

# Towards a More Sustainable Energy Economy

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By

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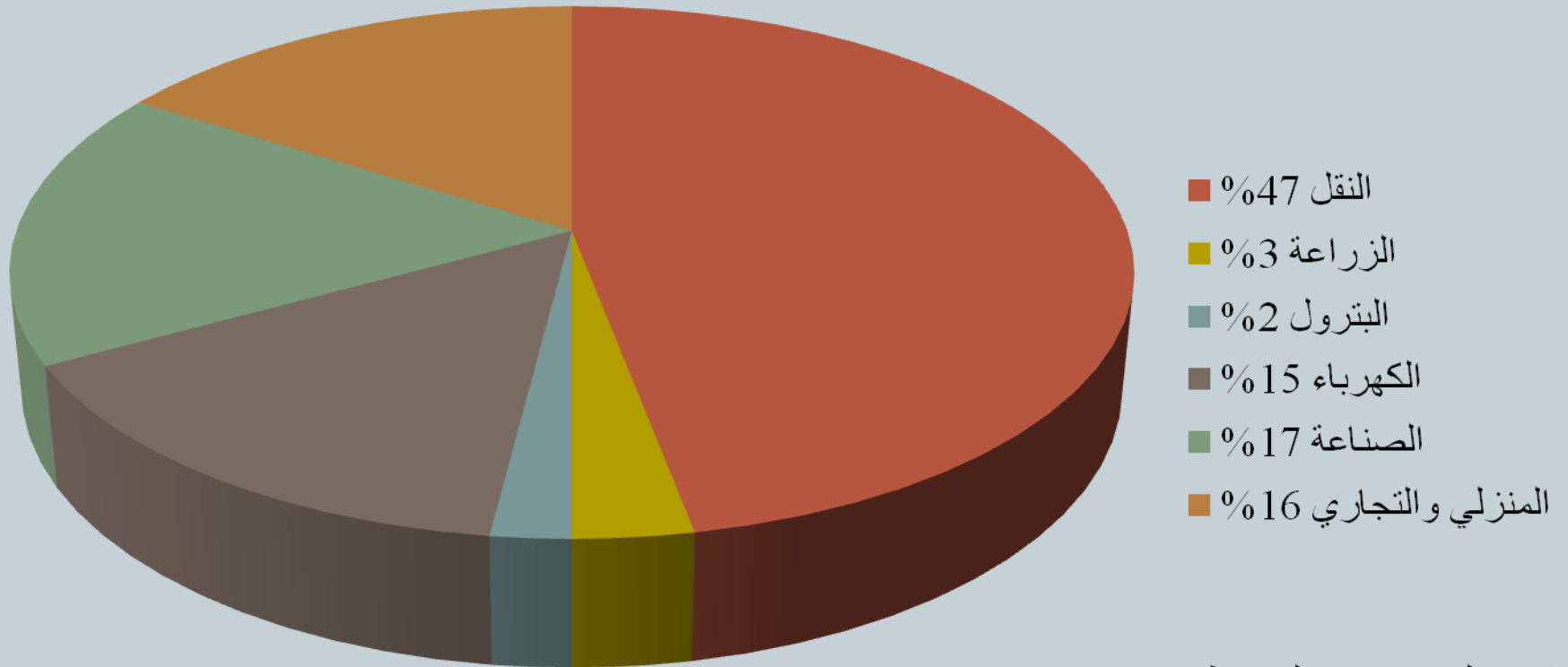
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GEF/UNDP project

