

# MED-ENEC Capacity Building Workshop Political and Economic Framework Conditions for Energy Efficiency and Renewable Energy in Buildings Cairo-Egypt, May 22-23, 2007

Framework Conditions in MEDA and Incentives Strategies

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- New challenges and stakes
  - Increase of the energy demand
  - Higher oil prices
  - Energy dependence (energy deficit)
  - Financial balance (budget)

## • General Conditions

- Limited scope for subsidies for incentives EE and RE programmes
- “Climate change” is not a priority in many countries
- Sector reforms require financial discipline
- No macro-economic approach but only sector interests of ministries
- No high priority in energy-exporting countries

## • Financial and Economic Barriers

- High interest rates in local funds.
- Indirect and direct subsidies to other sources of energies, without considering their externalities.
- Cost not yet directly competitive with conventional alternatives (example: double glazing, wall insulation, etc.).
- Owner / Tennant conflict of interest.
- Lack of information among potential users about the real cost of EE measures.

## • Human and Technical Barriers

- Lack of projects showing a good integration of the solar collectors and the thermal insulation in the building.
- Mistrust in new technologies (quality, price worthiness, etc).
- Lack of market offer of solar thermal equipment and thermal insulation technologies in some MEDA countries.
- Lack of established markets due to the lack or non-continuous dissemination and promotion activities and a lack of investigation and development of these technologies.

- What is needed for a transition and a market transformation?
  - The main parameters are the energy bills...
  - So the key is tariffs of energy & power applied...
  - In so many climatic & socioeconomic contexts.
  - But the complex links between the building quality, the behaviour, the appliances and the energy bills & comfort are not easily understood by the users, or architect, or «engineer»... civil, electrical, mechanical.
  - Still how to mobilize all others for promoting EE and RE: banker, city planner, contractor, real estate agent, rental broker?

- What needs co-financing?

- Pre-investment: audits, cost estimates, feasibility studies
- Investment: key components contributing to EE (double glazing, insulation material, efficient compressor, solar flat collectors etc), as easily surveyed in quantity, or the whole works?
- But also training packages; reform of regulations & tariffs; monitoring campaigns on energy per use in buildings ; R&D on energy in building for components, systems, softwares; awareness campaigns; evaluation of policies & measures.

- Economic and Fiscal Incentives in MEDA countries
- Subsidies for Energy Audits

Morocco	Algeria	Tunisia	Egypt	Israel
Envisaged	Subsidies for Energy Audit are planned in the frame of the PNME	Subsidies for energy audit and implementation by law (2005). Obligation for all companies and institutions to appoint an Energy Conservation Officer (by decree 2003)	The EEIGGR project will bear cost of energy audits and implementation for some buildings (ESLGM) has allocated a budget of 280,000 US\$ to enable ESCOs to access finance.	Regulation for Implementing of energy audits. Performance Contracting for large projects (in process). Obligation for all companies and institutions to appoint an Energy Conservation Officer.

- Economic and Fiscal Incentives in MEDA countries
- Subsidies for Energy Audits

Jordan	Palestine	Lebanon	Syria	Turkey
<p>By several programmes : JUMP up to 70% of study and 30% of implementation</p> <p>Weak implementation</p> <p>AFD credit line for implementation</p>	<p>NA</p>	<p>LCECP is subsidizing more than 180 energy audit.</p> <p>Implementation 20%</p> <p>Guaranteed fund for implementation is planned about 0.5 MUS\$</p>	<p>100 detailed audits of industrial and large commercial facilities have been conducted and subsidised.</p> <p>Implementation less than 10%</p>	<p>EIE is performing few energy audit per year totally subsidized.</p>

- Economic and Fiscal Incentives in MEDA countries
- Financial schemes

Morocco	Algeria	Tunisia	Egypt	Israel
<p>Financing of Demonstration projects (SWH, photovoltaic) by international donors and CDM mechanisms</p>	<p>FNME (National Energy Conservation Funds), feeding by tax on conventional energies). Executive Decree 2004 which allows PV to feed in to the grid.</p>	<p>2005 Law creates fund for supporting EE and RE projects feeding by tax on new cars and new air conditioners. PROSOL 2004 law investments incentives (Subsidies) for EE projects</p>	<p>Credit line of 40 M€ by AFD for pollution abatement and sustainable energy. Funding R&amp;D of the (NREA). The loan guarantee program as proposed in the EEIGGR.</p>	<p>Grant of up to 30% to demonstration projects. grants and licensing assistance to wind farm developers, and R&amp;D support.</p>

