



Tapping a Hidden Resource: Energy Efficiency in the Middle East and North Africa

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STRUCTURE OF THE REPORT

chapter 1	The Facts on EE Scope for Growth
2 WHY	Environmental & Human Development Benefits
3	Fiscal Savings
4	Pricing
5 WHAT	Social protection
6	Institutional & Financing arrangements
7	Country stories
8 HOW	Sector issues
9	Entry points and sequencing

What do we mean by energy efficiency?

Macro Level:

- **Energy intensity** = energy use per \$ of GDP
- ← **Structure of the Economy, Resource Endowment, Price of Energy, Consumption decisions**

Meso and Micro Level:

- **Consumption of energy in sector, industry or household**

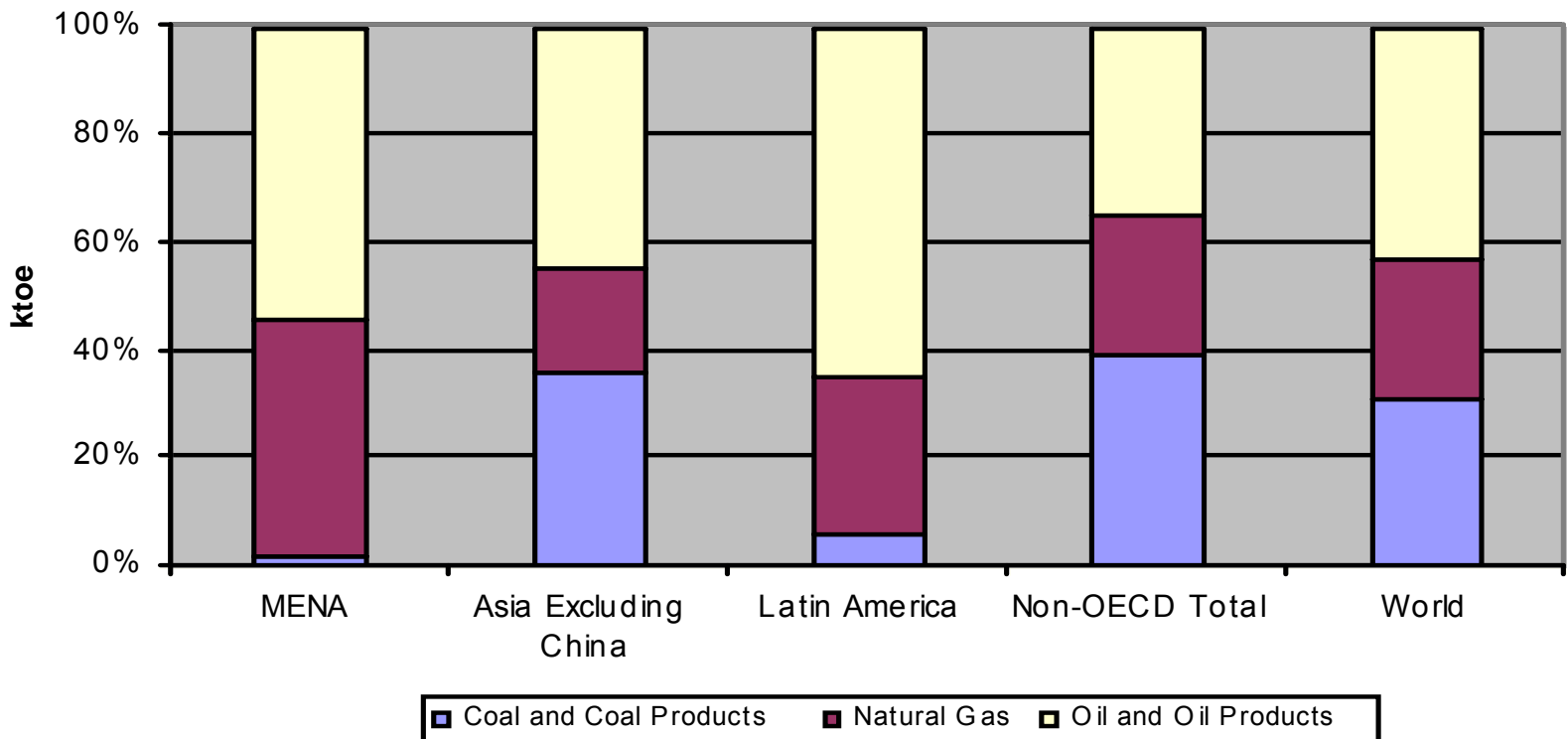
Technical energy efficiency = e.g. miles per gallon, lumens per watt

Part I: Why Energy Efficiency

chapter 1		The Facts on EE Scope for Growth
2		Environmental & Human Development Benefits
3		Fiscal Savings

