

UNITED NATIONS

Economic and Social Commission for Western Asia



UN-ESCWA

Status of Energy Efficiency activities in ESCWA Region

By

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I - Introduction



- **ESCWA was established in 1973, and it is one of the five regional Commissions created by the United Nations in order to fulfill the economic and social goals set out in the United Nations Charter by promoting cooperation and integration between the countries in each region of the world.**
- **ESCWA forms part of the United Nations Secretariat and, like the other regional commissions, operates under the supervision of the United Nations Economic and Social Council.**

➤ **ESCWA is the UN Regional Commission in Western Asia with its head quarter in Beirut-Lebanon**

➤ **ESCWA Member Countries are 14 Arab Countries in Western Asia:**

Bahrain, Egypt, Iraq, Jordan, Kuwait, Lebanon, Oman, Palestine, Qatar, Saudi Arabia, Sudan, Syria , United Arab Emirates and Yemen.

ESCWA Programmes /Divisions

- **Sustainable Development and Productivity (SDPD)**
- **Social Development**
- **Economic Development and Globalization**
- **Information and Communication Technology**
- **Emerging and Conflict Related Issues**
- **Statistics**
- **ESCWA Centre for Women**
- **Programme Planning and Technical Cooperation**

To improve the sustainable management of natural resources, the **Energy Section focuses on:**

- 1.Improving Energy Efficiency (different sectors).
- 2.Enhancing Access to Modern Energy Services.
- 3.Promoting Use of Renewable Energy Technologies.
- 4.Use of Advanced Fossil Fuel Technologies.
- 5.Transport & Sustainable Energy Use.

II-The ESCWA Energy Sector



A. Resources and Production

- The region has huge Oil and Natural Gas resources in 2006, it counted for 56% and 30% of the proven world reserves respectively, however four countries in the region have no or very limited fossil resources.
- Tremendous Solar resources are available in all countries and utilizable Hydro, Wind, Biomass and Oil shale in some countries.
- In 2006, the total primary energy production reached 34.1 m.b.o.e/day, where Oil and NG counted for 66.5% and 31.2% respectively, while renewables including hydro represented only about 2.3%.
- Installed electricity generation capacity of 113.43 GW, dominated by thermal power generation (92.8%).

B. Energy Consumption Patterns

- The total consumed commercial energy in 2006 was about 403 m t.o.e with a growth rate of 5.6 percent between 2002 and 2006.
- The average per capita primary consumption in 2006 reached 2.1 t.o.e/capita/year, with wide disparities in the levels of energy consumption within and between ESCWA countries.
- In 2003, the Energy Intensity was 0.51 Kgoe/US\$, and in 2007 the figure dropped to 0.24 Kgoe/US\$, because of the GDP increase due to high Oil prices.
- The use of Natural Gas is rapidly increasing in the region, with variable degrees. In 2006, it contributed about 42% of total energy consumption.
- While, Transport, Residential and Industry Sectors are the major consumers of gas and petroleum products, counting for 43%, 18%, 17% of the total consumption respectively. The major consumers of generated electricity are the residential and industrial sectors, consuming 55.5% and 26% respectively.

C. Energy Accessibility and Poverty

- About 19 million people in the ESCWA countries (10 %), mostly in rural areas, have no access to appropriate energy services especially electricity; a further of 30 million (15.6 percent) are severely undersupplied, both in rural and poor urban areas.
- Poverty is a serious problem in several ESCWA countries and there is an urgent need for increasing energy accessibility to the poor to mitigate energy and human poverty.

III- Regional Progress Achieved on Improving Energy Efficiency for Sustainable Development”



➤ Since 1992, ESCWA countries have devoted concerted efforts for achieving their energy sector sustainability. Reasonable progress was achieved including:

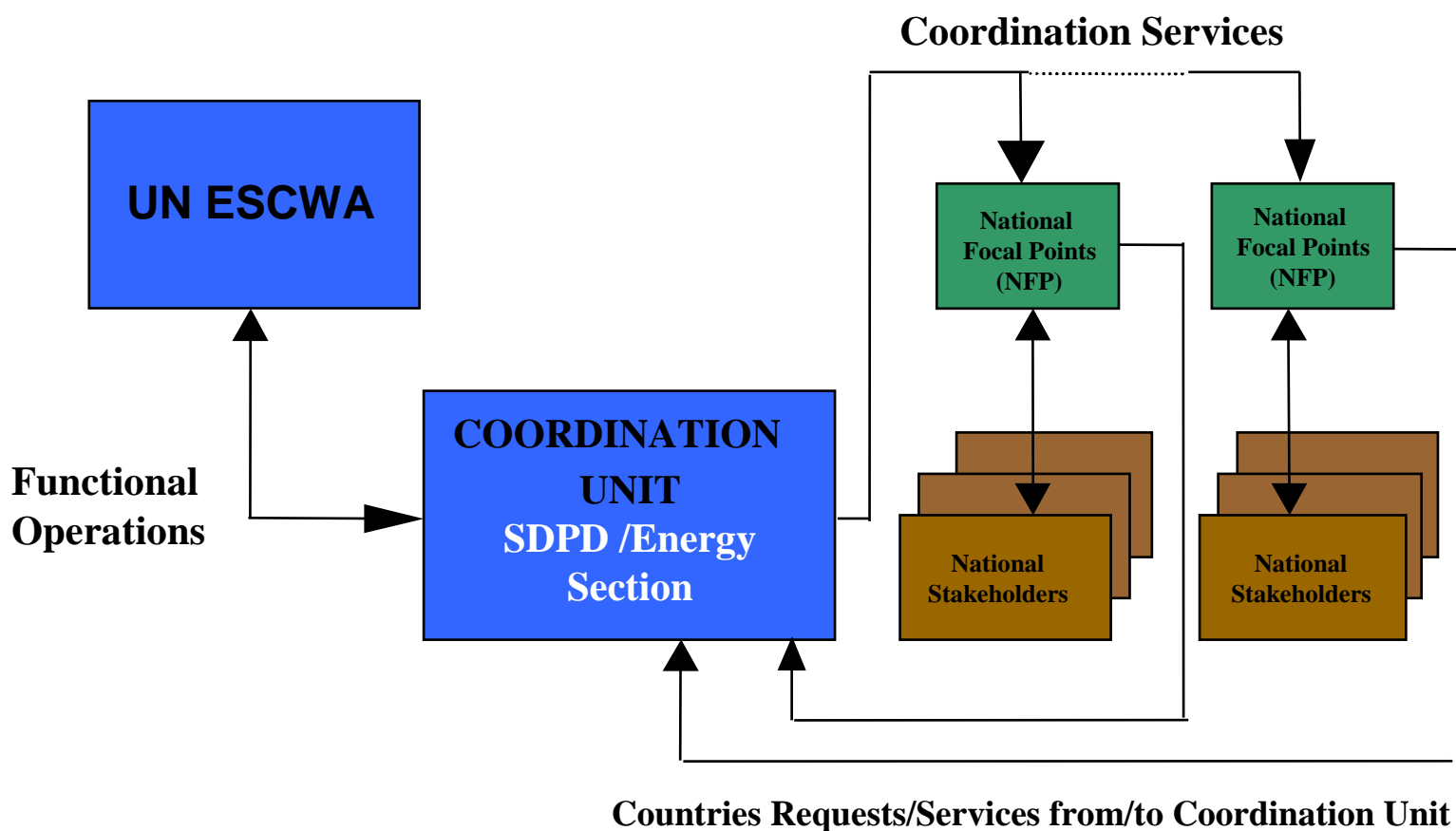
1. Several policies were adopted for encouraging energy efficiency in various economic sectors.
2. Energy audits were performed in many public and private industrial and residential facilities, the estimated potential savings vary among countries between 13 and 40 per cent of the total consumed energy.
3. Energy efficiency field projects were implemented in the residential, industrial and transport sectors.
4. Several codes of practice for efficient energy use in building, as well as energy labeling regulations were issued.

This has resulted in:

- Slight reduction in the growth rates of primary energy consumption and energy intensities were achieved.
- The efficiency of electric power plants was improved leading to about 40% reduction in the average specific fuel consumption between 1992 and 2006.
- Renewable national and regional expertise have been built, including high-level administration, engineers, technicians and staff of energy service companies.

Strengthening Regional Cooperation

- Establishing and activating the Regional Mechanism for the Development of Energy Uses for Sustainable Development



➤ **Cooperation with the League of Arab States (LAS)**

SDPD/**Energy Section** continued to forge closer cooperation with regional organizations, particularly the League of Arab States (LAS), through:

- A. Council of Arab Ministers Responsible for the Environment (**CAMRE**) and the Joint Committee on environment and Development in the Arab region (JCEDAR)- which ESCWA supports since 2003 through a strategic partnership with the CAMRE Technical Secretariat and **UNEP/ROWA**.
- B. Council of Arab Ministers Responsible for Electricity (**CAMRE/ELEC**) and its technical secretariat which ESCWA supports since 2005.

