MDEPC).
4	Concerned Entities	Egyptian Electricity Transmission Company (EETC).
5	Costs of implementing a procedure	
6	Total Costs	The project investment costs, after contracting over 65% of the project's operations, are EGP 4166 million, EGP 1006 million of which are domestic component + \$ 536 million that are foreign components.
7	Cost of Saving	
8	Reducing Fund	
9	Source of Funding	Arab Fund for Economic & Social Development - Kuwait Fund For Arab Economic Development – Saudi Fund for Development – OFID – Islamic Development Bank (IDB) – Abu Dhabi Fund for Development
10	Financial Incentive Mechanisms	
11	Awareness	-----
12	Evaluating saving all over the sector	Saving about 364.4 TOE annually.

1.2.10 Dirout Station Combined Cycle with a capacity of 2250 M.W.

S.	Procedure Name	Required information
1	Dirout Station Combined Cycle with a capacity of 2250 M.W.	The generation plan (2012-2017) will include Dirout Station Combined Cycle that generates third of electric power without using fuel. It uses Gas Turbine Exhaust which lead to save the energy used in generating electricity , improve the economics of generating electric power and reduce the environmental emissions.
2	Procedure Description	Establishing Dirout Station Combined Cycle.
3	Entities responsible for implementation	Under the supervision of Middle Delta Electricity Production Company (MDEPC).
4	Concerned Entities	Egyptian Electricity Transmission Company (EETC).
5	Costs of implementing a procedure	
6	Total Costs	
7	Cost of Saving	
8	Reducing Fund	
9	Source of Funding	Arab Fund for Economic & Social Development - Kuwait Fund For Arab Economic Development – Saudi Fund for Development – OFID – Islamic Development Bank (IDB) – Abu Dhabi Fund for Development.
10	Financial Incentive Mechanisms	
11	Awareness	-----
12	Evaluating saving all over the sector	Saving about 1093.2 thousand TOE annually.

3.1.2.11 Development and updating project of High Dam Power Station and Aswan (2)

S.	Procedure Name	Required information
1	The motive for Applying the Procedure	A loan with subsidized interest by the German Government
2	Procedure Description	<p>Developing and updating turbines speed regulators, voltage regulator, excitation system for main generators, turbines speed regulators, measuring systems, controlling DCS system and save guarding in Aswan Generation Station through the following:</p> <ul style="list-style-type: none"> ▪ Updating the operating systems in both stations, improving equipment performance and increasing operation efficiency of both stations. ▪ Increasing availability for both stations by decreasing the layoffs for repairing breakdowns. ▪ Increasing reliability of both stations by updating devices instead of old devices that its spare parts cannot be provided. ▪ Increasing the expected life of both stations. <p>this has been carried out by taking the following procedures:</p> <ul style="list-style-type: none"> ▪ A feasibility and technical study of the project. ▪ Preparing technical specifications and conditions to call for a world tender to execute the project. ▪ Contracting with the best bidder for execution. ▪ Executing in the location.
3	Mandated entity for implementation	<ul style="list-style-type: none"> ▪ Water Station Company for Generating Electricity.
4	Concerned Entities	<ul style="list-style-type: none"> ▪ (EEHC) – Ministry of Electricity & Energy.
5	Costs of implementing a procedure	
6	Total Costs	<ul style="list-style-type: none"> ▪ EUR 20 million + EGP 32 million.
7	Cost of Saving	<ul style="list-style-type: none"> ▪ Recovering generation abilities through increasing operation efficiency and decreasing units layoffs as a result of the non availability of spare parts for old equipments, in addition to increase the generation capacity of the High Dam Units from 175 M.W. to 200 M.W., and for each unit of the 12 ones with a total of 300 M.W.
8	Source of Funding	<p>Foreign Component: the German Government (A loan with subsidized interest)</p> <p>Domestic Component: self-generated resources of the company.</p>
9	Financial Incentive Mechanisms	

10	Awareness	
11	Evaluating saving all over the sector	Saving about 270.4 thousand TOE annually.

3.1.2.12 Raising efficiency and environmental improvement in thermal generating stations in Ataka – Walidia – Damanhour Generating Stations

S.	Procedure Name	Required information
1	The motive for Applying the Procedure	A loan with subsidized interest by the German Government
2	Procedure Description	<p>Increasing efficiency and environmental improvement in Ataka – Walidia – Damanhour Generating Stations through the following:</p> <ul style="list-style-type: none"> ▪ Updating the operating systems in the mentioned stations, to improve equipment performance and increase operation efficiency. ▪ Increasing availability for stations by decreasing the layoffs for repairing breakdowns. ▪ Increasing reliability of stations by updating devices instead of old devices that its spare parts cannot be found in the global market as a result of their being old. ▪ Reducing emission of nitrogen and carbon oxide gases. ▪ Reduction of the actual generated capacity as a result of the aging of generation units. <p>this has been carried out by taking the following procedures:</p> <ul style="list-style-type: none"> ▪ A technical feasibility study of the project. ▪ Preparing technical specifications and conditions to call for a world tender to execute the project. ▪ Contracting with the best bidder for execution. ▪ Executing in the location.
3	Mandated entity for implementation	<ul style="list-style-type: none"> ▪ Electricity Generating Company: Delta Company – West Delta - UEPC.
4	Concerned Entities	<ul style="list-style-type: none"> ▪ (EEHC) – Ministry of Electricity & Energy.
5	Costs of implementing a procedure	
6	Total Costs	<ul style="list-style-type: none"> ▪ The project's cost is about EUR 80 million + EGP 128 million.
7	Cost of Saving	<ul style="list-style-type: none"> ▪ Recovering generation abilities that is about 200 M.W. it is equal to the investment cost of a new generation unit with the same capacity, with an amount of \$200 million.
8	Source of Funding	<ul style="list-style-type: none"> ▪ Funding sources are consisting of: <ul style="list-style-type: none"> ○ Foreign Component: the German Government (A loan with subsidized interest) ○ Domestic Component: general budget.
9	Financial Incentive Mechanisms	
10	Awareness	
11	Evaluating saving all over the sector	Saving about 261.6 thousand TOE annually.