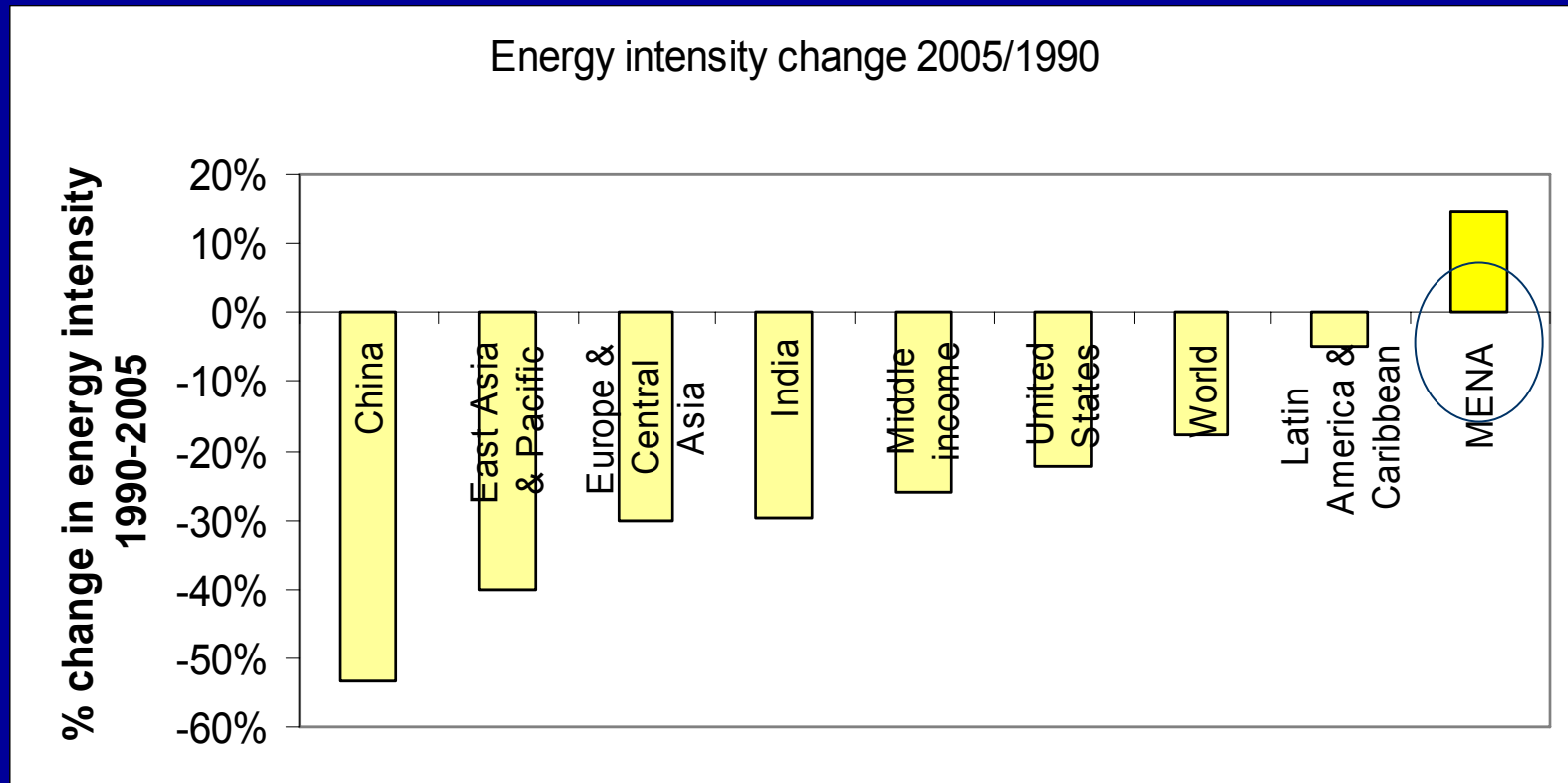
MENA depends on Oil and Gas for 95% of its energy consumption as compared to 69% for the rest of the World

Share of Total Primary Energy Supply by Fossil Fuel by Region, 2005



MENA's Overall Energy Intensity is Increasing:

= 60% more energy intensive than OECD Countries
= 40% more energy intensive than upper middle-income countries

