

A WORD ABOUT WIND

MARCH 2015

MIDDLE EAST

The risks and opportunities of investing in this oil-rich region

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EDITORIAL



by Richard Heap,
editor at A Word About Wind

“There is hope for investors and manufacturers that want to grow in the Middle East, one of the wind industry’s final frontiers.”

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The Middle East is home to some of the hottest countries on Earth.

For companies in the wind sector; however, the reception they have received in the oil-rich region has been much cooler. Governments in the region have been slow to recognise how renewables can fit with their traditional oil and gas operations; and most of the nations that have committed to ‘green’ targets have not brought in laws to give investors certainty.

That has made it tough for investors to gain a foothold in the Middle East.

Firms cannot even rely on high-profile flagship initiatives such as Saudi Arabia’s King Abdullah City for Atomic & Renewable Energy (K.A.CARE). The government set up K.A.CARE five years ago to develop renewable alternatives to fossil fuels; and in 2013 it set out plans to build 54GW of renewables, including 9GW of wind, by 2032. That would have set a big marker for other countries in the region to emulate — but sadly, Saudi leaders ditched the plan last month.

Understandably, stories like this give investors a one-sided picture of how wind is seen in the Middle East. These include the ideas that it is a marginal concern that gets dwarfed by a preoccupation with huge oil and gas reserves; that support is shaky and the sector is seen as expandable; and that controlling oil prices (see p.11) is the region’s real priority. These points all have some truth about them.

And yet, in this report we want to show that there is hope for investors and manufacturers that want to grow in the Middle East, one of the wind industry’s final frontiers.

There are a few myths investors must dispel before they can take the market seriously, and be taken seriously.

The first danger is assuming that every country in the region is like

Qatar, Saudi Arabia and the United Arab Emirates, with unfettered access to fossil fuels. They aren’t, and we see countries in the region that are looking to use wind to reduce their reliance on expensive fossil fuel imports. Jordan is one of the region’s most exciting wind markets for this reason.

The second danger is thinking that countries in the Middle East don’t face pressures like developing countries in other parts of the world. Energy demand is growing fast and we expect more countries to look towards wind as they seek to diversify their energy supply. Egypt is a case in point, and its leaders have stepped up efforts to roll out more wind.

We have seen similar pressures driving significant growth in Turkey (see p.16), which is on the fringe of the region.

And the third danger is thinking that things won’t change. Government-backed sovereign wealth investors such as ACWA Power, Masdar and Nebras are looking to invest in wind projects in their home countries and overseas. The most adventurous is Masdar, which has taken stakes in high-profile projects, including in UK offshore (see p.18).

Saudi Arabia’s axing of K.A.CARE is a setback for wind in the region, but it is not the end. We do see wind starting to gain a foothold and there will be opportunities for investors.

The Middle East is a region built on its energy reserves, and it will fight to keep its status. If that means trying to establish itself in renewables then that is what it will do. But it isn’t a market for investors that want a quick win. ■

Middle East is our second special report of 2015. For more information on future reports, you can find them at the back of this report and online.

If you want to contact me then call, find me on Twitter (@RichHeap), or email: richard@awordaboutwind.com

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AROUND THE REGION

Middle Eastern nations have been slow to back 'green' targets with new laws, but we do now see pockets of activity

Energy is a politically divisive issue around the world, but arguably nowhere more so than in the Middle East. Access to fuel has been a key factor in some of the region's biggest conflicts of the last century.

It is interesting to consider where wind power fits into this complex picture.

Countries in the Middle East have been slower to embrace wind energy than those in other parts of the world. The region is awash with oil and natural gas, which means its richest nations see little or no reason to move towards renewables, even though nearly all have green targets (see table, left).

Then, when they do opt to edge towards renewables, wind doesn't get much of a look in. The dry and sunny climate makes the Middle East ideally suited to solar power. By contrast, the region's wind power potential is patchy (see map, p.6) even using low-wind turbines.

Yet, despite difficult headwinds, there are pockets of promising activity in the region.

EASTERN MEDITERRANEAN

The region's most active wind markets are those adjacent to the Mediterranean Sea, which benefit from strong wind speeds. It is not surprising, therefore, that the region's largest wind market by far is Turkey, which has capacity in of 3.8GW and has already experienced ten years of growth since feed-in tariffs were introduced in 2005.

Growth in Turkey has been largely driven by the government's desire to cut its reliance on fossil fuel imports, and the country has a target of wind farms totalling 20GW by 2023. The challenges for overseas investors seeking to do business in Turkey are the complex regulatory regime; and the government's reticence to hand out too many licenses for new projects. That said, there is

Renewable energy targets in the Middle East

Country	Targets for renewable energy generation
Bahrain	5% by 2020
Egypt	20% from electricity generation by 2020, of which 12% is wind
Iran	5GW of wind and solar by 2018
Iraq	2% of electricity generation by 2016
Israel	5% of electricity generation by 2014; 10% by 2020
Jordan	7% of primary energy by 2015; 10% by 2020
Kuwait	5% of electricity generation by 2015; 10% by 2020
Lebanon	12% of electrical and thermal energy by 2020
Oman	10% of electricity generation by 2020
Palestine	25% of energy from renewables by 2020; 10% (or at least 240 GWh) of electricity generation by 2020
Qatar	At least 2% of electricity generation from solar energy sources by 2020
Saudi Arabia	50% of electricity from non-hydrocarbon resources by 2032; 54GW from renewables (of which: 41GW from PV and CSP, 9GW wind, 3GW waste-to-energy, 1GW geothermal), 17.6GW from nuclear
Syria	N/a
Turkey	30% by 2023 (c. 40GW)
UAE	Dubai: 5% of electricity by 2030; Abu Dhabi: 7% of electricity generation capacity by 2020
Yemen	15% of electricity generation by 2025

