

Renewable Electricity in the Arab Region: the Prospects of Trading?

Presentation to ,
**WORKSHOP ON THE ROLE OF INTERGOVERNMENTAL AGREEMENTS
IN ENERGY POLICY**

Hosted by
World Trade Organization and the Energy Charter
Geneva, Switzerland

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Senior Expert, RCREEE

29 April 2013

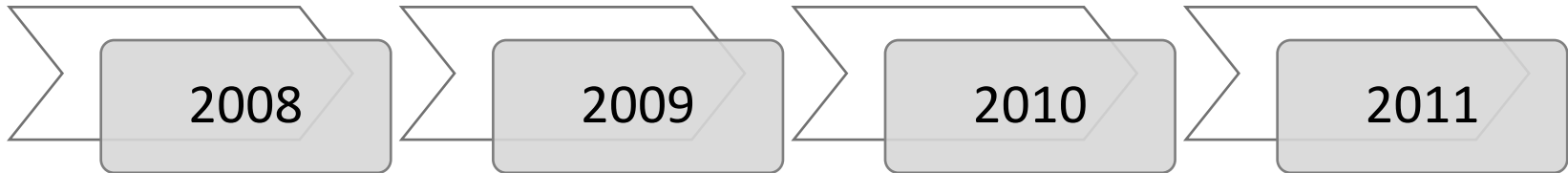


RCREEE is an independent not-for-profit organization with an international legal status. It is fully owned by its Member States and hosted by Egypt..



RCREEE set up is sponsored by Egypt, Germany, Denmark and the EU. RCREEE is also financed through member state contributions and fee-for-service contracts.

RCREEE is an Example of Regional Intergovernmental Cooperation



June 2008

The Cairo Declaration for the founding of RCREEE

Feb. 2009

Organizational Charta
Adopted by the Founding
Member States

Dec. 2009

Grant Agreement with
Danida providing 12,75 Mio
DKK (1,7 M€) in funding to
RCREEE

Aug 2010

Host Country Agreement
With Egypt signed giving the
Center an International
Organization Status

Nov 2010

Project Implementation
Agreement between the
goverments of Egypt and
Germany enabling start up
funding for of RCREEE in the
range of 4M€ from Egypt and
6M€ from Germany .

Dec 2010

Grant Agreement with GiZ
providing 1,5 M€ to RCREEE
in direct funding

Jan 2011

Host country agreement
approved by the Egyptian
Parliament giving RCREEE an
int- org status in Cairo

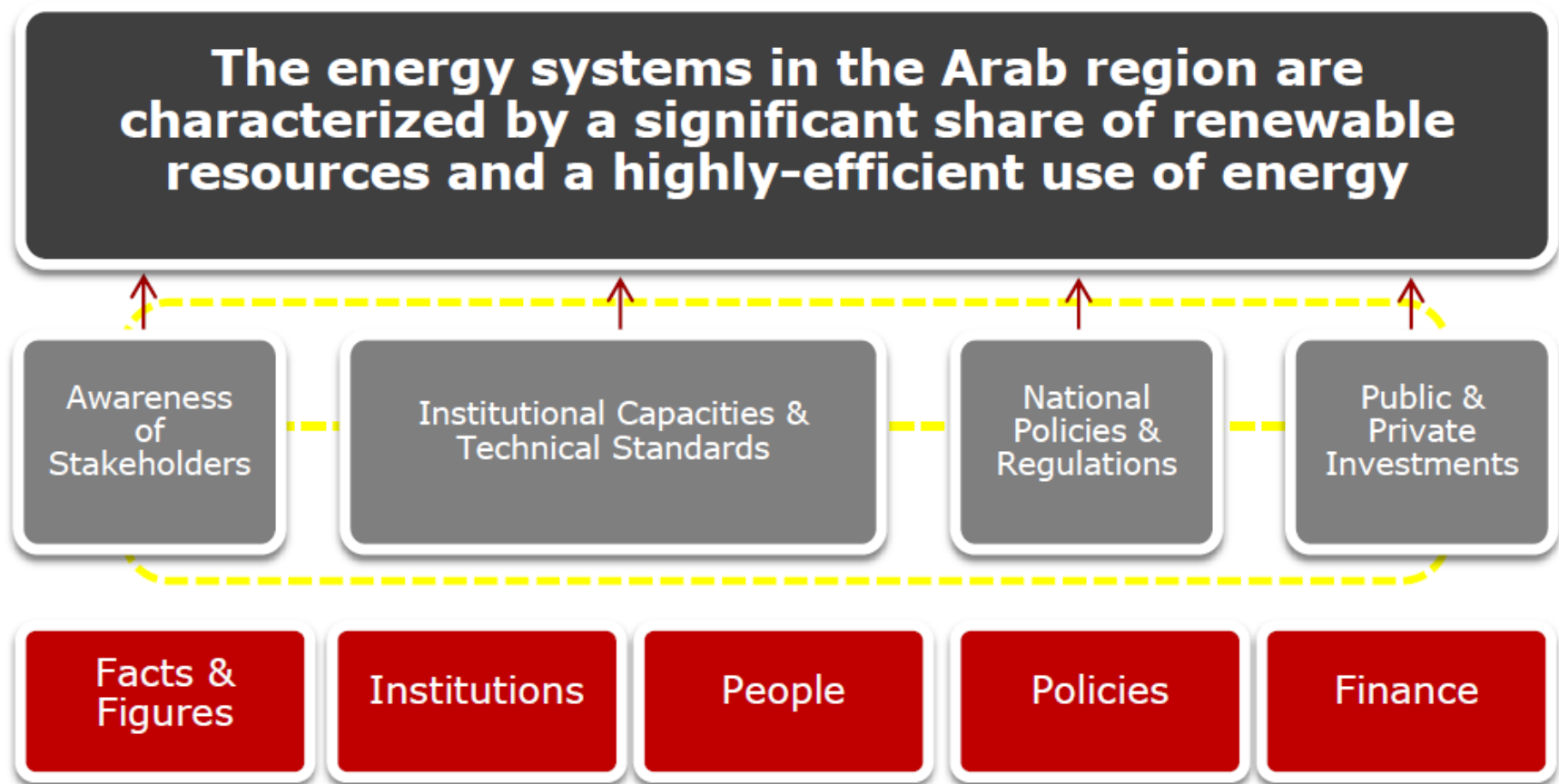
Oct 2011

Bahrain, Iraq and Sudan
Joined as RCREEE members
bringing the total number of
MS to 13.

Our Mission

"To enable a sustainable growth in Arab states' adoption of renewable energy and energy efficiency applications and initiatives through leading regional policy dialogues, learning, and research."

