



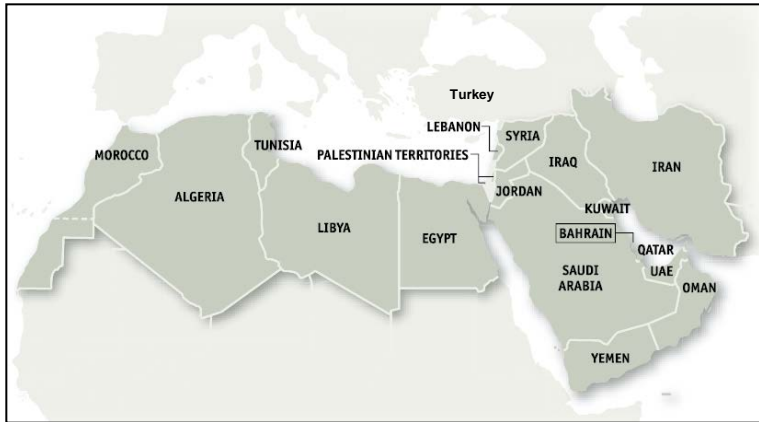
الجمعية الاماراتية لصناعات الطاقة الشمسية
Emirates Solar Industry Association

MENA SOLAR MARKET OUTLOOK

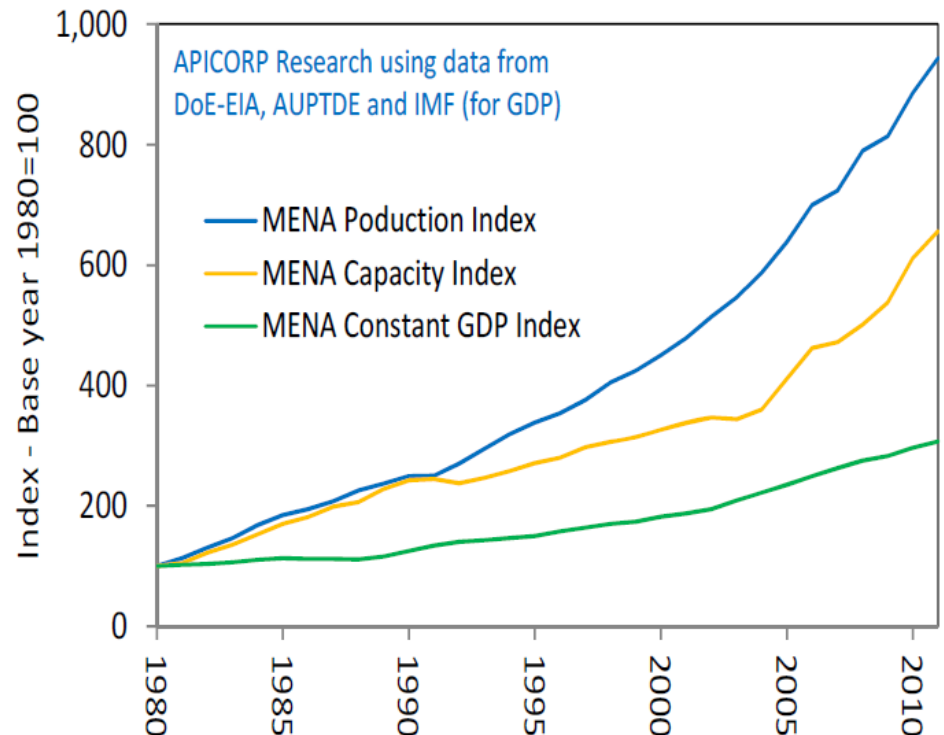
January 2013

MENA Trends

Electricity production capacity demands are growing rapidly



- Electricity production growth has outpaced economic growth (GDP)
- Electricity production growth has outpaced capacity growth



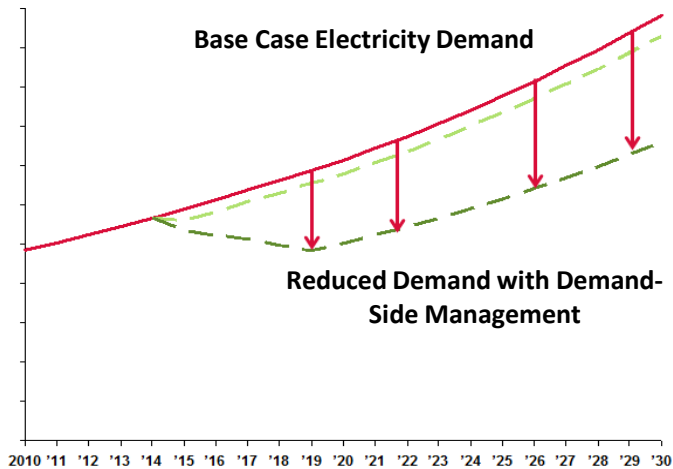
- Rising population
- Urbanization
- Economic growth and industrialization

