



## MED-ENEC Capacity Building Workshop

“Political and Economical Framework Conditions for  
Energy Efficiency and Renewable  
Energies in Buildings”

International Conference Center, Cairo – Egypt  
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# Energy Efficiency Strategy Jordan

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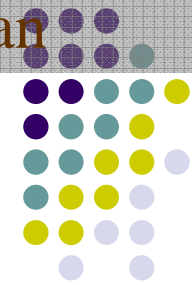


# Presentation Outline



- Energy Conservation Potential In Commercial Buildings – Jordan
- Barriers & NERC Activities to Create the Market through technology Push and Demand Pull
- Jordan Drafted EE Law
- Jordan EE Strategy
- Jordan Energy Master Plan
- Jordan National Agenda
- NERC Strategy (2006-2010)
- Royal Committee – Jordan Energy Strategy

# Energy Conservation Potential / Commercial Sector / Jordan



**Arab Center For Heart & Special Surgery**      Date: 9/2001

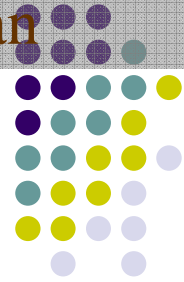
Percentage of Energy/Cost saving      18.2 %

Investments needed      104,002JD

Pay back Period      1.5 years.

Investigated Areas / Utility	Energy cost Saving (JD/year)
<b>Ventilation System</b>	
- Kitchen Ventilation	<b>3,602</b>
- ASD for AHU	<b>1,369</b>
- OR ventilation	<b>2,716</b>
<b>(2) Steam System</b>	<b>2,590</b>
<b>(3) Electrical System</b>	<b>4,765</b>
<b>(4) Lighting System</b>	<b>24,321</b>
<b>(5) Chilled Water System</b>	<b>25,415</b>
<b>Total</b>	<b>64,778</b>

# Energy Conservation Potential / Commercial Sector / Jordan



**Industrial Development Bank (Amman)**

Date: 3/2002

Percentage of Energy/Cost saving

33 %.

Investments needed

7,578 JD.

Pay back Period

0.5years.

<b>Investigated Areas / Utility</b>	<b>Energy Cost Savings (JD/year)</b>
<b>Boilers</b>	<b>160.5</b>
<b>Heating Control</b>	<b>491</b>
<b>Installing a new boiler for the Jordan Institute of Administration.</b>	<b>517</b>
<b>Lighting System</b>	<b>2,347</b>
<b>Changing Tariff</b>	<b>7,000</b>
<b>Installation of Photo cell Detector</b>	<b>530</b>
<b>Total</b>	<b>10,761</b>

## Energy Conservation Potential / Commercial Sector / Jordan

**Le Meridian Hotel (Amman)**

**Date: 7/2004**

Percentage of Energy/Cost saving

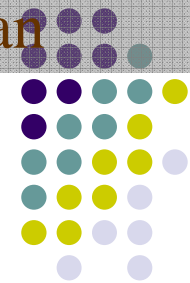
26.3 %.

Investments needed

392,385JD.

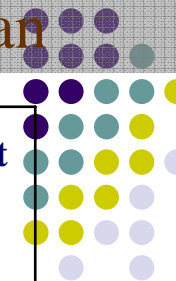
Pay back Period

1.9 years.



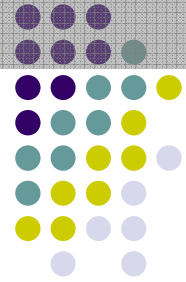
Investigated Areas / Utility	Energy cost Saving (JD/year)
1. Electrical System	150200
2. Ventilation system	6623
3. Steam System	4950
4. Lighting System	19179
5. Chilled Water System	15341
6. Water Treatment	4065
7. Solar Heating System	3858
<b>Total</b>	<b>204,216</b>