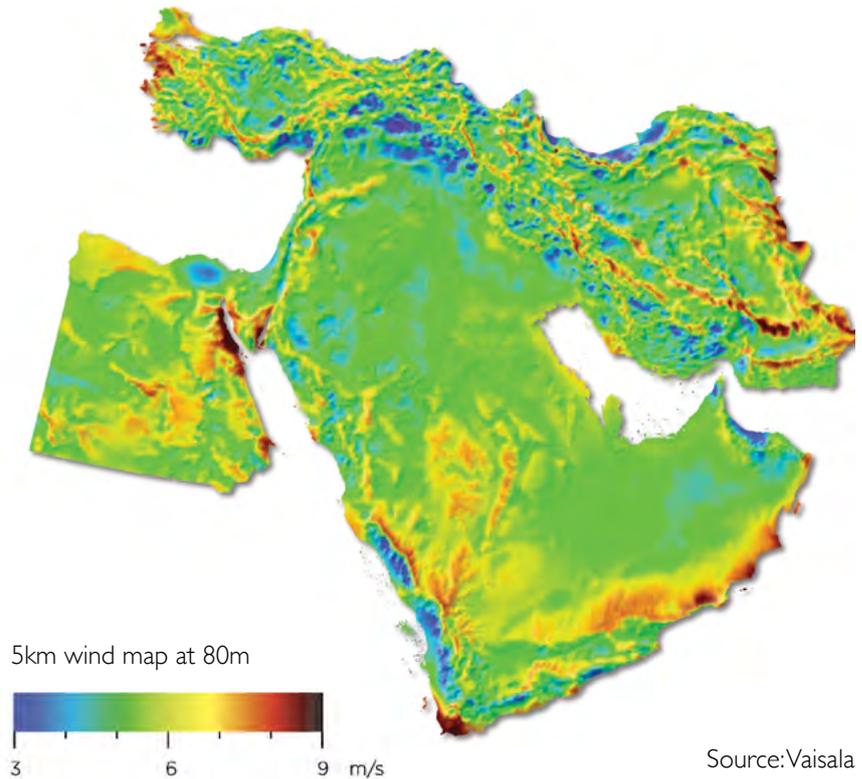
Source: Oxford Institute for Energy Studies (January 2014); Iran and Turkey added by A Word About Wind

Regional map: annual average speeds at 80m above ground

The map shows annual average wind speeds at 80m above ground. Weather measurement expert Vaisala created it using advanced weather prediction models run over a ten-year period.

The areas with the highest wind speeds (7-9 m/s) correlate with topographical features such as ridges and other areas of high elevation like the Zagros Mountains of Iran. Coastal areas of Oman and Turkey capture wind flow from the Arabian and Mediterranean Seas and also have a strong wind resource. The complex terrain of the Red Sea with its narrow constriction at the Bab el Mandeb strait and mountainous coastlines also creates unique wind patterns and funneling effects.

Wind in this region is generally driven by thermal circulations, in particular the contrast between cool ocean temperatures and hot temperatures on land. ■



Suzlon has identified Turkey as one of its core growth markets following its €1bn sale of German subsidiary Senvion, which is due to complete in April.

potential for developers and investors who are able to team up with local players.

Meanwhile, manufacturers continue to see opportunities for growth, and Suzlon has identified the country as one of its core growth markets following its €1bn sale of German subsidiary Senvion, which is due to complete in April. Turkey's two biggest wind regions — the Marmara and Aegean regions — are in the west of the country and benefit from the strong winds off the Mediterranean Sea (see map, above).

Egypt is the second-largest wind market in the Middle East, with a wind capacity of around 750MW. The total capacity figure stayed static at around 550MW in the few years after the Arab Spring uprising of early 2011, but the country's New & Renewable Energy Authority (NREA) is taking steps to get things moving. Investors will take time to gain confidence in the region given the ongoing political upheaval.

For instance, in January it awarded feed-in tariffs to 49 projects of up to 50MW each, and Egypt's government is seeking to hold new qualification rounds every three months until it commissions wind farms totalling 2GW. Egypt has a target of 7.2GW of commissioned wind capacity by 2020.

The two regions in Egypt with greatest wind potential — Zafarana and El Zayt — are both next to the Gulf of Suez. The country's wind capacity has been mostly located in Zafarana, where NREA has developed a 550MW complex of eight linked wind farms; but a 200MW project was due to complete in El Zayt last year, and the government has also awarded contracts in the region for 720MW of new projects. In total, the government has designated 1,300 square kilometres of land in these two regions to private investors for schemes that it hopes could total up to 6GW.

The third most promising market in this part of the Middle East is Jordan, which has recognised the need to diversify its energy supply since it does not have indigenous oil and gas production. Currently the country imports 96% of its energy. Add to this dynamic a significant wind resource, especially in the mountainous areas in the north and west, and the opportunity for wind power soon stacks up.

As a result, Jordan is looking to commission 1.8GW of wind and solar by 2018, with the 117MW Talifa wind farm the largest project currently in development and Elenor's 66MW Maan wind farm also due to be in operation by 2016.

Hot work: Engineer inspects turbine at Egypt's Zafarana wind farm



Source: Danish Wind Industry Association

The Gulf states with the most exciting wind prospects are two of the region's less glamorous countries: Oman and Yemen.

Wind plans in the rest of this part of the Middle East are beset with political problems.

In Israel, the industry has been fighting against the Ministry of Energy's repeated attempts to slash wind energy quotas in favour of solar, and developer Mei Golan owns Israel's only commercial wind farm: a 6MW project in the Golan Heights region between Israel and Syria. However, there is a further 22MW currently in development and potentially a further 3GW in the pipeline.

Meanwhile, the descent of Syria into civil war since the Arab Spring uprisings of 2011 is clearly a huge obstacle.

