Energy Efficiency in the Construction Sector in the Mediterranean Countries «EU- MED-ENEC »

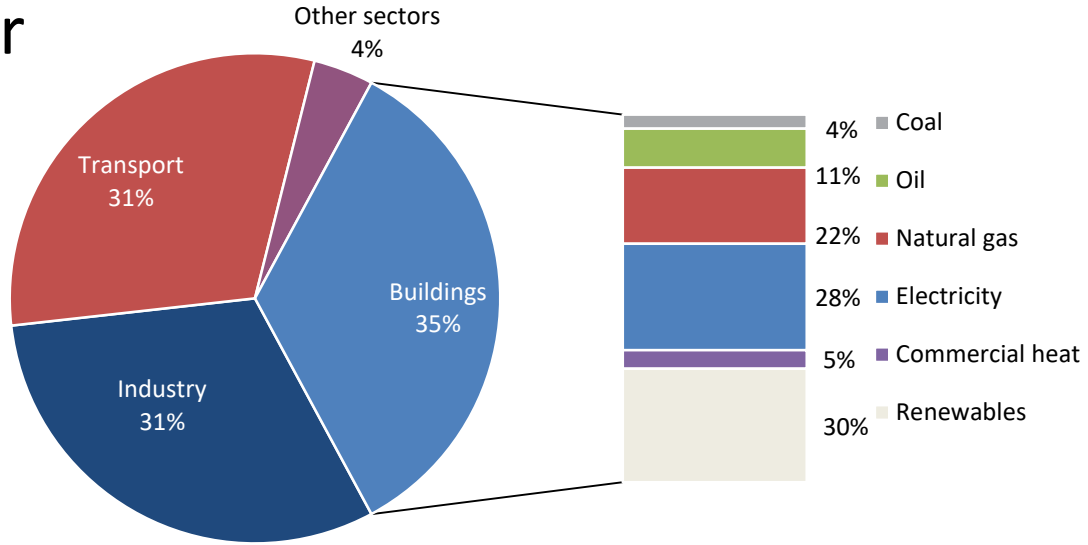
Kawther LIHIDHEB

Amman: 30-31 October 2017

Importance of Buildings

This project is funded by the European Union

- Largest end-use sector
- 1/3 carbon emissions
- 50% of electricity
- Major portion of GDP
- Opportunities/challenges:
  - Population growth and increased wealth in emerging economies will drive new floor area => needs to be efficient



Global Final Energy Demand, 2012

Source: IEA Energy Statistics, 2014

Energy saving potential in buildings

Energy savings structure according to IEA 450 scenario

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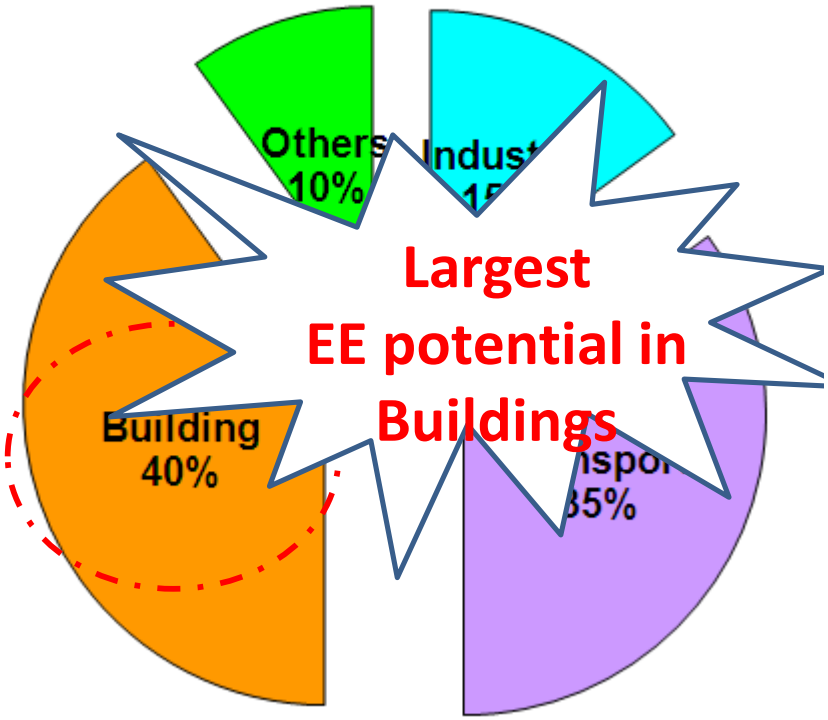
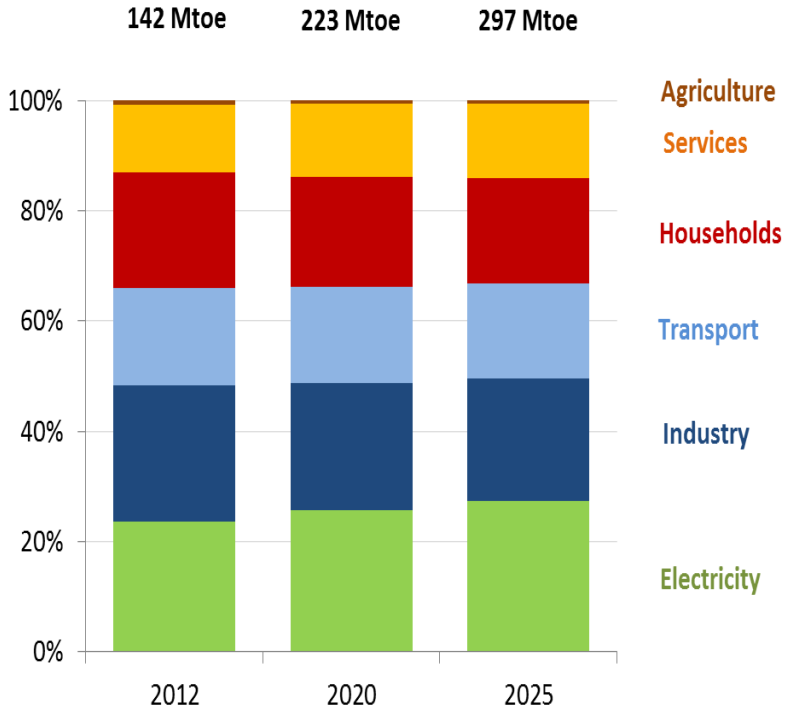
Final energy saving in MENA region in 2030 according to the IEA 450 scenario