Meeting the MENA Energy Demand Challenge

A sustainable strategy



DEMAND-SIDE MANAGEMENT (DSM)



Aims at curbing electricity demand by using technical, regulatory, and information levers

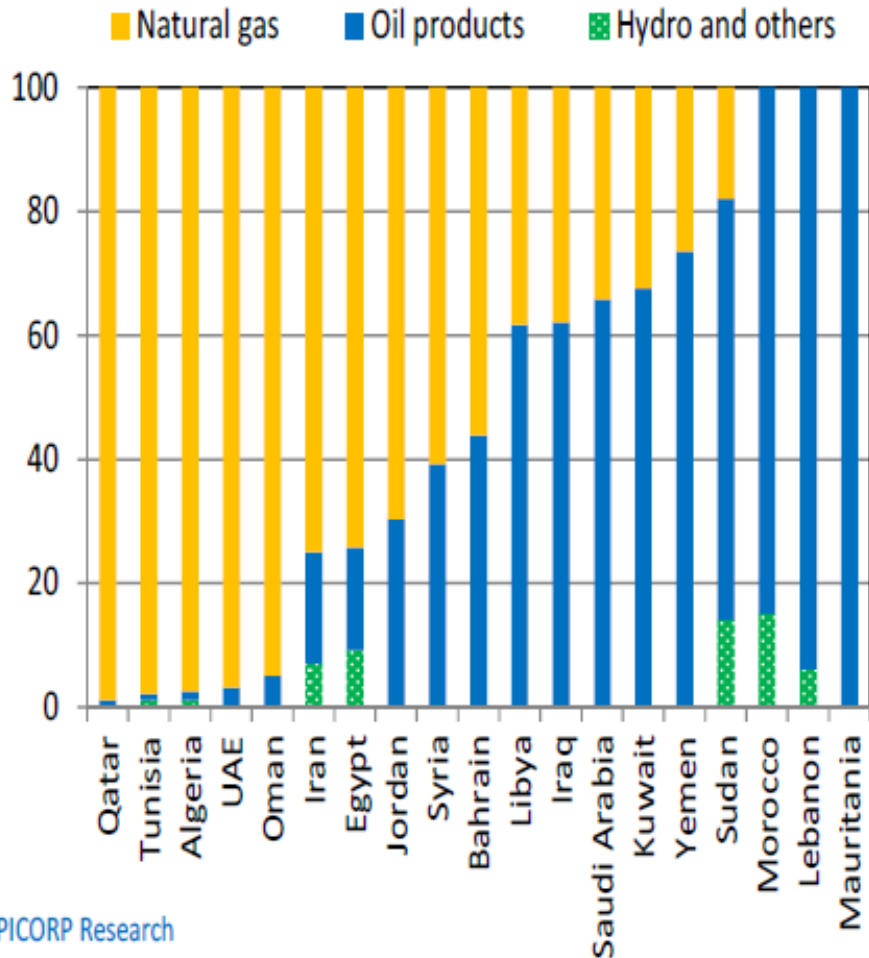
SUSTAINABLE ENERGY SUPPLY



Aims at having a diversified portfolio optimized to the specific country context

Meeting the MENA Energy Demand Challenge

The current energy mix is not sustainable



- In 2010, ~60% of power generated using natural gas and ~37% using oil
 - Limited renewables deployment, mostly hydro
- If new, fossil capacity is required to meet demand...
 - Significant budgetary strain on hydrocarbon importers
 - Significant opportunity cost to hydrocarbon exporters