# Energy Conservation Potential / Commercial Sector / Jordan



Company Name	Total Cost Saving (JD)	Energy Consumption (JD/Year)	Saving %	Pay Back Period (Yr)	Investment Required (JD)
Arab Center for Heart and Special Surgery	67,989	313,832	22%	1.8	123,102
Radisson SAS Hotel (Amman)	35,168	243,276	14%	0.4	15,731
Radisson SAS Hotel (Aqaba)	68,275	196,196	35%	1.3	87,544
Le Meridian Hotel (Amman)	203,962	776,883	26%	1.9	382,387
Grand Hyatt Amman Hotel	112,961	578,654	20%	2.1	235,285
Movenpick Resort & Spa Dead Sea	76,821	665,625	12%	0.8	60,052
Movenpick Resort Aqaba	86,449	358,223	24%	1.9	164,819
Four Seasons Hotel (Amman)	120,307	648,569	19%	1.4	170,670
Jordan Kuwait Bank	17,854	103,505	17%	1.3	23,579
Industrial Development Bank	4,020	33,065	12%	2.9	11,711
<b>TOTAL</b>	<b>793,806</b>	<b>3,917,828</b>	<b>20%</b>	<b>1.6</b>	<b>1,274,880</b>

## Identified Barriers / Market Creation



- 1. Lack of incentives and financing**
- 2. Lack of information**
- 3. Lack of technical expertise**
- 4. Lack of Management commitment, policy and organizational structure supporting energy management**
- 5. The needed equipment and retrofits are not available in the local market**
- 6. Non existence of laws and regulation to promote energy efficiency**

## Jordan Drafted EE Law



- Steering Committee established at HCST 1996
- Local consulting firm contracted “barriers and incentives for EE”
- EE law national team formed Supported by Gtz Expert
- Workshop 30/6/2002 & 27/4/2004
- Drafted law circulated to all, modified and translated into Arabic
- EE strategy adapted & approved by the Cabinet in 2004



## Goals

- Reduce energy consumption without negatively effecting production or the standard of living and in order to lower the imported oil bill on the national level and reducing the emission of harmful gasses to the environment
- Improve the standard of living
- Achieve balance between imports and exports
- Reduce production cost and improve competitiveness of the local industries and other sectors
- Reduce investment in Energy Sector



## General policies:

**1. Tariff policy:** gradually removing subsidies on petroleum products and electricity and applying a pricing structure based on actual cost

## 2. Legislations:

- Taxation policies
- Technical standards
- Thermal insulation
- Building codes
- Customs Duties
- Traffic Congestion

## 3. Awareness and Training

## 4. Financial Policies



## Implementation procedures

- Continuous process of planning, execution follow-up and evaluation
- Specifying definite roles and responsibilities for the concerned institutions
- The Ministry of Energy and Mineral Resources (MEMR) should follow-up the progress of the implementation of the procedures and issue a report annually



## Measures

1. Gradual elimination of Energy subsidies
2. Public awareness program in EE
3. Energy Efficiency Code
4. Training programs
5. Energy Data Bank
6. Elimination / reduction of custom duties & sales tax on EE materials and equipment
7. Grants and soft loans



## Measures / Cont.

8. Energy efficiency label for House Hold Appliances
9. Enforcement of "Building Codes/Thermal Insulation
10. Public Building thermal insulation & EE measures
11. Oblige large industrial & commercial institutions to appoint "qualified energy engineer" and to carry out periodical energy audits.
12. Improve efficiency in Electricity Sector
13. Energy efficiency demonstration projects



## Measures / Cont.

14. Promotion of mass transportation systems
15. Encourage small cars and discourage old cars
16. Tunnels, bridges & green street traffic lights systems
17. Traffic signs that show directions to different places
18. Taxi stop & "bus lines" maps
19. feasibility of using trains
20. energy efficiency projects in the water sector
21. Promotion of renewable energy technologies