3.2.1 The responsibilities of Energy Power Distribution Companies

3.2.1 Table of the Energy Efficiency procedures taken by Distribution Companies

S.	Procedure	Specific Improvement
1	Providing data and information	<ul style="list-style-type: none"> - Making reference boards of the procedures required for installing meters or increasing their capacities. - Making reference boards of the saving resulted from replacing the saving bulbs. - Activating the role of non-governmental organizations in the field of energy conservation. - Introducing the energy efficiency card and the usage of high efficiency electric devices. - Introducing solar heaters, the method of its usage and the saving out of it.
2	Providing services	<ul style="list-style-type: none"> - Making proceduements and studies of energy conservation improving power factor. - Applying programs of energy usage conservation related to industrial, commercial and administrative facilities. - Field visits for facilities and problems' solutions. - Installing compressors of enhancing power factor and supervising installed boards' maintenance. - Installing solar heaters. - Making a memorandum of agreement with industrial facilities to lessen loads in peak times and to use electric generators if possible. - Spreading the culture of using energy-saving bulbs and high efficiency electric devices.
3	Participating in financing some procedures	<ul style="list-style-type: none"> - Selling energy-saving compact bulbs via outlets in commercial branches in cash and installment, while supporting 50% of its price and with a guarantee for 18 months.
4	Awareness campaigns	<ul style="list-style-type: none"> - Making bulletins and guide books to educate energy usage conservation, using solar heaters and distributing them over industrial and commercial facilities and houses. - Participating in forums and conferences to spread the awareness by energy usage conservation. - Printing some guidelines of energy usage in house on the back of the electric bill.

3.3 procedures of electricity sector

3.3.1 Table of the procedures of energy efficiency in electric sectors.

Procedures	Energy expected to be saved over 2012-2015
Lessen the loss in the electric network (lessen the loss in the electric network only for three areas in the scope of 3 distribution companies.	In progress
Using smart meters in houses (the feasibility study to use smart meters in the household sector.	In progress

3.3.2.1 Reducing loss in the Electrical Network

- The project aims at reducing the rate of technical and commercial loss in transmission and distribution networks. From one side, This may save millions of pounds, on the other side, it may improve the capacity of the unified network to reach the standard ratio. the project includes the following:

1. Reducing the technical loss:

- Increasing the maintenance on the overhead transmission lines for the medium and low voltage and the transformers using the state of art instruments of troubleshooting.
- Reducing the lengths of overhead transmission lines of medium voltage by establishing distribution panels in load centers and also dividing the cable rings of high loads.
- Substituting and replacing of the network components of the damaged medium and low lines.
- Measuring the loads on medium and low network and doing the required procedures of processing and balancing the loads.
- Installing electronic high accuracy meters and code meters to reduce robbery.
- Balancing the energy that come out from stations, this is done between transformer stations meters and outlet feeding meters to perform the necessary processing in case of deviation.
- The Egyptian Electricity Holding Company, electric distribution companies and Egyptian Electricity Transmission Company have executed the project.
- The procedure execution costs and procurement costs have been calculated as a total to improve the loss and not for every procedure separately.

1. Reducing the commercial loss

- The required numbers of electric meter readers have been recruited to reduce the rate of reading of each reader to reach the allowed rates and to be able to read the electric meters monthly.
- Technical and commercial meter inspection teams have been prepared to monitor the faults of readers and electricity theft.
- The technicians and electricians have been assured to report about electricity theft to direct the electricity police to control the situation and take the legal procedures.
- Motivating the employees of the company to notify the cases of electricity theft.
- Many companies, now, choose the remote reading system, which clarify the difference between the total amount of energy registered on the main meter which is installed on the transformer, and the total amount of consumed energy registered on the subscribers' meters on the same transformer to consider the loss, if any.
- Installing the public lighting meters to monitor the actual consumption instead of estimating by the public lighting report.
- The hurriedness of opening accounts of new subscribers and reading the consumption monthly.
- The Egyptian Electricity Holding Company, electric distribution Companies and Egyptian Electricity Transmission Company have executed the project.
- The procedure execution costs and procurement costs have been calculated as a total to improve the loss and not for every procedure separately.