Our Results Framework

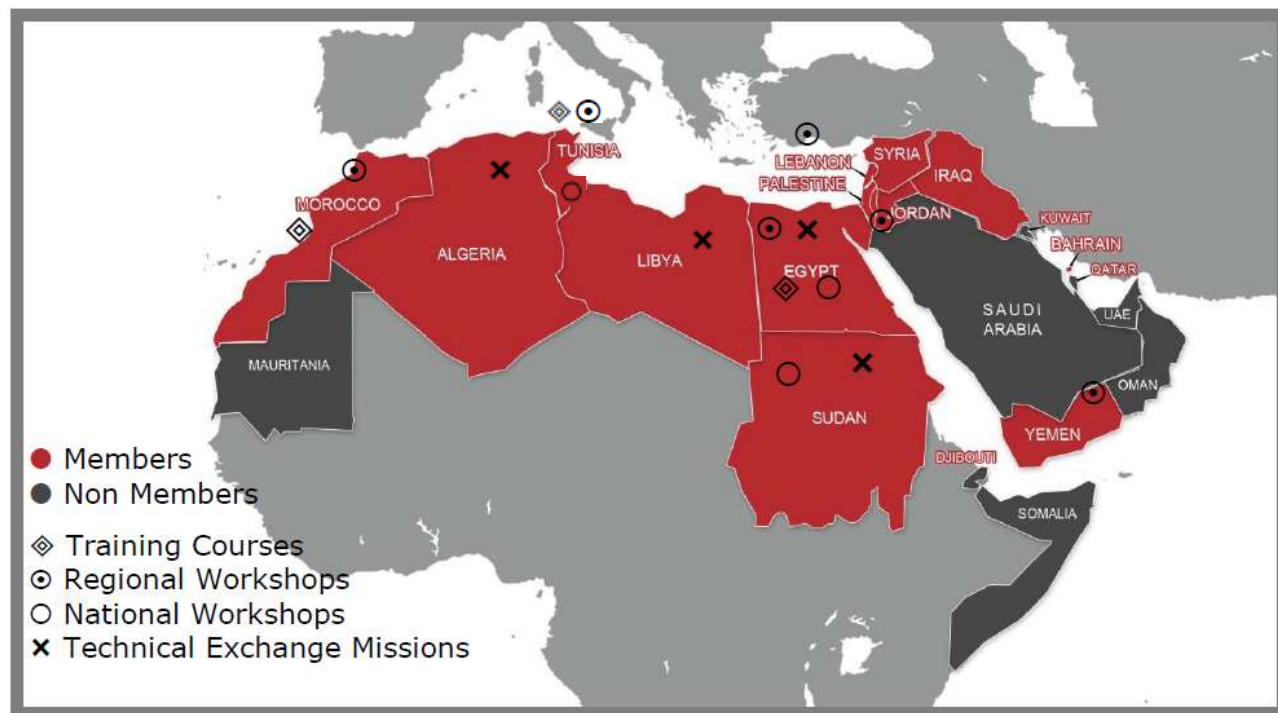


Products

- Impacts assessment of RE & EE policies in RCREEE MS
- National Energy Efficiency Actions Plans (with LAS)
- Arabian RE Strategy (with LAS)
- National RE Action Plans (with LAS)
- Energy Efficiency Indicators study
- New Perspectives for Carbon Trading for RE&EE Projects
- SWHs Certification and Standardization (with LAS)
- Development of a Compliance Tool for Building Energy Efficiency Code
- EE measures and plans.
- Solar-MED-Atlas
- RE pricing systems, the Feed in Tariff systems (CD)
- Solar Power Technologies (CD)
- Wind Energy planning and modeling / O&M of wind farms (CD)
- Energy Audit in the Building sector (CD)
- Financing RE projects (CD)
- Labels & Standards for Home Appliances (CD)
- NAMA potential in RCREEE member states (CD)
-



RCREEE organized over **30 technical training and expert workshops**. Close to **700 participants** from the Member States joined these events supported financially by RCREEE. At the same time RCREEE organized and supported **4 conferences in the region**.



Our Partners Network

RCREEE successfully developed a substantial network of cooperation partners. These partnership constitute an important relational capital for achieving our objectives.

Founders



DANIDA

Cooperation Partners



Renewable Electricity in the Arab Region

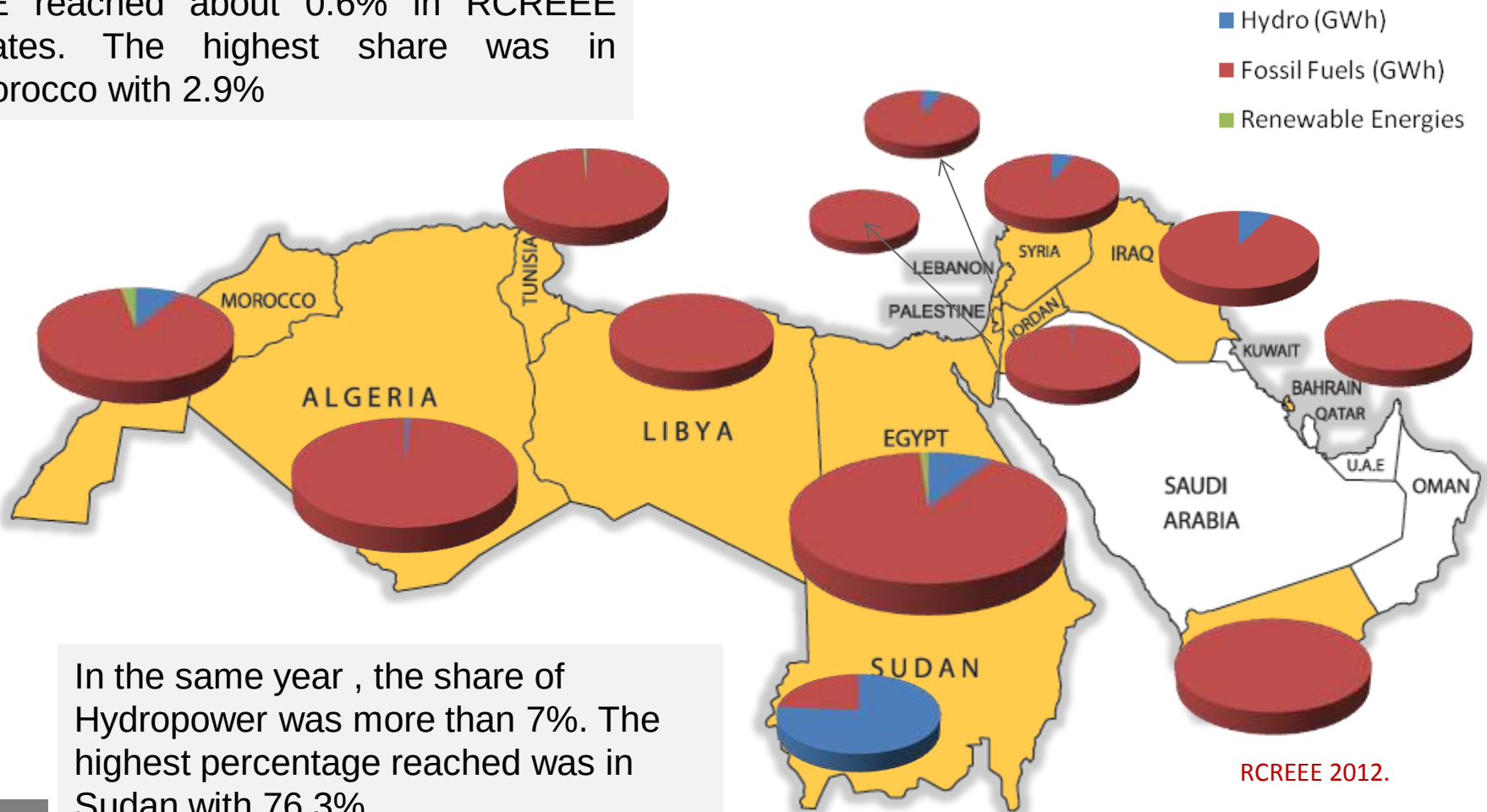
“The best way to predict your future ...
is to create it.”