- Economic and Fiscal Incentives in MEDA countries
- Financial schemes

Jordan	Palestine	Lebanon	Syria	Turkey
<p>Energy Efficiency Funds : under development.</p> <p>Credit Line AFD for Energy Efficiency Projects (40 M €).</p>	<p>NA</p>	<p>Commercial bank loans for SWH.</p> <p>Grants from China, Suede, Greece, Spain for EE projects and SWH (around 10 M Euros).</p>	<p>Exempt from tax import : Insulation material and SWH components.</p>	<p>Many incentives by Law on Utilization of Renewable Energy Resources for the Purpose of Generating Electrical Energy and EE law.</p>

- Economic and Fiscal Incentives in MEDA countries
- Demonstration of new technologies

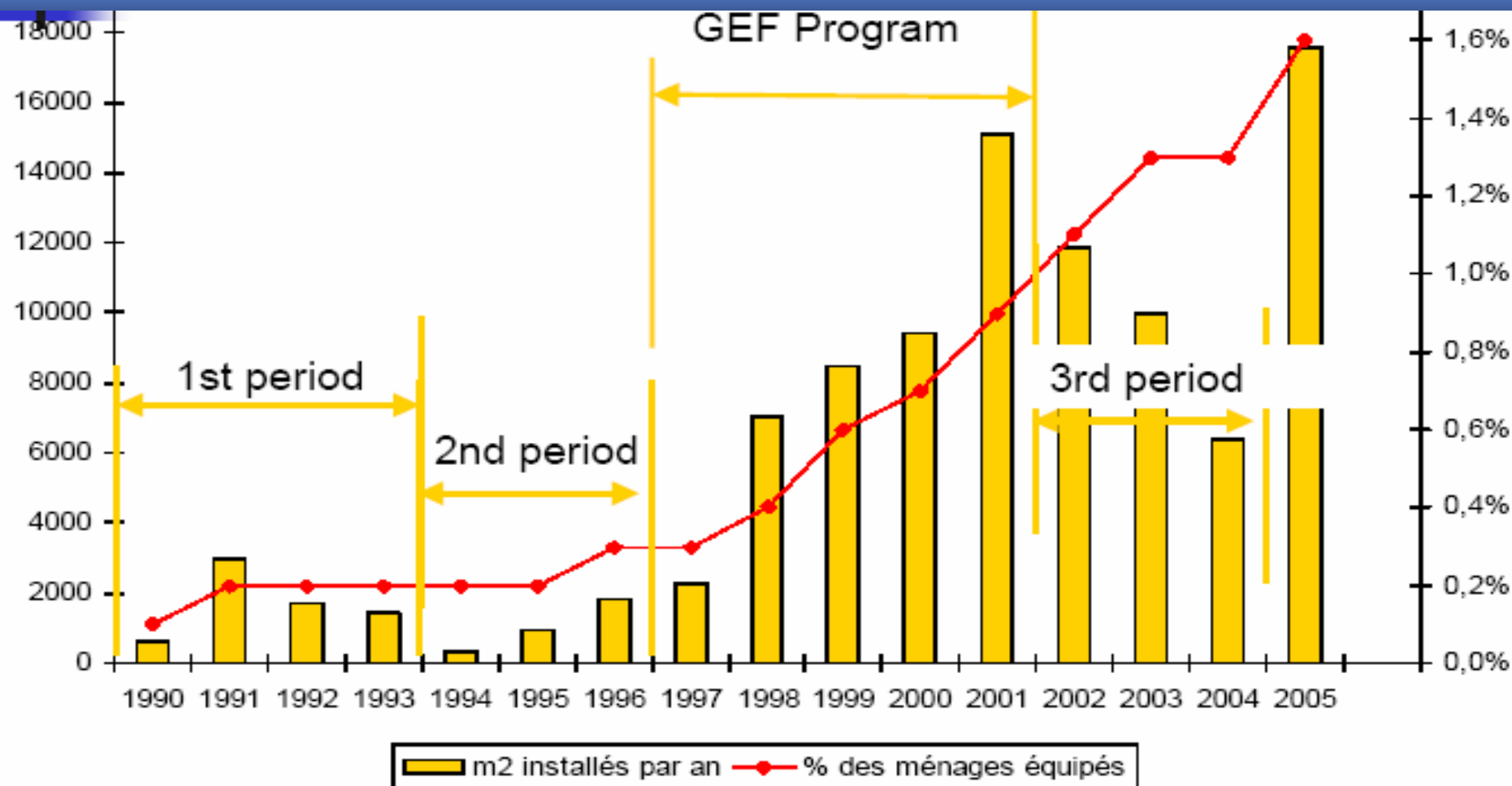
Morocco	Algeria	Tunisia	Egypt	Israel
Photovoltaic Efficient lighting in a couple of hospitals and schools	Planned in the frame of the PNME	36 operations Building Construction demonstration projects in the residential & service sectors. Implementation of EE measures as a result of Energy audit in some buildings. Collective SWH with GSR	Construction of EE buildings: Misr University for Science and Technology. National health insurance building. Cairo University faculty of Sciences. CFL lamps (Alexandria)	Co-generation, lighting of office buildings, bioclimatic building.