Jordan 2013

# Petroelum Products Consumption by Sector (2010/2011)

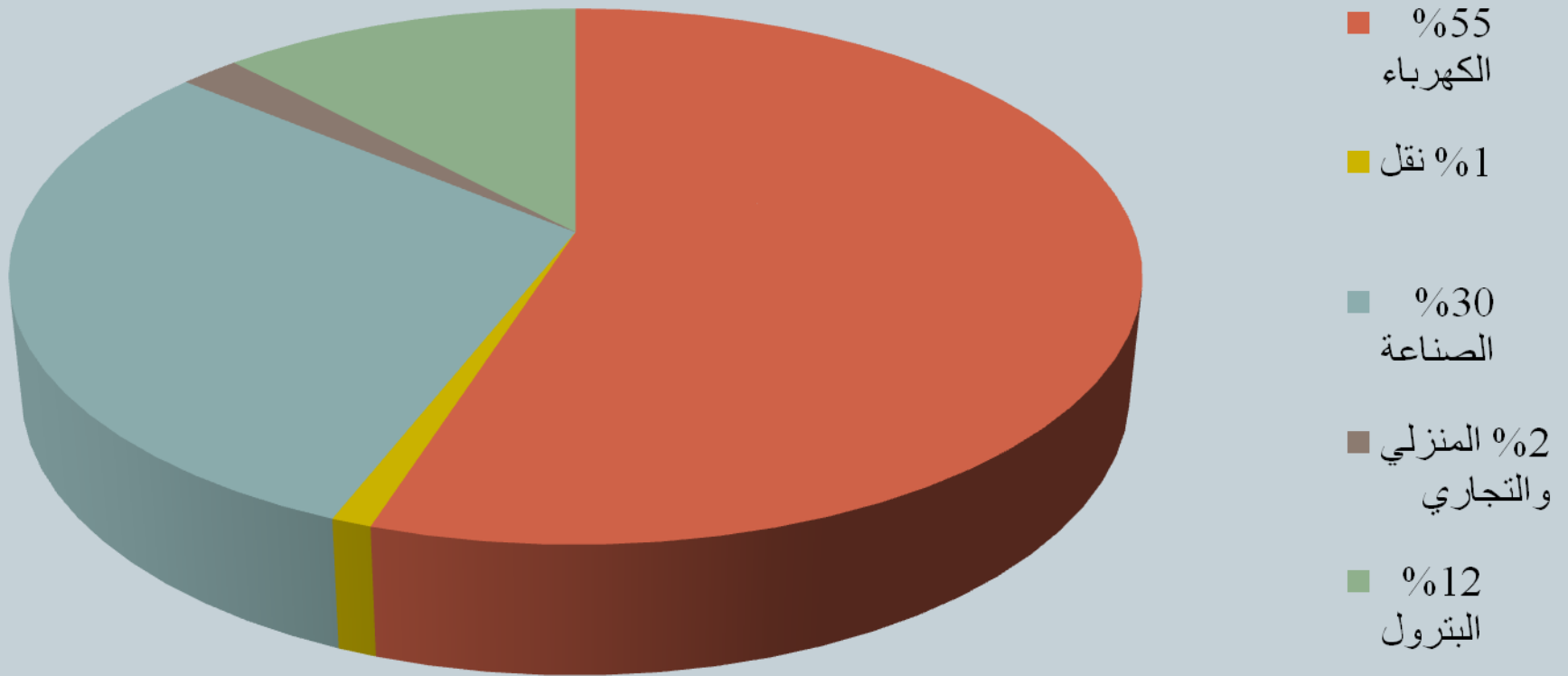
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الإجمالي = 34.7 مليون ط.ب.م