Peter Drucker



Electricity Generated in RCREEE Countries

In 2011, the generated electricity from RE reached about 0.6% in RCREEE states. The highest share was in Morocco with 2.9%

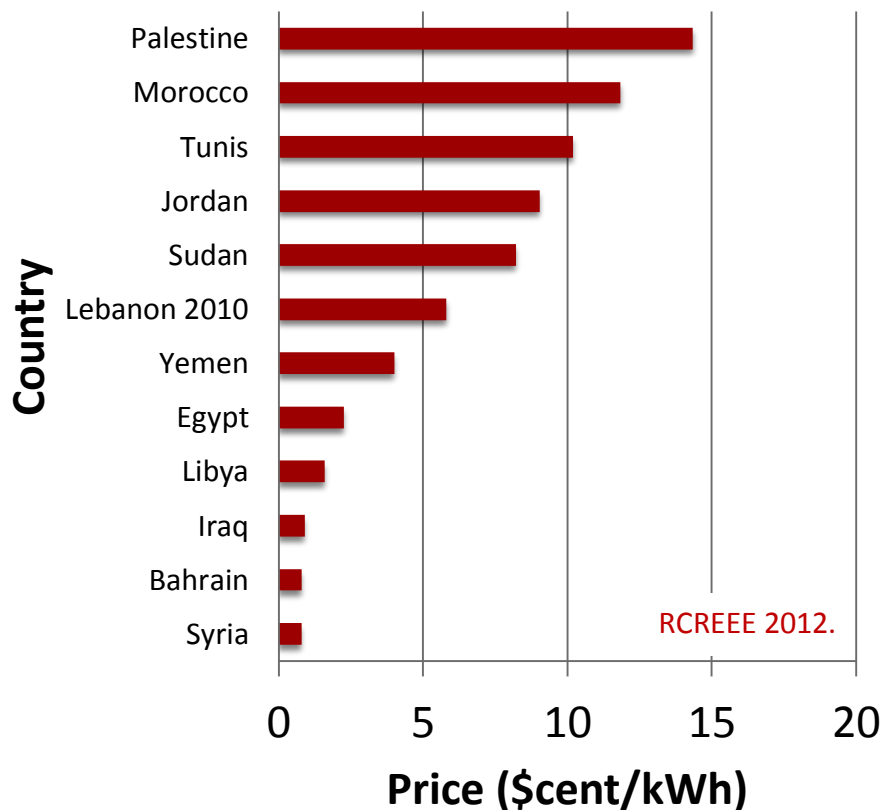


In the same year, the share of Hydropower was more than 7%. The highest percentage reached was in Sudan with 76.3%

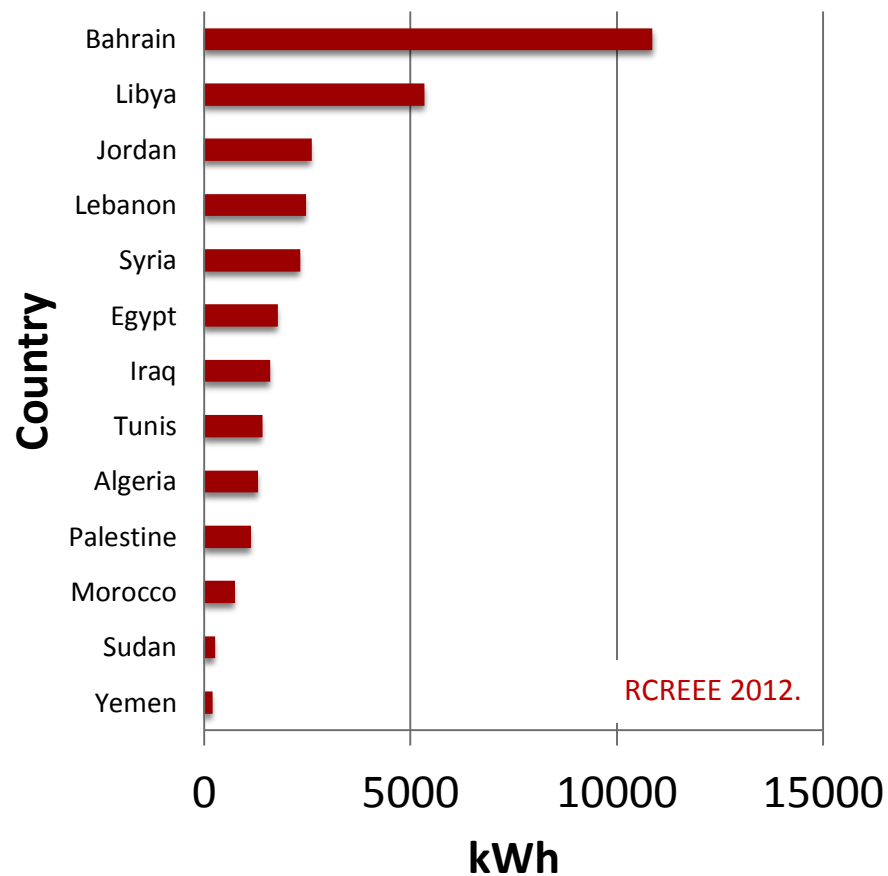
RCREEE 2012.

Electricity Markets

Average price of Electricity at Average household Consumption

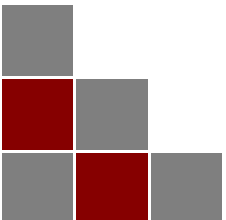
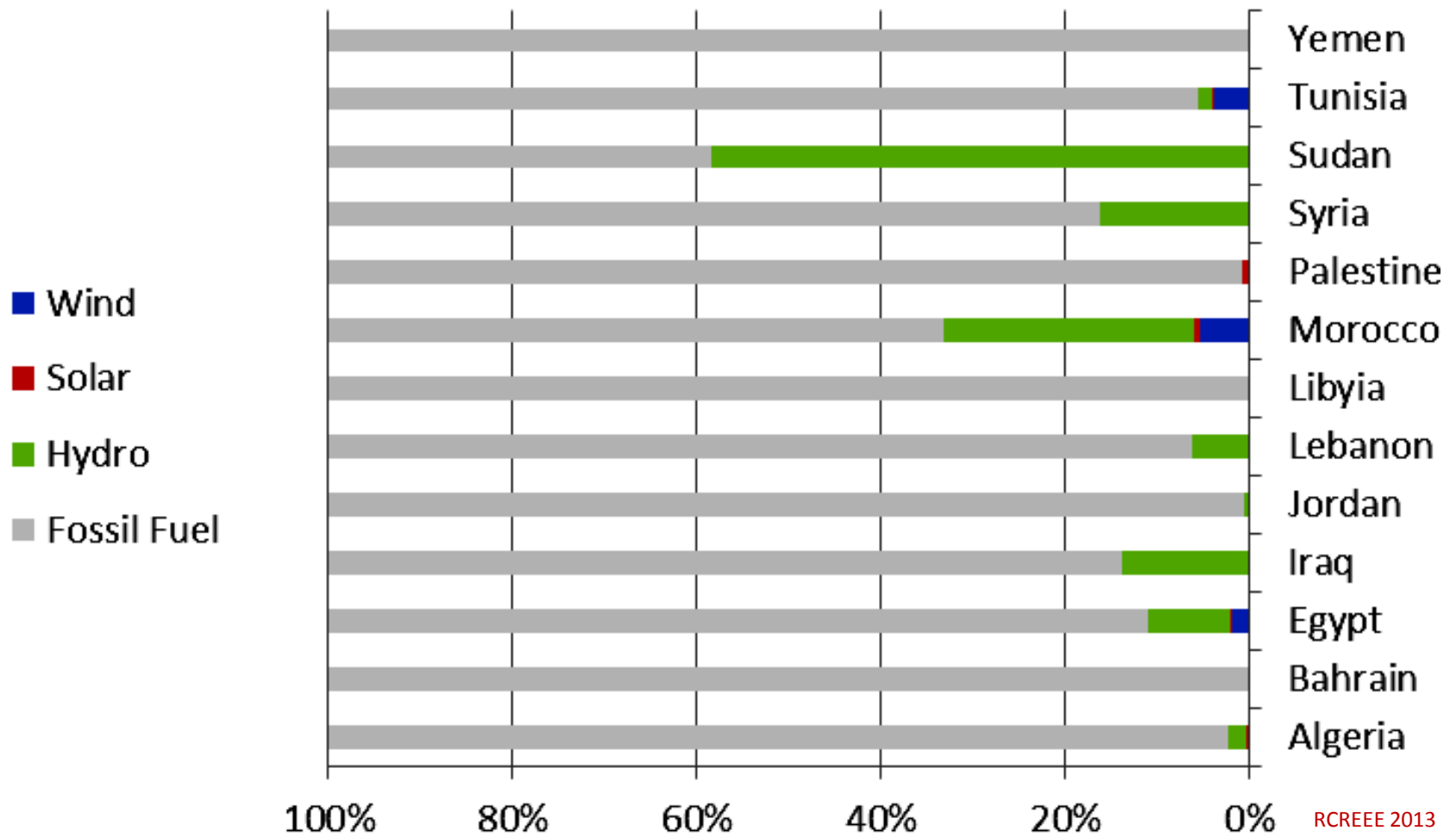


