The Middle Eastern electricity sector doesn’t always get the attention it deserves, bracketed as it is between the sheer scale of the wider Asian power market and the opportunities afforded by the competitive European market. But recent developments in the electricity sector of the region in general and of the countries comprising the Gulf Cooperation Council (GCC) in particular underline the fact that the Middle East is not only one of the fastest growing but also most prospective of global electricity markets.

Just a few examples may suffice to illustrate the point. In September, Kuwait, until now one of the last bastions of state ownership of power generation in the region, saw at least ten consortia express interest in providing consultancy services for what would be the country’s first privately-owned independent water and power producer (IWPP) project. Meanwhile Oman awarded a consultancy contract covering services for what would be the region’s first large-scale coal-fired power plant. Elsewhere, the competition to build the region’s first nuclear plant is nearing a conclusion in Abu Dhabi. And the initial phase of the region’s first interconnected grid, covering Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and the United Arab Emirates (UAE), the six countries comprising the GCC, entered operation in the third quarter of 2009.

Admittedly for decades up to the late 1990s the Middle Eastern power sector was seen as a backwater, and not entirely without reason. Regardless of country, the region’s electricity supply industries showed very similar characteristics, even though the different national grids were not connected to each other. They were heavily subsidized because they charged below-cost prices for their output, they comprised integrated generation, transmission, distribution and supply systems, they operated under complete state control, they used power plants fired almost exclusively with indigenous oil and gas, and they were relatively small by global standards. Put simply, the region offered limited opportunities for outside involvement.

The Emergence of Private Power

Exceptions to this monolithic picture appeared from the mid 1990s after Oman tendered the region’s first independent power producer (IPP) project. Awarded to a predecessor of France’s GDF Suez Energy International, the Manah-1 project entered operation in 1996.

Manah-1 was relatively small at 90 megawatts (MW). And much of the $216 million of funding for the project was provided by the International Finance Corporation, the private sector lending arm of the World Bank Group, together with the export credit agencies of the United Kingdom and France. These lenders are typical of the multilateral and bilateral institutions usually called on to finance pioneering IPP projects in untried markets.
But Manah-1 was the precursor of an increasing number of increasingly ambitious projects as the private generation model spread across the region over the next decade or so. Involving both IPPs and off-grid captive generators serving energy-intensive industrial consumers, the projects have grown markedly in size and cost.

Take for example the Ras Laffan-C IWPP project in Qatar, which will have 2,730 MW of electric capacity and has an estimated cost of $3.8 billion. The project was awarded in March 2008 to the Ras Girtas Power Company, which again includes GDF Suez Energy International, this time in consortium with Japan’s Mitsui & Co., Shikoku Electric and Chubu Electric, as well as two local energy companies.

In common with Manah-1, Ras Laffan-C is being funded in part by multilateral, bilateral and export credit agencies, in this case the Japan Bank for International Cooperation, Export Development Canada, Italy’s SACE and the Islamic Development Bank. But the project, which closed on $3.25 billion of debt in August 2008, differs from Manah-1 in that it got much of its funding from a syndicate of 21 international and regional commercial banks, with the finance extended by these banks indicating the experience and comfort levels such institutions have achieved in lending to Middle Eastern private power projects over the past decade.

Indeed from the late 1990s on, at a time when power markets in many parts of the world were closed or unattractive to international developers and lenders, the Middle East became a hotspot for private power investment. Since Manah-1 in 1996, IPP and IWPP developers in the GCC countries alone have closed finance on projects with more than 31,330 MW of electric and 1,724 million imperial gallons a day of desalinated water capacity costing almost $42 billion (Table 1).

Moreover, this excludes the very large amount of capacity developed on what is effectively an IPP basis but to serve industrial customers rather than the grid. The 1,074 MW of captive generation capacity built by Tihama Power at four sites in Saudi Arabia to serve the energy company Saudi Aramco is typical of this type of investment.

The amount of activity is reflected in the list of international investors active in the region. GDF Suez Energy International may be the largest single investor but it is far from the only one, with other European companies including the UK-based International Power and France’s Total also being active. Companies from the US have become less prominent since developers such as CMS and PSEG withdrew in the mid 2000s to concentrate on their home market, but are still represented by investors such as AES.