# Natural Gas Consumption by Sector ( 2010/2011)

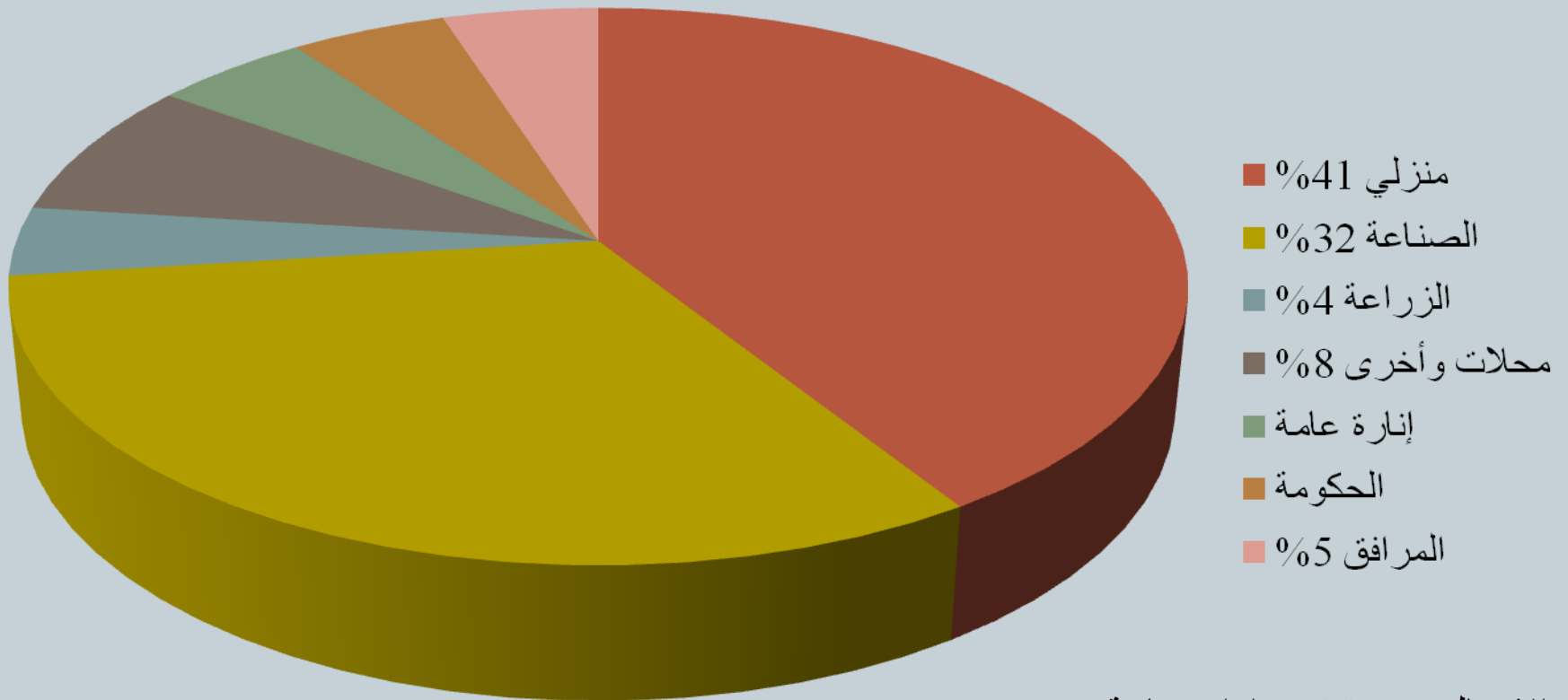
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الإجمالي = 46.9 بليون متر 3

# Electricity Consumption by Sector ( 2010/2011)

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الإجمالي = 46.9 تيراوات ساعة

# The challenge of Energy Deficit

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Energy supply/ demand deficit is expected reach (30- 50) m.t.o.e between (2022- 2050) , i.e about 24% - 35% of the demand

# An Aggressive energy policy reform is needed to

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- \* Enhancing exploration activities for fossil energy resources
- \* Upgrading Energy Efficiency (**EE**) both in the supply and demand side sectors.
- \* Increasing the contribution of **RE** resources .
- \* Development of an appropriate energy **institutional framework** .