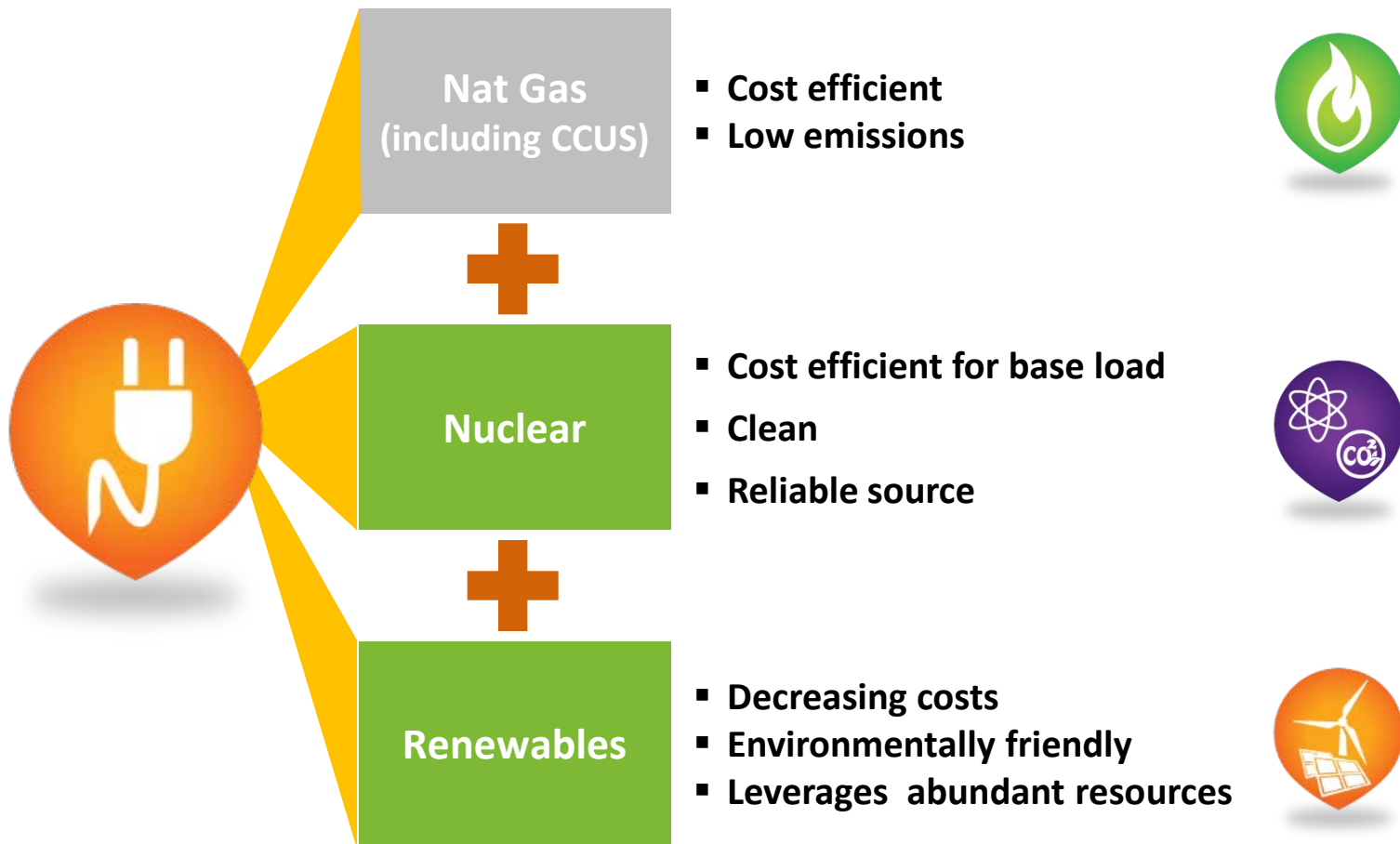
APICORP Research

Meeting the MENA Energy Demand Challenge

The sustainable energy mix



Energy Mix Diversification

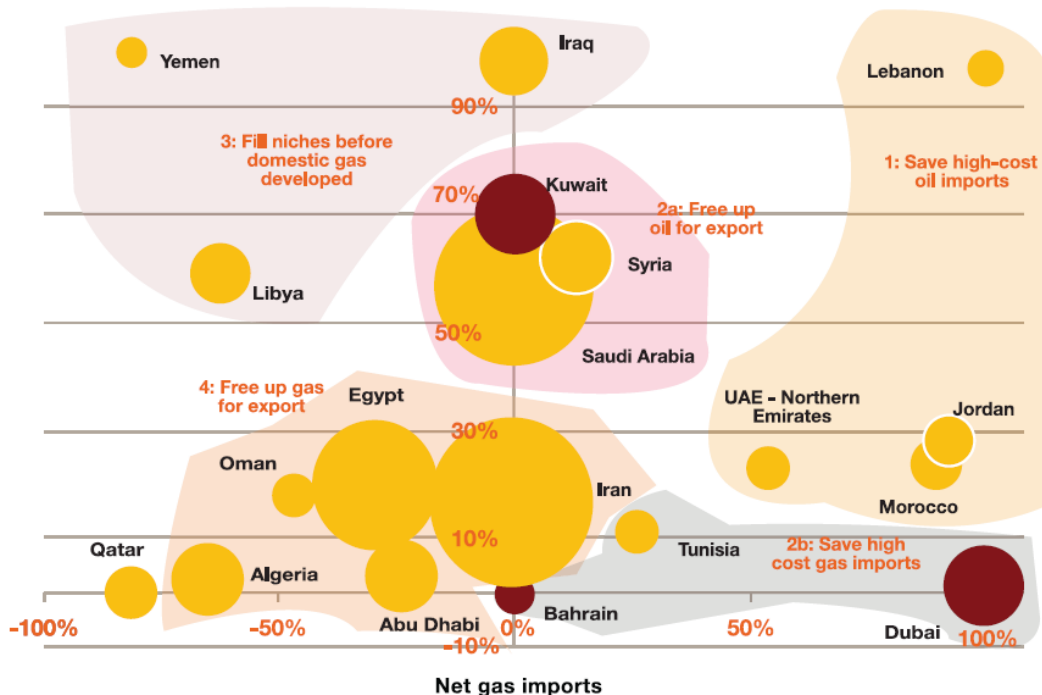


The MENA Sustainable Energy Mix Opportunity

Sunrise in the Desert: Solar becomes commercially viable in MENA



ESIA research report released January 2012



Scenario					Optimal solar generation	
Capital (\$/W)	Opex (\$/kWh/yr)	Cost of capital	Legacy low-cost gas ⁸	Imported fuel price (\$/MMBtu)	MW	% of total capacity ⁹
2.5	30	8%	Yes	10	0	0
2.5	30	4%	Yes	10	700	6.3%
2.5	30	8%	No	10	0	0
2	30	8%	Yes	10	400	3.7%
2.5	30	8%	Yes	13	0	0
2.5	30	4%	Yes	13	1600	14.1%
2.5	30	8%	No	13	1500	13.3%
2	30	8%	Yes	13	1500	13.3%
2.5	30	8%	Yes	16	1500	13.3%
2.5	30	4%	Yes	16	2900	22.9%
2.5	30	8%	No	16	2100	17.7%
2	30	8%	Yes	16	2300	19.0%

- **Solar power has become commercially viable in the MENA region due to:**
 - Dramatic reduction in solar equipment costs
 - Good fit of solar power resource with regional demand patterns, particularly in the Gulf where air-conditioning dominates peak demand