Source: IEA, 2009

Energy efficiency potential, 2025, MENA region



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Buildings in Arab countries

Importance of building in total energy consumption

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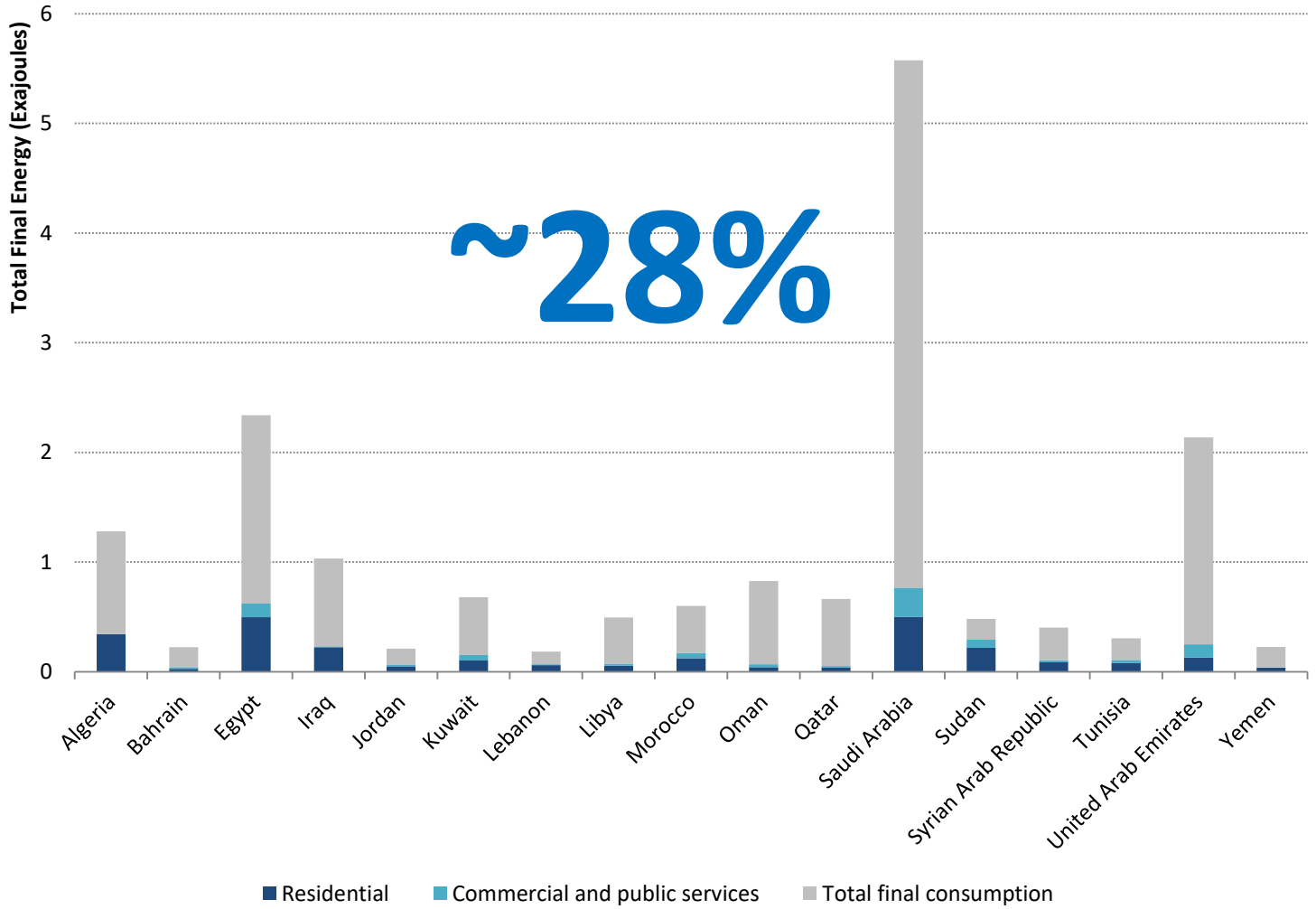
Final energy use in buildings, 2012



Source: IEA Energy Statistics, 2014

Buildings in Arab countries

Importance of building in total energy consumption

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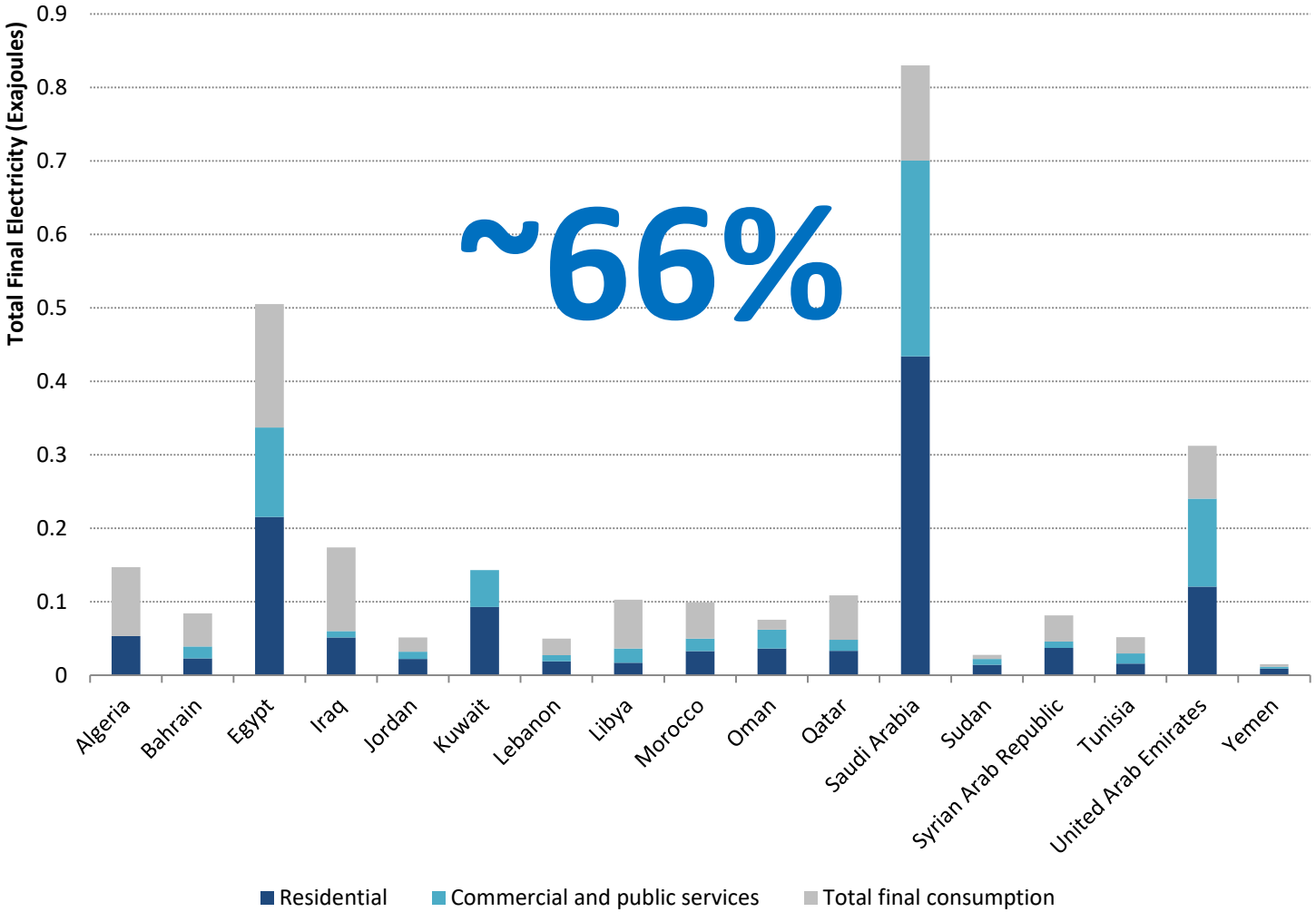
Final electricity use in buildings, 2012