Consumption per capita (kWh) in 2010

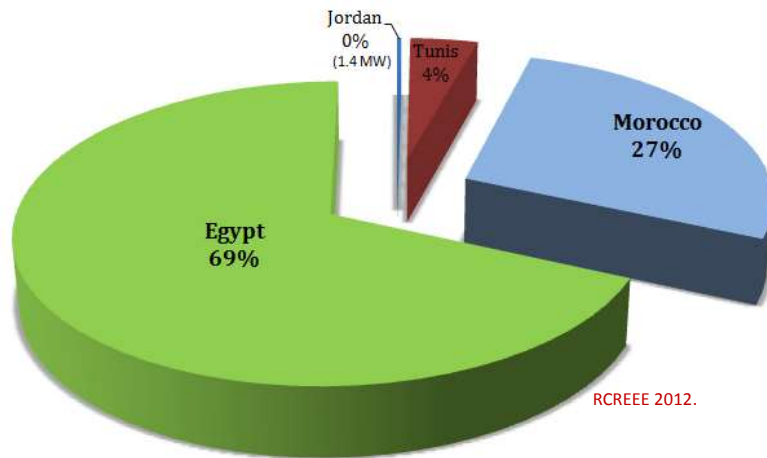


The countries considered are those members in the Regional Center of Renewable Energy and Energy Efficiency (RCREEE), i.e. the southern and eastern Mediterranean Arab Countries plus Bahrain, Iraq, Sudan and Yemen.

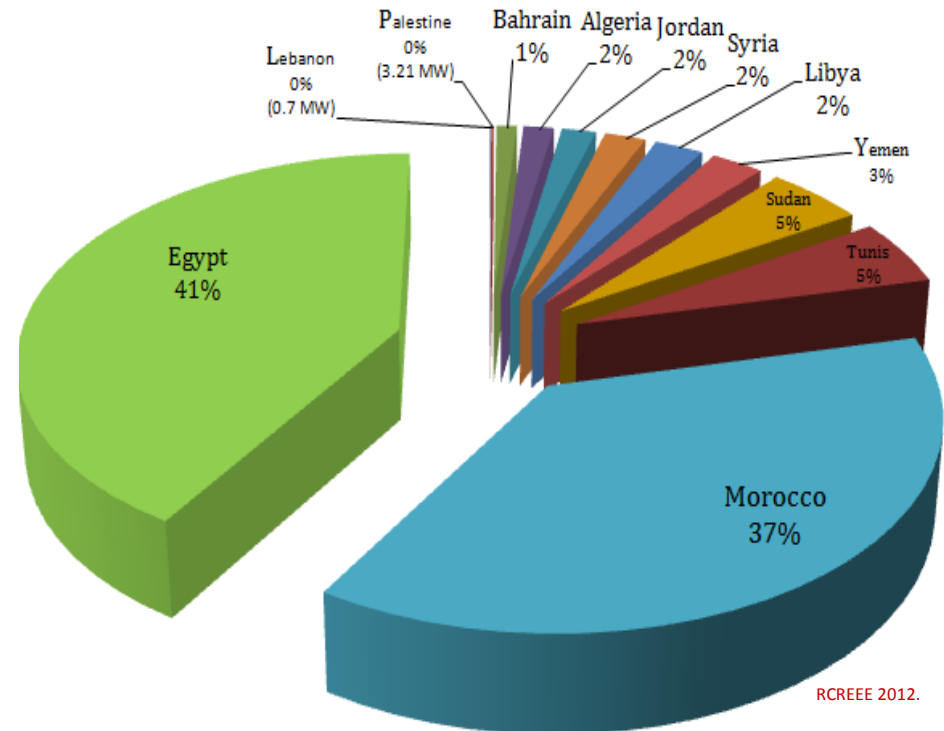
Share of RE (installed capacity MW)



Realized, under construction, awarded and tendered RE projects in RCREEE Countries



~0.54 GW IN 2008
4 COUNTRIES



~2.5 GW IN 2011
12 COUNTRIES

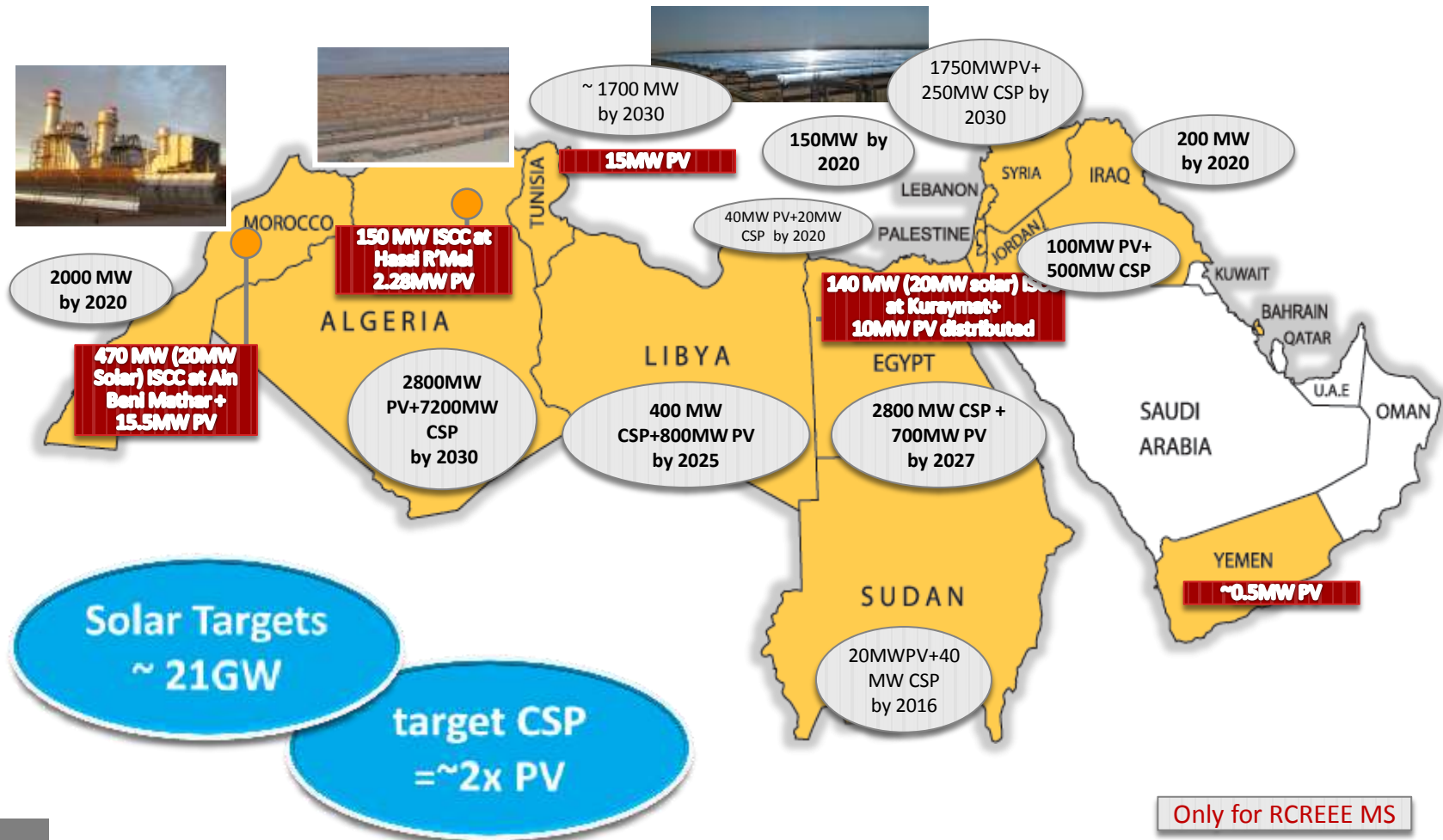
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The capacities include the awarded and under construction projects, e.g. the 60MW wind under construction in Libya and the recently awarded PV projects in Bahrain are taken into consideration, the total capacity of wind in Egypt includes the operational 550MW plus the recently awarded 200MW, similarly, the Moroccan CSP capacity includes the operational 20MW plus 160MW recently awarded, and so on.