There is a strong contingent of Asian investors including Japanese trading houses such as Marubeni, Mitsubishi, Mitsui and Sumitomo, and Japanese electric power companies such as Tokyo, Chubu, and Shikoku. Southeast Asian companies including Singapore’s Sembcorp Utilities and Malaysia’s MMC, Tenaga Nasional Berhad and Tanjong are also active. The substantial Malaysian presence reflects not only the level and maturity of IPP development in their home market but also the investors’ experience of funding large-scale power projects using Islamic financial instruments.

This is also a factor in the presence of investors from within the region’s own power and financial sectors, such as the Abu Dhabi National Energy Company (Taqa) and the Gulf Investment Corporation. Several of the region’s governments, such as Abu Dhabi and Saudi Arabia, require that domestic companies hold controlling or significant stakes in their IPP and IWPP projects, explaining their involvement. But some of the regional-based IPP players are also active beyond their home market and, indeed, outside the Middle East in the case of Taqa.

**Private Power Limitations**

While private generation has become entrenched in the Middle East and especially the GCC, it has not been accompanied by wider liberalization of the re-
Electricity supply industries. True, the privatization of existing generating plants has occurred in places such as Abu Dhabi, but it is usually where the plant is to be expanded or replaced with more capacity. Meanwhile with very few exceptions the region’s electricity transmission, distribution and supply systems remain state-owned and in all cases fully regulated. And critically, the retail electricity prices charged throughout the region still rarely cover the cost of supply and are again fully regulated.

This means that the success of IPP and IWPP projects in securing international investors and lenders depends basically on the bankability of the host government, not of the power offtaker. And outside the captive generation sector, the sale of a plant’s output using anything other than the single buyer model backed by state guarantees is not feasible. The region is very much at base camp in terms of the ascent to a fully liberalized and competitive power market.

Moreover since 2008 there has been some reversion to the state financing and ownership of power generating plants at one time planned as IPP or IWPP projects. But the retreat from private and foreign participation to direct state investment in countries such as Saudi Arabia is less ideological than pragmatic.

The reversion to state investment originated with the rapidly increasing cost of engineering, procurement and construction contracts from the mid-2000s. Caused by the spiraling price of equipment and other inputs at a time of strong demand, as well as by the limited pool of eligible contractors, the problem was exacerbated from 2008 by the increasing cost and much tighter availability of limited recourse finance as a result of the global economic crisis.

The upshot was that many planned private generation projects in the region have suffered significant delays in implementation since 2007, leading to fears of power shortages a few years down the line. Some governments have thus reverted for the moment to the quicker and in cases cheaper model of state financing to expedite the fast-track construction of plants.

Projected Demand Growth

The potential for power shortages reflects the robust pace of growth in electricity consumption in the GCC countries and the wider Middle Eastern region. Electricity use has increased at a near double-digit level since the second half of the 1990s, and is projected to grow at a similar level over the next decade or so at least.

For instance Bahrain is projecting average growth of 8% a year to 2020, while the UAE has projected 9% annual growth to the same year. Kuwait sees average growth of up to 9% a year to 2015, somewhat below the 10.8% annual increase anticipated by Qatar to the same year, while Oman is positing a 10% annual increase to 2014 and Saudi Arabia a similar 10% increase to 2017.

The high past and projected growth rate is partly due to the very low prices paid for electricity by many of the region’s residential consumers. This has led to burgeoning growth in electricity use to operate air-conditioners and other domestic appliances.

The introduction of higher prices would slow or even reverse the rate of growth in household electricity consumption if governments were to reduce subsidies and require residential power users to pay economic tariffs. But present indications are that this is unlikely to occur, especially in those countries with access to petrodollars. And even if it did occur, industrial and thus overall electricity demand is likely to continue growing strongly.

This is because Middle Eastern governments are acutely aware that their hydrocarbon resources can yield added value if the oil and gas is not exported as a raw material but used either directly or as electricity in the local processing and manufacture of goods. This has led to large-scale investment in electricity-intensive projects such as petrochemical plants, steelworks and aluminum smelters.