Source: IEA Energy Statistics, 2014

Buildings in Arab countries

Importance of building in total energy consumption

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Growing rate of urbanization
+
Rising standards of living
+
Aspirations for greater comfort

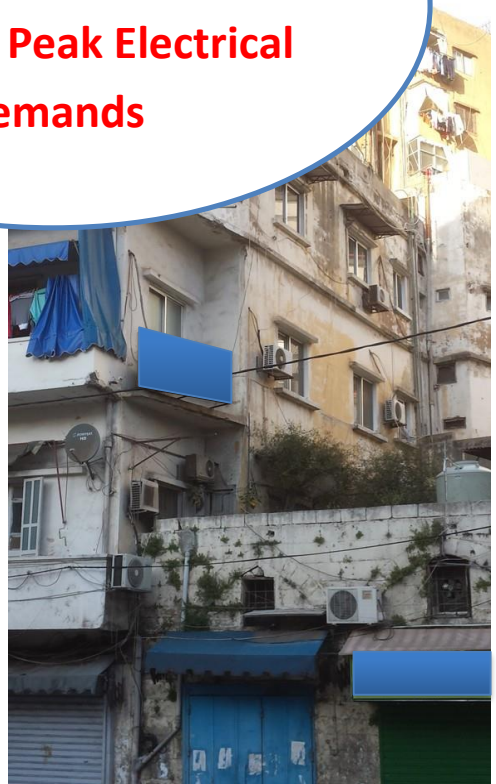
low prices of many household equipments (often with very poor energy performance ratings)

affordable to an increasingly high number of potential consumers

Important energy subsidies of consumer energy prices (in most countries of the region)

No incentive to end users to choose more EE solutions or equipments

Substantial Increase in Energy Consumption Including Peak Electrical demands



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MED-ENEC Project on Energy Efficiency in the Construction Sector is a regional project funded by the **European Union** and was implemented by a consortium of three companies **ADEME** and **ECOFYS** and lead by **GIZ**.

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MED-ENEC-Project Goal

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"To increase the use of Energy Efficiency (EE) measures and Renewable Energy (RE) technologies in the building sector and help develop the related industrial and service activities in our Mediterranean Partner Countries".

MED-ENEC Partner Countries

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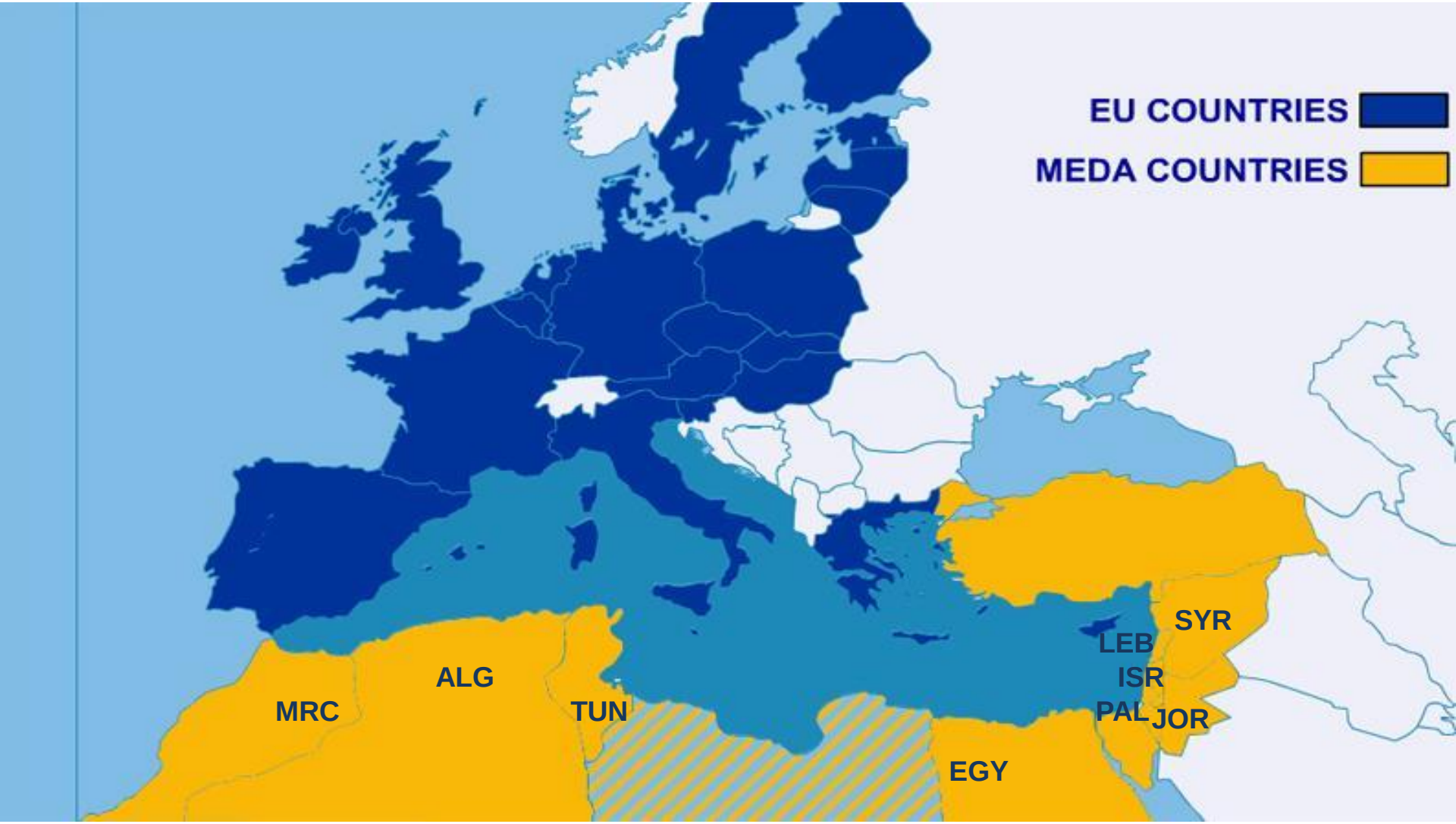

MED-ENEC IMPLEMETATION
2 PHASES

This project is funded by the European Union

- **MED-ENEC I: 2006-2009- Technologies Transfer**
  - MED-ENEC project supported **10 low-energy-buildings** as **pilot projects** in all partner countries

- **MED-ENEC II: 2010-2016 – Know How Transfer**
  - Support ME partners to improve **policies and framework conditions** that enhance energy efficiency and the application of renewable energy technologies in the building sector

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MED-ENEC PHASE I TECHNOLOGY TRANSFER 2006-2009

MED-ENEC I TECHNOLOGY TRANSFER

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› 10 pilot projects (PP) were established to :

- Demonstrate **best practices and new technologies** as well as integrative approaches for the efficient use of energy and the use of renewable energies in the building sector in the MEDA countries.
- Increase the **knowledge of new construction and technical building equipment technologies**, highlighting their interest, showing their practical feasibility, and promoting their adoption and development.