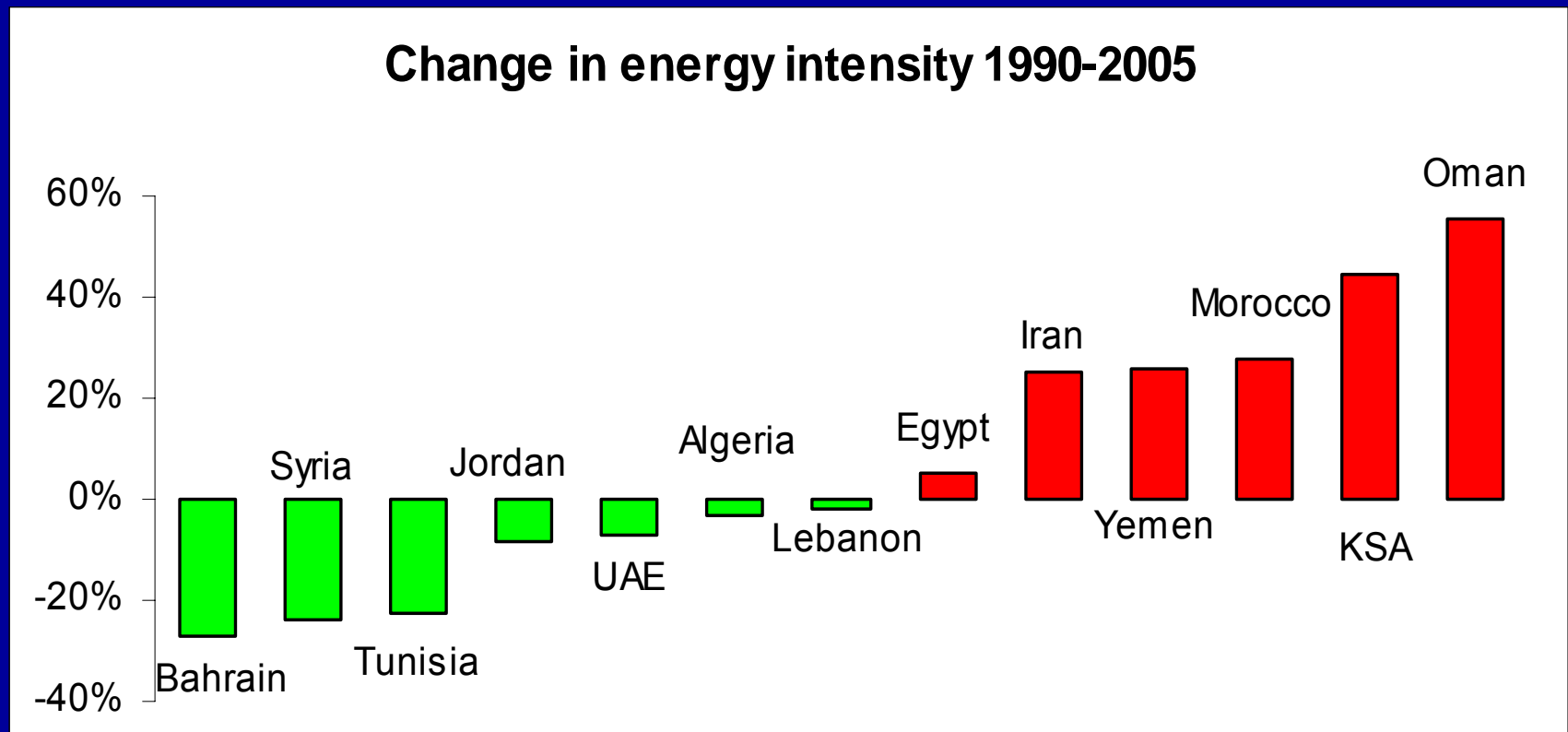


Energy intensity

= energy use per \$ of GDP

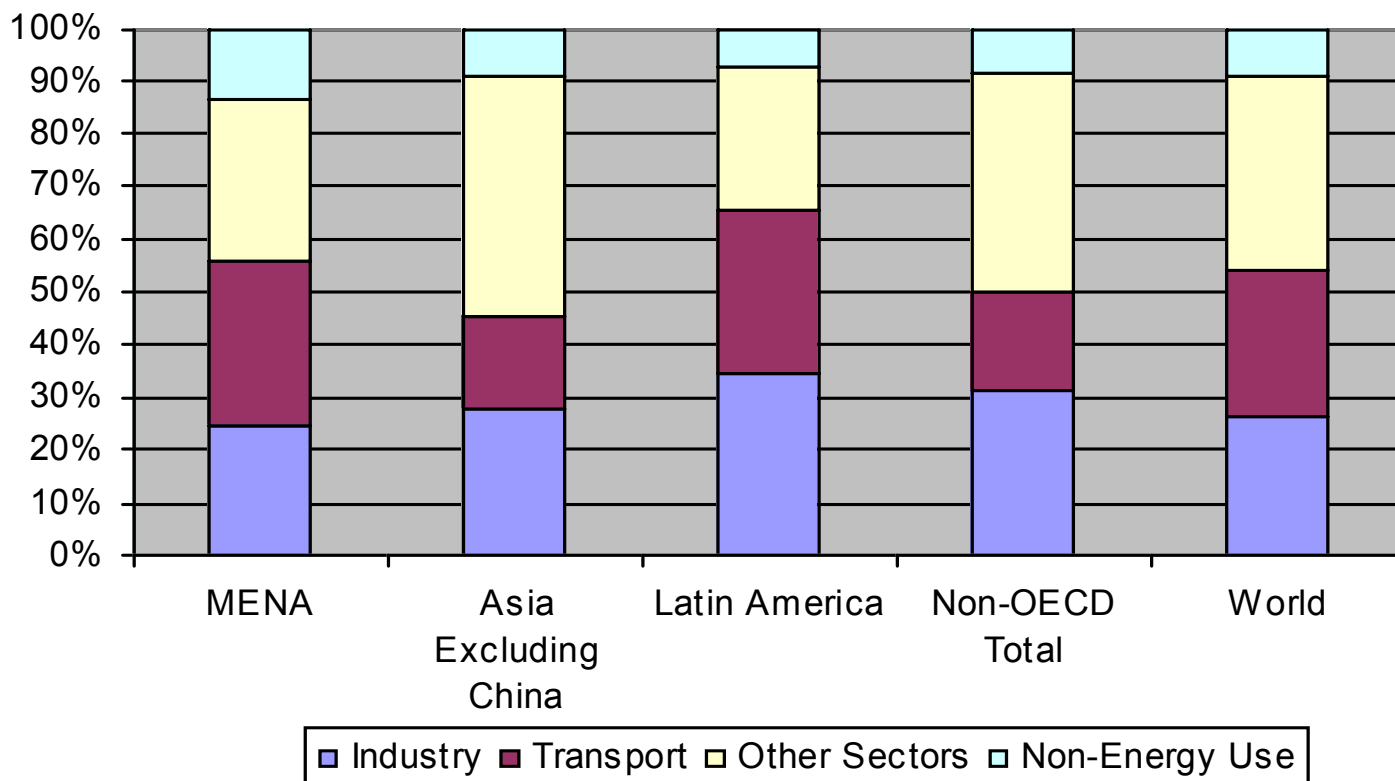
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Energy Intensity is increasing or decreasing regardless of the countries' resource endowment