S.	Title of Procedure	Reducing the loss in Electric network in three areas only in the range of three distribution companies
1	The motive for Applying the Procedure	The Japanese International Cooperation Agency (JICA) offered a study to improve energy efficiency via reducing the capacity in electric network in three areas only in the range of the distribution companies (North Cairo – Alexandria – North Delta) with a loan from Japanese Official Development Assistance (ODA)
2	Procedure Description	<ul style="list-style-type: none"> – Substitution of distribution transformers of the three companies (different capacities). – Using transformers 100 KVA to reduce the lengths of sortie. – Using three-side voltage regulators. – Installing condensers. – Developing the control and protection system. – Substituting the installed meters with AMR meters.
3	Mandated entity for implementation	The three distribution companies in cooperation with The Japanese International Cooperation Agency (JICA)
4	Concerned Entities	All electric sector subscribers
5	Source of Funding	Funded loan by The Japanese International Cooperation Agency (JICA)
6	Costs of implementing a procedure	USD 258,348 million (local component + imported component)
7	Total Costs	Local components USD 15,048 million (three distribution companies) + Imported components USD 243,3 million (ODA).
8	Saving cost (annually)	Under study
9	Reducing support	
10	Incentive Financial Mechanisms	
11	Awareness	
12	Evaluating saving all over the sector	

3.3.2.2 Using smart meters in households

- All distribution companies have been addressed as at 21/1/2008 to execute trial project to install electronic meters with remote reading system within 1000 subscribers in the area of high loss rates.
- Every Ministry of Electricity and Energy distribution company purchased 13000 meters to be installed as a trial project of the electronic meters which operate with the remote reading system in average of 13000 subscribers in the range of every company using the following communication system:
 - From the meter to data sub-assembly: by using low voltage network (DPLC)
 - From the data sub-assembly to the main center: by using mobile network (GPRS)
- Meter installation, system operation, receiving readings from meters to the central computer and project execution have been finished.

The project aims at:

- Reducing the loss rate of electric energy in electric distribution network.
- Resolving the complaints of subscribers of the increased consumption because of some virtual readings of the readers.
- Resolving the closed and postponed meters and increasing the rate of read meters.
- Detecting the theft of and tamper with meters.
- Project execution costs are about 5.6 million pound.
- It is expected to reduce the annual rate of loss in electric energy in electric distribution companies to half in the areas which installation has been made.
- Procurement has been achieved in the amount of electric energy in the areas which installation has been made due to the reduce of loss rate to reach 7% or less.
- Large number of subscribers have objected the installation of electronic meters instead of mechanic meters.
- Appearance of some problems during the system trial, such as, receiving of meter's readings incompletely and losing some subscribers' data and these problems have been resolved.

S.	Title of Procedure	Feasibility study to use smart meters in household sector
1	The motive for Applying the Procedure	<ul style="list-style-type: none"> — Reduce the electric energy loss rate in electric distribution networks — Resolving the complaints of subscribers of the increased consumption because of some virtual readings of the readers. — Grant agreement has been signed with The U.S. Trade and Development Agency (USTDA) as at 25/5/2010 of amount USD 416 thousands to fund feasibility study project of using smart meter in Egypt and detecting cases of theft and tamper with meters
2	Procedure Description	<ul style="list-style-type: none"> — The U.S. Trade and Development Agency requested the offers and (10) consultant companies have applied, the U.S Kima Consulting Company has been chosen to execute the study. — The study execution has begun at the beginnings of September 2011, it is expected to be completed at September 2012. — Many meetings have been held between the representatives of distribution companies and the consultant to determine the required data from the distribution companies and prepare samples to be filled by the companies. — The consultant made some field visits to the head offices of South Cairo and Alexandria companies to identify the control system in the network, the steps of collecting meter's readings and recovery, complaint center maintenance center, smart meter systems, prepaid meters in the two companies and visited The Egyptian Electric Utility and Consumer Protection Regulatory Agency. — Meeting has been held between representatives from the three mobile companies in Egypt (Vodafone – Mobinil - Etisalat) to discuss the possibility of using their networks in covering the project and insuring the information and the contractual style preferred by the companies and the consequential liabilities in accordance with any of the contractual styles. — The financial form has been discussed to execute the project and to enter the required modification with the Egyptian Electricity Holding Company and distribution companies. — Kima proposed a recommendation to cooperate in the field of technical specification revision of meters which have been prepared by the Egyptian Electricity Holding Company to catch up with technology development in this field. The proposed included the revision and evaluation of the current specifications and applied a proposal to evaluate the possibility of local manufacturers to insure the quality of meters produced by them.
3	Mandated entityfor implementation	U.S Kima Consulting Company
4	Concerned Entities	The Egyptian Electricity Holding Company
5	Source of Funding	About USD 416 thousands
6	Costs of implementing a procedure	About USD 416 thousands

S.	Title of Procedure	Feasibility study to use smart meters in household sector
7	Total Costs	It is expected to reduce the annual rate of loss in electric energy in electric distribution companies to half in the areas which installation has been made.
8	Saving cost (annually)	
9	Reducing support	The U.S. Trade and Development Agency (USTDA) grant
10	Incentive Financial Mechanisms	No incentive mechanism to execute this project
11	Awareness	
12	Evaluating saving all over the sector	Procurement has been achieved in the amount of electric energy in the areas which installation has been made due to the aforementioned reduce of loss rate

