



The Syrian Energy Sector

Energy Efficiency and Renewable Energy Action Plan

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Introduction

The Tenth five- year plan (2006- 2010)

- Restructuring of the Power Sector.
- Amending existing laws.
- Introducing new legislation.



I- GENERAL ISSUES

➤ Population estimates & average annual growth rates

It is expected that the population of Syria will almost double by Y2030, assuming an annual growth of about 2.4 to 2%.

year	1999	2005	2010	2015	2020	2025	2030
Population (Million)	15.89	18.54	20.87	23.27	25.82	28.50	31.47
Annual Growth Rate (%)	2.6	2.4	2.2	2.1	2.0	2.0	

GDP

- **GDP in 2004 was 21.4 Billion US\$.**
GDP per Capita was 1200 US\$.
- **It is expected that GDP will be 90 Billion US\$ in 2030 (assuming an average annual growth rates 6.8-7.0%).**
- **In 2004, GDP was:**
 - **302 billion US\$ in Turkey (4187 \$/capita)**
 - **10.4 billion US\$ in Jordan (~ 2000 \$/capita)**
 - **18.77 billion US\$ in Lebanon (~ 4000 \$/capita)**

II- Energy Issues

➤ Energy Intensity

- **Primary energy intensity in Syria was 0.92 toe/1000 US\$ GDP in 2004.**
- **Primary energy consumption per capita was 1.05 toe in 2004.**

➤ Oil production

- Today, Oil production is around 421 thousands barrels per day.
- It is expected to decrease to 280 thousand barrels per day in 2007.

➤ Gas production

- Gas production in 2004 was around 11.5 million m³/day (≈ 4 billion m³/year).
- It is expected that the newly discovered sources will raise the production to 28 million m³/day in Y2009.

➤ Energy balance for natural gas and petroleum

Gas [Mtoe]			Oil [Mtoe]			
Export	Import	Production	Export	Import	Production	
0.0	0.0	5.2	14.1	0.0	25.7	2003
0.0	0.0	5.2	13.0	0.0	24.6	2005
0.0	0.0	9.1	6.9	0.0	18.6	2010
0.0	0.9	8.8	0.0	2.8	14.8	2015
0.0	0.9	8.4	0.0	17.9	5.6	2020
0.0	0.9	8.4	0.0	23.5	0.0	2025
0.0	0.9	8.4	0.0	23.5	0.0	2030

➤ Primary Energy balance [Mtoe]

Source	2003	2020
Oil	25.7	5.6
Gas	5.2	8.4
Hydro	0.75	0.75
Wood	0.7	0.7
Renewable	0.0	2.0
Total	32.35	17.45
Balance	+ 12.66	- 23.36

III- Electric power production & Distribution

	Unit	2003	2004	Growth rate (%)
Installed capacity	MW	7014	7014	-
Total production	GWh	29048	31538	8.75
Peak capacity	MW	5018	5620	12
End-users	Million	3.75	3.89	3.76
Consumption/capita	kWh	1670	1754	5
Beneficiaries	%	99.5	99.6	0.1

National Energy Research Center

NERC was formed in mid-2003 to meet the pressing demand for the formulation and implementation of a national EE&RE policy. The immediate objective, however, is to lay the grounds for applied research in the EE & RE field consistent with Syrian socio-economic considerations. Our strategic target is to spread the culture of energy-efficient building in the construction industry and more generally to actively promote and support sustainable development of energy conservation plans and utilizing the renewable energy resources of the country.

IV- Renewable Energy Master Plan

The national target is to achieve 4.3 % of the country's total energy demand by the year 2011, from renewable energy sources (wind, solar, biomass...).

	Accelerate Growth Scenario	Renewable Energy Master Plan	Focused Growth Scenario
Energy Contribution in 2011	6.73 %	4.31 %	2.85 %
Total Investment Costs (million \$)	2400	1480	845
Total Lifecycle Costs for Traditional (million \$)	5200	3200	1900
Employment Generation	11014	7225	6301

v- Syrian Energy Conservation and Planning Project

Objectives:

- **Reduction of GHG emissions in Syria by improving demand-side energy efficiency.**
- **Saving 1.5 MTOE by Y2008.**
- **These energy savings should result in 5.8 million tons reductions in CO₂ .**

Energy Audits & Pilot Projects

■ Walk-Through Audits

More than 250 walk-through audits have been completed (Industrial, Hotel, Mosque, and a government building).

■ Detailed Audits

More than 100 detailed audits of industrial and large commercial facilities have been conducted.

■ Feasibility studies

More than 20 feasibility studies have been conducted.

■ Pilot Projects

More than 10 pilot projects have been implemented.