The largest share of consumption and fastest growth is from Transport

Share of Total Final Consumption by Sector by Region, 2005



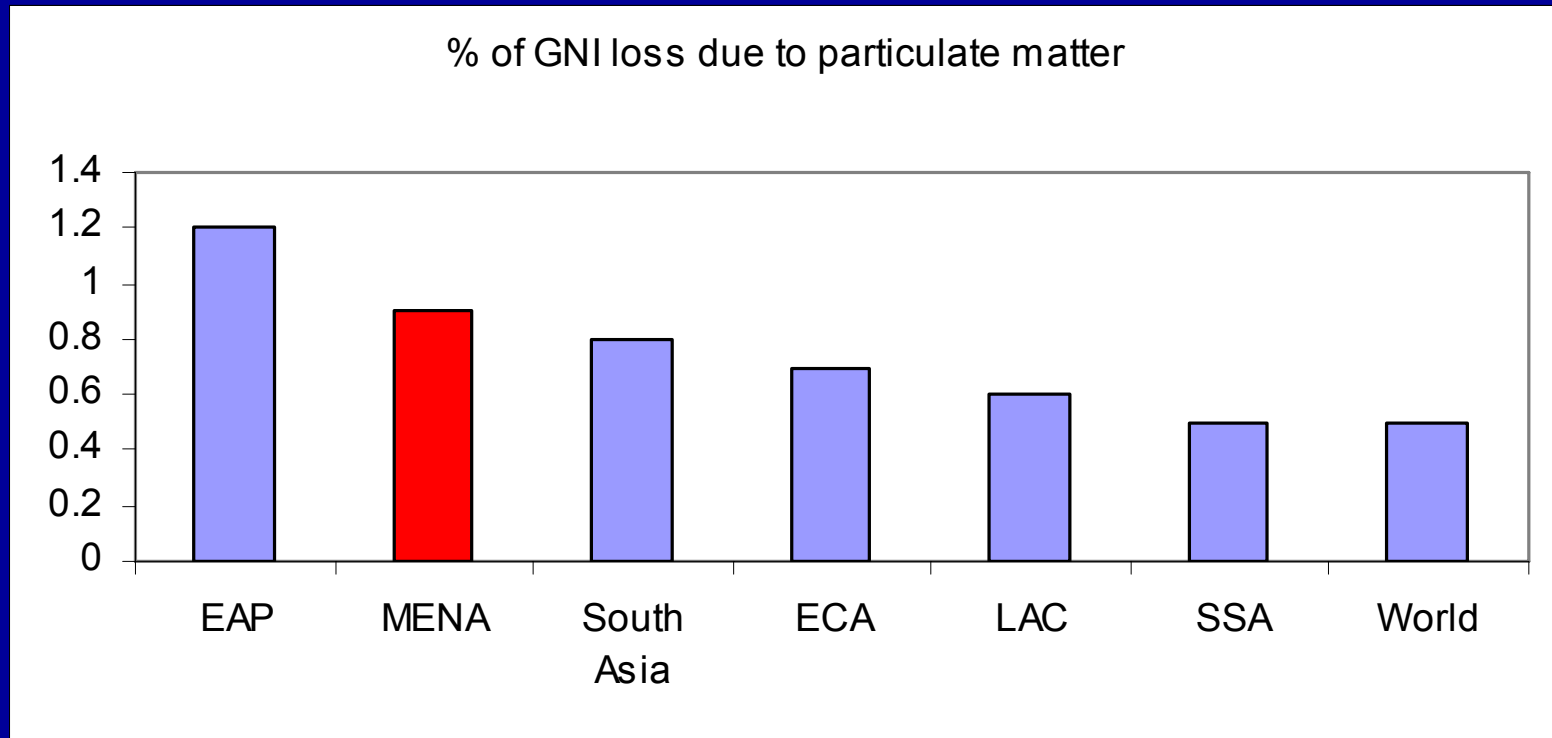
WHY Energy Efficiency? Scope for growth

20% Increase in EE would generate 2-5% of
Additional GDP

US\$ million/year GDP
increase

Iran	3,010
Egypt	1,406
Morocco	353
Tunisia	233
Rest of North Africa(XNF)	1,089
Rest of West Asia (XWS)	4,917
Total	11,008