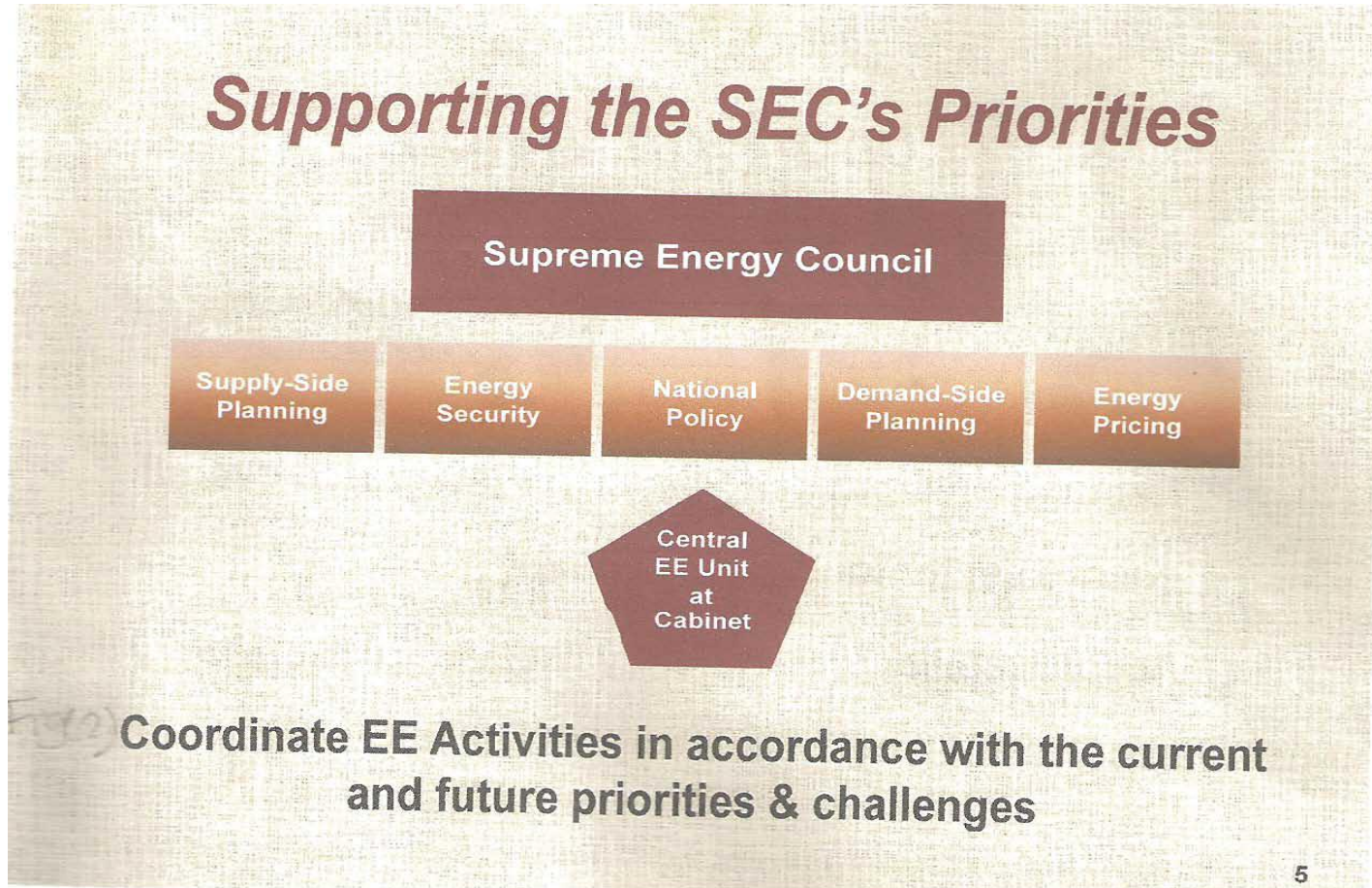
# Institutional strengthening

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- \* Challenged by the lack of clarity on the institutional responsibility for EE, the EEU was established in the COM, for shifting towards a more energy efficient economy and greater use of RE and,
- \* to provide technical advice and support to the Supreme Energy Council "SEC" and coordinates national EE efforts across all sectors to strengthen the linkage between policy development