- Economic and Fiscal Incentives in MEDA countries
- Demonstration of new technologies

Jordan	Palestine	Lebanon	Syria	Turkey
SWH and photovoltaic.	NA	Energy Efficiency Construction Project, French GEF. 20 000 m2 of EE residential buildings With Collective SWH and Efficient lighting,	SWH Photovoltaic.	4 Energy Efficient Buildings. Energy Efficiency Education Center EIE.

- Best practices from MEDA Countries: New incentive program for the development of SWH in Tunisia:
- Programme PROSOL (2005-2010):
  - Installation target : 100 000 m<sup>2</sup>/year
  - Objective 700 000 m<sup>2</sup> of cumulated area installed in 2011.
- Two financial mechanisms:
  - Classical: subsidy of 20% of the cost with a maximum of 100 DT (70 €) (Fund feeding by donors).
  - Innovative: soft loan over 5 years with reimbursement of the loan to electric utility (through the bill).
- Accompanying measures : no VAT on labour cost for installation.
- Regulation : obligation of installation of solar water heaters in new service sector buildings.

- Best Practices from MEDA countries :  
Market of solar water heaters in Tunisia (source ANME)



- Financing of SWH by commercial banks in Lebanon



## Case studies :

1. Rehabilitation of Existing Buildings For Saving Energy in ANKARA
2. Energy Conservation Measures In Residential buildings in Lebanon