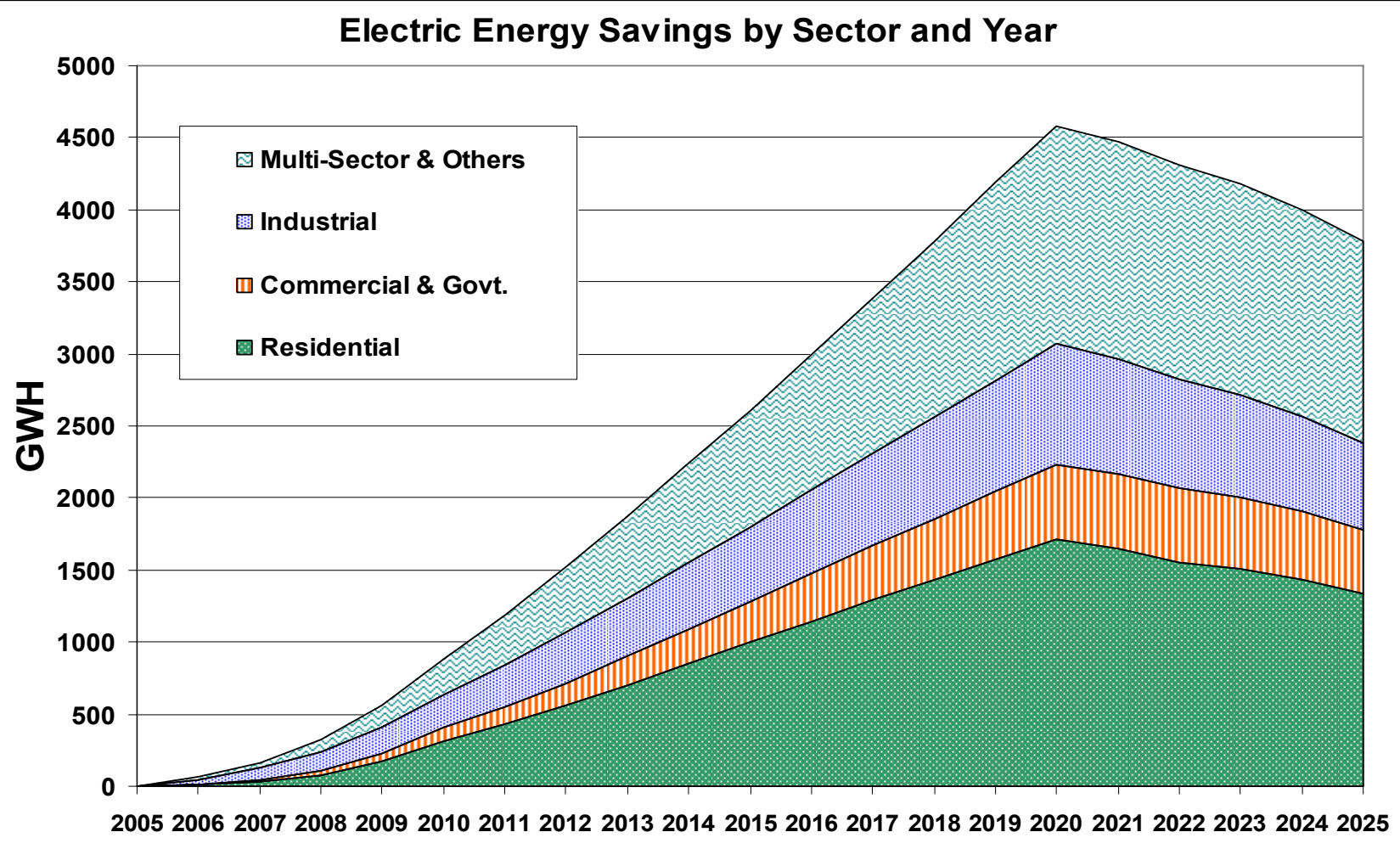
Potential for energy savings

From 100 detailed audits of industrial and large commercial facilities

Sum of annual opportunities		annual opportunities on thermal energy saving		annual opportunities on electric energy saving		
Toe	Million \$	Toe	Million \$	GWh	Toe	Million \$
30509	8.4	28914	5.6	416	1595	2.8

➤ Demand Side Management

- In 2020, Energy saving by DSM program expected to be 4500 GWh
- CO₂ Emissions reduction will be 3300 kton



➤ Legislations & Regulations Underway

- Energy Conservation Law.
- Code of Practice for thermal insulation.
- Energy Label for residential refrigerators.
- Law to purchase power from independent power producers (IPP).

Label design

لصاقة كفاءة الطاقة

براد تبريد عادي بابين

الماركة:
الموديل:
الحجم بالتر:
الحجم بالقدم:

أعلى كفاءة وأقل استهلاك

A ممتاز

B جيد جداً

C جيد

D مقبول

E ضعيف

درجة المنتج

C

الاستهلاك الكهربائي 0000 كيلو وات ساعي سنوياً



مستوى التبريد

هدفنا تبريد أفضل وكفاءة أعلى وفاتورة أقل وبيئة أنظف

Governmental incentives

The Government has recently acceded to the NERC's request to exempt from all import duties of the following imported materials:

- Thermal insulation materials,
- Absorbers for flat-plate solar collectors,
- Evacuated solar collectors

Key Barriers to creating an enabling sustainable energy framework

- Inadequate human capacity,
- barriers attributable to cultural or socio-economic factors,
- Market distortion and harmful subsidies,
- Technological barriers,
- Financial / Economic barriers.

EE & RE New Laboratory Complex

- **Site Location: near Damascus**
- **Land area: 4000 m² approx.**
- **Energy efficient architecture**
- **Design competition: 10 competitors**
- **Selection of winner: Mid Jan. 2006**
- **Budget: Allocated and approved for civil works**

Cooperation Projects with GEF

- Accelerating the Development, Adoption and Implementation of Appliance Standards and Labels in the Middle East and North African Countries
- Accelerating the Development, Adoption and Implementation of Building Codes in the Middle East and North African Countries
- Establishment of an accredited energy efficiency lab to support an ongoing national standards and labelling program

VI- Conclusions

- The energy policy is slowly beginning to taking shape in Syria, notwithstanding the institutional barriers that need to be surmounted.
- A successful strategy for deployment and implementation of EE & RE plan depends first and foremost on the full cooperation and mutual support of various government agencies and institutions.



Thank You

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