

Renewable energy  
Middle East Energy  
and Resources  
Managing scarcity  
for the future



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## Changes in regional energy policy towards a more defensive mix to include renewable energy signals opportunities for private sector companies in the short and longer term

### Seeds of change in the Middle East?

As an oil producing region, the Middle East has been considered a high net emitter of carbon, although this perception now appears to be gradually changing as the region has taken steps to embrace renewable energy. This is evidenced by a host of public announcements made by various governments in early 2012, with the Kingdom of Saudi Arabia (KSA), Kuwait, and Oman each announcing plans to produce at least 10% of its energy from sustainable sources by 2020<sup>1</sup>. These sentiments have been echoed in the United Arab Emirates, where Dubai and Abu Dhabi have set more modest (yet attainable) targets of producing 5% and 7% respectively of their energy from solar and renewable sources by 2030<sup>2</sup>. The change in Middle East energy strategy suggests there will be significant opportunities for private sector companies in the renewable energy and cleantech space in the near and long term.

### What's prompting the changes?

While the preliminary signals from regions such as Dubai point to energy independence, the opportunity costs of burning oil are becoming increasingly difficult to ignore.

As Dubai currently relies on natural gas from Qatar (via the Dolphin pipeline) to supply 90% of its energy needs<sup>3</sup>, energy independence can be argued as a primary motive to initiate change. However, simple economics paints a far more compelling picture, as KSA alone is conservatively estimated to be diverting 800,000 barrels of its daily oil production to oil burning power plants<sup>4</sup>. At current market prices of USD120 per barrel<sup>5</sup>, this amounts to up to USD35 billion<sup>6</sup> in lost oil revenue per annum as a result of not selling oil to foreign markets. And, with electricity consumption on the rise in the Middle East and an 85%<sup>7</sup> increase in energy consumption expected over the next two decades, electricity production will require larger amounts of oil, thereby increasing the opportunity cost for countries such as KSA.

Simultaneously, market forces and a changing competitive landscape are providing compelling reasons to consider alternative sources of energy. The levelized cost of electricity, which represents the life cycle cost of building and operating an asset and is measured by the price per watt/hour of electricity generated, has been steadily decreasing for established, large-scale renewable energy sources such as offshore wind and concentrated solar power (CSP)<sup>8</sup>. Photovoltaic (PV) prices have also followed suit, with the price of crystalline silicon PV modules falling by 50% from USD1.8 per watt to USD0.9 per watt in 2011<sup>9</sup> and further price decreases expected in 2012. A combination of the aforementioned factors has meant that renewable energy has become increasingly cost effective, and thus a more viable option for aspiring and energy-hungry countries in the Middle East. This is especially true for countries in the Middle East which have an abundance of natural sunlight, the key ingredient in solar energy production, although it should be noted that current technology still needs to be adapted for desert conditions in order to more efficiently harness this energy.

### How are countries responding to changes?

Some Middle East nations have been more active than others in devising and implementing their renewable energy plans. In the case of KSA, its recent renewable energy announcements fit neatly with the development of KACARE (King Abdullah City for Atomic and Renewable Energy), a decree entity that was set up in 2010 to foster renewable energy in the Kingdom. In the UAE, development plans appear far more advanced, and Abu Dhabi already has a fully-fledged (and operational) 10MW PV plant in Masdar City, a zero carbon city currently under construction. Abu Dhabi is currently commissioning Shams 1, a 100MW concentrated solar power plant that uses parabolic troughs and is expected to be operational in late 2012 while constructing Noor 1, a 100MW PV array<sup>10</sup>. In Dubai, an announcement with Sheikh Mohammed's blessing was made in early 2012 to develop a 1,000MW solar park by 2030, with a 10MW PV plant actively being tendered for completion in 2013<sup>11</sup>.

Even though there have been so many announcements in the renewable energy space, these stated aims may be overly ambitious in the timeframes indicated. Abu Dhabi, whose renewable credentials seem strongest as hosts of IRENA (International Renewable Energy Agency) and as the developers behind Masdar City, have scaled back their ambitions somewhat, and have pushed back their renewable energy targets by 10 years to 2030<sup>10</sup>. And in examining KSA's renewable energy aspirations, its stated aim of producing 10% of its energy from solar energy by 2020 represents over 5,000MW of new capacity that is required over the next eight years<sup>4</sup>. This amounts to over 600MW of new solar capacity required every year, or the equivalent of six large PV or CSP projects per year similar in size to those currently being built in the UAE.