The latter industry is a good example, not least since electricity can account for about 40% of smelting costs. And aluminum smelters are proliferating in the GCC and wider region.
Some of the smelters have been around for decades. In Bahrain, Aluminium Bahrain’s 830,000 metric tons (mt) a year smelter is powered by a 2,150-MW gas-fired power complex near Sitra which was built in four stages from the 1970s. Also developed in stages was the Dubai Aluminium Company’s integrated complex near Jebel Ali in Dubai, which by 2006 comprised an 860,000 mt/year smelter and a 1,750-MW power plant.

Also part-owned by Dubai Aluminium in the UAE is a 700,000 mt/year smelter and 2,000-MW power project at Taweelah in Abu Dhabi. Developed through the project company Emirates Aluminum, the complex is scheduled for operation from 2010.

The same year is due to see the commissioning of Qatalum’s 1,350-MW gas-fired power project and 585,000 mt/year smelter at Mesaieed in Qatar. And ahead of both these 2010 projects, the Sohar Aluminum Company in Oman has recently commissioned a 1,000-MW project in tandem with a 350,000 mt/year smelter.

All of these operating and constructing projects could be dwarfed by the integrated smelter and power project being developed in stages at Jazan Economic City in Saudi Arabia by a consortium including the local Saudi Binladin Group, Malaysia’s MMC Corporation and China’s Chalco. To host a 4,860-MW power project once fully built, the first stage of the project will include a 2,460-MW power plant scheduled for operation from 2012.

Saudi Arabia is also home to an integrated project comprising a 1.6 million mt/year aluminum refinery and a 720,000 mt/year smelter being developed at Ras Al Zour by the local Ma’aden. Originally planned to include a 1,600-MW oil-fired captive plant, it may now draw power from a 2,400-MW state-run project being developed in the area.

Add in the electricity needs of petrochemical and other industrial projects, not to mention the large and often-increasing amount of power needed to produce the region’s oil and gas, and the high projected growth in GCC and wider regional electricity demand is largely explained. For instance, Saudi Arabia has projected that the 169.3 TWh of power it consumed in 2006 will rise to 572 TWh in 2032, while installed capacity of 39,242 MW in 2008 is projected to rise to 140,000 MW by 2032. In the somewhat nearer term, the state-controlled Saudi Electricity Company has projected that peak demand will rise from 41,043 MW in 2009 to 75,155 MW in 2020.

Meanwhile Qatar, which had 3,660 MW of operational capacity in 2006, is projecting that it will need 16,260 MW of new plant from 2011 to 2036 on top of the additional capacity built between 2006 and 2010. And the UAE projects

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1. Primary energy consumption by region, 2008 compared with 2007.

*Source: BP Statistical Review of World Energy 2009*
that the 16,760 MW of capacity installed in 2006 will rise to 40,858 MW by 2020.

The projections of those countries whose forecasts extend less far into the future are also indicative of the scale of the needs. Oman, for example, is projecting that the demand of 13.9 TWh recorded in 2006 will almost double to 27.5 TWh as early as 2014.

And the growth bonanza is not limited to the GCC countries. Iraq, for example, anticipates strong growth in future demand on top of the fact that the 6,000 MW of capacity available in mid-2009 is well below existing demand of more than 10,000 MW. In early 2009 the country thus signed agreements to purchase more than 10,000 MW of generating equipment as the first stage of government plans to quadruple installed capacity by 2015.

Meanwhile neighboring Iran is planning to add a large amount of capacity to satisfy unmet existing demand, meet future requirements and replace aging generators. In this regard the South Korean construction company Doosan Heavy Industries recently said that “the Iranian power generation market is embracing a flurry of projects to construct new combined-cycle power plants due to the deterioration of existing power plants.”

Needed: Capital and Fuel

The new capacity and the associated expansion of the region’s transmission and distribution networks projected by the region’s governments and power utilities will require a very considerable amount of capital. The International Energy Agency (IEA) in its World Energy Outlook 2008 projected in its reference scenario that $158 billion of investment would be required by the Middle East power generation and wires sector from 2007 to 2015, with $59 billion of the total being for generating plants.

The IEA went on to project that from 2016 to 2030 the regional electricity sector would need a further $352 billion of investment. This would include $135 billion for generating plants and $217 billion for transmission and distribution systems.

Apart from a considerable amount of capital, the new capacity needed to meet the projected growth in demand will need a considerable amount of fuel.

Middle Eastern electricity was traditionally generated almost entirely from oil. Baseload power was produced from crude oil or heavy fuel oil burnt in large steam turbine plants, while diesel and other lighter oil products provided the feedstock for peaking plants and smaller, isolated grid systems.