And finally, plans for Lebanon's first wind farm, a 60MW project in the Akkar region by developer Hawa Akkar, have gone quiet since arriving with great fanfare in 2012.

THE GULF STATES

Progress is slower in the Gulf even though nations have publicly backed renewables.

In Saudi Arabia, for example, leaders have previously set a target of 9GW of wind power in the energy mix by 2032. This is in spite of the fact that Saudi Arabia has the largest oil reserves in the world and the fourth-largest concentration of natural gas.

The logic for adding renewables is to free up oil and gas to sell more profitably for exports; to diversify its economy; and to meet growing energy demands.

And yet, there are no wind projects being planned, and the organisation set up to deliver them, the King Abdullah City for Atomic & Renewable Energy (K.A.CARE), was shut down last month (see p.11).

The situation is similar in fellow oil giant the United Arab Emirates, where just one wind project is currently underway. In the emirate of Abu Dhabi the government's renewables arm Masdar, part of the Mubadala Development Corporation, is working on a 30MW wind farm on Sir Bani Yas Island, but this is the only project of note.

Masdar has been investing in wind projects overseas, from the world's largest offshore wind farm, London Array, to renewables projects on small Pacific islands (see p.18).

Wind also appears of little interest to the likes of Kuwait, which does not have a formal renewable energy policy framework; or Qatar, with huge natural gas reserves but no wind farms in prospect.

In fact, the Gulf states with the most exciting wind prospects are two of the region's less glamorous countries: Oman and Yemen. Both have access to attractive wind resources on their south coast.

Of these two, Oman is taking the lead. In October, Masdar signed a joint development agreement with Oman's Rural Areas Electricity Company to construct a 50MW wind farm in the Dhofar region. Work on the \$125m project is due to start later this year

Iran has made progress on wind, but the risks for investors are huge. Opportunity exists, but only the bravest need apply.

and complete in early 2017. It may be a small project by global standards, but is a significant step for one of the Gulf's least wealthy states.

Meanwhile, in Yemen, plans are also afoot for the country's first wind farm — a 60MW project in Al-Mokha next to the Red Sea, which has been in prospect since 2009 — but progress is slow. The World Bank approved funding of \$20m last March to help support the project by Yemen's Ministry of Electricity & Energy, and it does appear to be gaining momentum.

Progress may be slow, but it is progress. The interesting aspect for investors is that Oman and Yemen have shown with these schemes that they are both open to outside support.

THE WILDCARD

There is one major nation that doesn't fit into either of the above geographical areas: Iran. The country has made progress on wind energy, although risks for investors are huge.

Last year, the Renewable Energy Organisation of Iran announced that it would expand its 180MW Manjil wind farm in Gilan province by a further 100MW, and this was due to be commissioned in October.

This expansion followed the completion by developer Mapna Group of the 17.5MW first phase of its 100MW Kahak wind farm, which is due to be commissioned during 2016.

And, according to the Iranian Wind Energy Association in late 2013, there are further plans to build three wind farms of 200MW each in the country, although we have seen little evidence of these.

So why would investors want to look at such a wildcard state?

First, the reformist government has been opening up the country to foreign investment, although the delicate political situation — internally and internationally — could jeopardise this. Second, sanctions against the state are being lifted, and if they are lifted fully, this could lead to major investment into the country. And third, the country is lining up alongside allies such as the US in the battle against Islamic State, which cannot do it any harm geopolitically.

The risks are huge though, mainly due to the uneasy relationship between Iran, Israel and the US over claims Iran is developing nuclear weapons. Opportunity exists, but only the bravest wind energy investors need apply. ■

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EGYPT TOP PROSPECT FOR FOREIGN INVESTORS



Michelle T. Davies is partner and head of clean energy and sustainability at Eversheds

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Few countries in MENA have put in place the legal frameworks needed to attract investors. Here are three that have.

Egypt, Jordan and Morocco. For investors and developers looking to develop or invest in onshore wind farms in the MENA region, these are the three key markets.

Let's look at them in order:

In our view, Egypt presents the largest opportunity. The government plans to award feed-in tariff (FIT) contracts to 2GW of wind projects in its first renewable energy FIT tender round. This has so far been under-subscribed and we expect a second round to sweep up the excess capacity.

The plots are divided into 50MW sites and successful bidders will be awarded a site that has all real estate and permitting rights already in place or which will be put in place. Our current understanding is that 50% of the grid connection fee will have to be paid prior to a site being awarded, although there are a number of developers and investors who are lobbying to try to change this.

There are some challenges with the FIT programme, which mainly centre around the incompleteness of the regulatory framework. Many investors and funders have confidence in the ability of the New & Renewable Energy Authority (NREA) and the electricity regulator to resolve these in a bankable and workable way. To date, both organisations have shown a high degree of

pragmatism and understanding of what it takes to create a bankable framework and projects which can be financed.

“There are challenges with feed-in tariffs in Egypt, which mainly centre around the incompleteness of the regulatory framework.”

There are some elements that increase the investment cost such as tax; the grid and usufruct payments; 20% of the power purchase agreement being paid in local currency; and so on. Even so, many developers are satisfied that these items have been reflected in the FIT price.

The FIT programme is not the only way developers can access the Egyptian onshore wind market. They can do so via the separate independent power projects (IPP) programme and also via the

“Egypt needs power and it needs it quickly. So far, it has been successful in attracting attention internationally.”

merchant offtake market. But it is the FIT regime that seems to be the government's priority, and which indicates that Egypt's leaders are scaling up the country's renewable energy ambitions.

There are strong drivers for the government to do this. The country needs power and it needs it quickly. The country has been experiencing blackouts and we understand that the coal IPPs and FIT programme are top of the agenda to help resolve the immediate problem.

The country also has some excellent wind resource. These factors, coupled with the approach taken by the electricity regulator and NREA, mean that Egypt has so far been successful in attracting significant attention internationally.