IV - ESCWA Achievements on Energy Efficiency (EE)



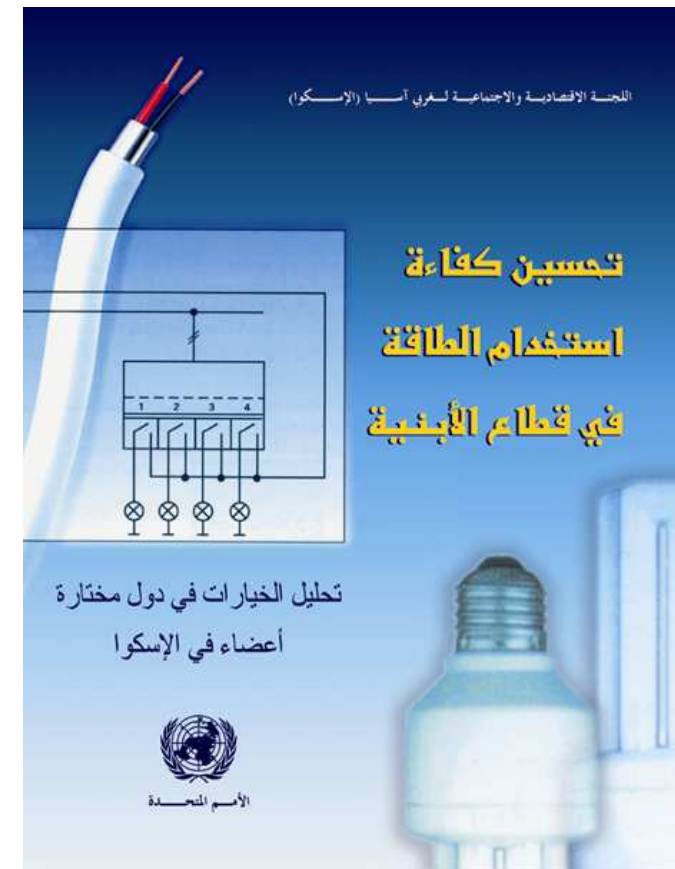
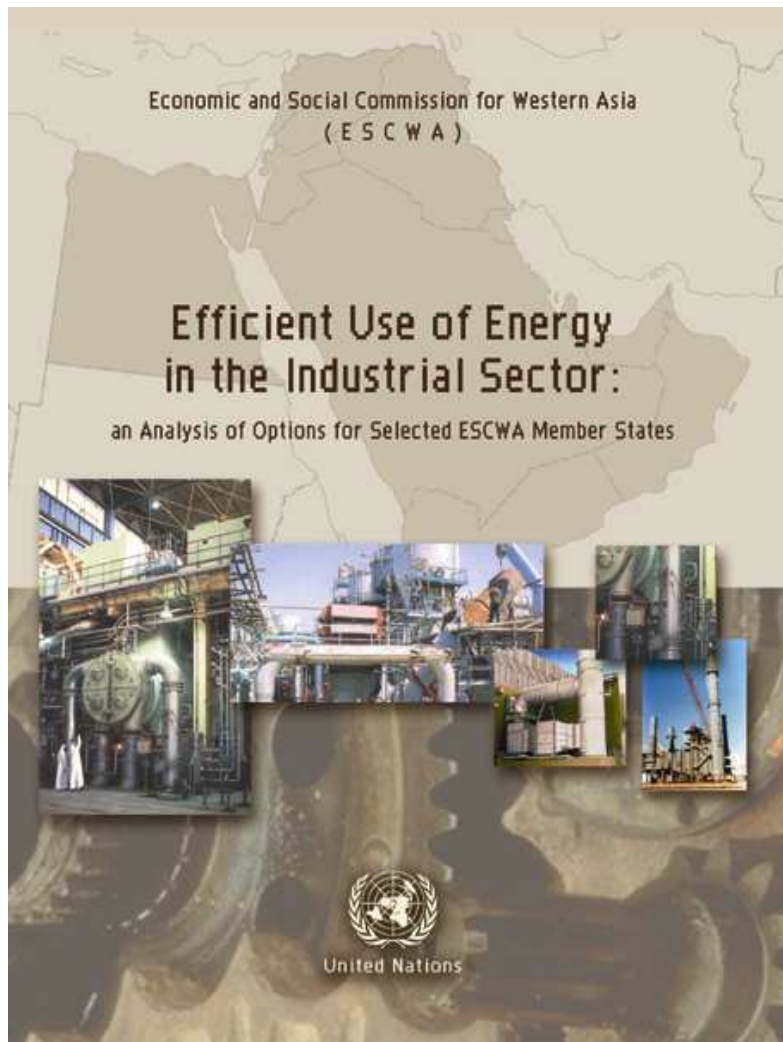
(EE) Services Provided to ESCWA MCs