Solar Energy

Operational Capacities and Targets

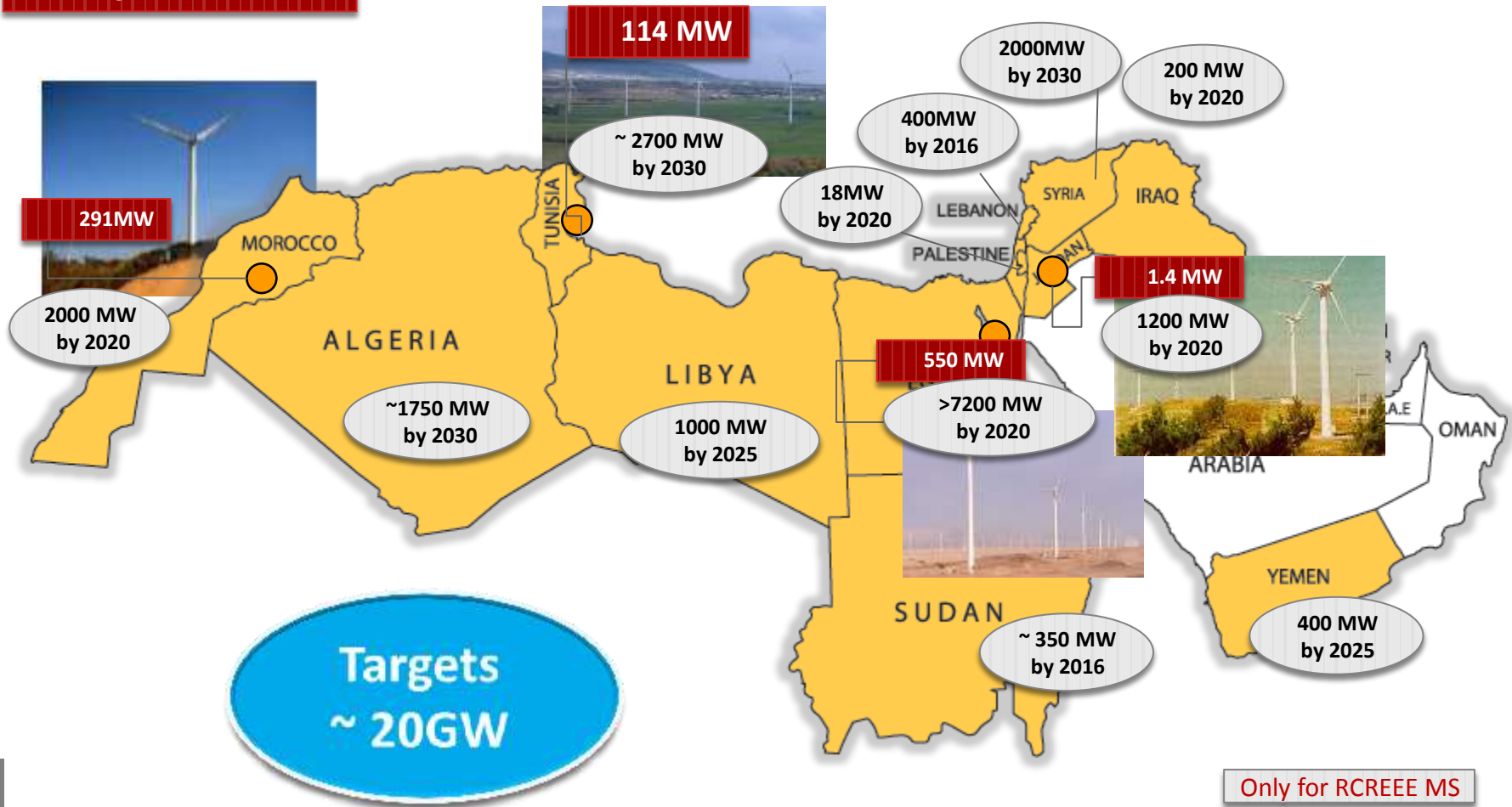
Existing end 2011: ~75MW PV+ 65 CSP



Wind Energy

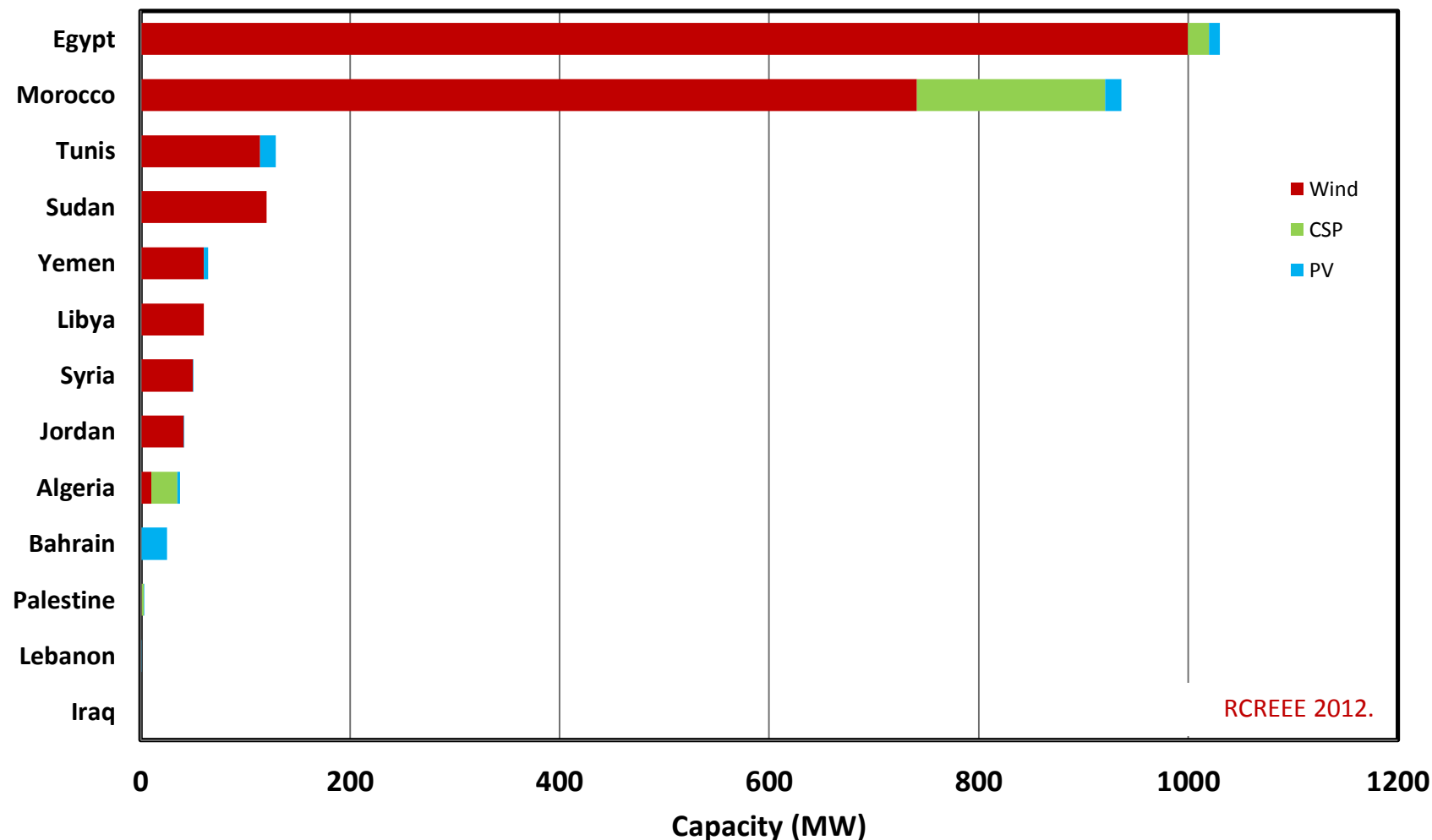
Operational Capacities and Targets

Existing end 2011: ~957 MW



Realized, under construction, awarded and tendered RE projects (MW) - end 2011

Capacities

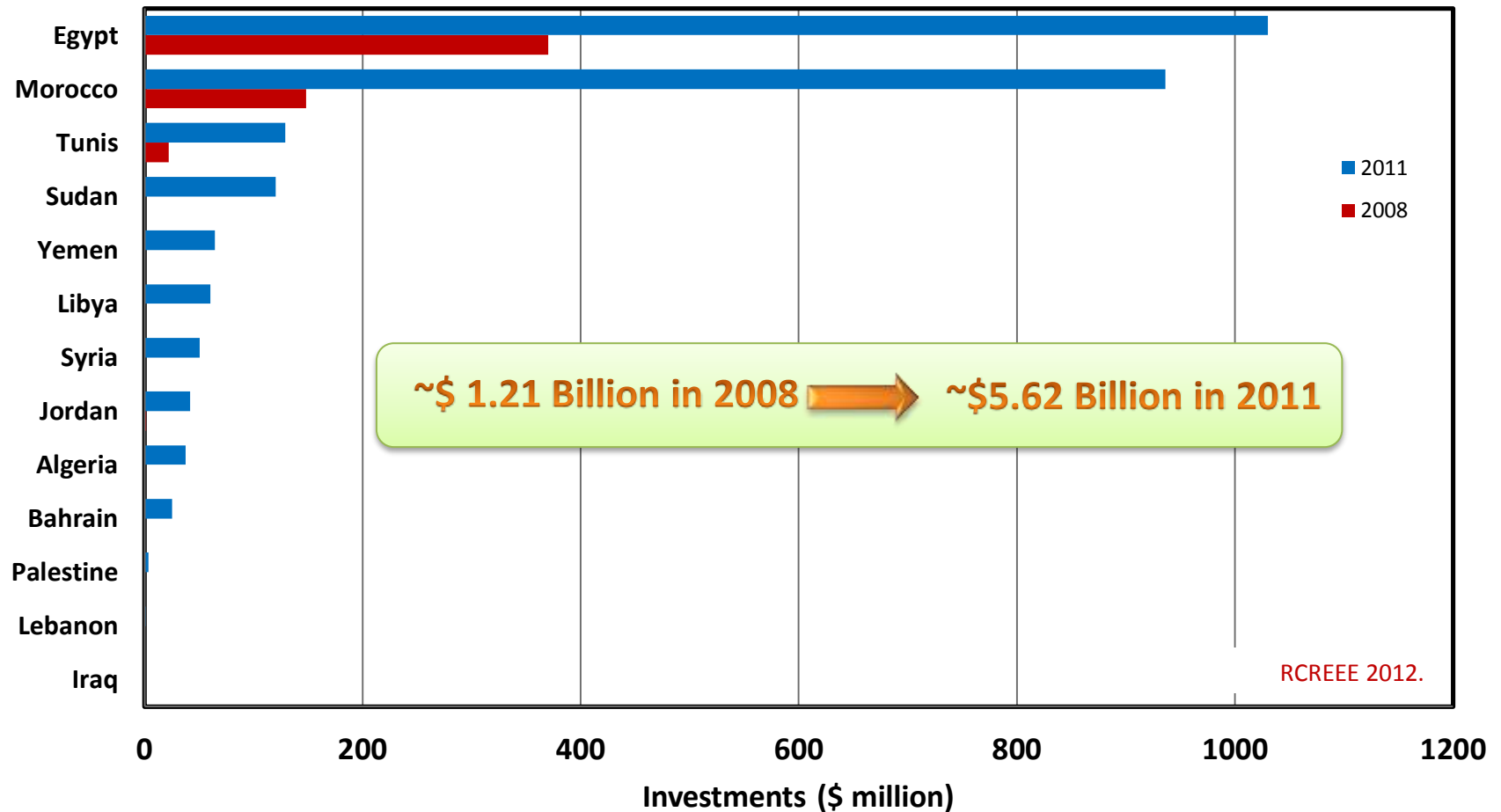


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Investments

Accumulated investments for realized, under construction, awarded and tendered RE projects (\$ Million)