# Supporting the SEC's Priorities

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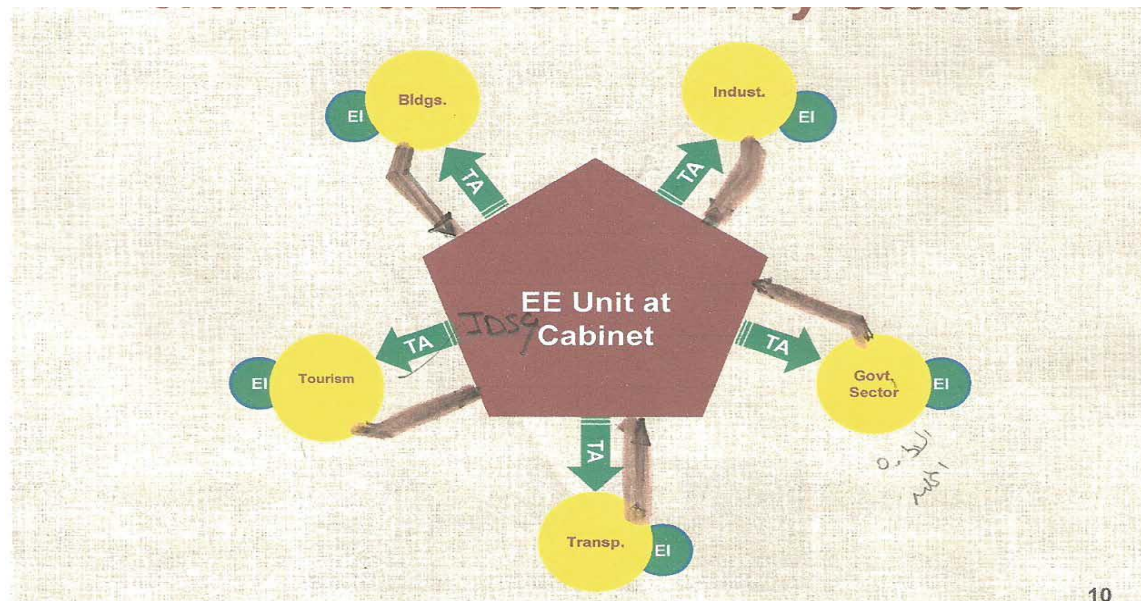




# Decentralized EEU's. in key ministers to

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- \* Creating sector-specific EE units in each of the major energy production and consumption sectors to carry on the responsibility of planning, implementation and monitoring EE activities in these sectors.



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# Energy Efficiency Indicators

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- Specific EE indicators and the streamlining of each of the sector's energy information system and supporting databases should be simultaneously developed to create the basis for future benchmarks, regulations and standards.
- An analytical study sponsored through the MDG-F/CCRMP has identified and evaluated the necessary structure for an effective indicators system that takes into account the relationship between energy consumption and economic structure and activity for the sector and its main sub-sectors.

# Funding and Legislation

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- The successful implementation of the recommended sector-specific EE units will require funding and technical assistance (TA).
- there will also be a need to provide financing schemes to energy end-users to fund EE projects .
- it is critical that the Government continue energy price reform, develop and implement EE law and associated regulations that can foster an EE financing market.

# Promotion of Efficient Lighting

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Most of the lighting used in Egypt is to a great extent responsible for the system peak time electricity production; in addition to high electricity bills, it has a negative impact on the environment by requiring the combustion of greater quantity of fuel in power plants resulting in atmospheric pollutants shown to cause global warming.

In order to reduce energy consumed by lighting equipment through its efficient utilization, it was necessary to assess the following:

- \* The most common types of lighting used in Egypt.
- \* The market size of the lighting equipment in Egypt.