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## Renewable energy aspirations, while commendable may be ambitious in the timelines stated

While significant, the Kingdom's goals are not unachievable, as seen in Germany, where 7,500MW of solar capacity was added in 2011 alone<sup>12</sup>. These targets do however, pose considerable challenges to a nation such as KSA because it does not yet have any significant solar capacity of note, and its ambitions are only now starting to materialize. The Kingdom's challenges are further compounded by the fact that it (and the Middle East as a whole) does not have suitable demand side policies in place to stimulate the private sector, such as tax benefits or feed-in tariffs for renewable energy electricity generation.

In light of the foregoing, we see the following developments and opportunities over the medium term:

- Gradual removal of oil input subsidies in favour of a free market mechanism. Any Governmental move that negatively impacts oil subsidies would be expected to carry a potential social backlash. However, a gradual increase in the price of oil sold to domestic electricity producers to more fairly reflect market value seems to be an inevitable step. This is because a decrease in oil input price subsidies will simultaneously reduce the opportunity cost of lost oil revenue (i.e. oil not already sold to foreign markets), whilst also reducing the local demand for oil and its derivative products. A knock on impact of a decrease in oil input subsidies may be in the form of higher electricity costs for consumers, which UAE residents may already have experienced as they have seen their electricity prices double over a three year period through 2011 - 2012.

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## Likely beneficiaries of the changes include large scale renewable energy companies, component manufacturers and venture capital investors in these companies

- Consideration of feed-in tariffs and/or tax benefits to encourage renewable energy production. The introduction of feed-in tariffs to provide a guaranteed stream of income for electricity generated by the private sector would serve to stimulate the private sector into considering renewable energy adoption. While there have been no public announcements to this effect, we expect consideration of feed-in tariffs to be one way in which governments look to finance their renewable energy plans.
- Opportunities for companies adapting technology to better suit the desert environment. By developing technology that is able to better withstand the dust, sand, wind, high temperatures and low water levels that characterize the desert environment in the Middle East, companies may realize a first mover's advantage to mass adoption.

In the near term, we expect that there will be further policy announcements and a push towards green energy production being stimulated at the national and governmental level. This is because it is the governments and national oil companies themselves who are currently bearing the brunt of the costs and who see the financial incentive to initiate change. These developments should translate into further good news for large-scale renewable energy producers, particularly large CSP and PV developers, although the benefits should cascade down to materials suppliers and component manufacturers across the value chain and venture capital investors in these companies. Given sufficient projects, we see the additional flurry of activity in the Middle East as a good incentive for large multinational renewable energy companies and component manufacturers alike to consider establishing offices and production centers in the region. All of this suggests a 'green light' for future prospects in the renewable energy industry in the Middle East.

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## Endnotes

- 1 <http://www.utilities-me.com/article-1746-saudi-to-generate-10-per-cent-solar-by-2020/>;  
[http://articles.economictimes.indiatimes.com/2011-10-27/news/30328296\\_1\\_renewable-energy-kuwait-city-al-falah](http://articles.economictimes.indiatimes.com/2011-10-27/news/30328296_1_renewable-energy-kuwait-city-al-falah);  
<http://www.thenational.ae/business/energy/swiss-german-partnership-plans-2bn-solar-investment-in-oman>
- 2 <http://www.thenational.ae/thenationalconversation/industry-insights/energy/dubai-seeks-renewable-power-sources-for-the-future?pageCount=2>
- 3 [http://www.eoearth.org/article/Energy\\_profile\\_of\\_United\\_Arab\\_Emirates](http://www.eoearth.org/article/Energy_profile_of_United_Arab_Emirates)
- 4 <http://www.thenational.ae/thenationalconversation/industry-insights/energy/kingdom-enters-the-solar-race>;
- 5 Based on dated Brent crude spot prices on 11 April 2012 - <http://www.bloomberg.com/energy/>
- 6 Calculated as Spot price of USD120\*800,000 barrels \*365 days
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- 8 <http://www.instituteforenergyresearch.org/2009/05/12/levelized-cost-of-new-generating-technologies/>
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