- 1. Regional Studies and Publications**
- 2. Expert Group Meetings (EGMs)**
- 3. Promotional Material & Fact Sheets**
- 4. Technical Cooperation Projects**
- 5. Capacity Building Activities**
- 6. Field Projects**

Regional Studies and Publications



Year 2001



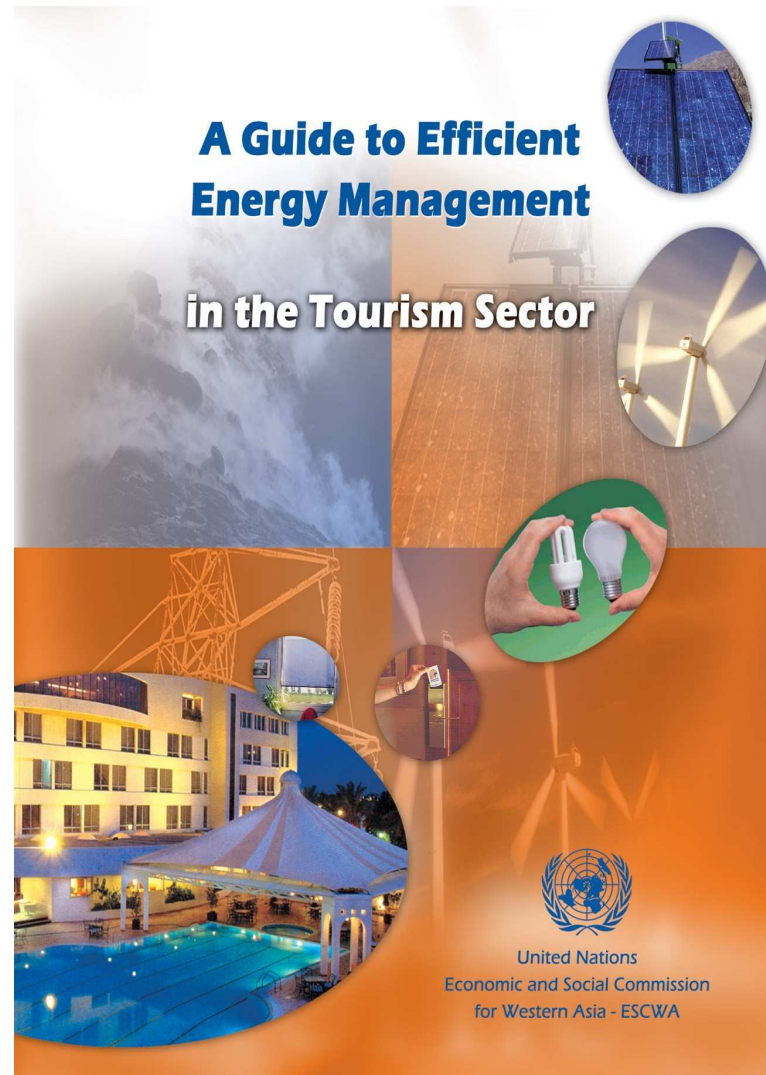
Improving Energy Efficiency
in the Building Sector