## Mains indicators of space heating energy consumption in residential buildings in Ankara (1998)

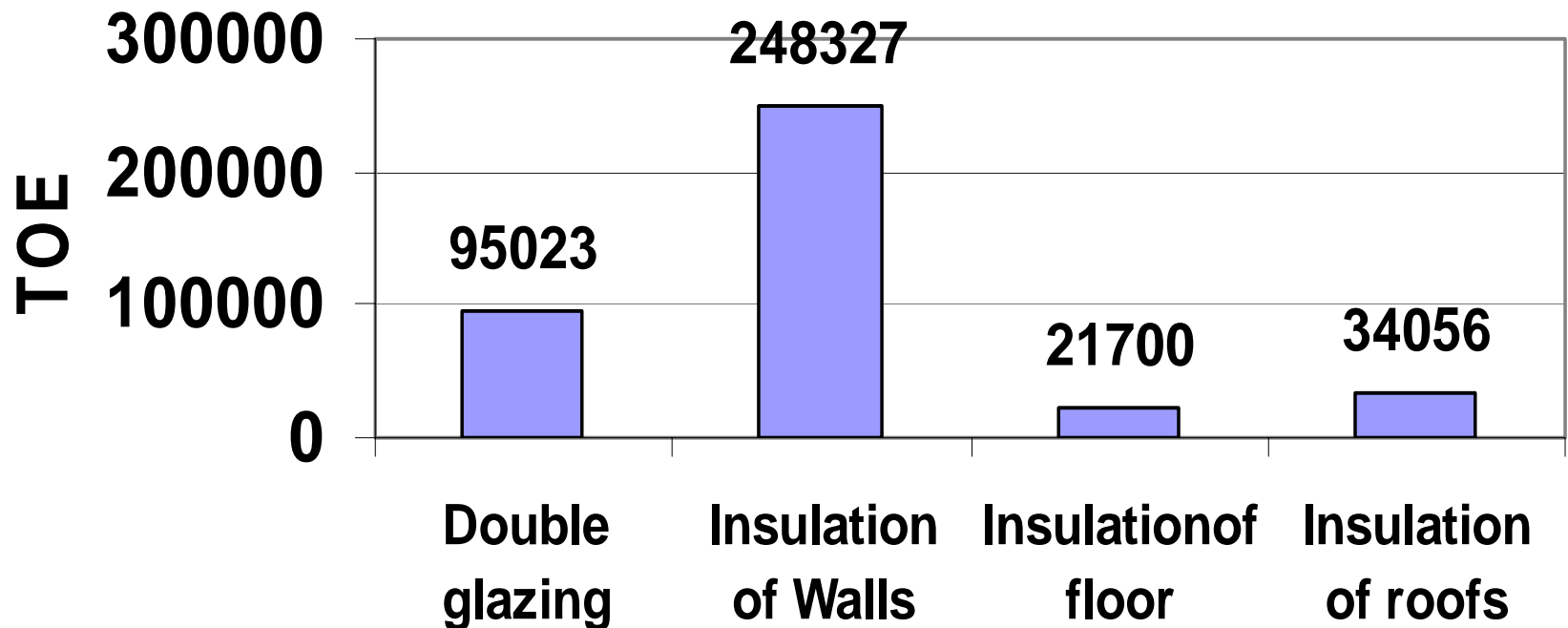
Number of persons living at the residences	nbr.	3106012
Total net used area	m <sup>2</sup>	73446870
Total heated area	m <sup>2</sup>	42219800
Average living area per person	m <sup>2</sup>	23.647
average heated area per person	m <sup>2</sup>	13.6
Ratio heated area to living area	%	57.5
Total primary energy consumption for space heating (65% of total)	TOE	991800
Energy consumption per person	TOE	0.319
Primary Energy consumption per living area (not insulated building)	kWh/m <sup>2</sup>	190.8
Final Energy Consumption per living area (EE 71%) (not insulated)	kWh/m <sup>2</sup>	135.5
Primary Energy consumption per living area	TOE/m <sup>2</sup>	0.014
Primary Energy consumption per heated area	TOE/m <sup>2</sup>	0.023

Source : Calculated by Mourtada based on data from **Turkish Statistical Institute**

# Potential of Energy Saving from Thermal Rehabilitation of Residences For Ankara Province

(Total\* = 346 000 TOE per year)  
(\* taking into account combination of measures)

Source A. Mourtada ADEME



# Evaluation of recommended EE measures in typical in Typical apartment of 94m<sup>2</sup> in ANKARA

<i>Measures to be applied</i>	Cost estimate	Savings	<i>Existing heating system Annual cost in TRY</i>	
			<i>Fuel</i>	<i>Gas</i>
<b>Pay back in years if</b>			<b>3140</b>	<b>908</b>
Double-glazing	900 €/flat	12%	4,7	16,1
Insulation of walls	1500 €/flat	28%	3,3	11,6
Insulation of roof	1250 € <b>5</b> flats	21 % top	3,7	12,8
Insulation of floor	750 € <b>5</b> flats	14 %floor	3.6	12.6
Thermostatic w. valves	120 €/flat	3%	2,5	8,8
Interior temperature lower if insulation: 22C > 20C	No cost	14 %		
<b>Total all measures combined</b>	<b>2920 €/flat</b>	<b>50,5 %</b>	<b>3,6</b>	<b>12,5</b>
Solar Water Heater for 200 l/day	600 €/flat	2760 kWh/y	3,2	9.1

# Residential Energy Efficiency : The Cost of EE Measures For ANKARA Province

- Investment in Thermal Rehabilitation from 2600 to 3100 € per dwelling.
  - 20 to 40% of households could have access to financing (proper resources, loan).
  - Investment in Thermal rehabilitation in existing residential building could be 680 millions € for the next 5 years.
- The economy for the country could be more than 800 to 1360 millions € (reducing investment needed to upgrade the electricity infrastructure and reducing importation of natural gas and fuel).