That was followed in the 1990s by a switch to the use of natural gas in more efficient plants as oil prices increased and resources depleted. Over the past decade, gas used in combined-cycle and other plants has taken over from oil in many areas. According to the IEA, 380 TWh, or 56%, of the region’s 681 TWh of power needs in 2006 were generated from gas, with 240 TWh coming from oil and the remaining 8% coming from coal and hydroelectric plants.

However, there is increasing competition for the region’s gas. It is required for export as liquefied natural gas (LNG) or through pipelines, for use as feedstock in the petrochemical and other industrial sectors, and for reinjection to enhance oil recovery.

Gas use for power generation has thus come into question. This is especially true in countries with limited indigenous resources and where alternative supplies are not available from regional pipelines such as Dolphin Energy’s system, which links Qatar with Oman and the UAE, or from the LNG imports proposed in, for instance, Kuwait.

This has led to a reversion to oil use in a few areas. For example, the Saudi Arabian authorities require that new power plants in some parts of the country are fired with heavy crude or heavy fuel oil to conserve gas reserves. But the question mark over gas has also spawned interest in the use of coal, nuclear, renewable and alternative energy sources to help meet the region’s future power needs.

Coal to the Rescue?

The Middle East has sparse coal resources. There is limited production and consumption of indigenous coal,
with Turkish and Iranian use of locally mined coal for power generation being exceptions. But as gas prices rose from the mid 2000s a number of Middle Eastern countries examined the option of importing coal.

Oman is one such country. In the mid 2000s a consortium comprising the local Oman Oil Corporation with South Korea’s LG Energy and Korea Southern Power commissioned studies by consultants John T Boyd and PB Power on coal mining and power projects, respectively. Based on these studies the consortium sought to undertake an integrated mining and power project on the basis of direct negotiation with the power authorities. But in April 2008 the government decided to award the country’s first coal-fired project through an open competitive tender.

The state-run Oman Power and Water Procurement Corporation is thus planning to tender a 1,000-MW to 1,200-MW coal-fired IPP project at Duqm for operation from 2015. Technical and financial advisory contracts on the project were awarded to WorleyParsons and KPMG, respectively in September 2009.

Several other jurisdictions have examined the coal option, especially in the UAE. For instance a 1,000-MW coal-fired IPP project at Ajman is being developed by Malaysia’s MMC Utilities under an agreement signed in July 2008. The project would operate under a 20-year concession with the cost being estimated at $2 billion.

A separate coal-fired plant is planned at Ras al Khaimah, another of the northern emirates. Through a special purpose vehicle, Middle East Coal, the state-run RAK Investment Authority bought equity in an Indonesian coal mining project in early 2009 to provide fuel for the Mina Saqr project. In the first instance this is planned to have 600 MW from 2011, but it could eventually host up to 4,000 MW of capacity.

In Dubai a 2,000-MW gasified coal-fired combined-cycle plant was under consideration in 2008 when the state-owned Dubai Electricity & Water Authority signed a memorandum of understanding relating to the project with a consortium of local and Chinese companies. Meanwhile in neighboring Abu Dhabi a clean coal technology-based power plant costing $1 billion was being studied by Taqa in 2007.

Renewable and Nuclear Prospects

Abu Dhabi’s interest in clean coal technology reflects its wider focus on renewable and alternative energy projects. The Abu Dhabi Future Energy Company (Masdar) is responsible for promoting renewable and new energy projects, with one of its first projects being a 10-MW solar photovoltaic plant at

2. Electricity consumption by world region, 2008 compared with 2007.

![Graph showing electricity consumption by world region](image-url)
Masdar City. Developed through a joint venture with Germany’s Conergy, the project was commissioned in 2009.

Masdar is also promoting at least 500 MW of concentrated solar capacity through 100-MW projects. The 25-year concession for the first scheme, a parabolic trough-based project at Madinat Zayad known as Shams-1, was tendered on a build, own and operate basis in 2008 with four bids being received. But the high-priced bids led Masdar to look at relocating the plant and tendering it again.