## **Steering committee.**

headed by Minister of Energy and Mineral Resources

### **Technical committees:**

1. Information and awareness committee
2. Taxes committee
3. Specification committee
4. Pilot Projects committee
5. Building Codes
6. Public Transportation committee

# Jordan Energy Master Plan



MEMR in 2004 released a 15 year Energy Master Plan for restructuring & developing:

- Electricity Sector
- Refined Products Sector
- Crude and Product Supply Infrastructure
- Gas Sector
- Jordan's Indigenous Energy Resources

Over \$3 billion. investment required



## **Additional challenges addressed:**

- The concession for the refinery will expire in 2008
- Commercial gas imports from Egypt will have substantial impact on the primary energy supply to Jordan.
- The move to gas and changes in subsidized oil from Iraq will impact the refinery
- Complex subsidies exist.

# Jordan National Agenda 2006-2015



- Steering Committee was formed by a Royal Decree issued on the 9th of February 2005
- The National Agenda policy initiatives were developed along three main dimensions:
  1. Government & Policies
  2. Basic Rights and Freedoms
  3. Services, Infrastructure and Economic Sectors



## **Energy sector Challenges Addressed:**

1. The reliance on international energy markets for imports
2. The rising cost of Energy imports, 23% of GDP in 2006
3. Fuels consumption expected to exceed its 3% per annum.
4. Electricity demand expected to exceed its 4% per annum.
5. The provision of necessary funding for investment in energy industry to meet energy needs
6. Promoting an efficient use of energy in all sectors.
7. Upgrading fuels specifications