The second country of interest is Jordan, which remains an important market in the region even though the second round for the wind FIT was cancelled last year. We have recently learnt, however, that this will be relaunched imminently.

Notwithstanding this, there is some degree

of hope that the market will pick up again and there has been some interest in the opportunity for developers to participate on an engineering, procurement and construction (EPC) basis in the net metering/wheeling projects with industrial and commercial end users.

And third, Morocco. This is an key wind market, although it appears to be dominated by a small number of participants.

There is also a good degree of outbound investment from the MENA region. Many Saudi Arabian corporates in particular, having geared up for the King Abdullah City for Atomic & Renewable Energy's 54GW renewables programme that has not materialised, are seeking opportunities elsewhere. These tend to be in the region but there is an appetite for the renewables space including wind.

A number of new funds emerging in the United Arab Emirates in particular are also focussing further afield as well as in the region — and you will see many of these participating and being successful in the FIT rounds in Egypt and Jordan. ■



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PENINSULA STRUGGLES TO CHANGE COURSE

The oil price crash has shocked the world, and may further slow wind investment plans in the Arabian Peninsula.

This year, Saudi Arabia has scaled back its commitments to renewables, driven by two big changes: a new king, and its tight grip on oil prices.

The Seawise Giant was the largest ever oil tanker. It took five miles to stop, had a turning circle of two miles, and was longer than the Empire State Building is tall.

Changing the course of an oil supertanker may be tough. Changing the course of energy policy in the Middle East is even tougher. The region is built on fossil fuel riches, with half of the world's proven oil reserves and around 40% of the world's gas reserves. The region also has enviable conditions for solar power, but has been slow to develop renewables.

This is starting to change. Most countries in the region have made commitments to developing renewables, mainly solar but also wind. However, most are lacking the legal framework and incentives required to make it exciting for developers and investors; and in most cases the political support for solar and wind still looks shaky.

For evidence of this, we need only look at a recent about-turn in Saudi Arabia.

BIG TALK, LITTLE ACTION

Saudi Arabia is the world's dominant oil producer and exporter; is the only country in the Arab world in the G20 group of major economies; and has strong ties with other economic powerhouses, notably the US. This makes its stance on renewables highly influential.

In 2015, it has scaled back its commitments to renewable energy, including wind.

This has been driven by two big political changes: a new king, and its tight grip on oil prices.

Five years ago Saudi Arabia looked set for a big push on renewable energy. King Abdullah bin Abdulaziz al-Saud established the King Abdullah City for Atomic & Renewable Energy (K.A.CARE) in April 2010 with the aim of developing alternatives to its fossil fuel sources.

In February 2013, K.A.CARE published a white paper setting out details of a procurement process for 54GW of renewable energy by 2032, including 41GW solar and 9GW wind. It raised expectations that wind and solar may actually happen in Saudi Arabia.

The idea of renewables in Saudi Arabia makes good sense. It would help the country build a strong position in these emerging technologies, which would give it an influential role in the energy market as fossil fuel reserves dwindle. It would also mean Saudi Arabia could generate electricity used within the country from renewables, rather than burning oil that could be more profitably sold overseas. Solar and wind could both play roles in this.

But little happened following this white paper and, in the first two months of 2015, Saudi Arabia has been pulling away from renewables. On 19 January, K.A.CARE said it was pushing back its deadline from 2032 to 2040; and then, on 23 January, King Abdullah died at the age of 90 and

New broom: Saudi Arabia's new ruler, King Salman, has scrapped the country's main renewables initiative



leadership of the country passed to his brother Salman. Just one week later, on 2 February, King Salman announced that K.A.CARE was to be disbanded.

The future of renewables in Saudi Arabia is now uncertain and, with oil prices as low as they are — currently around \$50 a barrel, down from \$115 a barrel in June 2014 — the country is unlikely to see it as an immediate priority. Saudi Arabia controls the influential Organization of the Petroleum Exporting Countries that is continuing to keep oil prices low by maintaining existing production levels despite weakening demand. It is no surprise that it would focus on managing oil prices and any potential political fallout.

OIL PRICE SHOCKWAVES

These low oil prices make life more difficult for energy sources that offer alternatives to traditional fossil fuels, including wind power. Industry experts are divided on what these low oil prices tell us about if and when Saudi Arabia might look to step up its wind plans.

David Short, director of renewable energy at Mizuho Corporate Bank, expects Saudi Arabia to pursue some renewables projects as it would look bad to do nothing.

However, he does not expect it to be at the high levels that K.A.CARE previously committed to.

Instead, Short expects oil prices to delay wind investment: "They say they can weather the low oil prices, and that the funding of infrastructure is budgeted for and it's all fine. But I can't see them pursuing anything other than what they've actually got and, as they haven't got many programmes for renewables, I imagine they'll put it on hold for a bit longer."

This view was contradicted by one manufacturer who did not want to be named. He says oil prices would not stifle the country's appetite to invest in wind.

"Aramco [officially called Saudi Arabian Oil Company] is very aware that a barrel of oil left in the ground or exported is worth more than burning it domestically for power generation at an artificially low price. That is why renewables are attractive in the region. It will help them balance their budget and earn more from what they are already pumping out."

For Khaled Klabi, head of renewables and energy advisory for Middle East in DNV GL's Dubai office, there is still good logic for Saudi Arabia to invest in renewables.

He says: "When they decided to go to renewables, they thought it was probably more beneficial economically to sell oil than to consume it internally. I'm not sure the oil price decrease will have changed their minds. Saudi has a renewables programme, but everything takes a long time

in Saudi. The resource is there. The grid is there. The money is there. I can't see why there are no renewables projects."

For investors, the challenge with the lack of established political and economic support for renewables is a barrier to investment in most of the rest of the region. The likes of Oman and the United Arab Emirates both have ambitions for renewable energy, but they aren't supporting these with the feed-in tariffs that attract inward investment.

