



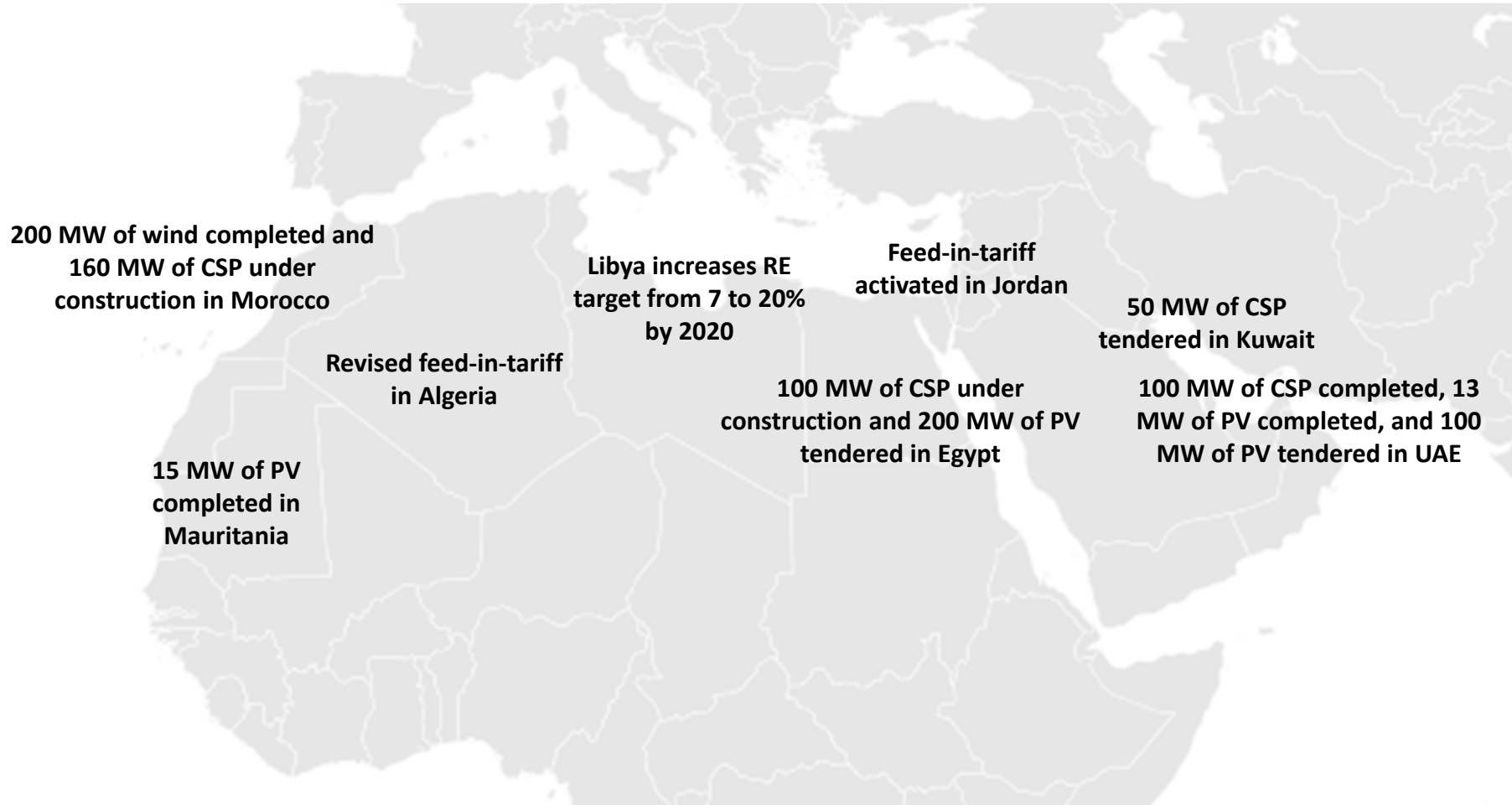
**REN21 2014 Global Status Report**  
**Renewable energy in the MENA region**