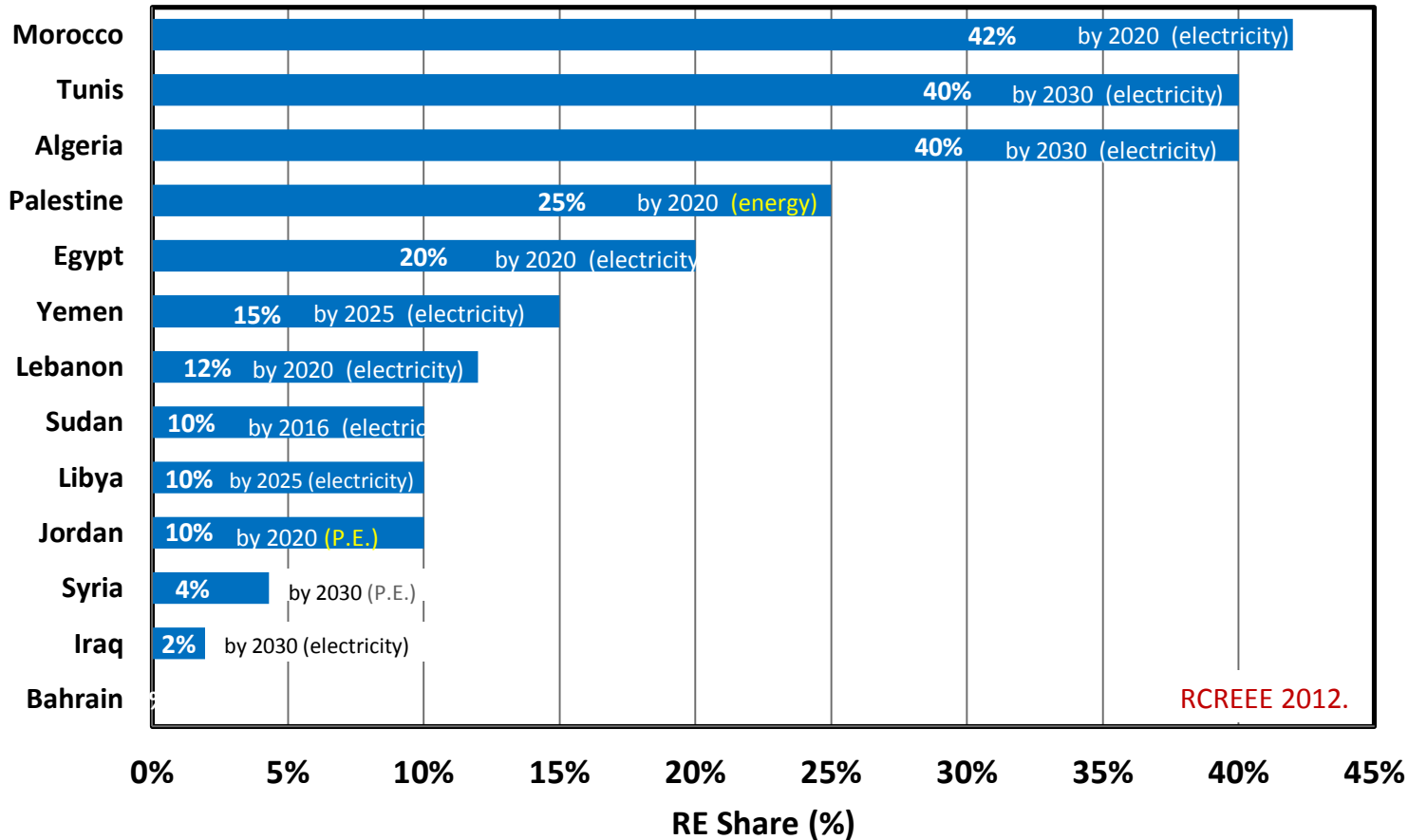
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Some investments for projects were not disclosed, and accordingly estimations based on average regional market prices were used for different technologies, taking into account the year of operation for relevant project and the corresponding cost trends, e.g. PV off grid systems prices used were \$ 8,7,6, and 5/kWp for the years 2008, 2009, 2010, and 2011 respectively