The main exceptions to this in the Arab world are Egypt and Jordan, both of which have feed-in tariffs in place; and there is also Turkey, which has a well-established wind market and sits between the Middle East and Europe.

Another big barrier for overseas investors and developers looking to get involved in the Middle East is the cultural differences involved with doing business in the region,

from the influence of Islam to the impact of royal family politics on business decisions. This means that once an overseas firm gets a foothold in the region they crop up in many countries.

WIDE INVESTOR APPETITE

In the wind industry, this means that developers and investors who express an interest in developing projects in one Middle Eastern country are usually interested elsewhere. We can therefore look at a recent wind tender in Egypt to get a good idea of the businesses interested in developing wind in the Middle East.

Egypt has announced that it is seeking to add 7.2GW of wind capacity by 2020, including 2.5GW from private companies. In January, the country's energy regulator published a list of firms who it had pre-qualified under its feed-in tariffs regime.

These included European investors Acciona, Enel Green Power and GDF Suez; Asian firms including Eurus Energy, Marubeni and Tata Power; and Middle Eastern firms including ACWA Power, ElSewedy Electrics and MAPNA Group.

Overseas manufacturers have also been making their presence felt in the region, although they do not typically have to take on the same long-term exposure as developers and investors do.

Vestas made the early running by supplying 38 of its V112-3.0MW turbines to the 117MW Al Tafila project in Jordan last year; the first utility-scale wind farm in the Gulf region. It also won a contract to supply turbines to the 50MW wind farm in Harweel in Oman, which is the country's first significant wind farm and is set to begin operations in 2017.

Meanwhile, Gamesa has been expanding in the region after dominating the market in Egypt as a supplier to the nation's New & Renewable Energy Authority. It has since grown into Jordan by winning a contract to supply 33 of its G97-2.0MW turbines for Elecnor's 66MW Maan project in October. It is set to deliver these by mid-2015.

This shows how global wind companies are interested in the region; and that investors are keen to put their money into projects in countries that have the right regulations in place. Most Middle Eastern nations do

Morocco: Lessons from Africa's largest wind market

Morocco may not technically be part of the Middle East, but the north African nation is still part of the Arab world and its wind energy plans make it worth looking at.

Unlike other countries in north Africa, Morocco does not have any natural oil resources and so needs to import an estimated 96% of its energy needs from other nations, including half from Saudi Arabia. It also has an attractive wind resource on its Atlantic coast, and policies in place to develop 2GW of wind power by 2020.

The difference with markets such as Egypt and Jordan is that Morocco does not have an official feed-in tariff for renewable energy.

However, since 2006 the country has run the Energipro scheme, which enables transmission operator l'Office National de l'Electricité et de l'Eau Potable (ONEE) to buy renewable energy at a higher price than energy from conventional sources. It supports investors by acting in a similar way to a feed-in tariff.

Developers and investors can also gain funding support from Morocco's renewable energy company — Société d'Investissements Énergétiques (SIE) — which was set up in 2008; and the \$1bn Energy Development Fund, which was established in 2010, to support renewables.

This support has helped Morocco to develop the largest wind market in Africa and second largest in the MENA region after Turkey. The Global Wind Energy Council has reported in its 2015 global installed capacity statistics that capacity grew 300MW in 2014 to 787MW.

This growth was due to the completion of commissioning in December of the 300MW Tarfaya wind farm by Tarfaya Energy Company, a 50:50 joint venture of GDF Suez and Nareva Holding. The development partners have signed a 20-year power purchase agreement to sell power generated from the wind farm — the largest in Africa — to ONEE.

The Moroccan government has been seeking further growth with an 850MW tender last year for five projects. This attracted bids from Acciona; ACWA Power and Gamesa; EDF, Alstom, Qatar's QWEC and Morocco's FIPAR; Enel Green Power and Morocco's Nareva; and International Power, which is part of GDF Suez, with Vestas.

Bidders must include plans to produce parts locally, and will partner with state-owned firms ONEE, SIE and the Hassan II Fund for Economic & Social Development. ONEE has gained backing from the the African Development Bank, the European Investment Bank, the European Union and KfW for three of the five projects. ■

Most of the Middle East's rich governments could afford to pay for wind farms themselves rather than bring in overseas capital.

not have that infrastructure, although most of the region's rich governments could afford to pay for wind farms themselves rather than bring in overseas capital.

However, if countries in the Middle East are seeking to attract overseas investment they should look to emulate the rules in place in Egypt, Jordan and Turkey, as well as Morocco (see box, p.13). Morocco is in North Africa, but its position in the Arab world makes it a good case study.

ATTRACTIVE INVESTMENT MARKETS

In Egypt, the government last September launched feed-in tariffs to support the expansion of renewable energy, which followed a delay of almost five years. This set feed-in tariffs at \$0.1434/kWh for projects with capacity of between 20MW and 50MW and \$0.136/kWh for projects of 500kW to 20MW. The government also announced that developers of large projects would be able to pay custom duties at reduced rates for imported equipment.

After years of delay and uncertainty in the country following the political upheaval after the Arab Spring of early 2011, these rules have given developers much-needed confidence. They helped the Egyptian government attract interest in building wind projects from a number of major international development firms, including the likes of GDF Suez and Tata Power.

Sherife AbdelMessih, chief executive of the Cairo-based Future Energy Corporation, says Egypt and Morocco are the only markets in MENA that are exciting for investors because both have moved away from inter-government loans and towards private investment.

He says: "For me, the most interesting country in the region is Egypt, and the reason for this is that the feed-in tariff is extremely generous and the size of the projects. Also, as a power market, Egypt is much larger [than others in the region] and has much larger consumption, so it can take more wind onto its grid than the likes of Morocco or Tunisia."