Presented by the UAE Ministry of Foreign Affairs  
3 July 2014

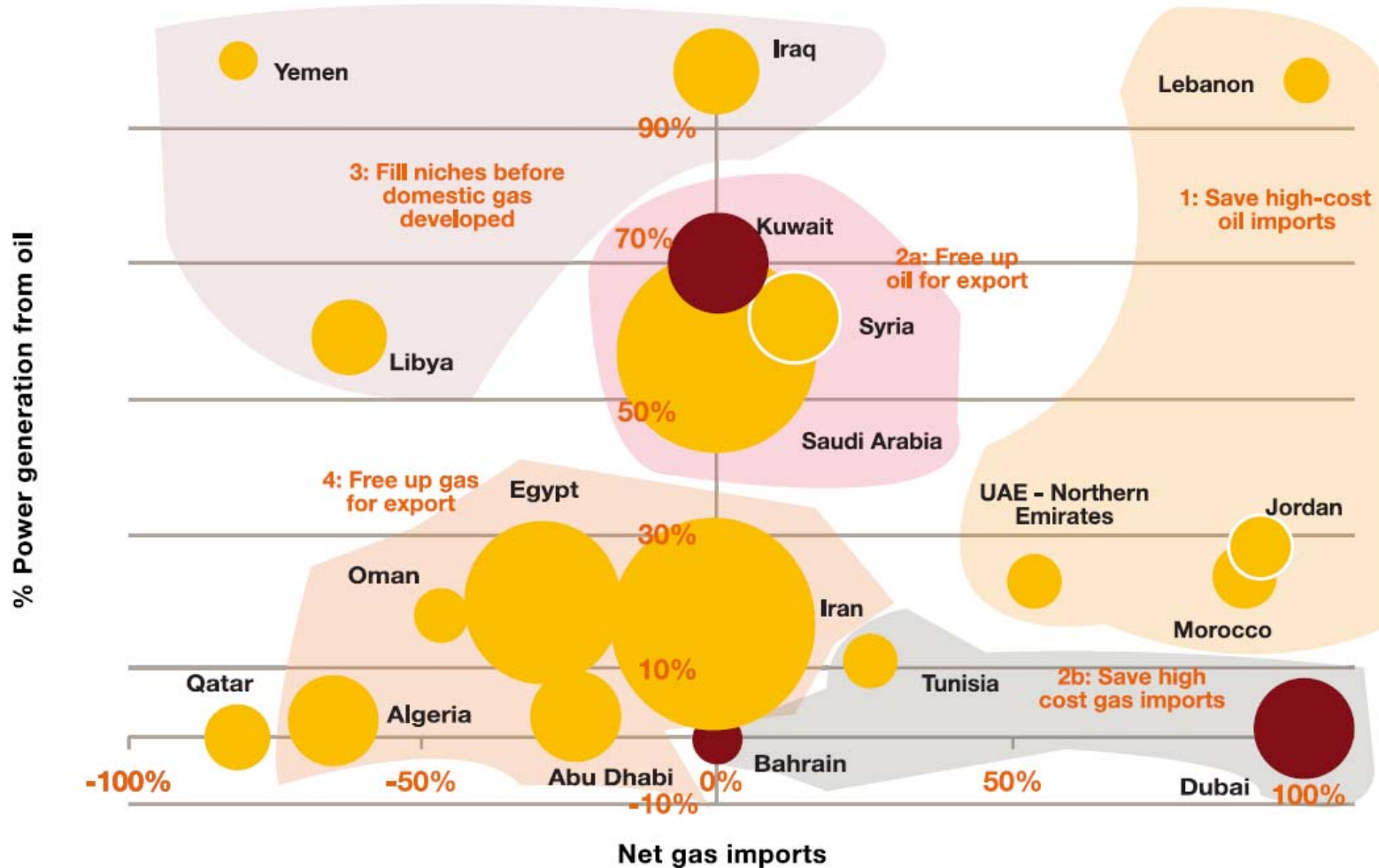
---



# News of 2013 and early 2014



# Motivating factors – RE's relentless move toward (and past) fossil fuel parity



Source: ESIA and PwC, *Sunrise in the Desert*



# Ripe for RE: cost reduction and energy security imperatives

## 2011 Generation Mix across the MENA region

	TWh	(% of Total Generation)					
		Oil	Gas	RE (Hydro)	RE (non Hydro)	Coal	Nuclear
Saudi Arabia	175	38%	62%	0%	0%	0%	0%
Egypt	157	16%	75%	8.3%	1.3%	0%	0%
UAE	99	2%	98%	0%	0%	0%	0%
Kuwait	57	62%	38%	0%	0%	0%	0%
Algeria	51	5%	94%	1.0%	0%	0%	0%
Iraq	45	16%	75%	9.2%	0%	0%	0%
Syria	41	40%	52%	8.0%	0%	0%	0%
Qatar	31	0%	100%	0%	0%	0%	0%
Libya	28	44%	56%	0.0%	0.0%	0%	0%
Morocco	25	26%	16%	7.5%	2.8%	47%	0%
Oman	22	18%	82%	0%	0%	0%	0%
Tunisia	16	0%	99%	0.3%	0.7%	0%	0%
Jordan	15	73%	27%	0.4%	0.1%	0%	0%
Bahrain	14	0%	100%	0%	0%	0%	0%
Yemen	6	78%	22%	0%	0%	0%	0%
<b>REGION</b>		<b>25%</b>	<b>71%</b>	<b>3%</b>	<b>0.4%</b>	<b>1.5%</b>	<b>0.0%</b>

Source: IEA 2013 (from 2011)