Targets

Renewable Energy Targets in RCREEE Countries



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Several elements to consider



IPP option

PPA

FiT

Public bidding

Auto-producer
option

Net-metering

Grid access &
dispatch priority

Grid
interconnections
with neighboring
countries

Grid connection
rules (grid code)

RE Target

Fossil Fuel /
Energy Subsidies

RE Agency

Institutional
Support

Land allocation

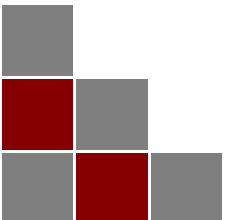
Tax incentives

Grants, subsidies,
loans

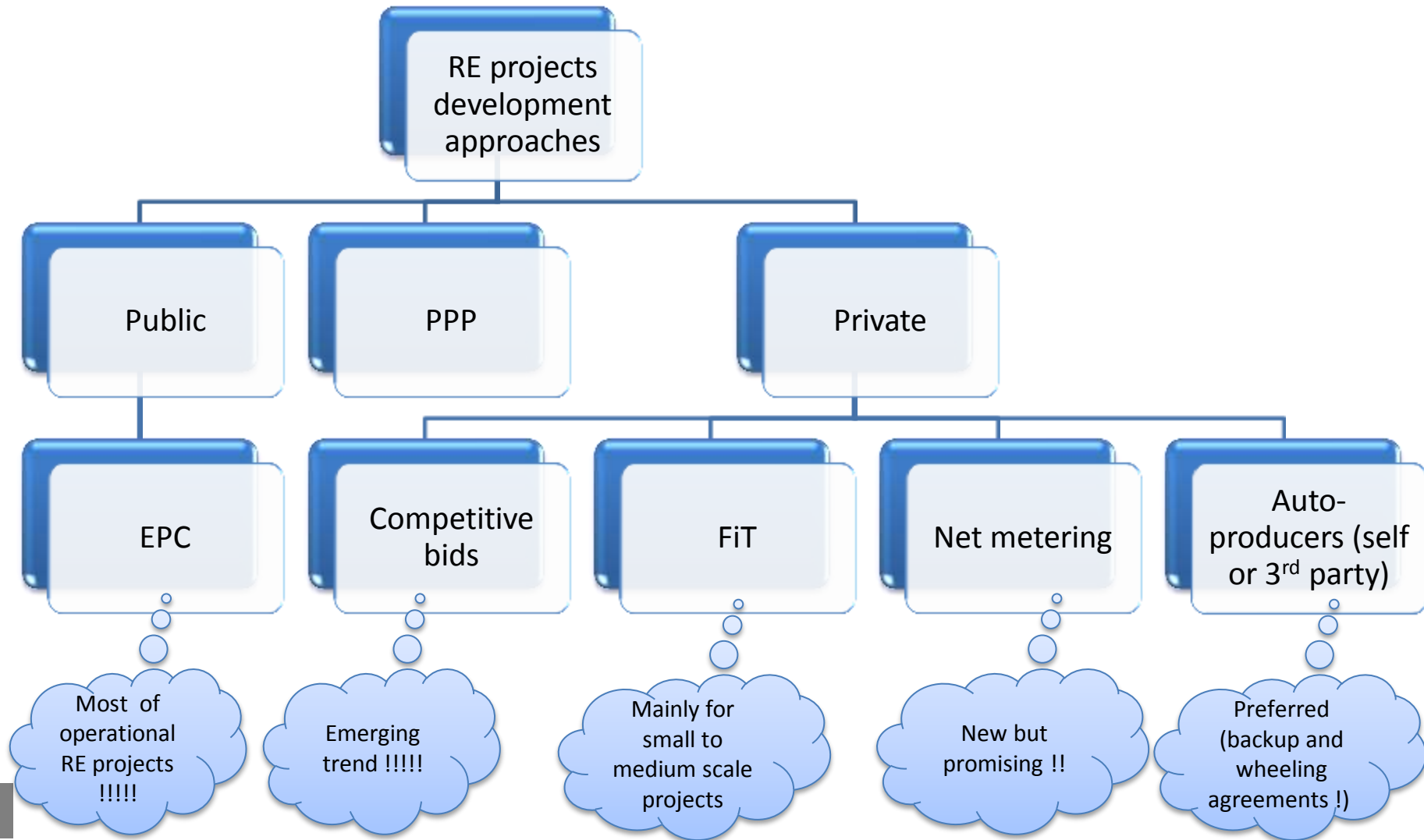
Carbon/green
credits

Risk mitigation
supports

....

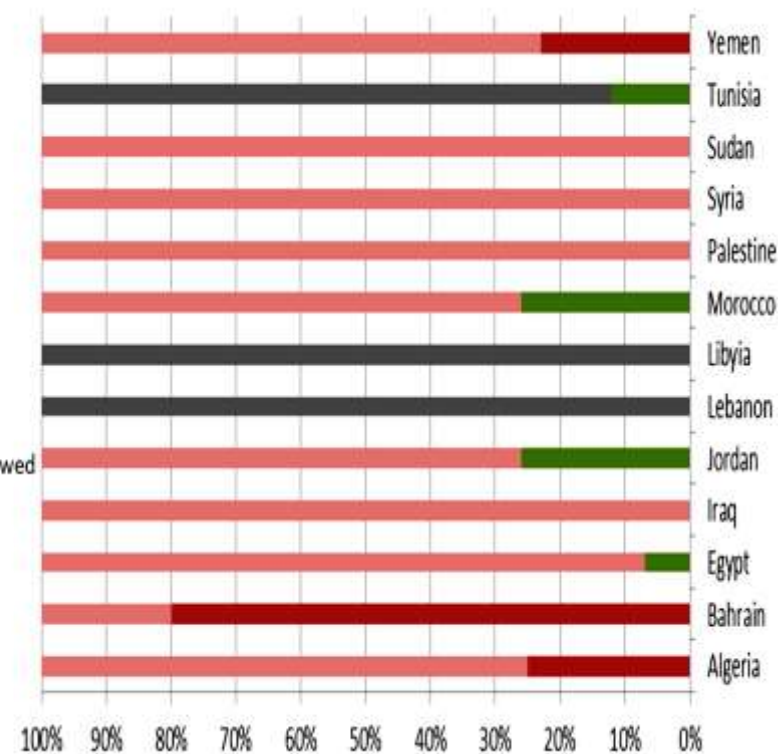


RE Policies Landscape in Arab Countries



Markets

Country	Public Competitive Bidding		FiT	Net-metering
	Legal basis	PPA		
Algeria	●	●	●	
Bahrain				
Egypt	●	●		●
Iraq				
Jordan		●	●	●
Lebanon				●
Libya				
Morocco	●	●		
Palestine			●	●
Syria	●	●	●	
Sudan				
Tunisia				
Yemen				



Key Challenges

Grid Expansion and Stability

Integrating RE projects into power systems is manageable, but not costless.