AbdelMessih adds that investors are now gaining more confidence investing in Egypt after four years of uncertainty after the Arab spring.

He says: "If you look back at 2010 there was about \$1bn of asset finance going into wind power plants in those countries [in North Africa]. That dropped to a fifth of that - \$200m - last year but, given we now have more political stability, and the announcement of the auction in Morocco and the feed-in tariff in Egypt, you should expect these figures to pick up and go beyond that \$1bn annually."

In Jordan, the regulatory structure is more settled. The government passed its Renewable Energy & Efficiency Law in April 2012, which established a system where developers can negotiate directly with the Ministry of Energy & Mineral Resources for renewable projects.

The legislation also means the National Electric Power Company and regional distribution companies are required to buy electricity generated by renewable energy projects and pay for grid connections; and exempts systems and equipment for renewable energy projects from customs duties and sales tax.

On top of this, the government introduced the first feed-in tariff in the Arabian Peninsula in 2012; and launched a fund in 2013 to make grants available for renewables projects and guarantee investors' funding requirements. All of this has encouraged new projects, including the 117MW Talifa, which is being developed by the Jordan Wind Project Company, a joint venture comprised of InfraMed, Masdar and EP Global Energy.

Meanwhile, in Turkey, the market is far different. It has had feed-in tariffs since 2005 and its total capacity at the end of 2014 was 3.8GW. However, it is still difficult for overseas developers and investors to get involved in the market due to the complex regulatory infrastructure, and the most common way to do so is by partnering with a local firm.

“Many investors have gone into countries where governments made promises but where there wasn’t enough security. Investors are starting to be more cautious.”

The largest three investors in Turkish wind are Polat, Demirer and Bilgin, according to statistics from the Turkish Wind Energy Association in January. However, Borusan, Guris and Bereket have most under construction — 195MW, 165MW and 104MW respectively.

Overseas manufacturers have found it easier to get involved. The largest by installed capacity are Enercon (947MW), Nordex (862MW), Vestas (834MW) and GE (609MW). These also showed that the manufacturers with the largest amount of capacity under construction are Vestas (344MW), Nordex (309MW) and Siemens (220MW).

Investors will find it difficult to make investments elsewhere in the region until governments put in place the incentives and regulations that give confidence. If that is to happen then it will require political backing for wind that has been lacking in most Middle Eastern nations.

Luis Nuche, sales manager at assessment and forecasting consultancy Vaisala, who is responsible for growing the firm’s opera-

tions in the Middle East, says many investors would be wary of investing in countries without such frameworks in place.

“Many investors have gone into countries where governments have made promises, but where nothing has been put in place or there wasn’t enough security,” he says.

“Investors are starting to be much more cautious and, until they are such that the framework that is in place is safe and is going to be respected for at least 20-30 years, they don’t move.”

Low oil prices may encourage some to bring in such rules. The oil price crash has again highlighted the inherent instability in oil prices, and nations may look to push programmes of wind and solar to prepare themselves for when oil prices rise again.

But there is no guarantee it will happen, and the indication in most Middle Eastern nations is that wind — and attracting new investment into the sector — is not a priority. Like an oil supertanker, we should not expect the region’s energy plans to change course quickly. ■



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FAST-GROWING TURKEY IS WORTH THE EFFORT



Olcayto Yigit is general manager for Vestas in Turkey

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Turkey plans to grow wind power fivefold by 2023 to 20GW, and is putting in place rules so the private sector can deliver.

Turkey is one of the fastest growing wind markets in the world, and its potential for new projects is enormous. There is plenty here to interest investors.

through the diversification of the energy mix; and has a target to increase the share of renewable resources in power generation up to 30%.

The Global Wind Energy Council reported last month that the country now has 3.8GW of installed wind capacity, with 800MW added last year, and it plans to reach 20GW by 2023. It needs this growth to cater for power demand that has grown significantly due to rapid economic growth and a larger population.

To reach this goal and incentivise wind projects in the country, the government is providing support to investors and developers through various mechanisms that range from a feed-in tariff (FIT) structure to more transparent game rules.

“The new rules are encouraging more investors to take part. Turkish wind is becoming more competitive and less risky.”

In order to respond to these needs, and decrease its dependency on foreign imports, the government has put in place a series of policies aimed at securing electricity supply

This new context is having some success. It is encouraging more local and international investors, as well as developers, to take part in wind projects in the country, which means that the wind industry is becoming a more competitive and less risky market.

Our first transaction in Turkey dates back to 1984 and now, 30 years later, the country and the Turkish wind industry have changed a lot and investment opportunities have arisen.

Since 2013, the interest towards FIT has increased significantly, reaching almost 75% of power plants in 2014 due to pool prices and foreign currency fluctuation.

The FIT mechanism is proving to be an encouraging tool for new investors, as it has reduced market uncertainty and helped on the financing front. In this context, Turkey is expected to be one of the largest wind power markets in the short term, with an average market size (new installations) of almost 1GW per year — continuing the trend we saw in 2014. If we look at the evolution of annual installed capacity in recent years, it is easy to see steady growth.

There are some steps that manufacturers can take to help investors maximise the

value of their investments. Cutting-edge wind turbine generators, suitable for different wind conditions, as well as flexible service contracts are cost-effective solutions that bring the cost of energy down, helping developers and investors get a higher return on investments.

Teaming up with a reliable local partner will also save significant time on the fact-finding process, and for other services if the investor decides to invest.

Like any other growing market, the Turkish wind market has its own challenges.

Site development and permitting can be especially a long and difficult process. Companies who do not have long-term patience should be looking to acquire already permitted projects. Likewise, companies should be ready for a highly competitive market and will need to participate in aggressive grid capacity tenders in 2015 and onwards. ■

“Firms can save significant time on the fact-finding process, and other services, by teaming up with a reliable local partner.”