4. Inter-Sectoral Joint Procedures

4.1 Joint Procedure Table

4.2 Detailed Information Related to the Procedure

4.3 Supporting Procedures, which is Difficult to Estimate Savings therein

4. Inter-Sectoral Joint Procedures

4.1 Joint Procedure Table

Procedures		Energy Expected to be Available during 2012-2015
First Procedure	Energy Review	----

4.2 Detailed Information Related to the Procedure

4.2.1 Energy Reviews

Procedure Name	Required Information
Sector	Various consuming sectors (industrial - administrative and commercial buildings - public utilities)
The motive for Applying the Procedure	Support of energy conservation programs planning is targeted through energy reviews in the planning phase to identify opportunities for savings and procedures needed to achieve it as well as the implementation of energy reviews after application to be acquainted with the savings achieved and compare them with the scheme.
Procedure Description	<ul style="list-style-type: none"> ▪ Support the implementation of energy efficiency procedures in various sectors. ▪ Conduct energy reviews of a sample of industries and buildings, periodically (every three years, for example) to identify the applicable energy conservation procedures and procedure improvement in energy efficiency. ▪ Help in promulgating obligatory laws and legislations of energy efficiency, such as the application of standard indicators of energy consumption.
The mandated entity for implementation	Egyptian Electricity Holding Company (EEHC) and its affiliated electricity distribution companies - energy service companies - training centers.
The concerned entities	<ul style="list-style-type: none"> ▪ Ministry of Electricity and Energy. ▪ Ministry of Industry and Foreign Trade ▪ Ministries and affiliated public utilities ▪ Ministries, entities and affiliated buildings
Awareness	<ul style="list-style-type: none"> ▪ Hold workshops and seminars to introduce the program, its importance, objectives and procedures to be executed. ▪ Prepare training for specialists in the field of energy and issue accredited international certification as energy reviewers.

4.3 Supporting Procedures, which is Difficult to Estimate Savings therein

4.3.1 Supporting Procedures Table, which is Difficult to Estimate Savings therein

S.	Procedure	Qualitative Progress
1	Awareness programs through energy efficiency improvement project (awareness of the importance of energy conservation through non-governmental organizations)	Scheme
2	A plan for training and capacity building of technical cadres in the field of solar water heating	
3	A plan for training and capacity building of technical cadres in the field of energy efficiency	
4	Review legislations necessary to confirm the use of energy-saving devices in government buildings	Scheme
5	Establish a central laboratory for testing of high-efficiency lighting equipment	
6	Scientific research	

4.3.2.1 Programs of awareness through the project of improving EE

Many procedures have been taken via the project of improving EE to increase awareness of the consumer with the importance of conserving energy consumption, through the following:

1. Awareness programs for employees in the state's agencies:

- Cooperation agreement between the project and the Central Agency for Organization & Administration (CAOA)
 - An agreement has been signed with CAO A to train and increase awareness of the employees and trainees. This is taking place via a center of educating leaders for governmental sector affiliated to CAO A.
 - Through this agreement, the project has provided technical assistance that include scientific and practical materials in addition to lecturers. It also helped in carrying out exhibitions that include energy-saving devices in cooperation with the organization. The exhibitions include distributing awareness bulletins, helping specialized companies in exhibiting their products and selling energy-saving bulbs to the employees in the body in installments.
- Cooperation agreement between the project and the General Authority for Investment & Free Zones to educate employees with the importance of EE and executing EE projects in the Authority.

2. Training courses for employees in the governmental sector of the State with the importance of conserving energy consumption in governmental buildings:

The project has organized forums for conserving energy consumption in the governmental buildings and all what is equal to it to the employees in government entities. The forums included theoretical lectures and practical experiments to identify the advantages and methods of conserving energy in buildings, especially the awareness procedures that do not need any investments.

More than 220 trainee, representing all State's administrative bodies, have been trained in the field of educating the importance of improving EE in government buildings. Bulletins have been distributed to follow these guidelines via appointing an EE official in each government building.

3. Identification and awareness of the importance of standard specific programs of household electric devices and EE cards.

The awareness programs include both consumers and people concerned with applying these programs.

There was a number of forums held in this regard; they were attended e by the representatives of Egyptian Organization For Standardization & Quality, Industrial Development Authority, General Organization for Export and Import, Chamber of Engineering industries, industrial control authority and electric device manufacturers in addition to a group of consumers.

4. Encouraging concerned non-governmental associations in the field of EE

- The project encouraged the concerned non-associations to work in the field of improving EE and providing technical support to these association to obtain a financial subsidy through the program of small grants funded by GEF and specialized for the activities of these associations in the field of environment.
- These associations held forums to circulate the culture of energy saving lighting systems. They also applied the system of lending technical to circulate the system of energy-saving bulbs as a circulated loans to be used again at the time of payment. Also, these associations applied the programs of enhancing EE. Some of it included lighting some streets by energy-saving

bulbs and also to train a number of professionals (60 professional and technicians to work in the fields of improving EE.

- The activity of these non- governmental organizations cover most areas in the republic in the following cities: Cairo – Alexandria – El-Minia – Beni Suef – Arish – Mansura and others.