The PP represent a balanced regional mixture as well as different building types and technologies

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MED-ENEC I TECHNOLOGY TRANSFER

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I) Small residential buildings			
1) Rural house (80 m)	ALG - Souidania, Alger	Bioclimatic design, earth stabilized bricks, night ventilation and fans, solar space heating & hot water	
2) Urban villa (420 m)	JOR - Aqaba	Design, orientation, shading, solar cooling, thermal insulation	
3) Urban villa/guest house (253 m)	MORC - Rabat	Bioclimatic design: orientation, thermal insulation, overhang shadowing, thermal mass, night ventilation, solar collector/heat pump system	
II) Large residential buildings			
4) Flat in apartment building (306 m)	PAL - Ramallah	Thermal insulation, double-glazed windows, ground coupled heat pump	
5) Low-income apartment building (2,400 m)	SYR - Kudsira Suburbs	Thermal insulation, traditional shading, solar chimney, evaporative cooling, solar floor heating & hot water	

MED-ENEC I TECHNOLOGY TRANSFER

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III) Non-residential buildings			
6) Private training & research centre (1,760 m)	TUR - Gebze	Thermal insulation, natural light, shading, ground heat pumps for cooling & heating	
7) NGO training & community centre (2,100 m)	ISR - Sakhnin	Traditional elements: passive cooling towers (Malkafs), natural light openings (Tisanes), shading systems (Mashra-bia). New technologies: CFL bulbs, photovoltaics (PV) and wind turbine	
8) Public administration office (refurbishment, 576 m)	EGY - Sharm El Sheikh	Solar cooling, reflective insulation coating for roof, shading, sealing the windows, occupancy sensors	
9) Private hospital (refurbishment, 6,000 m)	LEB - Zgharta	Roof insulation, efficient lighting, maintenance of air conditioning, demand-side management system	
10) Tourism complex (3 chalets, 148 m)	TUN - Beni M'Tir	Wooden construction, bioclimatic design, insulation, shading, thermal mass, night ventilation, geothermal heat, solar air collectors, PV	

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MED-ENEC PHASE II
KNOW-HOW TRANSFER
2010-2016

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KNOW HOW TRANSFER

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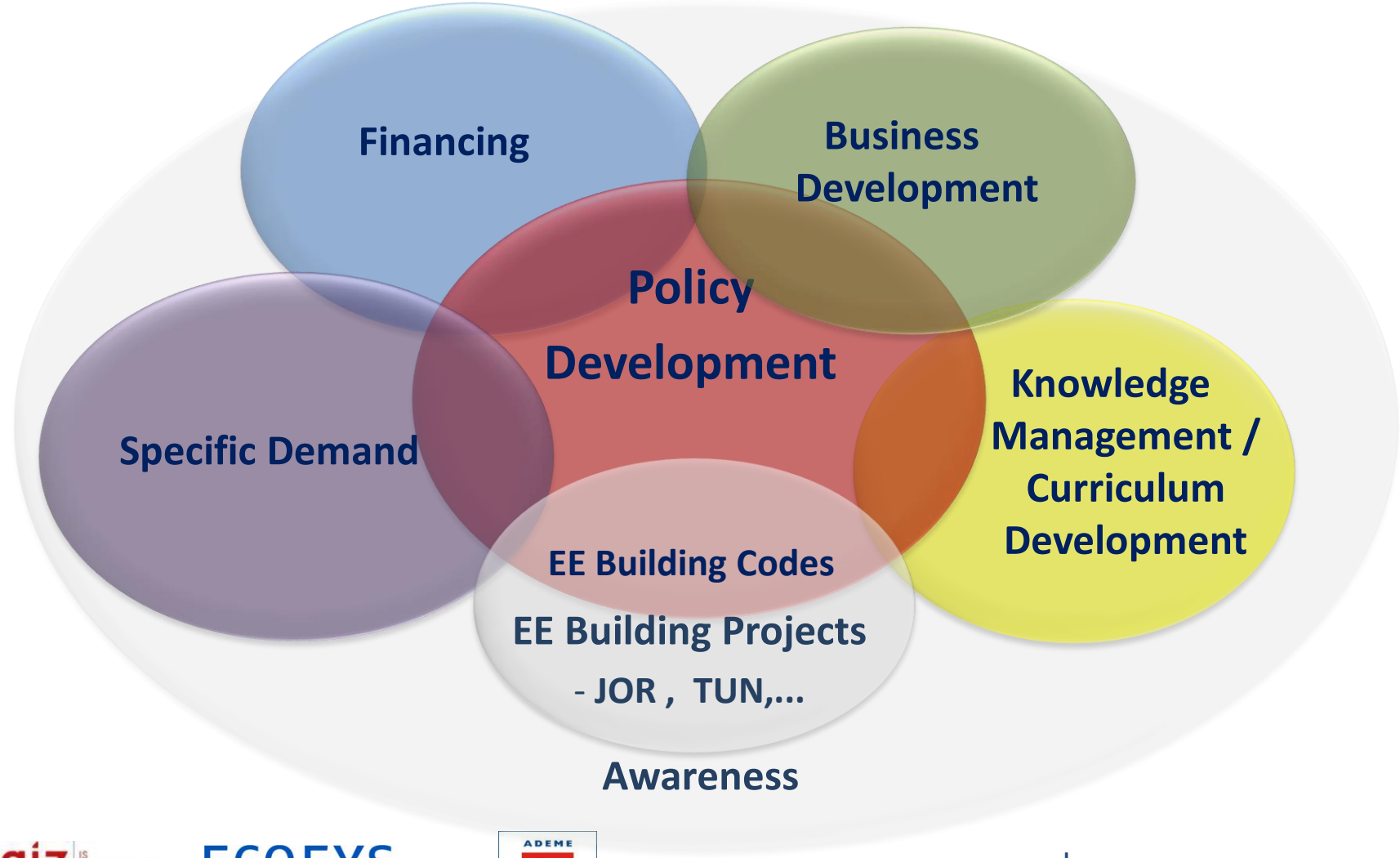

Energy Efficiency Policy Recommendations In MENA Countries

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Energy Efficiency in the Construction Sector in the Mediterranean