WHY? Energy Efficiency generates environmental and Human Development benefits



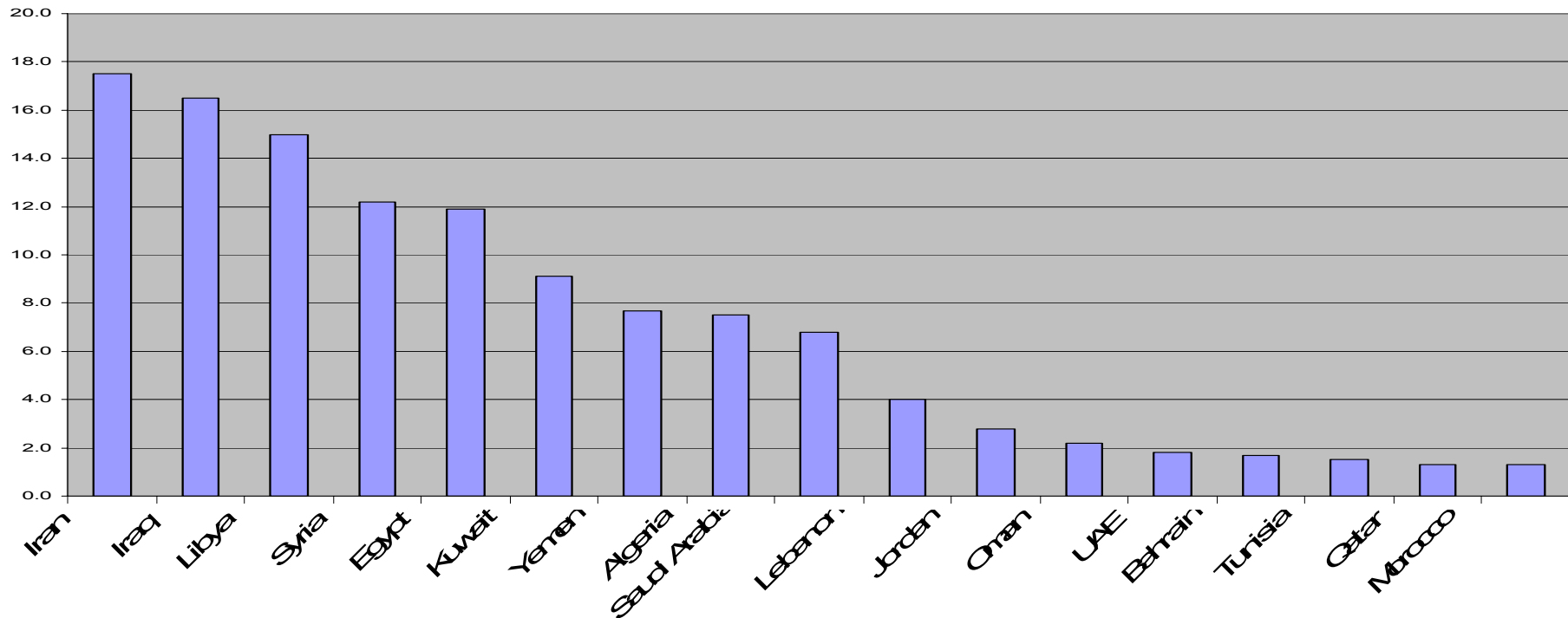
10% more energy efficiency ... 2,400 lives saved per year in 8 MENA countries

Report quantifies potential for carbon emission reductions

Why ? Fiscal savings

Energy Subsidies cost 7.1% of GDP (2006)

Subsidies as Percent of GDP



Less energy use = lower subsidy cost
Energy efficiency eases subsidy-reduction

Part II: What Solutions for Energy Efficiency?

4		Pricing
5	WHAT	Social protection
6		Institutional & Financing arrangements
8		Sector/Technical Solutions

The foundations of technical solutions: price reform with social protection, enabling framework, implementation arrangements.

Technical solution – Quick Payback

Implementation arrangements

- Energy efficiency agency
- Energy efficiency program(s)
- Financing arrangements
- Enlisting stakeholders