5. Advertising campaigns:

- There was an awareness with the importance of conserving energy via mass media; printed, visual and audible.
- In the framework of the activities of Egyptian – German Committee, there was cooperation between the project of improving EE and Procter & Gamble, Egypt, to launch the first media campaign for conserving energy on 16/10/2008, with a joint financing of GTZ and P&G Company.
- This cooperation represents an initiative to involve the private sector in educating of issued that has a national feature.
- The initiating of this campaign was announced by news channels in the Egyptian TV; information materials concerning energy conservation were presented on different Egyptian TV channels and newspapers.

S.	Procedure Title	awareness of the importance of energy conservation through non-governmental organizations
1	The motive for Applying the Procedure	<ul style="list-style-type: none"> – Non-governmental organizations through simple financing can play a major and important role in influencing the surrounding environment and positive communication with a non-governmental organization. – Financial support through the Small Grants Program funded by the Global Environment Facility (GEF), specified for the activity of organizations in the field of environment
2	Procedure Description	<ul style="list-style-type: none"> – Prepare a statement of non-governmental organizations working in the field of energy and environment, in cooperation with the Ministry of Insurance and Social Affairs. – Prepare a legal and institutional framework to develop a funding mechanism through a revolving loan or any funding mechanism for the implementation of awareness programs of the importance of energy conservation, through: <ul style="list-style-type: none"> ▪ Hold workshops and organize awareness campaigns, meetings and conferences to identify the importance of energy conservation. ▪ Train technical cadres from a non-governmental organization to carry out operations of installation and maintenance of high-efficiency lighting systems. ▪ Prepare awareness brochures to identify the guidelines of rationalization of energy consumption and distribute them to the members of a non-governmental organization. ▪ Organize training courses for employees at selling electrical appliances centers to familiarize them with the programs of specifications and labels of energy efficiency. ▪ Distribute energy-saving bulbs
3	The mandated entity for implementation The entity participating in implementation	<ul style="list-style-type: none"> – Non-governmental organizations working in the field of energy and environment. – Social Security Fund or responsible management of the Ministry of Insurance and Social Affairs.
4	The concerned entity	Members of a non-governmental organization
5	Costs of implementing a procedure	Grants to implement a project of rationalization of energy consumption by a non-governmental organization rang between 100 to 150 thousand dollars, in the light of value of grants from the Small Grants Program funded by the Global Environment Facility (GEF) under the support of the energy efficiency improvement project to non-governmental organizations, funded by the Small Grants Program
6	Total Costs	
7	Cost of Saving	
8	Reducing Fund	
9	Source of	Donors

	Funding	
10	Financial Incentive Mechanisms	Grants for Non-governmental organizations and funding mechanisms necessary for the application of revolving loans systems
11	Awareness	Hold seminars and workshops, train technicians, prepare and distribute brochures, and train electrical appliances vendors.
12	Evaluating saving all over the sector	

4.3.2.2 A plan for training and capacity building of technical cadres in the field of solar water heating

Procedure Name	A plan for training and capacity building of technical cadres in the field of solar water heating
Sector	Workers in the field of water solar heating, may include various entities including relevant ministries, bodies and organizations / universities and technical schools / manufacturers and import companies / Non-Governmental Organizations / health centers and hospitals / local councils, etc..
The motive for Applying the Procedure	The decision of the Supreme Council of Energy No. 8/2/8/1 - Plan of the Ministry of Electricity for renewable energies strategy, which aims at increasing the generated energy from renewable energies to 20% in 2020, including 12% of wind energy and 8% from hydro-energy.
Procedure Description	<ul style="list-style-type: none"> ▪ Programs vary according to the quality and level of the trainees; they are divided into specialized and general programs for non-specialists. ▪ An annual training plan aims to technical capacity building and prepare excellent technical cadets in solar water heating, including works of installations, testing and maintenance of solar water heating systems for workers in the field of local manufacturers, non-governmental organizations, local councils, consulting offices, health centers and hospitals, with the help of potential laboratory of tests of solar water heaters, New & Renewable Energy Authority (NREA).
The mandated entity for implementation	New & Renewable Energy Authority (NREA) Egyptian Electricity Holding Company (EEHC) Energy Efficiency Improvement Project
The concerned entities	<ul style="list-style-type: none"> ▪ Ministries of transportation, housing, industry, health, local development, etc.. ▪ Ministry of Electricity and Energy ▪ Nile centers for media and Non-Governmental Organizations ▪ Manufacturers of local solar heaters.
Financing source	Each beneficiary / implemented entity bears its own costs.
Awareness	Awareness of the importance and advantages of the uses of renewable energy and energy efficiency. Activate the participation of universities, research centers and non-governmental organizations in this area. Availability of information for decision-makers, energy-planners, consumers and users of those systems.