National grids need to be expanded and/or strengthened to connect remote windy and sunny area with load centers.

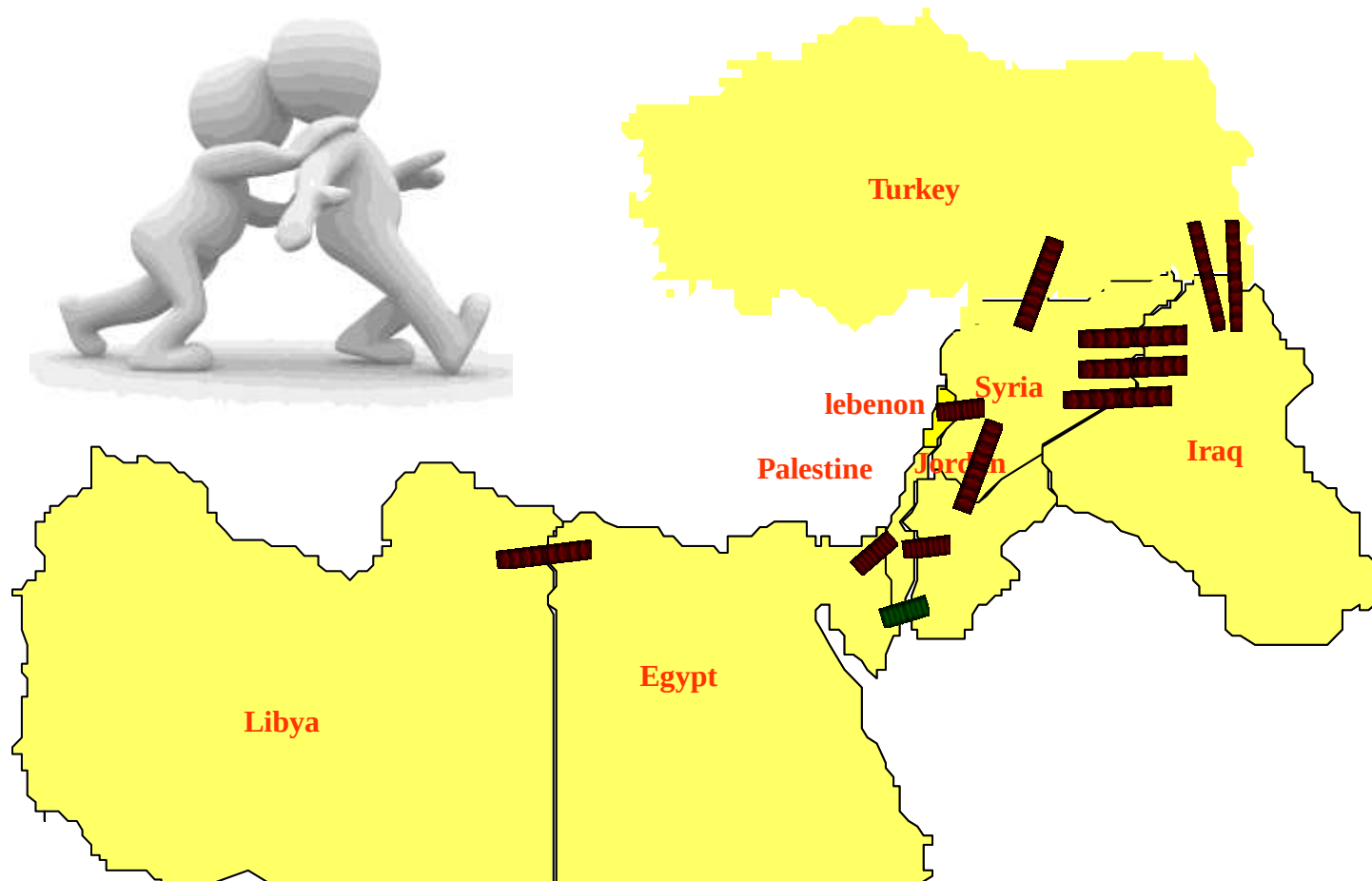
The variability of RE and the needed balancing capacities are a major concern for grid operators in Arab countries.

Unlike EU countries, Arab planners and grid operators have very limited experiences in accommodating increased RE penetration (**distributed generation systems, codes, forecasting systems, or RE control Centers!!**)

**Grid
s !!!!**



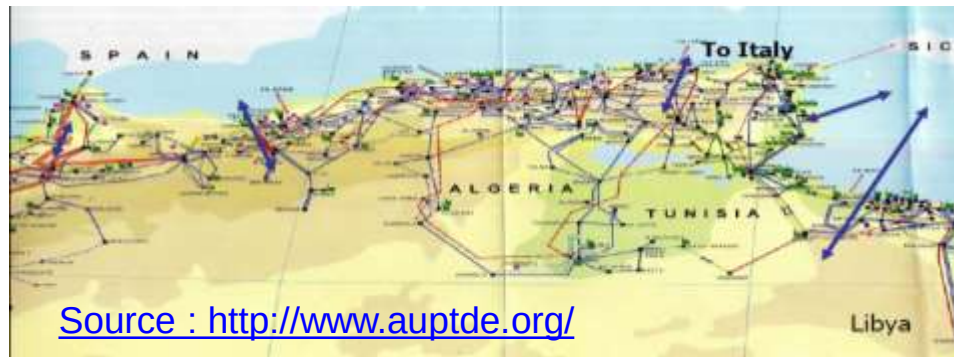
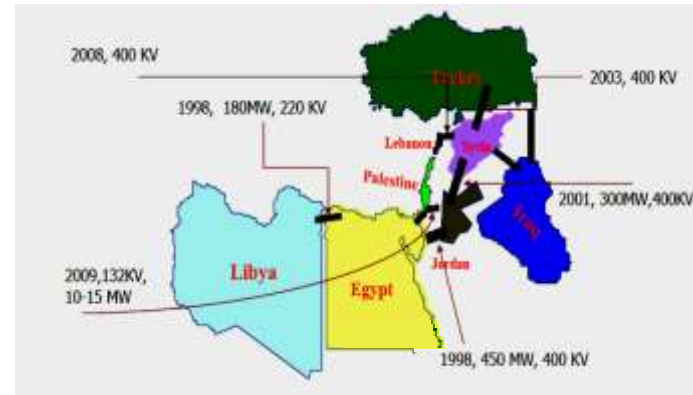
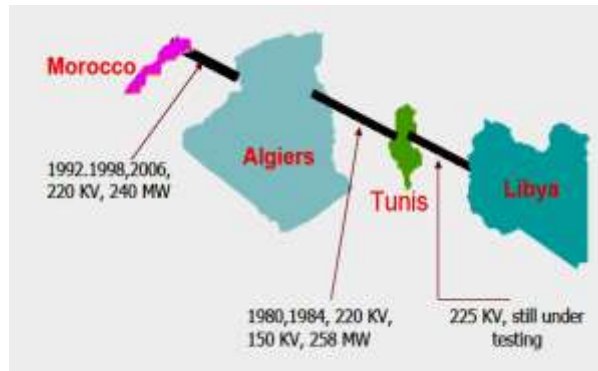
Eight Countries Interconnection Project



The network in south Mediterranean is linked as “chain”, not as a “spider-net” like the UCTE.

Key Challenges

Interconnection & Export of Electricity



Source : <http://www.auptde.org/>

**MSP,
Desertec
!!!!!!!**

Interconnection between Arab Countries is still **isolated** and the transmission **capacities are limited**.

The EU directions set conditions on renewable electricity produced in third countries, that such **RE electricity is physically transferred to EU Member states**.

RCREE

Regional Center for Renewable Energy and Energy Efficiency
المركز الإقليمي للطاقة المتجددة وكفاءة الطاقة

“Speed is irrelevant if you are going in the
wrong direction.”

Mahatma Gandhi



Thank you

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Senior Expert

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