# Efficient Lighting Equipment

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Compact Fluorescent Lamps and Electronic Ballasts have been targeted to reduce the share of lighting in total energy consumption, based on the following:

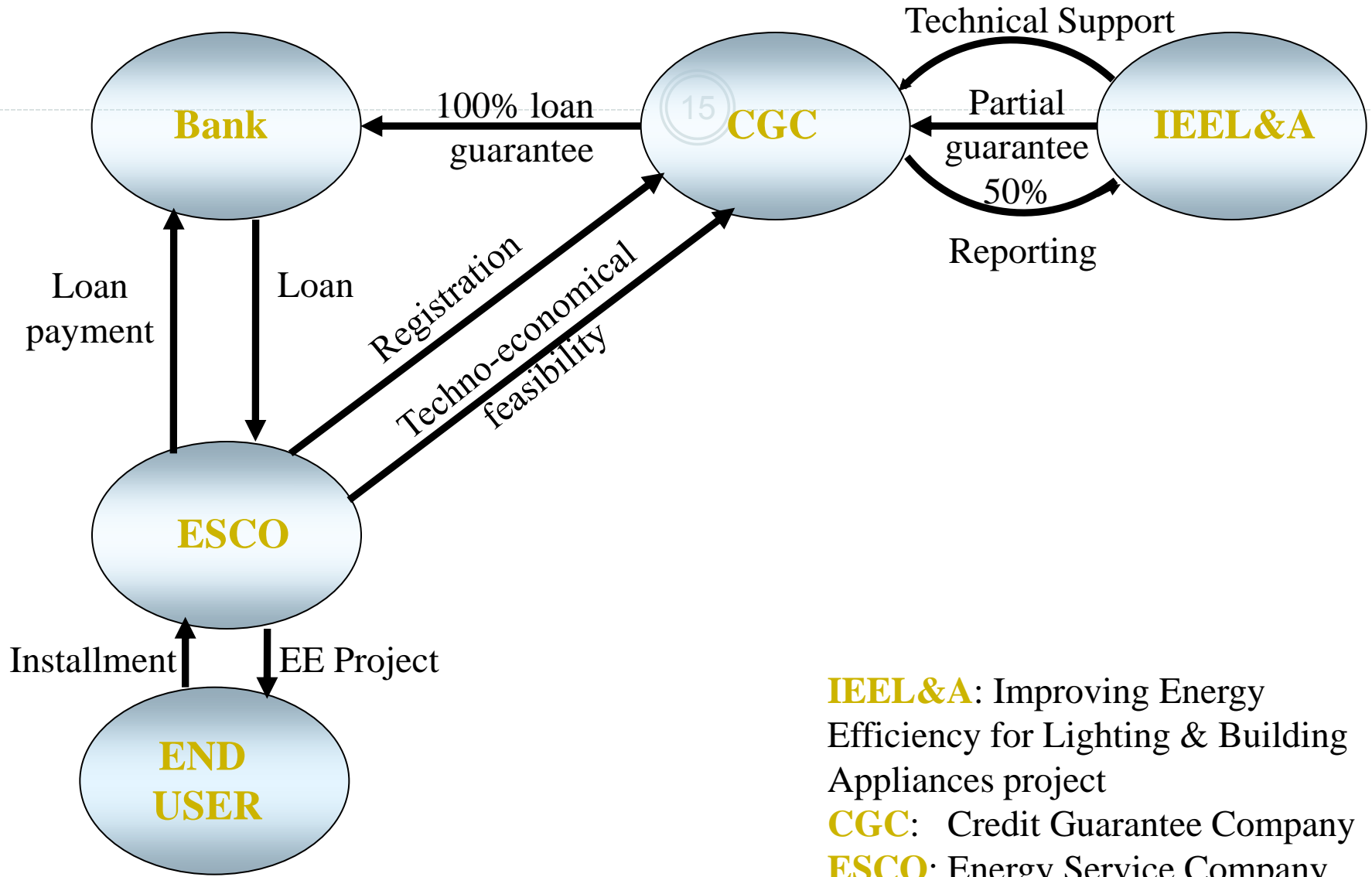
- Simple technology, does not need special preparation.
- Simple and short pay back period.
- Direct and high impact on energy saving and CO2 reduction.