# Jordan National Agenda 2006-2015



## Selected Performance Indicators for Energy

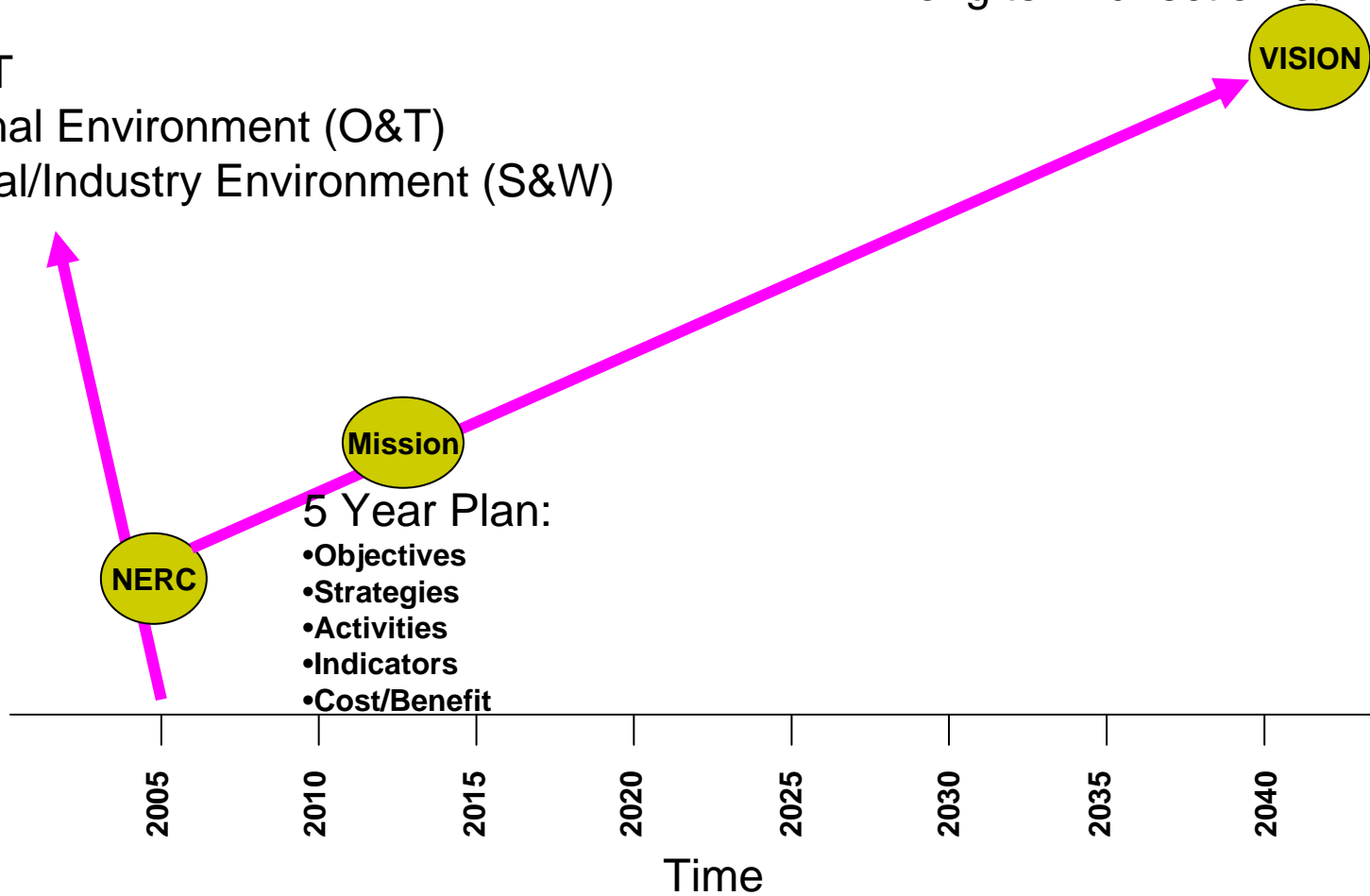
<b>Performance Indicators Target</b>	<b>Current</b>	<b>Target (2012)</b>	<b>Target (2017)</b>
Gas Use as a Percentage of Total Energy Consumption	18%	25%	30%
Renewable Energy Sources as a Percentage of Total Energy	1%	2%	3%
Percentage of Households Using Solar Energy for Water Heating	14%	20%	25%
Energy Consumption per GDP (Ktoe per US\$ 1,000 in 1995 US\$)	620	550	500
Percentage of New Buildings that Meet Energy Conservation Standards	~0%	40%	70%
Percentage of Electricity Distribution Loss	13.4%	12.8%	12%

# NERC Strategy (2006-2010)



Long term direction & Aspiration

SWOT  
External Environment (O&T)  
Internal/Industry Environment (S&W)



## NERC Strategy (2006-2010)



- **Vision:** Nationally and regionally recognized / distinguished energy center with high credibility by the public and private sectors.
- **Mission:** To Provide service and implement projects, research, technical / economical studies and consultations in the field improving and developing the use of new and renewable energy and energy efficiency and to foster cooperation and communication with the public and private sectors through competent and motivated employees
- **10 Objectives**



- **Performance Indicators:** were set at the activity level only.
- **KPI:** not set at the objective level because:
  - No agreed on objectives / targets exist for Jordan
  - Main contributors to such national targets are not identified neither their specific responsibilities and contributions