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LESSONS FROM THE STONE AGE

Middle Eastern investors have done many high-profile investment deals overseas, but been slower to back wind. Why?

The world's fossil fuel companies hold three times more proven fossil fuels than can be burned if the world is to limit global warming to below two degrees Celsius.

The Stone Age did not end for the lack of stone, and the Oil Age will end long before the world runs out of oil."

Former Saudi Arabian oil minister Sheikh Zaki Yamani gave this famous quote back in 1973 and has kept warning about the end of the oil age ever since. The message to nations in the Middle East is clear: they cannot keep burning oil and gas indefinitely, and must put in place long-term economic plans that account for the end of fossil fuels. Few are listening to Yamani's warning.

Only a few Middle Eastern governments have detailed policies in place to support their domestic renewable energy targets; and there is limited activity from Middle Eastern investors in renewables outside the region. The focus in the Middle Eastern countries with fossil fuels is to keep investing in developing these resources for both domestic consumption and exports.

But this strategy looks short-sighted.

Investor group Ceres and the Carbon Tracker Initiative have warned that the world's fossil fuel companies hold at least three times more proven reserves of oil, gas and coal than can be burned if the world is to achieve the international goal of limiting global warming to below two degrees Celsius. This is a major risk to the Middle East.

And yet, investment into renewables by Middle Eastern investors and governments is still limited.

RENEWABLES POSTER BOY

The poster boy for Middle Eastern activity in the wind sector is Masdar, the renewable energy arm of Mubadala Development Company, which is an investment vehicle of the Abu Dhabi government. The Sovereign Wealth Fund Institute has reported Mubadala is the ninth-largest sovereign wealth fund in the Middle East (see table, p.19), with assets under management of \$61 bn.

Masdar made its most high-profile investment in wind in 2008 when it bought a 20% stake in the 630MW 175-turbine offshore wind farm London Array, which became fully operational in 2013. It still owns its 20% stake in the project, alongside E.ON (30%), Dong Energy (25%) and La Caisse de Dépôt et Placement du Québec (25%). This is still the world's largest offshore wind farm, although larger ones are planned.

Then, in September 2014, it made its second significant wind investment by purchasing a 35% stake in the planned 402MW Dudgeon offshore wind farm. Masdar bought half of the 70% stake of Norwegian energy company Statoil, which is developing the scheme alongside fellow Norwegian firm Statkraft, which holds 30%. Together the partners plan to complete the project, located off the UK's North Norfolk coast, in 2017.

Fintan Whelan, co-founder of Mainstream Renewable Power, who left as corpo-

When it comes to renewable energy investment, part of the reason Masdar looks so active is because other Middle Eastern investors are doing so little.

rate finance director in November, called Masdar's focus on UK offshore "remarkable". The offshore wind sector is still in its infancy, and was even more so when Masdar first took the plunge into London Array in 2008.

But its strategy makes sense when you look at the approach of Middle Eastern sovereign wealth funds in other sectors. In property, for instance, these funds target high-profile trophy assets.

Last month, the Qatari Investment Authority won a battle to buy London office district Canary Wharf for £2.6bn alongside Canadian property investor Brookfield. This adds another high-profile asset to Qatar's interests in London property, which include 95% ownership of The Shard skyscraper that was, for a short time, Europe's tallest building. These deals show that government-backed Middle Eastern investors like large assets that deliver both positive publicity and reliable returns.

Masdar's London Array deal certainly fits this criteria and, to a lesser extent, so does its interest in the smaller Dudgeon scheme. They are both good PR for Abu Dhabi's renewable energy efforts.

Its other wind investments also help position Abu Dhabi at the forefront of the sector in the Middle East. It has bought a 31% stake in Jordan's 117MW Talifa wind farm, which is the first utility-scale wind farm in the Middle East and is due to be commissioned in September; and it is also backing the 50MW Dhofar wind farm in

Oman. Both show Masdar is active regionally as well as internationally.

Charlie Richardson, senior underwriter at specialist GCube Insurance, which is working with companies in the region including Masdar and ACWA Power, says Masdar has also been involved with other smaller projects outside the Middle East.

In January 2014, the United Arab Emirates signed a partnership to deploy small renewable energy projects in five Pacific Islands. These have been implemented by Masdar and financed from the \$50m UAE-Pacific Partnership Fund. These follow previous projects such as the installation of a 6MW wind farm in the Seychelles in the Indian Ocean.

He says: "They haven't gone for a particular technology or region. A lot of their projects have got sustainability for local environments very much in mind. They've got a wind farm in the Seychelles that, if you think about it, makes a lot of sense. It's not the easiest place to invest but they did it because it's the right time to do this as well as a good investment."

Of course, in part Masdar looks so active because other Middle Eastern investors are doing so little.

GOVERNMENT-BACKED BUSINESSES

This is now changing but progress is slow.

One company that is making moves in wind and solar is Saudi Arabian energy

Middle Eastern sovereign wealth funds with assets over \$10bn

Sovereign Wealth Fund	Country	Assets	Founded	Origin
Abu Dhabi Investment Authority	United Arab Emirates (Abu Dhabi)	\$773bn	1976	Oil
SAMA Foreign Holdings	Saudi Arabia	\$757bn	n/a	Oil
Kuwait Investment Authority	Kuwait	\$548bn	1953	Oil
Qatar Investment Authority	Qatar	\$256bn	2005	Oil & Gas
Abu Dhabi Investment Council	UAE (Abu Dhabi)	\$90bn	2007	Oil
Investment Corporation of Dubai	UAE (Dubai)	\$70bn	2006	Oil
International Petroleum Investment Company	UAE (Abu Dhabi)	\$68bn	1984	Oil
National Development Fund of Iran	Iran	\$62bn	2011	Oil & Gas
Mubadala Development Company	UAE (Abu Dhabi)	\$61bn	2002	Oil
Development Fund for Iraq	Iraq	\$18bn	2003	Oil
Emirates Investment Authority	UAE (Federal)	\$15bn	2007	Oil
State General Reserve Fund	Oman	\$13bn	1980	Oil & Gas
Mumtalakat Holding Company	Bahrain	\$11bn	2006	Non-Commodity

Source: Sovereign Wealth Fund Institute

Outbound investment: Masdar's London Array deal is a rare Middle Eastern investment in wind



Source: London Array Limited

firm ACWA Power; which is owned by the Saudi Public Pensions Agency, a subsidiary of Saudi's Public Investment Fund, the International Finance Corporation, and eight Saudi conglomerates. In October, ACWA announced plans to raise \$7.4bn to invest in wind and solar in the Middle East and North Africa; and it is bidding on an 850MW wind tender in Morocco.