3-3-2-4 Training and developing technical staff plan in energy efficiency field

Procedure Name	Training and developing technical staff plan in energy efficiency field
Sector	Those engaged in energy efficiency field. This may include different bodies such as the concerned ministries and authorities / universities and technical schools / manufacturing and importing companies / non-governmental organizations / health centers and hospitals / local council... etc.
The motive for Applying the Procedure	<ul style="list-style-type: none"> ▪ Supreme Council of Energy resolution as at 11/3/2009, which includes establishing a unit in the secretary general of ▪ Ministries of Finance, Electricity, Commerce and Industry conduct preparing number of programs in field of energy efficiency improvement – with respect to giving priority of starting to the government buildings: <ul style="list-style-type: none"> ○ Street lighting rationalization program. ○ Energy rationalization program in public buildings. ○ Energy rationalization program in public facilities. ○ Energy rationalization program in households
Procedure Description	<ul style="list-style-type: none"> ▪ Programs vary according to the quality and level of trainees, and divided into specialized and non-specialized programs for non-specialized persons. ▪ Annual training plan aims at awareness and promotion of the different techniques of rationalizing energy and the revenues upon the national economy, in coordination with Nile communication centers all over Egyptian governorates and non-governmental organizations, and using the testing laboratories of the Ministry, i.e (household electric devices testing laboratories in New and Renewable Energy Authority... etc)
Mandated entity for implementation	<ul style="list-style-type: none"> ▪ New and Renewable Energy Authority ▪ The Egyptian Electricity Holding Company ▪ Energy efficiency improvement project
Concerned Entities	<ul style="list-style-type: none"> ▪ Ministries of Transportation, Housing, Health, Local Development...etc. ▪ Ministry of Electricity and Energy ▪ Nile centers for media, non-governmental organizations. ▪ Electric appliance and lighting fittings manufacturers.
Source of Funding	Every beneficiary/executing entity bears its own costs.
Awareness	<p>Awareness and making known of the importance and merits of using the renewable energy and energy efficiency.</p> <p>Bringing the participation of universities, research centers and civil society organization to life in this field.</p> <p>Providing the information for decision makers, energy planners, consumers and the users of these systems.</p>

4-3-2-4 Reviewing the required legislations to insure using the energy saving appliance the in government buildings

Procedure Name	Reviewing the required legislations to insure using the energy saving appliance the in government buildings
Sector	<ul style="list-style-type: none"> – Contains many sectors such as household, government and touristic sectors ... etc – Companies of manufacturing and importing products and systems of heating water by solar energy.
The motive for Applying the Procedure	<ul style="list-style-type: none"> – Minister of Industry decree No. 180 of the year 2003, issued as at 30/07/2003 for obligating the manufacturers and importers to put the power consumption label on the household electric devices. – Supreme Council of Energy resolution No. 14/8/10/6 for implementing initiative of lighting efficiency improvement and energy rationalization in government buildings. – Supreme Council of Energy resolution No. 12/5/11/3 for providing incentives to the investors in new and renewal energy field and granting tax exemption to the components and spare parts of renewal energy systems besides the sales tax prescribed for it. – Supreme Council of Energy resolution no. 12/5/11/5 for establishing renewable energy support fund. – Supreme Council of Energy resolution no. 12/5/11/9 for establishing funding system with a bank or many banks to facilitate possessing solar heaters.
Procedure Description	<p>Issuing new legislations, amending / abrogating the old legislations, to contribute to activation of energy efficiency plan in electricity sector:</p> <ul style="list-style-type: none"> – Legislation to necessitate holding a certificate of test and validity for the products and water heating devices by solar energy (imported and local), to insure the quality and protect Egyptian market from devices with lower efficiency and performance. – A law which binds the new residential building contractors to use solar water heaters within terms and conditions of offering the construction tender in light of coordination with New Urban Communities Authority and the concerned authorities. – Substitution of the electronic meters in the residential units instead of the traditional meters in nominal prices. – Amending the purchasing regulations in government organizations and obligating them to purchase their requirements of high efficiency energy devices and equipment, in order to create a demand for these products, this may contribute to encouraging the manufacturers to produce them. – Providing many ways of incentives for citizens to follow the methods of energy rationalization and using the equipment that attain this goal.
Mandated entity for implementation	<ul style="list-style-type: none"> – Egyptian Electric Utility and Consumer Protection Regulatory Agency
Concerned Entities	<ul style="list-style-type: none"> – Ministry of Housing - New Urban Communities Authority – Contractors of completing the residential units. – Ministry of Electricity and Energy – NREA - Egyptian Electricity Holding Company. – Ministry of Industry – Companies of manufacturing and importing products and systems of heating water by solar energy.

	<ul style="list-style-type: none"> – NREA – Egyptian Electricity Holding Company – Energy efficiency improvement project – Supreme Council of Energy – Energy Efficiency Unit – Ministry of Housing - Urban Communities Authority – Ministry of Industry – Egyptian Organization for Standardization and Quality.
Source of Funding	Every beneficiary/executing entity bears its own costs.
Awareness	