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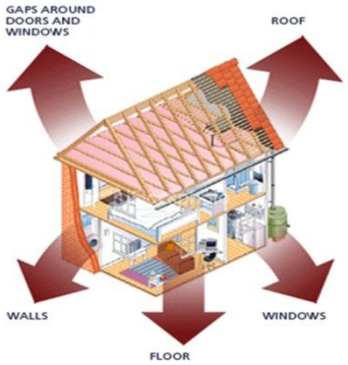
Cross-sectoral

1. Establish energy efficiency data collection and indicators (including capacity)
2. **Develop National Energy Efficiency Action Plans**
3. Facilitate private investment in energy efficiency
4. Designate lead institutions for planning, implementing, and monitoring energy efficiency policies and programmes
5. Implement an energy pricing policy that is in line/coherent with EE ambitions

Buildings

1. **Require and enforce building energy codes (including minimum energy performance sta**
2. Support energy-efficient building renovations
3. Encourage use of high-efficiency building components



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Energy Efficiency Policy Recommendations In MENA Countries

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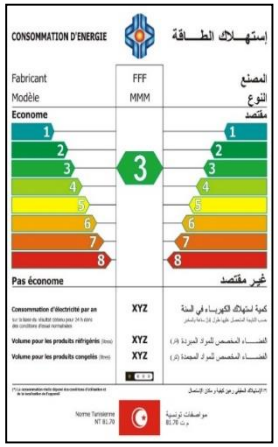
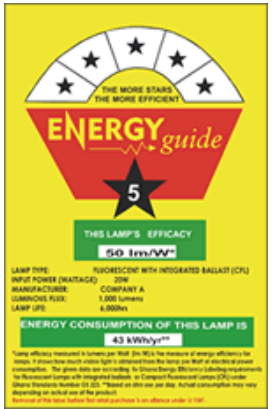
Appliances and Equipment

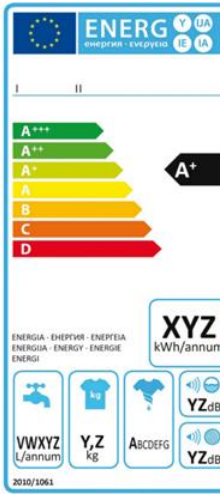
1. **Require MEPS and labels for appliances and equipment**
2. Monitor, verify and enforce standards



Lighting

1. **Phase out inefficient lighting products and systems**
2. Put in place efficient lighting systems (including high-efficienc street lighting)





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Policy Level

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Energy Efficiency in the Construction Sector in the Mediterranean

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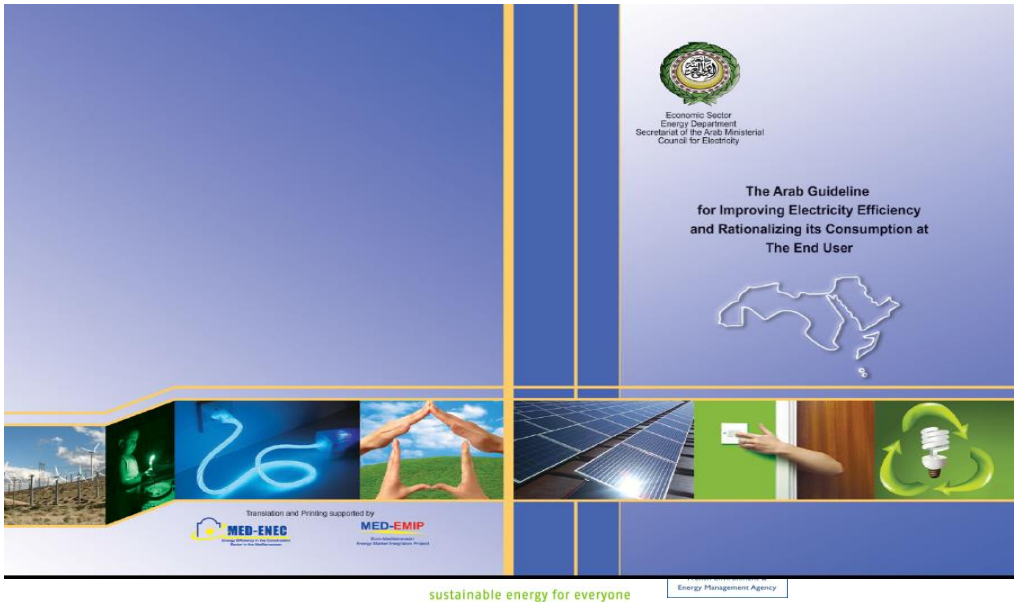
- Contribution on the development of the Arab EE framework under the umbrella of **LAS**.
  - Arab EE guideline
  - NEEAP Design Methodology
  - NEEAP Monitoring Reporting & Evaluation



Arab EE Guideline was the changing point for EE planning in the Arab region

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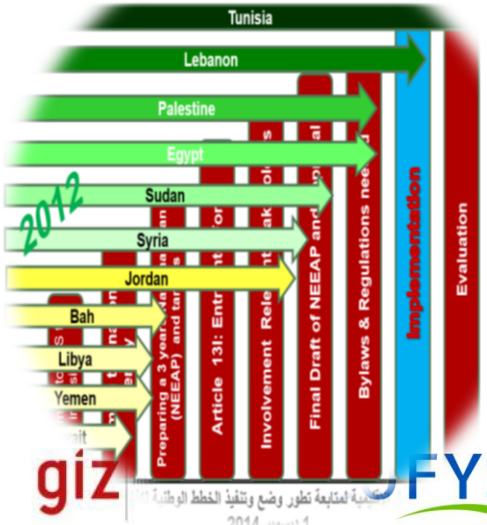