Enabling framework

- National plans
- Laws and decrees
- Regulation

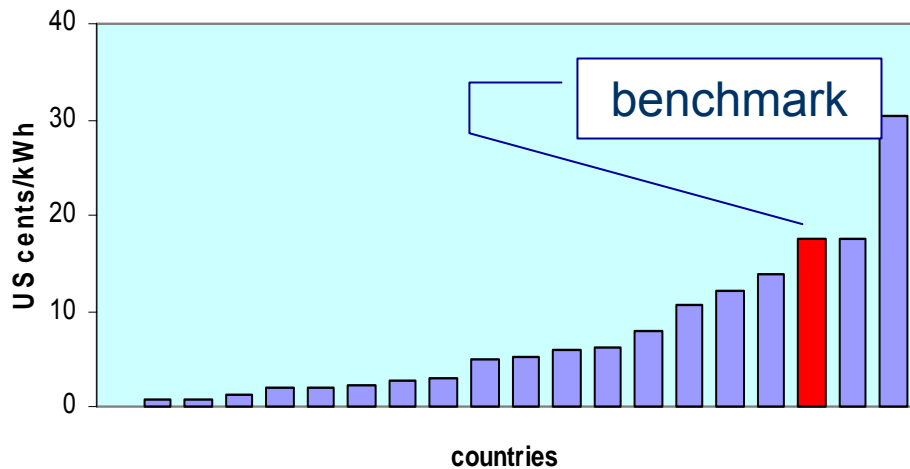
**Price Reform
Social Protection**

- Efficiency, flexibility, transparency
- Targeted subsidies and cash transfers,
- EE programs for industries and households

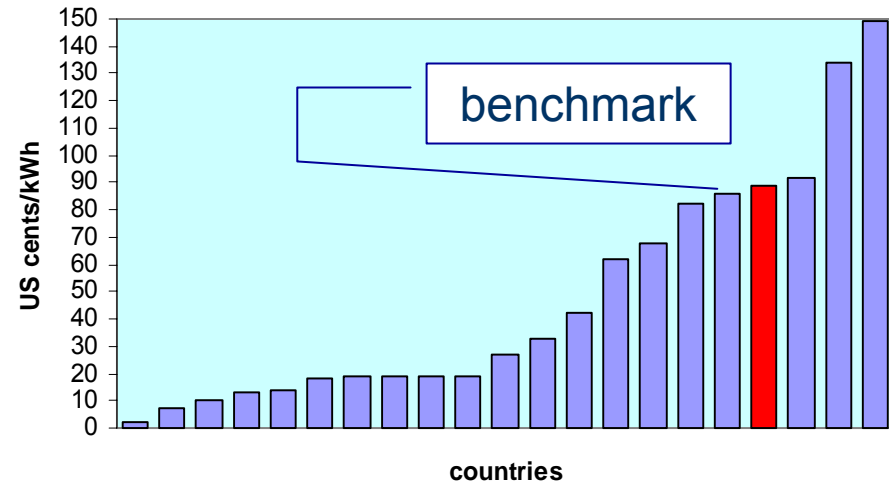
There is scope for progressive pricing reform to encourage energy efficiency

Electricity Prices in Mena Countries

(average residential, 4th quarter 2007)



Diesel Prices in MENA



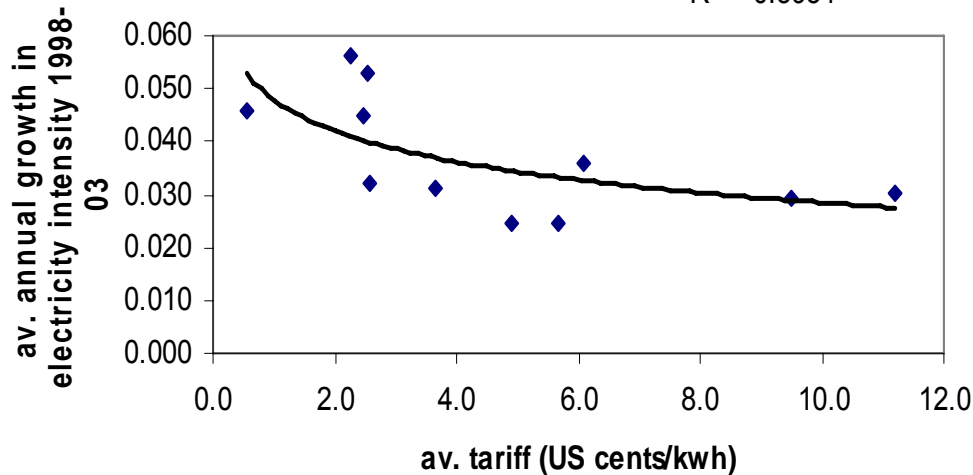
Benchmark for electricity = derived value from tariffs in the northern Mediterranean Countries (France, Greece, Italy, Portugal, Spain, and Turkey), where financial and Environmental costs are covered → economic pricing.