Regional Studies and Publications



Year 2003

A Guide to Efficient Energy Management in the Tourism Sector




United Nations
Economic and Social Commission
for Western Asia - ESCWA

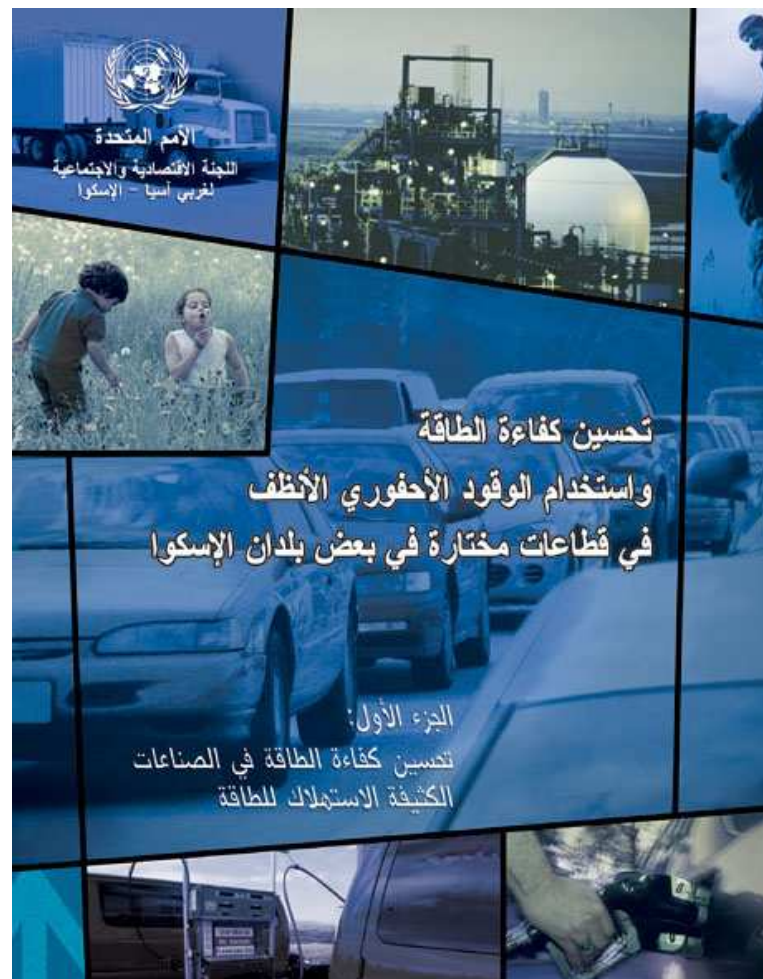
Regional Studies and Publications



Year 2005

Energy Efficiency & Cleaner
Fossil Fuels Uses in
Selected Sectors in Selected
ESCWA Member Countries.

Vol.1: Energy Efficiency in
Selected Energy-Intensive
Industries



Regional Studies and Publications



Year 2007

Energy Conservation and Efficiency in the Upstream Energy Sectors in Selected ESCWA Member Countries.

ترشيد استهلاك الطاقة، وتحسين كفاءتها
في القطاعات العليا لإنتاج الطاقة
في دول مختارة، أعضاء بالإسكوا



الأمم المتحدة - اللجنة الاقتصادية والاجتماعية لغربي آسيا

Expert Group Meetings (EGMs)



- **The role of energy networks in Arab regional integration. (Planned 2009)**
- **Promoting SMEs participation in providing services for EE (Planned 2010)**

Promotional Material & Fact Sheets



Fact sheet on Energy for Sustainable Development in the Arab Countries: Efficient Energy Management for selected Economic/ Industrial sectors (2009)

Building sector

Tourism Sector

industries;: Glass, Iron & Steel, Fertilizers & Cement

Oil & Gas sector

- Fact sheet on Improving Efficiency in the Electric Power Sector in the ESCWA Region (Planned 2010)

Technical Cooperation Projects



- Advisory Services to Bahrain in the field of Energy Efficiency and Conservation in the Oil and Gas Sector. (2006)
- Advisory Services to Yemen in the field of Energy Efficiency and Conservation in the Residential, Commercial and Industrial Sectors. (2006)
- National Energy Efficiency Training Workshop, Sana'a 26-28 Jan. 2008.
- Regional Sustainable Production & Consumption Roundtable, Abu Dhabi, March 2008. (UNEP-LAS-ESCWA)

Capacity Building Activities



Capacity Building Project to Implement Regional Priorities in the Field of Sustainable Development:

- **Regional workshop on Energy Efficiency Labeling (EEL), Amman 18-19 Dec 2006.**
- **Regional workshop on project funding through the Clean Development Mechanisms (CDM), Amman 20-21 Dec 2006.**

Field Projects



Energy Efficiency Program with QATAR General Electricity and Water Corporation (KAHRAMAA)

Energy Efficiency Program with Qatari KAHRAMAA(KM)



KM

Existing Need
&
Actions Taken
&
Actions Planned

ESCWA

Capacity to Deliver
and Pool Expertise
&
Need for an Example

**KM/ESCWA cooperation programme on
Energy Efficiency in the Qatari Electricity Sector**

- Agreement signed in Feb. 2006
- To be implemented in full coordination between KM/ESCWA
- Total cost of 437,573 US\$ (KM 49% and ESCWA 51%)

Programme Structure

Performing a “**Study and Field Surveys**” to Evaluate the Current Situation, the Potential and Prospects for Improving Energy Efficiency in the Qatari Electricity Sector”

- 1) **Organizing** a “**Seminar**” for concerned officials from the different Qatari sectors to discuss the “**Measures and Technologies for Improving Sectoral Energy Efficiency in the Qatari Electricity Sector**”

Energy Efficiency Program with Qatari KAHRAMAA(KM)