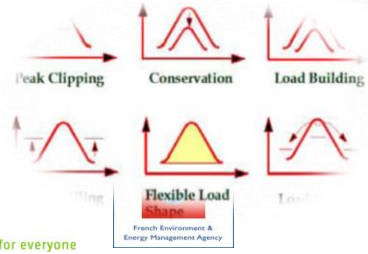

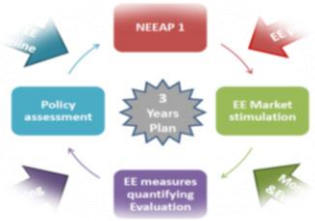

MED-ENEC II
Policy Level

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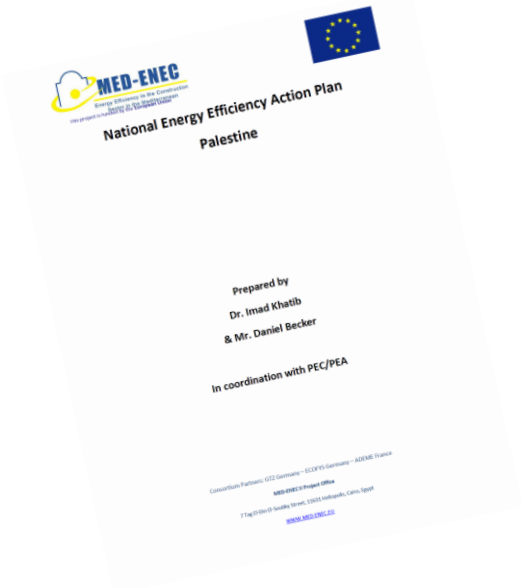
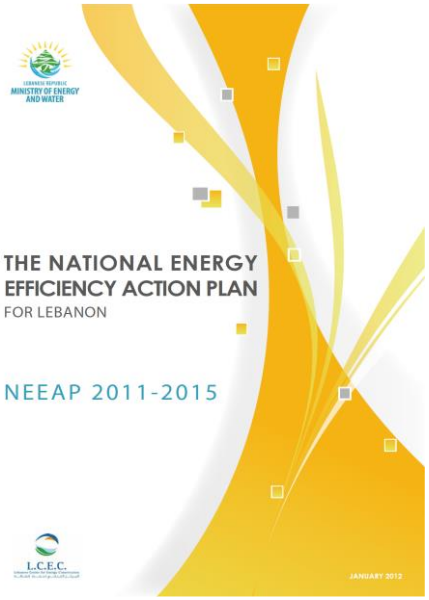
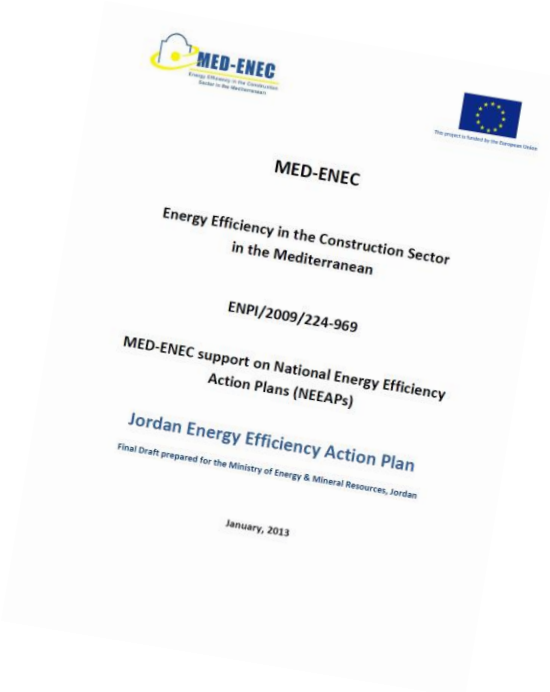
- Supporting ME-Partner Countries on designing and evaluating their NEEAPs.
  - Lebanon
  - Palestine
  - Jordan







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Energy Efficiency Building Code

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- Overview on the different status of EE BC in the region
- Develop the regional Road Map (Regulatory framework, institutional set-up, capacity building,….)
- Following: Adopt to local conditions
- Creating a platform of exchange of best practices among the countries

Status EE Building Code Implementatin in ME-PCs

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	ALG	EGY	JOR	LEB	MOR	PAL	SYR	TUN
Technical Development of EE BCs (envelope)								
Technical Development of EE BCs (Active systems)								
Legal Framework Development								
Endorsement Legislation								
Institutional Set-up								
Implementation								
Enforcement								
Monitoring & Evaluation								
Upgrading / adjustment								

	Need to start
	In progress
	Achieved

EE Building Code Roadmap in the MENA Region

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Energy Efficiency in the Construction Sector in the Mediterranean

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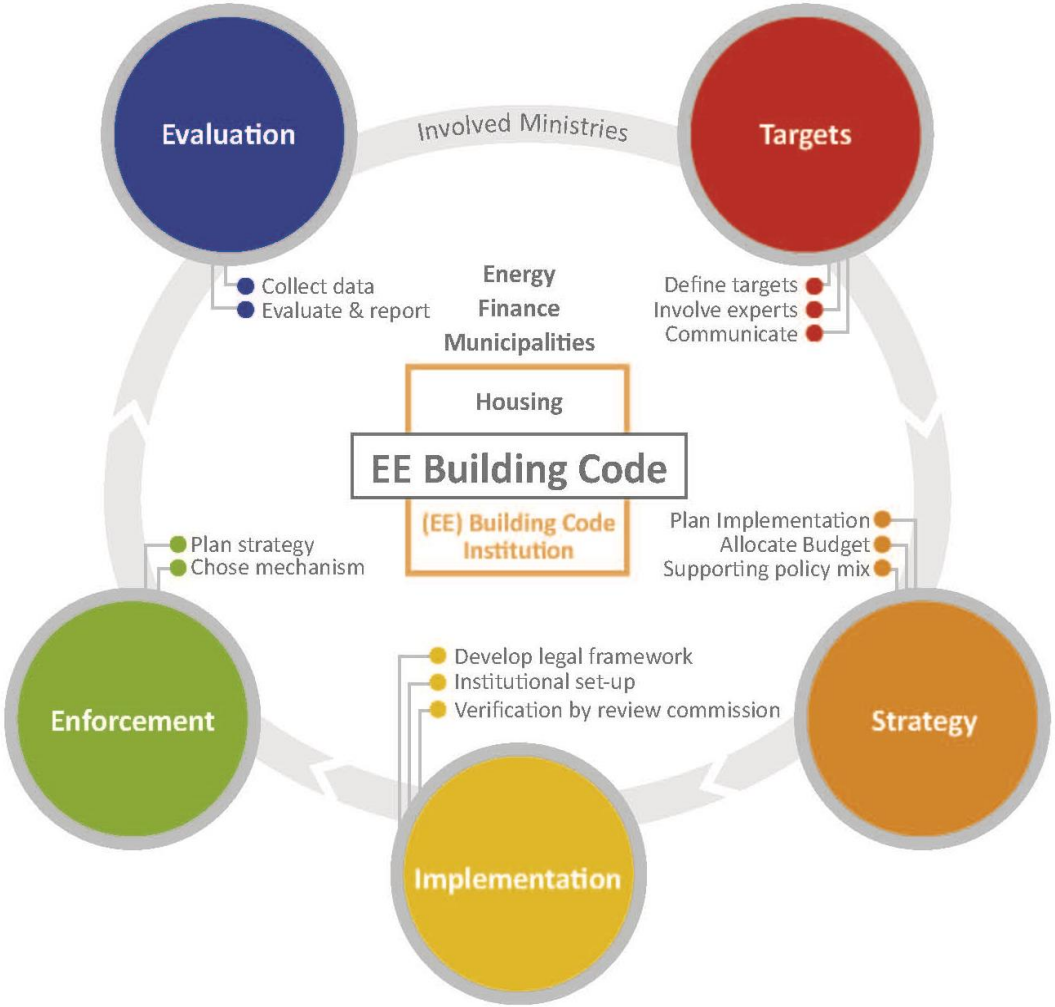