# Technical and Financial Feasibility of Efficient Lighting Equipment

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- Using CFL lamp saves 80% of the electricity consumed by the equivalent incandescent one, therefore leading to a corresponding average energy savings per one lamp over its lifetime of about 750 kWh and a corresponding fuel savings of 225 kg oil equivalent and 675 kg CO<sub>2</sub> reductions.
- Using of low Wattage tubular fluorescent lamps leads to energy savings are 10% of its current consumption.
- Replacing gradually, magnetic ballasts by electronic ones, leads to energy savings of around 30%.
- Based on current market prices and electricity tariff, CFL is financially feasible for residential, commercial and industrial users

# Loan Guarantee Mechanism



# Case studies

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بعض المباني التابعة لمصلحة  
الميكانيكا والكهرباء – وزارة  
الموارد المائية

| الانخفاض في<br>انبعاث CO2<br>(طن) | فترة الاسترداد<br>(سنة) | نسبة الوفرة<br>(%) | المبنى                               |
|-----------------------------------|-------------------------|--------------------|--------------------------------------|
| 32.27                             | 3.27                    | 28.01              | ديوان عام مصلحة الميكانيكا والكهرباء |
| 26                                | 3.4                     | 28.4               | الهيئة المصرية العامة لحماية الشواطئ |
| 3.7                               | 3.6                     | 25.5               | محطة ظلمبات السلام (2) – ترعة السلام |
| 76.54                             | 1.2                     | 56.38              | محطات وظلمبات أبو المنجا             |

| الانخفاض في انبعاث CO2<br>(طن) | فترة الاسترداد<br>(سنة) | نسبة الوفرة<br>(%) | المبنى       |
|--------------------------------|-------------------------|--------------------|--------------|
| 43.44                          | 2.7                     | 37.12              | القصر العيني |
| 28.925                         | 2.9                     | 43.83              | الشيراتون    |
| 26.698                         | 3.4                     | 30.86              | الهرم        |

المباني الادارية التابعة  
لمركز معلومات ودعم  
اتخاذ القرار التابع لرئاسة  
مجلس الوزراء



# Barriers to increase market penetration of energy efficient lighting in the residential sector:

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- The residential sector consumes 41% of the total electricity consumption out of which 34% for lighting purposes (13% of the total consumption) mainly consumed during peak hours.
- Principal barriers to increasing the market penetration of energy efficient lighting in this sector:
- Low awareness by consumers and, to some extent, retailers concerning the benefits of energy efficient lighting
- Lack of experience, and in some cases trust, of the targeted consumers regarding the performance and quality of new lighting products;
- Usually higher upfront costs of energy efficient lighting compared to the alternatives with lower efficiency .

# Efficient Lighting Initiatives undertaken targeting the residential sector

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- Diffusion program of CFLs by the Distribution Companies through leasing programs.
- Encourage the private sector to manufacture CFL locally.
- Public awareness programs through media, seminars and exhibitions
- Cooperation with NGOs for increase customer awareness , and training technicians for mounting and repairing efficient lighting equipment.

# Efficient Lighting Initiatives undertaken targeting the residential sector

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- Ministry of Electricity and Energy subsidized 50% of normal retail price of good quality CFLs
  - First phase, 6.5 million lamps, 20 watt have been sold to customers for half of their prices 6 L.E lamp and a guarantee period of 18 months.
  - Second phase selling an additional 3 million lamps with the same system.
  - additional 2.9 million lamps have been tendered by the electricity distribution companies to continue this process .