Based on Energy Audits, the Following EE/DSM Measures were Identified/Evaluated

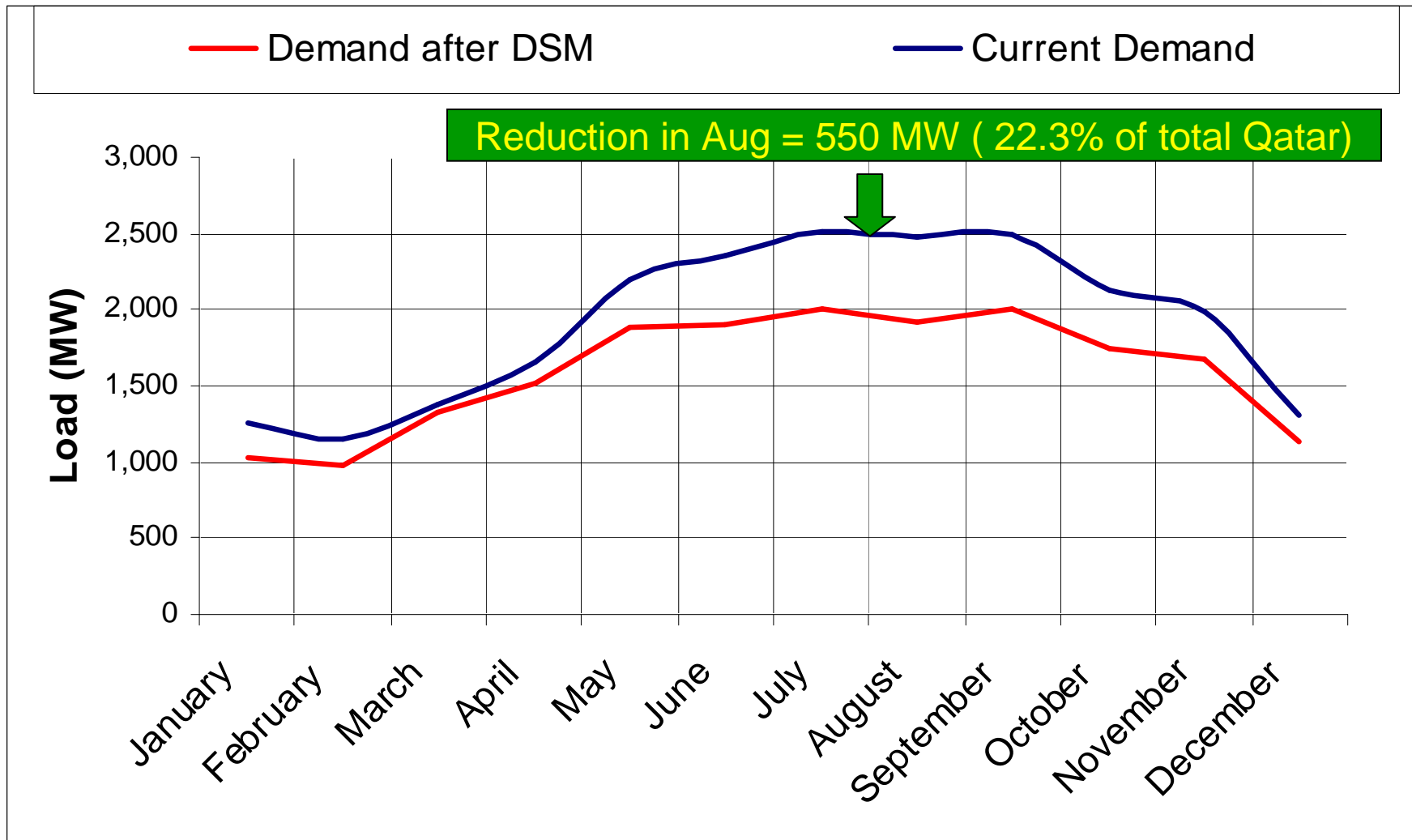
(i) EE/DSM measures of the Building sector (8 measures)

- Lighting Retrofits
- Building Envelope Improvements & Thermal Codes
- A/C Retrofits & Related Energy Labeling and standards
- Low Cost/No Cost Energy Efficiency Measures
- Power Factor Correction
- Introduction of Absorption chillers/Cogeneration/Distributed Generation
- Installation of Motor's Efficiency Measures (Inverters, motor controllers,...).
- Awareness Programs