- The situation in Lebanon is Characterized by :

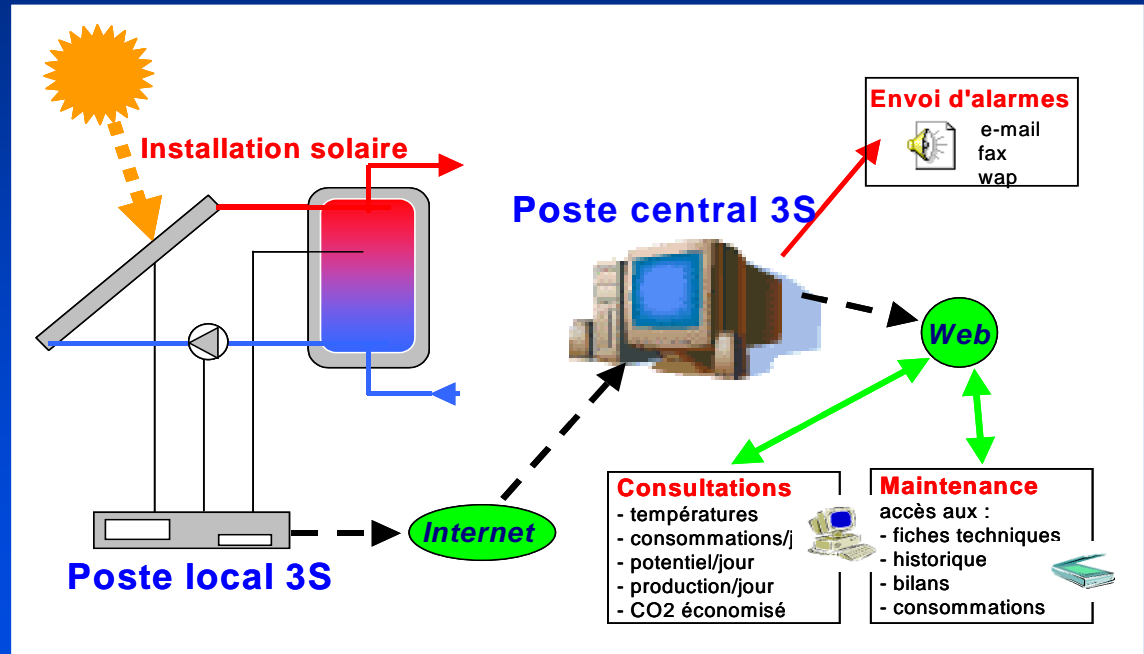
- insufficient electricity production in a sector showing a deficit and in progress of reorganisation with tariffs greatly subsidized,
- a primary energy completely imported and from oil derivatives.



- Demonstration projects (French GEF)



- The demonstration operation included a follow-up mechanism and survey nearby of the users in order to evaluate improvements being introduced



- Results of the Project PEEC : An appreciable energy saving

- The project shows a real electricity saving at least 1500 kWh/year per flat of 150 m<sup>2</sup> by using SWH and EE Lamps for an investment of 660 €/flat.
- If Energy Conservation Measures are applied for 150 000 apartments (total investment = 99 M€) the electricity demand will be reduced by 36 MW. The Investment avoided in new electricity generation plants will be 80 M€ (thermal plant “heavy fuel”).
- The annual electricity saving will be 225 GWh with generation cost of 15.6 M€.
- Other benefits : Jobs creation, environmental improvement.

- Recommendations for financing incentives
  - Subsidies are needed for a kick-start, over a limited period.
  - Awareness raising, technical assistance and capacity building
  - Market preparation and market assessment.
  - Improving legal and macroeconomic framework conditions for EE and renewable energy technologies.
  - Expanding development partnerships with the private sector (especially Banks).

- Towards a decentralized and balanced financing-funding
  - Transition to more EE needs financing, but...
  - Financing needs a stable source of funding...

Recommendation:

- A small environmental tax on all energies, with adequately tuned parameters...
- Feeding EE funds at national, regional and obviously municipal levels...
- which could finance, with part subsidy, all what is needed to move towards more sustainable buildings, better planning & sustainable mobility.

Thank you for your attention