Prices affect levels of energy consumption & technology choice

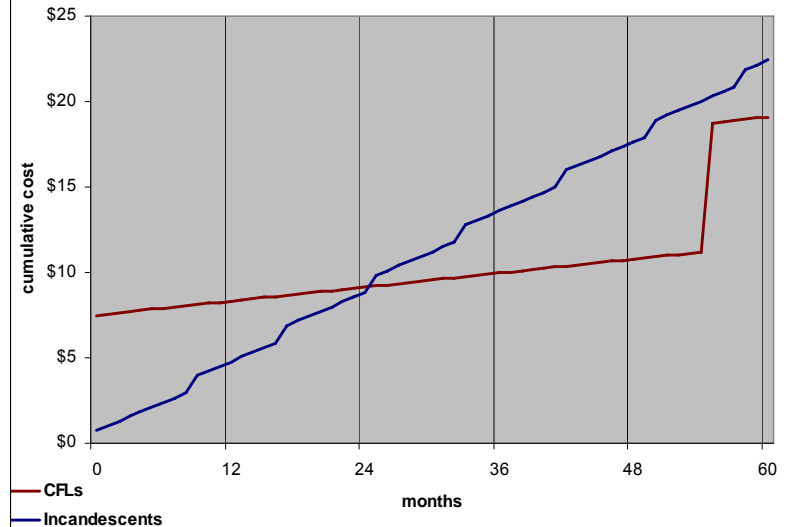
Tariff determines electricity intensity

$$y = -0.0084\ln(x) + 0.0479$$

$$R^2 = 0.3934$$



CFLs vs. Incandescent Lamps



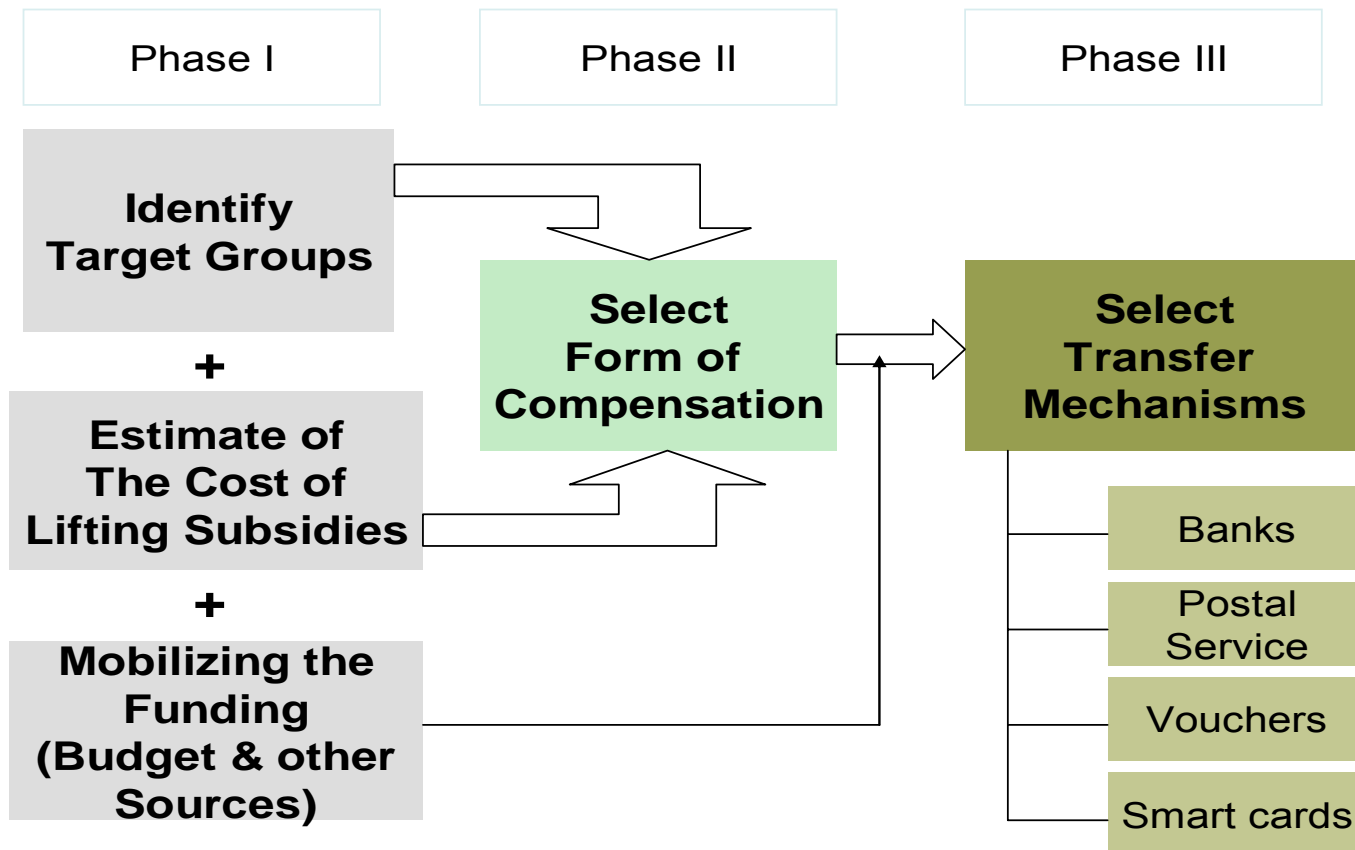
1998-2003: Not including drought-affected Syria and Yemen

With power at US\$0.03/kwh, households have little incentive to switch to CFLs

Pricing for energy efficiency – more than just price increases

Principles	Measures
Efficiency	Prices should cover the opportunity cost of providing energy
Flexibility	Pass-through of primary fuel costs
Transparency	Consumers know tariff structures according to timing, location and quality of supply. Time of Use tariff for electricity

Pricing Reforms and Social Protection for Energy Efficiency go hand-in-hand



Pricing Reforms and Social Protection: Some Country Examples

- ✓ Indonesia: targeted cash transfers replaced untargeted energy subsidies;
- ✓ Brazil: energy efficiency programs helped households adjust to higher prices;
- ✓ Jordan: targeting of key stakeholder groups.