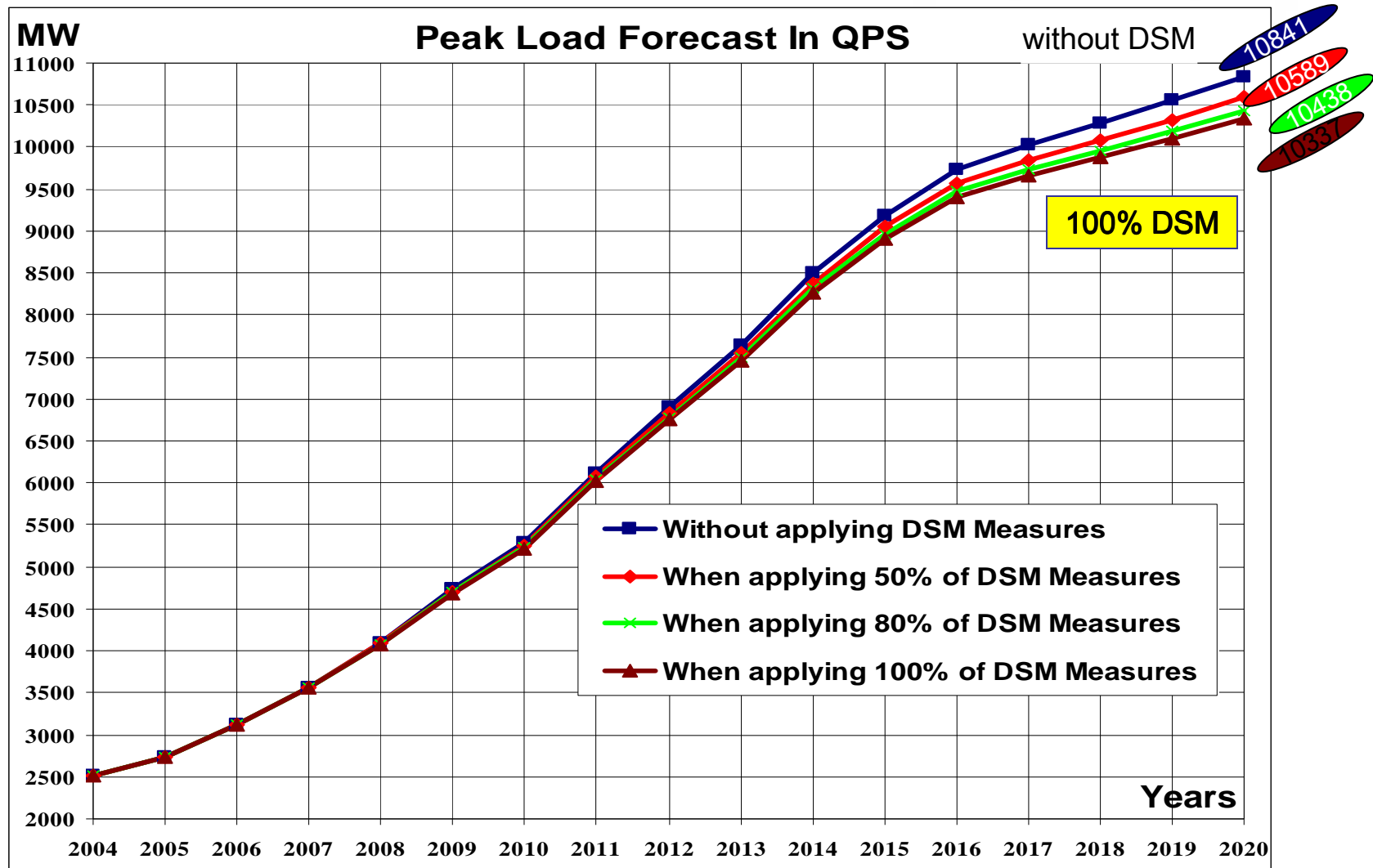
(ii) EE/DSM measures of the Industrial sector (7 measures)

- Load Shifting
- Standby Generation
- Reschedule Annual Maintenance
- Power Factor Correction
- High Efficiency Motors and Adjustable Speed Drives/Inverters
- Lighting Retrofit
- Good Housekeeping