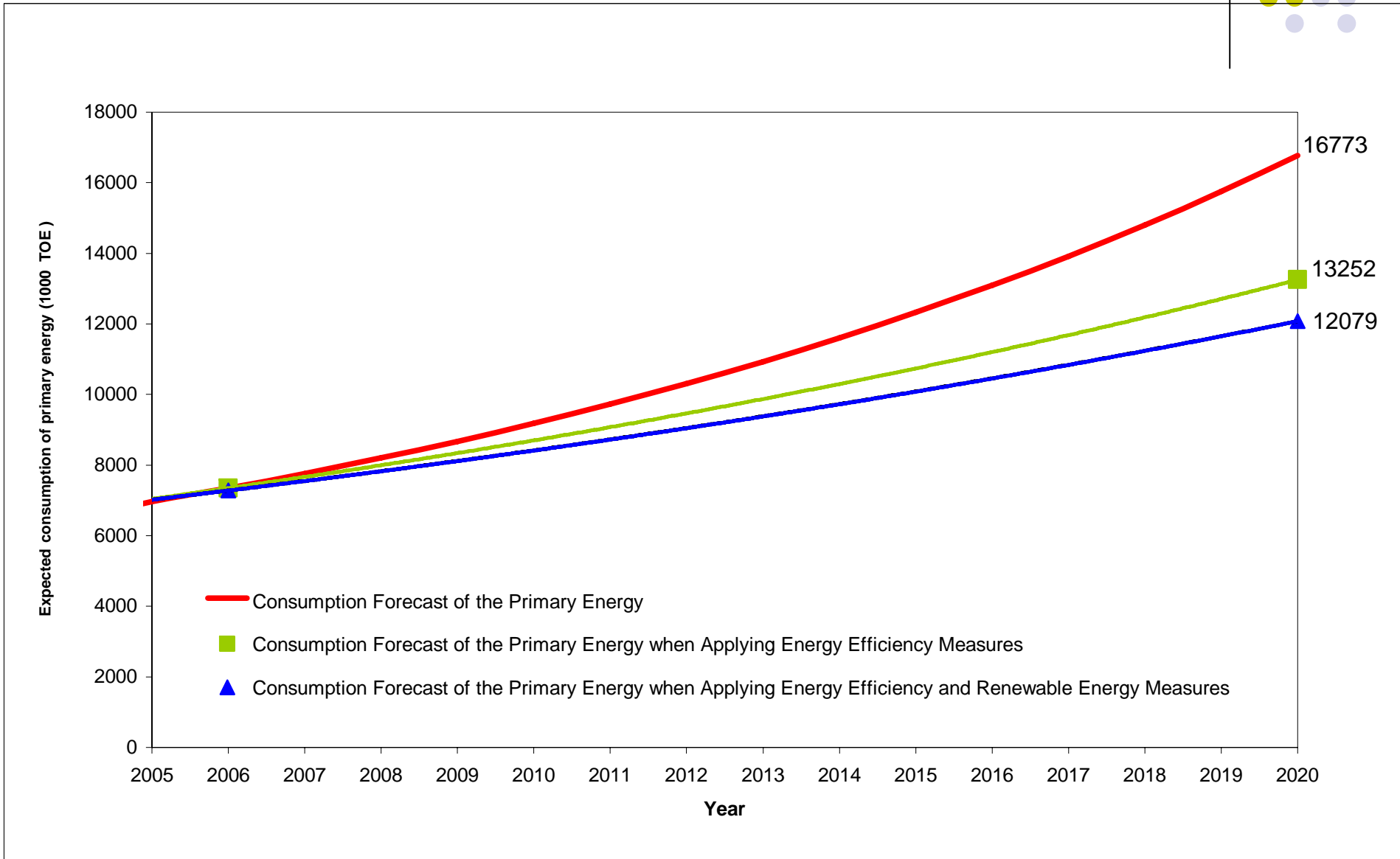
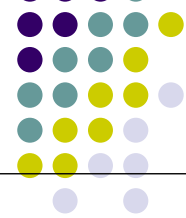
In January 2007, His Majesty King Abdullah II entrusted a Royal Committee to:

1. Review and modernize the national energy strategy for the upcoming 15 years.
2. To recommend ways to provide the needed energy, particularly the alternative and renewable energy resources.
3. Draw up a- work program with clear mechanism and specified cost within a time frame
4. to implement the strategy and to indicate the roles of all concerned parties in implementing it, which ensures the achievement of national economic interests.

# Jordan Energy Strategy



## Forecast of The Primary Energy When Applying the RE & EE Measures recommended by NERC





# Energy Efficiency Strategy - Jordan

Thank You