# Energy Efficiency Program for Street Lighting

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- Energy consumption of street lighting in Egypt reached 6.1 TWh in year 2010/2011 representing 4.9% of the total electricity consumed by the country with a cost of about L.E 2.8 billion.
- Upon recommendations of the Supreme Council of Energy, an energy efficiency street lighting program is currently implemented in coordination between the Ministry of Finance, Ministry of Local Development and Ministry of Electricity and Energy.

# Energy Efficiency Program for Street Lighting

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- The total cost of the program is M.L.E 260 over a period of two years.
- The first phase is implemented in great Cairo Governorate with a cost of M.L.E 20
- The general features of this program consist of:
  - Replacing sodium and mercury lamps by CFLs depending on the types of streets and in accordance with international standards
  - Restriction of the use of mercury vapor lamps

# Standards & Labels Program

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- ❑ A ministerial decree of the “Minister of Industry” was issued for applying the specifications and the energy efficiency labels for the following:
  - Refrigerators
  - Air conditioners
  - Washing machines
  - Efficient lighting equipment
  - Electric water heaters

Accredited Energy Efficiency Testing Laboratories have been erected at “New and Renewable Energy Authority” premises for:



# Building Codes

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Ministerial decrees for enforcement of Energy Efficiency by the “Ministry of Housing Utilities & Urban communities” have been issued:

- (482/2005) on 20/12/2005 for residential buildings
- (190/2009) on 25/5/2009 for commercial buildings
- (433/2010) on 26/8/2010 for Governmental buildings

Developed administrative building code has been incorporated in the Unified Building Law.

# Cooperation with Gov. entities

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- A joint cooperation agreement has been signed for the provision of technical assistance to the “The General Authority for Cultural Palaces” in order to raise awareness in the field of rationalization and improvement of energy efficiency.
- An agreement with “Ministry of Awqaf” to implement energy conservation mechanism, due to rapid increase in energy consumption during Ramadan, was carried out starting with 40 mosques to define the energy saving opportunities.



# IEEL&A Project Outcomes

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## Outcome 2:

Comprehensive  
S&L Scheme  
for Building  
Appliances



## Outcome 1

Accelerate  
Growth of the  
EE Lighting  
Market in  
Egypt

## Outcome 3:

Sustain the Project Results

# Issues Not Addressed

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- \* Adopted EE Initiatives and policies have mainly focused on saving electricity consumption and promoting RE for electricity production.
- \* Issues that have not yet been addressed by consent EE and RE policies are:
  - Efficiency legislation for the industrial and commercial sectors.
  - Enforcement of efficiency codes in buildings .
  - Restructuring the transportation system and Enhancing mass transport.
  - Dissemination of distributed solar systems and biomass technologies

# Strategic Policy Recommendation

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The EEU/IDSC is currently adopting a strategic approach including six key issues:

- \* The policies and plans for promoting EE and RE should be closely linked to the needs of socio-economic development .
- \* EE and RE activities should not be considered only for the demand side sub-sector, but for the energy sector at large.
- \* Demand-side management should be an integral element of the overall energy sector long-term planning.

# Strategic Policy Recommendation “cont.”

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- \* Accountability for EE should lie with the consuming sectors.
- \* Plans for promoting RE applications, should carefully consider all available resources / technology options.
- \* EE and RE programs should effectively contribute to environmental protection and climate change mitigation.

# EEU Ongoing Activities and the Way Forward

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- \* Introducing efficient lighting systems to the three IDSC buildings.
- \* Leading an initiative to introduce efficient lighting systems to large consuming public facilities.
- \* Contributing to the implementation of the "ESPSP" funded by EU.
- \* In cooperation with MOH, developing the regulation for the disseminating installation of solar water heaters in new buildings is prepared.

# The Way Forward

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- \* Further building an effective institutional framework.
- \* Developing a national energy efficiency strategy.
- \* Updating the exiting RE targets and strategies.
- \* Developing sector-specific EE operating plans.
- \* Implementing market initiatives and policies in targeted sectors.
- \* Monitoring and market development
- \* Ensuring that an adequate and stable financial support is established.

Thank you