 - Increasingly limited access to cheap hydrocarbons, leading to reliance on expensive imported LNG and/or oil-based fuels for power generation

The MENA Sustainable Energy Mix Challenges

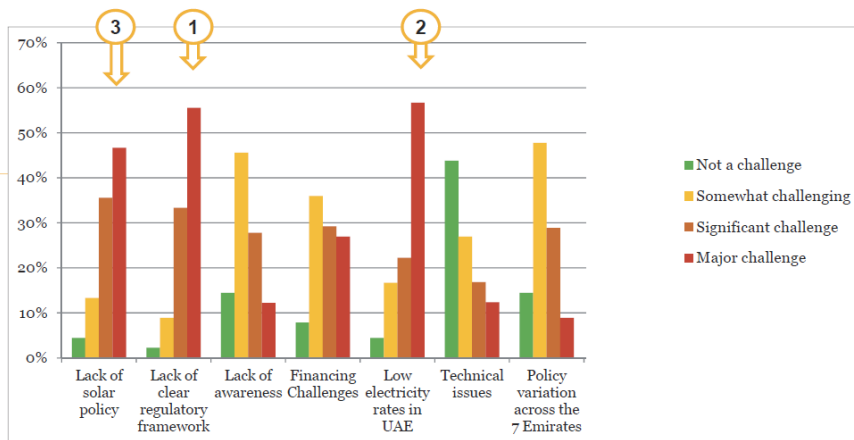
UAE Solar Survey 2012



ESIA and PwC report released November 2012

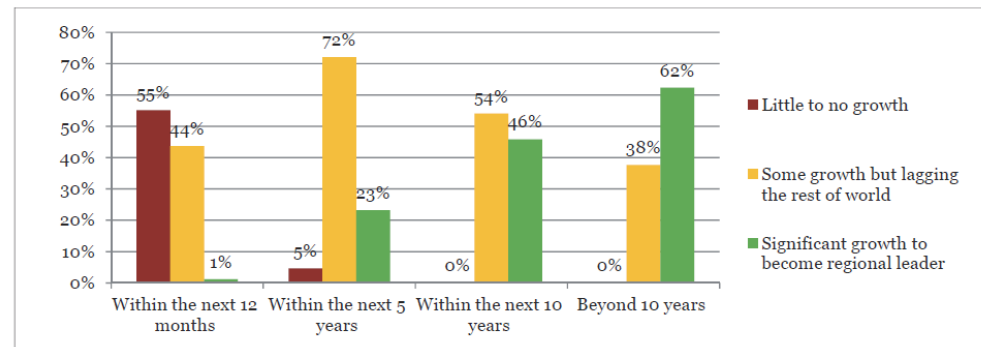
Survey Questions

Q1: What, in your view, are the challenges for investors in the UAE renewable (solar) industry?



Survey Questions

Q6: How quickly do you see the solar market developing in the UAE?



- **UAE challenges for realizing the potential for solar energy:** (1) lack of clear regulatory framework, (2) lack of solar policy, (3) low electricity rates
- **Resulting market perception:** the UAE has excellent potential for solar energy but will be challenged to become a regional leader in solar energy in the next several years
- **Findings reflect a general market perception of solar power in the region**