4.3.2.5 Establishing central laboratory for the tests of high efficient lighting fittings

Establishing central laboratory for the tests of high efficient lighting fittings	
Sector	The household and public lighting sector mainly and other sectors is targeted, since lighting fittings are spread in all sectors.
The motive for Applying the Procedure	Tests are performed on all lighting fittings in many organizations which is considered an obstacle in the way of unifying the steps of test, the rate of accuracy and the surrounding conditions when performing the test. Besides the unavailability of possibilities to do all tests in accordance with the international standardizations to insure the quality and efficiency of lighting fittings. For this reason, it is targeted to develop the laboratory of testing the high efficiency lighting fittings in laboratories of Ultra-High Voltage Research Center and providing it with the required devices and equipment in addition to individuals to be an integrated laboratory and qualified to perform all required tests in integral way in accordance with the international standardization. Developing the current laboratories in electricity distribution companies can be done in a later stage to become a territorial laboratories of the central laboratory in the laboratories of ultra-high voltage research centers.
Procedure Description	<ul style="list-style-type: none"> ▪ Counting all kinds of tests which are performed recently in different entities in electricity sector (Electricity distribution companies, Ultra-High Voltage Research Center, energy efficiency improvement project, New and Renewable Energy Authority) in addition to Department of Chemistry (where flammability test performed) and counting test devices which are available now and determining their specifications ▪ Counting all types and specifications of the devices to be imported for Ultra-High Voltage Research Center to become an integrated laboratory, which performs all the required tests for the high efficiency lighting fittings, save the photographic tests. ▪ Determining the types and specifications of the devices to be imported for New and Renewable Energy Authority laboratories in light of developing this laboratories to perform photographic tests. ▪ Insuring the compatibility of the available devices of electricity distribution companies' laboratories, and methods and how to perform a test and the extent of sufficiency of employees in these labs. ▪ The state and way of execution in the Central Lab and territorial labs ▪ Working on approving the lab from Ministry of Industry and Foreign Trade and issuing certified certificate for third parties.
Mandated entity for implementation	The Egyptian Electricity Holding Company and Energy efficiency improvement project in cooperation with Ministry of Industry and Foreign Trade.
Concerned Entities	<ul style="list-style-type: none"> ▪ Ministry of Electricity and Energy ▪ Ministry of Industry and Foreign Trade ▪ Ministry of Local Development ▪ Ministry of Transportation ▪ Ministry of Housing ▪ Lighting fittings manufacturers
Source of Funding	Energy efficiency improvement project.
Awareness	Holding a seminar and inviting the concerned authorities to inform them about the tests to be done by the lab and any missions or services, in addition to identifying their opinions and proposals. The importance of performing tests in this lab or the similar labs which are approved by the Ministry of Industry and Foreign Trade.

4.3.2.6 Scientific researches under preparation

5- Evaluating the Development of Energy Efficiency Policies

5. Evaluating the Development of Energy Efficiency Policies

S.	Procedure	Qualitative progress
1	Declaration of decisions or laws of energy efficiency	<ul style="list-style-type: none"> ▪ Decision of Eng. Minister of Housing, Utilities and Urban Development no. 401 of 1987 on the use of solar water heaters in the sectors of Republic buildings. ▪ Decision of Mr. Minister of Industry no. 266 dated 16/12/2002, as well as Decision no. 180 dated 30/07/2003 on the adoption of standards for the efficient use of electric power for three household Appliances (refrigerators – automatic washing machines - air-conditioners). ▪ Decision of Mr. Minister of Housing, Utilities and Urban Development no. 482/2005 dated 20/12/2005 on the application of the first code for energy efficiency of residential buildings in Egypt. The Ministerial Decision no. 190 of 2009 was also issued on the application code of energy efficiency in the commercial and administrative buildings.
2	The formation of a technical committee responsible for making the national plan for energy efficiency	<ul style="list-style-type: none"> ▪ Decision of the Supreme Council of Energy on 11/03/2009, which included the establishment of a unit in the General Secretariat of the Council of Ministers includes a number of individuals to collect, review and coordinate various programs to rationalize energy. ▪ The Ministries of Finance, Electricity, Trade and Industry, create a number of programs in the field of improving energy efficiency - taking into consideration starting by government buildings - including the following: <ul style="list-style-type: none"> ○ Street lighting rationalization program. ○ Energy rationalization program in public buildings. ○ Energy rationalization program in public facilities. ○ Energy rationalization program in homes.
3	Creating a program for energy efficiency strategy at the national level and circulating it to relevant institutions for review and remarks	<ul style="list-style-type: none"> ▪ Energy Efficiency Unit of the Prime Minister was established in May 2009 as a responsible authority for developing strategies and policies of energy efficiency.
4	The existence of draft resolution or draft law or draft legislation on energy efficiency in the parliament and needs approval	<ul style="list-style-type: none"> ▪ The new electricity law proposal involves a chapter on incentives to encourage energy use efficiency. ▪ Chapter Two of Law includes improving energy use efficiency: <ul style="list-style-type: none"> ○ Licensee shall transport or distribute by purchasing or paying for excess of energy from mutual generation units and electricity production units from the energy restored with a capacity of less than 50 MW with a rate determined by Agency. ○ Licensee may transport or distribute by contracting with consumers to reduce or carry loads with a rate determined by Agency, taking into consideration the transparency and non-discrimination as determined by

S.	Procedure	Qualitative progress
		Regulations. ○ Electrical Energy Consumer whose contracting ability exceeds 500KW shall assign a responsible for improving energy use efficiency together with keeping an energy record in accordance with the Energy Regulations of this law.
5	Allocate budget, financing plan, funds or loans for energy efficiency projects	<ul style="list-style-type: none"> ▪ The Electricity law proposal involves a fund called the Development Fund; for the electricity production from renewable energies; of the Ministerial Council. The fund will have legal personality and its task is providing the necessary support to the Egyptian Company for electricity transfer in order to purchase electric energy available from the production plants of renewable energies as determined by the Regulations. ▪ The Ministry of Electricity and Energy started an ambitious program to spread saving bulbs through electricity distribution companies:6.5 million saving bulbs of 20 watts capacity are sold in 2009 as a first stage with a reduction of 50% of the bulb price (borne by electricity distribution companies). The bulb price can be paid in installments from the electricity bill. ▪ Reducing customs duties imposed on energy-saving bulbs, imported from abroad, in addition to supporting and encouraging the establishment of many factories producing those types of bulbs in Egypt.