# The case for countries that use oil for power (especially exporters)



وزارة الخارجية

## Cost advantage for importers

- IRENA research shows that RE is significantly cheaper than oil-fired generation for new power

## 'Miracle' for exporters

- Reduced pressure on exports from domestic consumption: allocation choices get easier
- Increase revenues: BNEF estimates that at \$1.5/watt of solar and \$108/barrel of oil, Saudi solar power IRR = 22% from 'liberated' oil for export
  - At \$94/barrel, IRR still around 20%

## KSA 2032

- 16 GW of PV
- 25 GW of CSP
- 9 GW wind
- 3 GW waste-to-energy
- 1 GW geothermal

مدينة الملك عبد الله للطاقة  
الذرية والمتجددة K.A.CARE

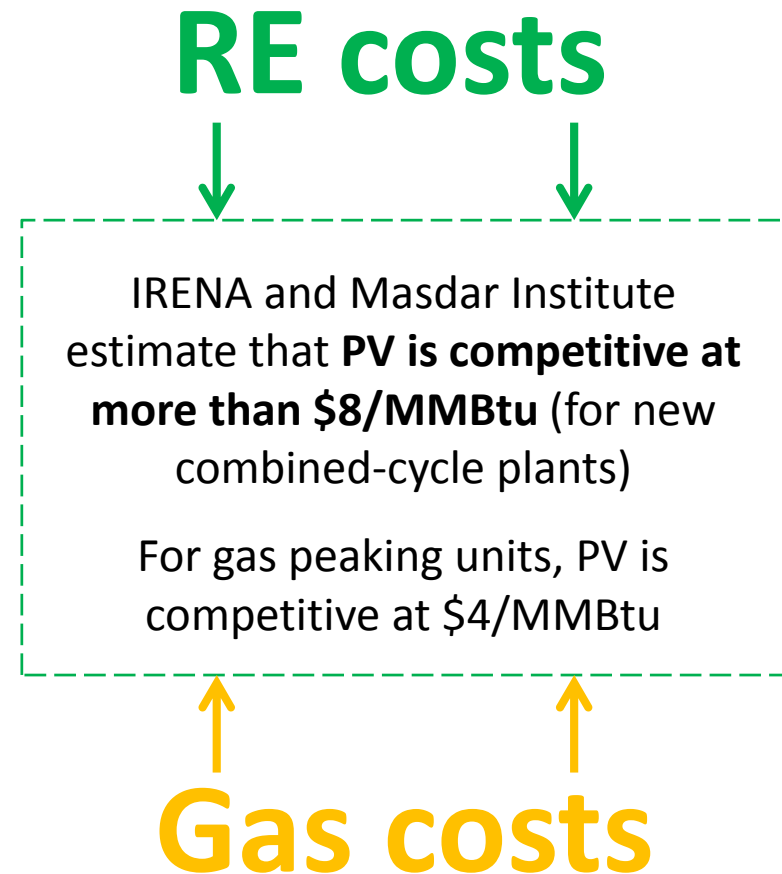




# The case for gas importers (especially LNG)

## Gas pricing evolution

- Long history of \$1/MMBtu in the GCC; <\$3/MMBtu in other MENA countries
- New domestic production often estimated at \$5-8/MMBtu
- LNG imports at \$12-20/MMBtu
  - North American shale would be \$6-8/MMBtu in dream scenario
  - **Current LNG importers:** Kuwait, Dubai
  - **Upcoming LNG importers:** Bahrain, Abu Dhabi, Oman?