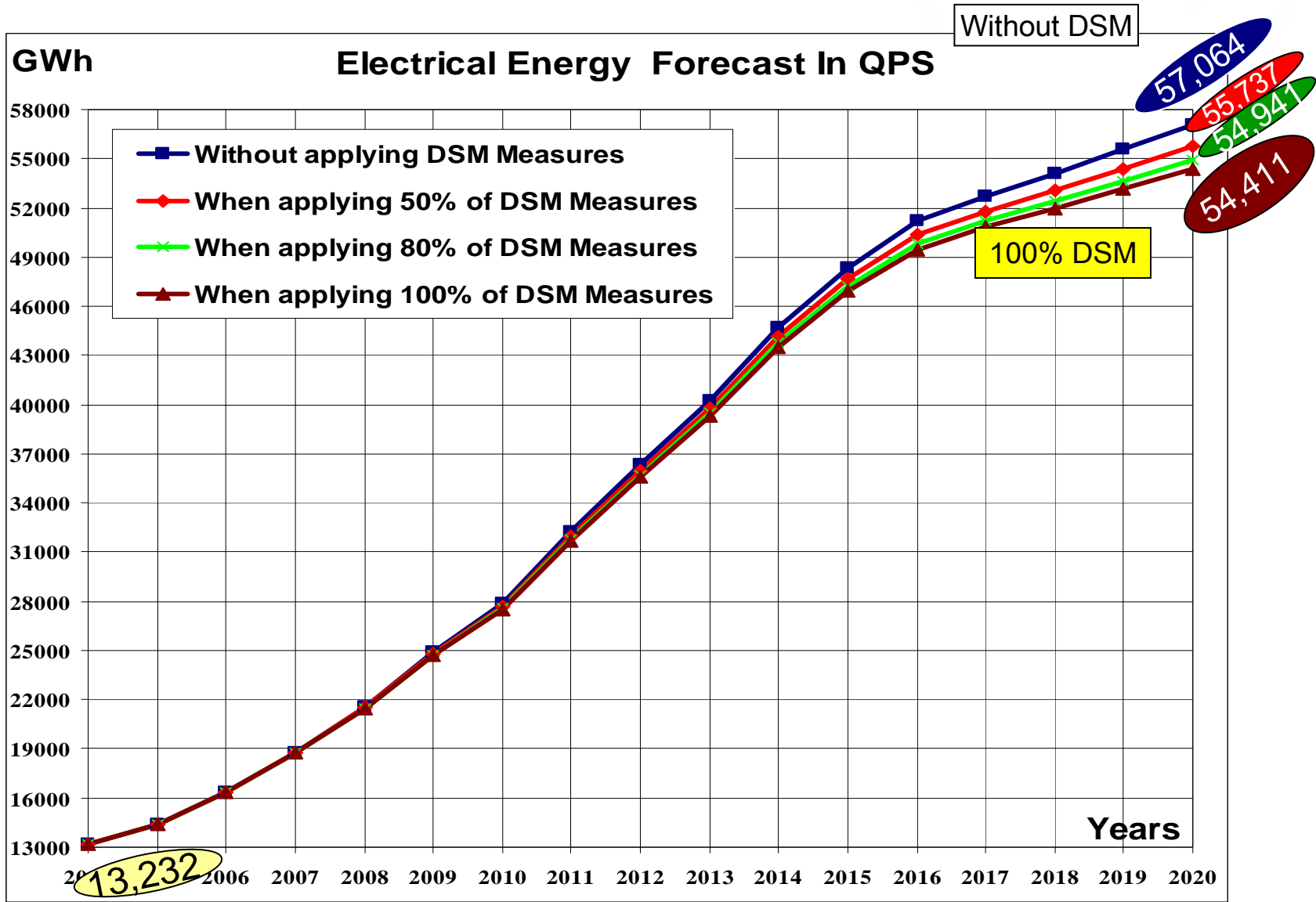
Load Reduction (MW) due to EEEP Implementation in the State of Qatar (Building + Industry)



Effect of EEEP Implementation on Peak Demand Till 2020



Effect of DSM Measures on Elec. Consumption (Gwh) for All Qatari Elec. System Till 2020



Conclusions



By EEEP Implementation, the following benefits can be achieved

- 550 MW reduction in electricity demand during summer season (in August); which represented 22.3% of Qatari peak load.
- 2,333 GWh/year saving in electricity consumption which represented 19% of total consumption.
- Reduction in capital investment required till 2020 : 325 Million US\$ in power stations + 92 Million US\$ in transmission & distribution;
- Emission reduction: 1.3 Million ton of CO₂ and 5,324 ton of NO_x per year due to fuel saving;
- Creating new businesses in the field on energy efficiency industries;
- Supporting the sustainability of NG in Qatar.

V - Looking Forward



- ESCWA within its objective to achieve integrated sustainable management in the ESCWA region, will put a focus on:
 - ❖ Enhanced capacity of member countries to improve the role of the energy sector in achieving sustainable development, with particular emphasis on fulfilling MDGs and integrating climate change in national sustainable energy strategies.
 - ❖ Strengthened South-South cooperation in the field through its existing regional cooperation mechanisms.

- ❖ Provide technical support to developing countries in conducting and improving their needs assessments for clean energy & **energy efficiency** technologies.
- ❖ Support member Countries in the formulation of policies to increase investment and financial flows.
- ❖ Enhance cooperation and coordination with concerned UN agencies in achieving the above.

Thank you!