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Renewable energy in the GCC

22 October 2013

Renewable energy: a lot can change in 5 years

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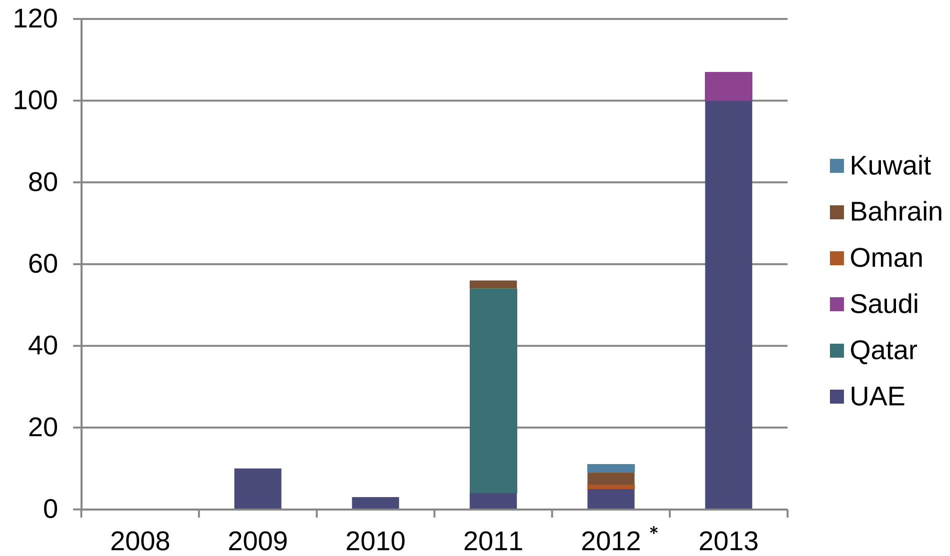
2008: 0 MW

2013: 190 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 original case: we should, and we can

Why did the UAE embrace renewable energy first?

- HH Sheikh Zayed, founding father of UAE, leaves legacy of environmental sensitivity, international openness, and social progressivism unusual for region and time
- Economic diversification drive – create new, non-oil/gas sectors and jobs
- Reputational interests – the UAE measures itself against the best in the world

Result: UAE is patient capital

The ‘old’ justifications for domestic renewable energy

1. Diversify away from hydrocarbons
2. Create jobs
3. Decarbonize – and access climate finance
4. Reduce long-term environmental liabilities

Did these factors justify government investment in domestic projects and industry?

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What was the payback period?

Economic diversification – renewable energy still largely dependent on subsidies from oil/gas wealth	Long
Jobs – would be largely subsidized	Long
Decarbonization – CDM marginal revenue source	Long
Environmental liability – health and clean-up effects hard to measure and may take years to manifest	Long

Yes – if you took the long view

Result: only visionary, stable governments invest

The ‘new’ justifications: moving beyond visionary

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1. Opportunity costs
2. LNG/field development avoidance
3. Energy security

The case for oil exporters (who use oil for power)

The long-term threat

- KSA burning almost 1,000,000 barrels/day to meet summer cooling demand (10% of crude production)
- Chatham House estimate: under BAU, KSA becomes net oil importer by 2038

The near-term 'miracle': high oil prices + falling solar costs justify investment today

- BNEF estimates that at $1.5/watt of solar and $108/barrel of oil, Saudi solar power IRR = 22% based just on freed-up 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

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The case for gas importers

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Historical pricing

- Associated gas <$1/MMBtu; imports from Qatar <$2/MMBtu
- Abu Dhabi gas LCOE: $0.09/kWh
- Abu Dhabi RE LCOE: $0.2-0.4/kWh

Where to get gas now?

- LNG imports at $10-20/MMBtu; unconventional dream scenario: $6+
- Domestic gas field development at $4-5+/MMBtu (mostly sour & tight)

Old RE benchmark

PWC estimates solar competitive at 15-$17/MMBtu; need for government subsidy narrowing

New RE benchmark

Current LNG importers: Kuwait, Dubai
Upcoming LNG importers: Bahrain, Abu Dhabi, Oman?

The case for gas exporters

Gas pricing landscape

- Qatari gas can be produced for $1-3/MMBtu
- Qatari gas largely sold to Asia for $10-18/MMBtu on long-term, oil-indexed basis
- Spot cargoes sometimes sold for $25+/MMBtu
- About 700 bcf/d consumed domestically

Q-Max LNG carrier

The opportunity

- Mohammed al-Sada, Qatar's Minister of Energy: 'We want to produce more clean energy to save burning natural gas in power plants, which we can sell at higher prices globally'.

The other domestic RE industry: fund management

UAE example: maintain energy leadership through overseas investment in RE

- Masdar and Taqa: using sovereign wealth funds to drive the RE industry
- World's largest offshore windfarm (UK), breakthrough solar energy storage (Spain)
- $540 million in venture capital
- $500+ million in soft loans and grants

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

Timeline – ‘watch this space’

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- Competitive tendering for large-scale projects on the horizon
    - particularly in KSA
- Feed-in-tariffs (or other subsidies) for distributed generation under consideration – but roll-out may be curbed by government preference for the economies of large-scale projects
- Sovereign wealth funds are interested in overseas opportunities now – typically need to demonstrate returns of 11-13+%
- Development agencies (if not grant) look for 2-6%

Thank You