## The case for gas exporters

---

### Opportunity cost landscape

- Gas can be produced for \$1-3/MMBtu in some MENA countries (namely Qatar)
- Can be sold to Asia for \$10-18/MMBtu on long-term, oil-indexed basis
- Spot cargoes sometimes sold for \$25+/MMBtu



Q-Max LNG carrier

# The GCC transformation: market moving from 'visionary' to commercial impetus



وزارة الخارجية

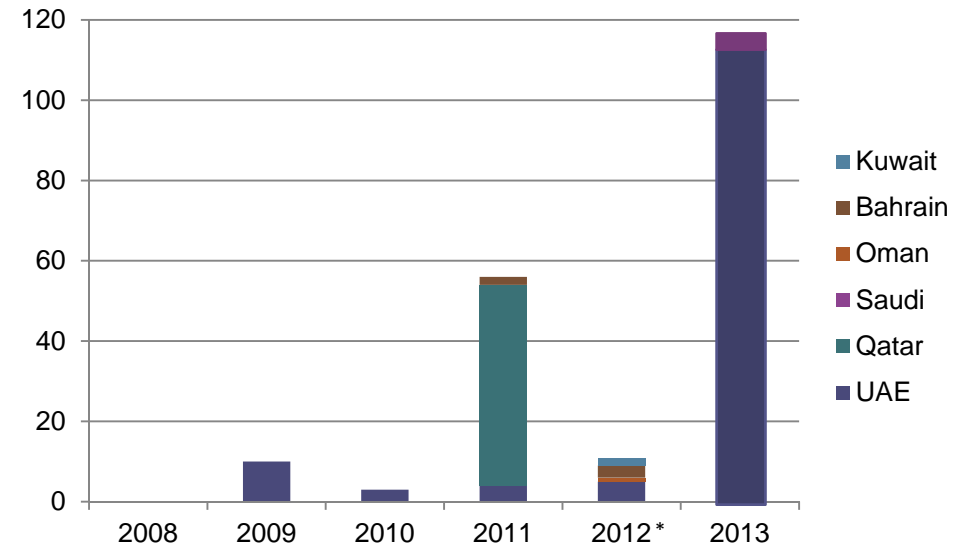
**2008: 0 MW**

**2013: 200 MW**

**2020: 28 GW**

**2032: 60 GW**

RE Capacity Additions



\* Date may indicate first available reporting of installation



First PV plant, at Masdar, 2009



Qatar's waste-to-energy, 2011



Masdar's Shams 1 CSP, 2013





## The other domestic RE industry: overseas investment

### UAE example: maintain energy leadership through fund management and project development

- Masdar, Taqa, and IPIC: quickly growing RE portfolios
  - World's largest offshore windfarm (UK), breakthrough solar energy storage (Spain)
  - \$540 million in venture capital
- Emergence of Saudi's ACWA as important RE investor (e.g., in Morocco)



Masdar investment:  
London Array, world's largest offshore wind farm,  
commissioned in 2013



## RE as development assistance

- UAE allocates over \$500m in 2013
  - Soft loans for IRENA-reviewed projects: Ecuador, Maldives, Sierra Leone, etc.
  - 15 MW PV in Mauritania
  - 6 MW wind in Seychelles
  - 10 Pacific island projects
  - Extensive PV in Egypt
- \$180 million Islamic Development Bank programme for RE-based energy access
- Interest from Kuwait and KSA



UAE-funded projects in Mauritania and Seychelles



## Verdict: RE power is coming at scale, but with a lag

### Barriers

- RE competitiveness is very recent: mindset change just starting
- Local capacity is often limited (banks, regulators, project developers, etc.), slowing pace and upping cost of capital
- Higher gas prices aren't always passed on to utilities, skewing investment
- Consumer subsidies curb solar water-heating and distributed generation
- Conflict and instability

### Potential near-term outlook

- Saudi first round of tenders in the next few years
- Further growth in Morocco: success begets success
- Expansion in Egypt and Jordan (facilitated by GCC funding)
- LNG imports in GCC will accelerate RE deployment (already happening in Dubai)