However, its renewables focus remains on solar. In January, for instance, it won the right to develop the 200MW second phase of Dubai Electricity's Mohammed bin Rashid Solar Park, which is the largest renewables project in the Middle East. This follows its success in developing the first 160MW phase; and it has also won a further €1.7bn contract to build two solar farms in the southern Moroccan city of Ouarzazate totalling 350MW.

For ACWA, the focus on solar is understandable. The company's activities are concentrated in the Middle East and North Africa, where solar is regarded by most nations as more appropriate for the region than wind power. Meanwhile, ACWA's chief executive Paddy Padmanathan expects solar with energy storage to compete with base load fossil fuels by the end of this decade.

However, if it can beat four other bidders in the 850MW Morocco wind auction then its focus on solar will start to shift.

Meanwhile, Qatar's Nebras Power has also been moving into renewables, although again mainly in solar. Nebras is owned by Qatar Electricity & Water Co., Qatar Petroleum International, and Qatar Hold-

ing, which is an investment firm operating as a subsidiary of sovereign wealth fund Qatar Investment Authority. The company was established in early 2014 to invest in power and water desalination projects.

In January 2015, Nebras reached a financing agreement with Diamond Generating Europe and Kawar Group to develop 52.5MW Shams Ma'an solar power plant in Jordan. It owns 35% of the project.

Combined, the presence of government backing for ACWA, Masdar and Nebras demonstrates one of the key challenges for the growth of renewables, including wind, in the Middle East. Most large firms in the region are either owned by governments or have close connections to them. This means their renewable energy plans will only come forward if the government sees renewables as a priority.

If the government doesn't want to push wind and solar then developers will find it tough — and potentially impossible — to bring projects online.

OUTSIDE THE PENINSULA

There are other pockets of activity outside of the Arabian Peninsula, of which the largest is Egypt. Some Egyptian investors have been investing in renewables overseas.

In October, Egyptian investment bank EFG Hermes made its first investment outside of the Middle East and Africa when it bought a 49% stake in EDPR France, a unit of EDP Renewables that runs 33 wind farms totalling 334MW, for \$208m. It made this acquisition in a special purpose vehicle with an unnamed Middle Eastern sovereign wealth fund.

Karim Award, co-chief executive at EFG Hermes, said that it showed the bank wants to back sustainable energy projects while generating attractive returns for shareholders and co-investors. This demonstrates not all Middle Eastern investors are driven by high-profile projects.

Christine Brockwell, managing director and head of corporate development for Global Capital Finance, which advised EFG Hermes on the corporate finance aspects of the deal, says she is seeing a growth in interest in European renewables from the Middle East.

She says: "This is mainly due to the increase in large scale opportunities in

It is 42 years since Sheikh Yamani contrasted the age of oil with the age of stone but, in the years since, we have not seen a coordinated response from the Middle East.

onshore and offshore wind being offered by utilities as part of their capital rotation plans, combined with a lack of attractive alternatives in other yield producing assets such as the bond market. European utilities are viewed as ideal partners to control and manage the assets in the local market while the investor can take a more passive role in the cash-yielding assets."

Meanwhile, manufacturers should follow the development of Middle Eastern wind with interest. If the market takes off then it would open up opportunities for manufacturers to set up joint ventures with local developers and to bring in investment from Middle Eastern backers.

This shift has already occurred in Egypt, where the Elsewedy Group owns a 90% stake in the Spanish turbine maker M. Torres Olvega and has established a joint venture with German steel manufacturer SIAG Schaaf Industrie Aktiengesellschaft. These partnerships were agreed in 2008 when it looked as though the Egyptian market was poised to grow fast.

While the market stalled for a few years after the Arab Spring, these partners are set to benefit from current growth.

Elsewedy won a major contract from the Egyptian government last summer to build six 100MW wind farms on the Red Sea coast; and the firm is in the running for a 250MW project on the Gulf of Suez.

However, these opportunities for wind manufacturers to attract investment from the Middle East will only arise as governments in the region decide to prioritise the development of wind energy. In the short term this is far from certain. The wind market is starting to grow in the Middle East but activity is restricted to a small handful of players.

It is 42 years since Sheikh Yamani contrasted the age of oil with the age of stone. However, in the years since, we have not yet seen a coordinated response from countries in the region to tackle the threat posed by the eventual shift away from oil.

Until governments in the Middle East take that threat seriously, their investments in the worldwide wind industry are set to remain restricted to a small number of high-profile deals.

A flood of sovereign wealth into global wind is a distant prospect. ■



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YEAR AHEAD

Here are the key dates for our programme of regular events and reports. For further details, you can contact our team.

Events

19th March	Quarterly Drinks Q1
19th May	AWEA 2015 Drinks, Orlando
18th June	Quarterly Drinks Q2
10th September	Quarterly Drinks Q3
October	Annual Conference
5th November	Quarterly Drinks Q4

Reports

June	Funding Offshore Report
September	Eurozone Focus Report
November	Top 100 Power People
January	Finance 2016



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