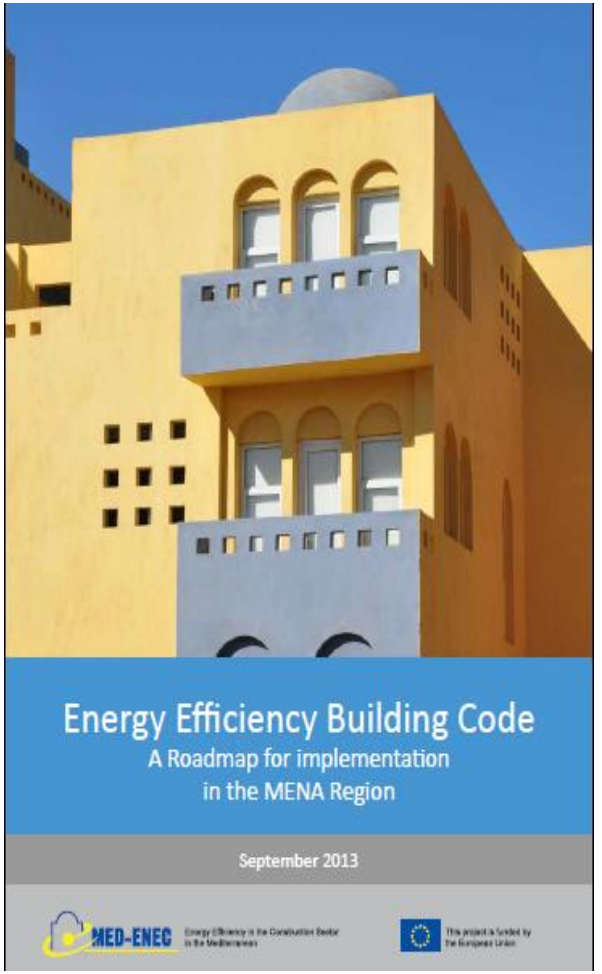

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MED-ENEC II
Promoting ESCO market in the MENA Region

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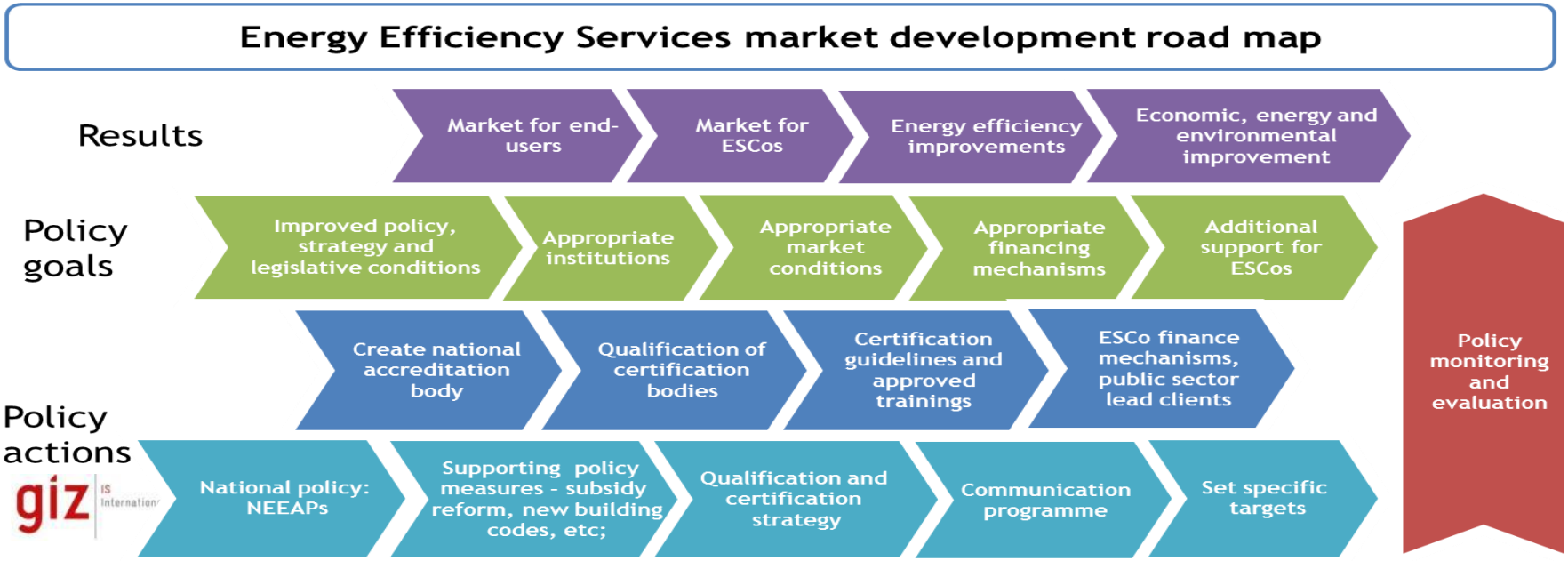
- **Regulation and Certification of ESCOs (ME)**
  - Overview on the status of ESCOs in the region
  - Different status of the countries
  - Develop the regional Road Map (Regulatory framework, certifications, institutional set-up, capacity building,….)
  - Following: Adopt to local conditions



- **Supporting ME-PCs on developing and implementing action plan to promote ESCOs business model in the building sector**
  - **Tunisia ESCO-Pilot project "public sector"**
    - EE potential and Market for ESCO in public sector
    - Existing barriers for ESCO access to public sector
    - Developing and proposing a suitable regulatory framework
    - Developing a national toolkit(bidding document, - Typical contract, M&V plan for ESCO)
    - Developing a training program and certification scheme for ESCO
  - **Lebanon**
    - Developing and conducting training WS on ESCOs (EPC, MRV, Financing, Business model of ESCOs)
  - **Jordan**
    - EE potential and market analysis for ESCOs in the public buildings in jordan

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Capacity buildings activities

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- Enhancing the capacities of ME-PCs on EE in Building Sector
  - EE policies design and implementation for policy makers (all partners)
  - Energy audits in existing buildings (hotels, office buildings,..) for
    - Energy Experts, Energy Managers by sector
    - Algeria, Egypt, Lebanon, Palestine….

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- **Supporting ME-PCs on designing implementing and enforcing MEPS & Labelling Programs for Energy using equipment**
  - **Morocco- Designing Regulatory Framework for MEPS & Labelling**
    - Conducting an international and regional benchmarking related to MEPS
    - Assisting the national counterpart on the designing of the MEPS program
    - Proposing a comprehensive regulatory framework for the implementation of MEPS adapted to the Moroccan context
    - Conducting national consultations with key stakeholders to validate the new national MEPS framework
    - Developing a final suitable regulatory framework for MEPS

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MEPS & Labelling for Equipment