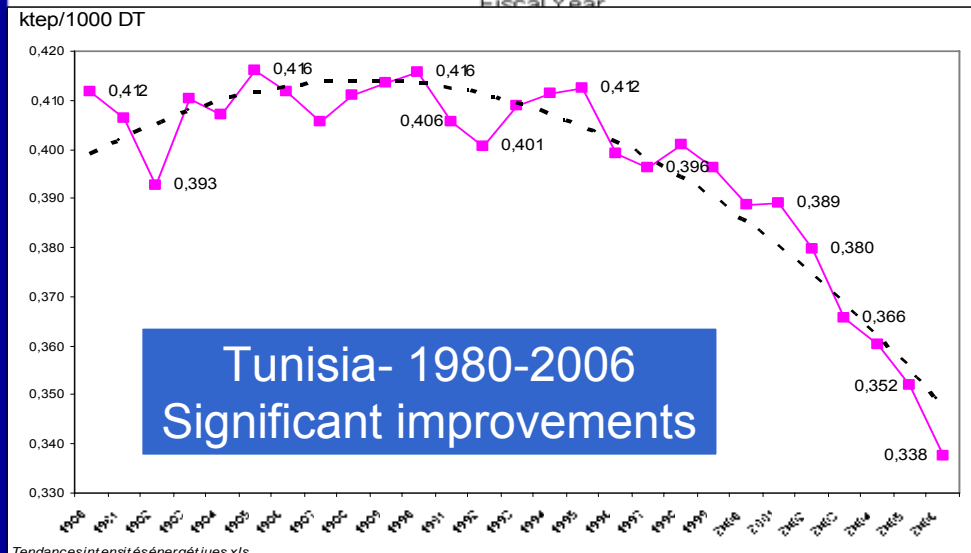
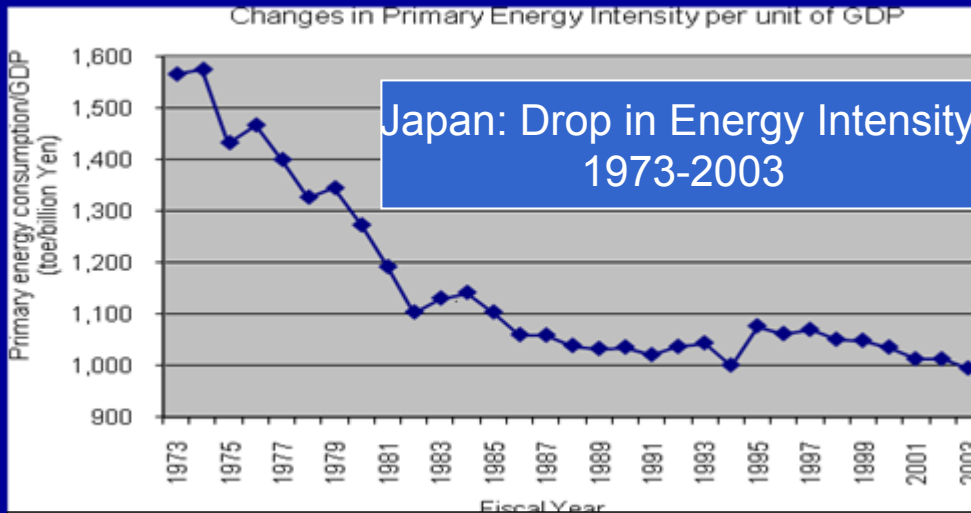
Solid Institutional and Financing Arrangements are part of EE Solutions

	Algeria	Egypt	Iran	Israel	Jordan	Kuwait	Lebanon	Morocco	Saudi Arabia	Syria	Tunisia
<i>Enabling frameworks in place</i>											
Energy efficiency laws and decrees	√			√					√		√
National energy plans		√	√	√	√			√		√	√
Energy efficiency regulations and rules	√	√	√	√	√	√				√	√
Apex agency for the energy sector	√	√	√	√	√	√	√	√	√	√	√
<i>Implementation arrangements</i>											
Energy efficiency agency	√		√	√	√	√	√			√	√
Programmatic arrangements	√		√	√			√	√	√	√	√
Financing arrangements			√					√			√
Other supportive arrangements	√	√	√	√	√	√	√	√	√	√	√
<i>Results monitoring</i>			√			√					√

Technical Entry Points in all Sectors of Activity

- Lighting
- Energy audits in manufacturing
- Construction standards (MED-ENEC)
- Transport Efficiency (cars and urban transport system)
- Irrigated Agriculture
- Power Transmission and Distribution losses (7,300MW if all countries were at 10%)
- CHPs
- Gas Flaring

Conclusion: Energy Efficiency : a resource for MENA, waiting to be tapped



World Bank stands ready to provide investment and policy lending, analysis and technical assistance.

- quick payback
- lower subsidy cost
- mitigates the social impact of high prices
- improves air quality
- Saves lives & improves quality of life

Entry points and opportunities for World Bank partnership

