The shifting sands of energy supply

Mhairi Main Garcia considers recent developments in the renewable energy sector in the region and whether we are seeing a real shift towards the development of a sustainable renewable energy industry, as well as some of the existing and future challenges that will impact on the sector.

Are the shifting sands of energy supply a mirage or tangible, sustainable development? This review will concentrate on renewable energy developments in the hydrocarbon-rich Gulf Co-operation Council (GCC) states.[1] The GCC states hold almost 30 per cent of the world's proved oil resources and more than 20 per cent of proved gas reserves[2], yet we are witnessing sizable renewable energy targets and impressive announcements about new projects and investment in the renewable energy sector. Significantly, in January 2018, it was reported that Saudi Arabia would issue tenders for solar and wind projects totalling more than 4GW during 2018, representing an investment of between USD5-7 billion.

There have been significant and positive strides towards deploying utility-scale renewables projects in the GCC. This development has been encouraged by the success of the large-scale Dubai and Abu Dhabi tenders, and increased global investment in renewables, developments in technology efficiency, increased competition and reduced technology costs. Conversely, there is an acknowledgement of a need for subsidy reform and energy diversification, and recognition of a volatile oil price and budgetary constraints. Whilst investment in the renewables sector has been somewhat slow to take off compared to other

regions of the world, and in some areas has been subject to a number of false starts, we are witnessing a steady flow of large-scale tenders in the region.

FORTHCOMING PROJECTS

In the UAE, Phase V of the impressive Mohammed Bin Rashid Al Maktoum Solar Park is currently tendering the advisory role, following on from the successful tenders for Phases II, III and IV, which not only resulted in upsized projects but attracted world-breaking tariffs. In Abu Dhabi, it is anticipated a second solar photovoltaic (PV) project at Sweihan will be tendered, following on from the success of the initial Sweihan solar PV project, which was also upsized and attracted record pricing.

In Oman, there are currently two tenders out to the market: the 100MW Amin solar PV project and the 500MW Ibri solar PV project, being tendered respectively by Petroleum Development Oman and Oman Power and Water Procurement Company (OPWP). OPWP is expected to issue a further solar PV tender later this year. Moreover, Oman is developing a 50MW wind project at Dhofar. While in Qatar, Qatar General Electricity and Water Corporation (Kahramaa) has started the process for tendering a 500MW solar PV project.

In Saudi Arabia, as with the UAE projects, its first large-scale solar tender at Sakaka attracted world-breaking pricing. On the wind front, Saudi is currently evaluating the bids for its first wind tender, the 400MW wind farm at Dumat Al Jandal. The timing and size of the next solar and wind tenders remain unclear.

CHALLENGES

Renewable energy targets

Continued economic and industrial development and population growth in the GCC will ensure that there is a sustained and increased demand for power. Nonetheless, although renewable energy will account for a rising share of that demand, natural gas will remain the main feedstock in the region.

Moreover, while Dubai has led the way by tendering back-to-back projects forming the Mohammed Bin Rashid Al Maktoum Solar Park, and other procurers have projects in the pipeline, it is still relatively early days for a number of the jurisdictions in the region on their renewable energy journey. At the time of writing, it is unclear whether the reported 4GW of projects to be tendered by Saudi Arabia in 2018 will now be tendered this year; though there is clear commitment to tender multiple large-scale solar and wind projects in the country, so this may be a matter of timing and making sure there is an adequate opportunity to learn from the Sakaka and Dumat Al Jandal tenders.

Emphasis on utility scale solar PV

The emphasis in the GCC to date has been on competitively tendered, large-scale solar PV projects, with limited concentrated solar power (CSP) and limited wind power. This may be largely price-driven; nevertheless the success of Dubai's DEWA Phase IV project has shown that CSP is a cost-effective and dispatchable energy source. Wind on the other hand may geographically present more limited opportunities than solar, although there are still large areas of the GCC which present great potential for wind projects and which have yet to be realised.

The emphasis on solar PV also presents challenges to grid operators, since this intermittent energy source requires other sources of energy to be available to dispatch when the sun is not shining. The energy sources need to be carefully balanced to ensure stability of the grid and continuity of supply at all times of the day, in different times of the year and in different weather conditions.

The regulatory regime for distributed energy is also largely underdeveloped, with some of the GCC states lacking specific regulations to regulate and facilitate the development of distributed energy. There needs to be more consistent regulation of distributed energy across the region.

Localisation and local content

A key goal in implementing renewable energy regionally is to promote local employment and the development of local industry. "Localisation" and local content requirements are present in most public tenders in the region. Localisation requirements compel investors to train and employ the local population, with varying targets across the region; which is particularly important given the region's burgeoning youth population. Local content requirements provide that investors must use local equipment, plant and machinery (typically insofar as it is of an

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equivalent standard and is cost-effective) and to use local suppliers and contractors.

Localisation and local content targets and plans therefore form an integral part of the competitive bidding process and investors' plans to meet the required targets (which may be more stringent than local law requirements) will be assessed as part of the tender. Localisation targets are on the increase and this may pose a challenge to investors seeking to develop renewable energy projects in countries where there is a limited track record of such projects. Training programmes for local employees are thus of key importance, as well as establishing an employment plan for the duration of a project, which may last well in excess of 20 years. In terms of local content requirements, these are also being extended, with some tenders requiring a degree of in-country manufacturing. While this is a positive move to encourage local investment, transfer of know-how and local employment, if all countries in the region include this requirement, there is a risk international investors may limit which countries they invest in, since it may simply be impractical to set up manufacturing centres in multiple countries.

Future developments

There are a number of prospective developments, which will present both opportunities and challenges to the renewable energy sector, directly and indirectly, both globally and in the GCC. While the GCC is still playing catch-up on the global renewables stage, it will have the opportunity to be at the forefront of some of these developments. Such developments each warrant a separate article, but in summary include:

» Storage: The development of cost-competitive, large-scale storage to enable dispatchability of solar PV and wind energy and provide a basis for grid stabilisation.

» Technology: The development of technology to tackle regional issues impacting on deployment and efficiency of renewables, related in particular to high temperatures, high humidity and sand.

» Digitalisation and blockchain: The development of decentralised electricity markets, management and trading and the potential use of independent micro-grids will present both policy and regulatory challenges.

CLOSING REMARKS

Renewables provide a cost-effective alternative to hydrocarbon fuels for the GCC and there is a positive shift in the energy mix in the region representing a clear commitment to renewables. Projects are coming to fruition in the region and we are witnessing more than a mirage, with large swathes of desert being covered in shiny solar panels. The movement is towards a tangible, sustainable development of renewable energy. However, while it may be largely an issue of timing, the ambitious nature of the renewables targets and investment announcements do not always match the projects coming to the market. The current momentum needs to be maintained if the full potential of renewables is to be realised in the region and if the GCC is to achieve its renewable energy targets, achieve energy diversification and free up hydrocarbon resources for sale on the international market, as well as reduce the region's carbon footprint.

Finally, although utility-scale solar PV is likely to continue to lead the way in terms of technology choice, the GCC can play a key role in driving forward new and exciting developments in the renewables sector, promoting efficiencies and potentially increasing access to other technologies.

1. Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and the United Arab Emirates (UAE).
2. Source: BP Statistical Review of World Energy 2018.

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