Some supportive Procedures for energy efficiency policies

Procedure	Qualitative Progress
Standards for energy efficiency for electrical appliances	Standards are prepared for energy efficiency for the most energy-consuming electrical appliances (refrigerators, automatic cloth washers, air conditioners, electric heaters) in addition to energy- saving lamps , electronic brakes of regular fluorescent bulbs as well as preparing energy efficiency card for it, and ministerial decisions on activating it have been issued . The following is a statement of the standard specifications for energy efficiency of the Egyptian Organization for Standardization and Quality: <ol style="list-style-type: none"> 1. Refrigerators: "as per the Egyptian standard No. 3794/2002" 2. Automatic Washing machines: "As per the Egyptian standard No. 4100/2003" 3. Air Conditioners: "As per the Egyptian standard No. 3795/2002" 4. Electric heaters: " AS per the Egyptian standard No. 5806/2007 " 5. Self-braking bulbs for general lighting purposes:" AS per the Egyptian standard No. 6313/2007 " Concerning market control, different Competent Control Authorities shall tightly control the market regarding the electrical tasks and appliances whether imported or locally produced to ensure that no low-efficient or poorly made tasks and appliances exist.

S.	Procedure	Qualitative progress
	energy efficiency codes	<p>Energy efficiency codes have been prepared for residential, commercial and governmental buildings. The following are statement of energy efficiency codes issued by the National Center for Research on Housing and Construction:</p> <ol style="list-style-type: none"> 1. New buildings in household sector: (ministerial decision for adoption and application) Code Name: "Egyptian Code to improve energy use efficiency in new residential buildings " 2. Commercial buildings: (ministerial decision for adoption and application) Code name:" Egyptian Code to improve energy use efficiency in commercial buildings. " 3. Governmental buildings: Code Name: "Egyptian Code to improve energy use efficiency in governmental buildings."
	Limit the use and production of lighting tasks of low efficiency	Legislation shall be enacted to limit the use of lighting tasks of low efficiency primarily incandescent bulbs along with the international trend in this area and the EU plan.
	Sources of financing energy efficiency projects	<p>Electricity and energy sector:</p> <ul style="list-style-type: none"> ▪ Financing domestic energy rationalization program through supporting and distributing energy-saving bulbs to household sector subscribers through the bearing of electricity distribution companies half the price of bulbs. <p>Ministry of Finance:</p> <ul style="list-style-type: none"> ▪ Financing rationalization of public lighting program (street lighting by 260 million pounds. <p>Global Environment Facility (GEF):</p> <ul style="list-style-type: none"> ▪ Financing energy efficiency improvement project funded with a \$ 4.8 million. The project aims at the implementation of its activities to the Egyptian market transformation to use energy-saving lighting systems and high-efficient electrical appliances.

Annex (1):

Mechanism to support the deployment of solar heaters in the domestic sector

General Obligations:

Typical Solar heater composes of solar collector of 2 meter square area and tank of 150 liters / day capacity.

Solar heater price = 3500 LE

Solar heaters targeted in mechanism:

- Total electric heaters produced in 2008/2009 (705 thousand heaters) as per the statistical Yearbook of the Republic of Egypt, 2011 "Central Agency for Public Mobilization and Statistics CAPMAS
- Supposing that 80% of them are sold to consumers = $705 \times 0.8 = 560$ thousand heaters
- Supposing that 75% are sold to household sector = $560 \times 0.75 = 423$ thousand heaters
- The proposed mechanism targets 10% of household sector solar heaters $423 \times 0.1 \approx 40$

How to distribute the 40 thousand solar heaters:

- 85% of residential compounds in new cities = $40 \times 0.85 \approx 35$ thousand solar heaters
- 15% of existing residential buildings = $40 \times 0.15 \approx 5$ thousand solar heaters

Total cost of the heaters:

- 40 thousand solar heater $\times 3500 = 140$ million L.E
- Supposing that administrative expenses are 4% (3% is the Bank commission and 1% is for other expenses)
- $140 \text{ million L.E} \times 0.04 = 5.6$ million L.E
- total costs = $140 + 5.6 = 145.6$ million L.E

Annual savings in fuel:

- Each solar heater saves 5.23 Kilowatt/hour ($150 \text{ liters} \times 30 \text{ C} / 860 = 5.23 \text{ KW/h}$) –Total savings throughout the year = $5.23 \times 320 \text{ days} = 1674 \text{ KW/h}$
- Total savings = $40000 \text{ heaters} \times 1674 \text{ KW/h} = 67 \text{ GW/h}$ annually