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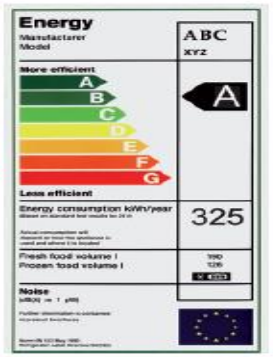
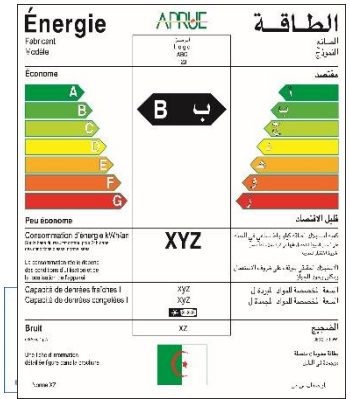
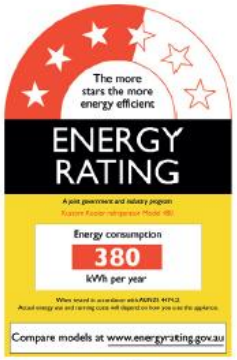
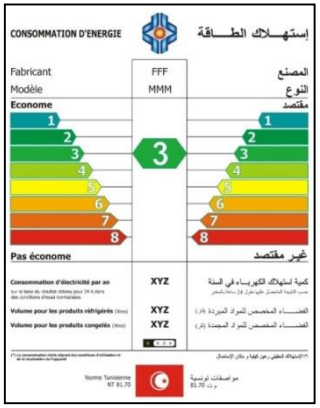
- **Contributing on launching a new initiative for a Regional Standard & Labelling**
  - The free trade in goods and services within the **Arab countries** needs better **alignment and coordination** of standards and testing procedures
  - The **harmonization** of EE S&L programs often brings additional benefits:
    - Reduces program costs by adopting existing program;
    - Avoids or removes indirect barriers to trade.









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EE Guidelines

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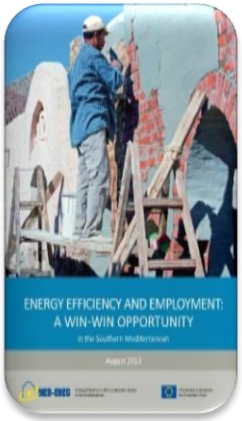
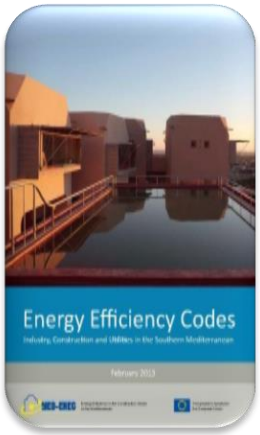
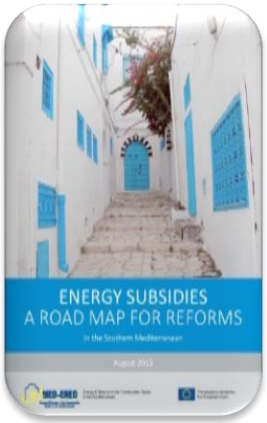
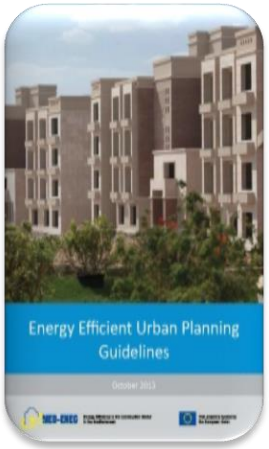
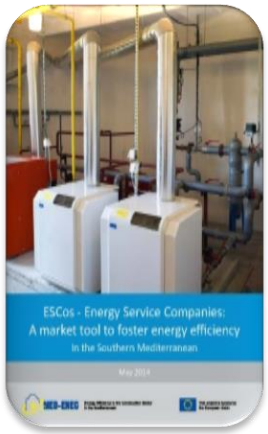
- **Developing EE Guidelines & Best Practices covering relevant challenges facing the Region to scale up EE in building sector.**

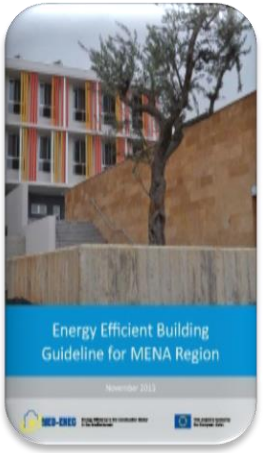


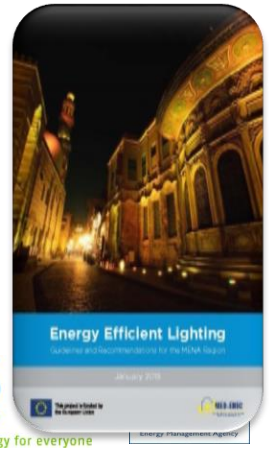


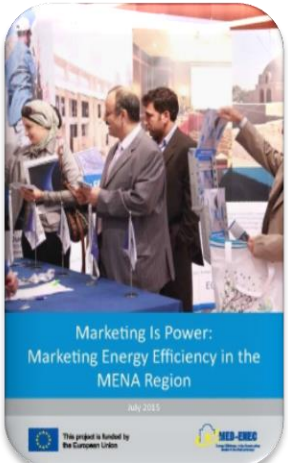


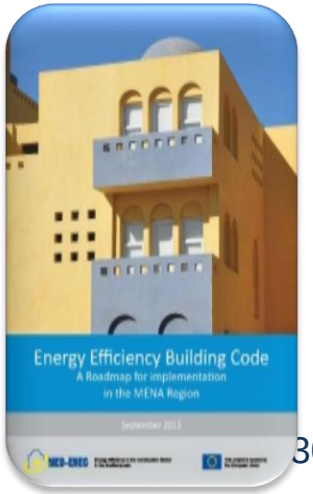


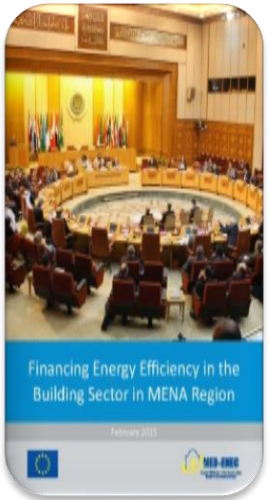












Regional Cooperation
Stakeholders Partners of MED-ENEC

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- LAS
- RCREEE
- EU projects CES-MED, SUDEP
- MEDENER
- ESCWA
- UNEP
- WB
- IEA
- EBRD

EE is a key driver for a sustainable energy transition in the region
Scaling up EE market….will require

- A **coherent** and **Clear EE** policy package and Government support to push and pull the market
- **Financial** support and **Innovative** Mechanism to address Market failures
- **Massive awareness** increase of actors at all levels & **enhancing the capacities** of all stakeholders
- **Public-Private Partnership** strategy and actions to promote EE (ESCOs, Energy utility….)

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Global and regional collaboration and knowledge exchange is essential to address the EE & RE in a more effective way

- ✓ **Accelerate** the replication and exchange of successful energy efficiency strategies and policies
- ✓ **Rapidly** adopt best practices and best available technologies
- ✓ **Regional emulation** will achieve a real transformation of the market towards Energy performant technologies and EE behaviours

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MED-ENEC
Energy Efficiency in the Construction Sector in the Mediterranean

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THANK YOU
FOR YOUR ATTENTION

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