Beyond the solar business, Masdar is developing a 390-MW hydrogen-fueled power project through Hydrogen Power Abu Dhabi, a joint venture with Hydrogen Energy, which comprises the UK’s BP Alternative Energy and Rio Tinto. The project will incorporate CO₂ capture and storage in producing oil fields. A final investment decision is currently targeted for the third quarter of 2010 with initial operation envisaged from 2013.

Several other countries in the region have ambitious plans for renewable and especially solar energy. For instance in Qatar the state-run Qatar General Electricity and Water Corporation said in 2008 that solar plants should account for 4,500 MW of the 16,260 MW of the new capacity it projected as needed from 2011 to 2036. The capacity would be installed in 500-MW complexes.

Meanwhile in Oman a 2008 study sponsored by the Authority for Electricity Regulation and undertaken by consultants Cowi and Partners proposed the establishment of large-scale solar thermal plants and up to 750 MW of wind turbine capacity in the south of the country. The tender for a 200-MW solar thermal project was under consideration in 2009.

Apart from renewable energy, nuclear power is in the frame as a long-term solution for the electricity requirements of many Middle Eastern countries. Iran’s highly-contentious nuclear program started much earlier than most, and has since hogged most of the headlines, but it is far from the only regional country with nuclear aspirations.

The UAE in general and Abu Dhabi in particular have travelled well down the road to nuclear generation. In 2008 the UAE forecast that it would require 40,858 MW of capacity by 2020, with 30% projected to be nuclear plants.

Abu Dhabi is planning to develop nuclear capacity on the basis of joint local and foreign ownership in line with its IWPP model. Sites on the coast between Abu Dhabi and Ruwais and in Fujairah were investigated from 2008, with construction of the first four reactors then scheduled to begin by 2012 and operation planned from 2017.

In April 2009 three consortia were prequalified for the foreign equity stake including France’s GdF Suez Energy International, Areva and Total; Japan’s Hitachi with the US’s GE Energy; and South Korea’s Korea Electric Power with Hyundai Engineering & Construction. The $41-billion project contract was said to be near award at the time of writing (early October).

Trading Power, Sourcing Kit

The Middle East’s burgeoning electricity demand will be met not only by building more generating plants within each country but also by trading electricity between countries to take advantage of differing national load patterns. As a first step the GCC Grid Interconnection Authority is connecting the grids of the six GCC countries through a three-stage project due to be completed in 2010. The $1.25-billion project involves 5,000 MW of potential electricity flows regulated by a power exchange and trading agreement signed in July 2009 by all six countries apart from Oman.

The GCC project could be followed by the gradual interconnection of electricity systems in the wider region and beyond. But meeting the projected demand will still require the construction of a large amount of additional generating plant.

This is expected to include a substantial amount of renewable and nuclear capacity as well as some coal and oil-fired plant. But meeting the region’s power needs will still need a substantial
amount of additional gas-fired plant. And, as already noted, the fueling of this capacity could have a significant impact on the availability and price of gas for other uses.

There is little question that this will be one of the key issues facing the Middle Eastern power and wider regional energy sector for decades to come. In this context, increasing the efficiency of gas-fired generating plant—getting more kilowatt-hours per Btu—is an important concern for the region’s power utilities.

The efficiency issue is also important because power plant equipment and construction costs have tended to be significantly higher in the Middle East than elsewhere. Middle Eastern power plants have traditionally been “gold-plated” facilities built and equipped by leading US, European, Japanese and South Korean companies. Chinese, Indian, Russian and other suppliers of often-cheaper equipment and construction services have made limited inroads.

While the high cost per kilowatt of regional generating projects partly reflects indigenous factors such as high labor and other input costs, it also reflects stringent qualification criteria which have in turn resulted in a limited pool of eligible equipment and contractors. Not only do these tend to be more expensive per se, but from the mid 2000s the substantial number of projects chasing a limited number of contractors made for even more expensive plants.

In some recent tenders there appears to have been greater acceptance of non-traditional sources of equipment and services. This has been assisted by the improving quality and performance of, for instance, the main Chinese and Indian equipment suppliers and contractors.

The likelihood is thus that there will be some shift in the sourcing of power plant equipment with a possible reduction in unit costs. But the Middle East appears likely to remain a high cost region.

The Inevitability of Competition?

The substantial amount of investment required by the regional power sector means that capital will in all probability continue to be sourced from both state coffers and from private investors and lenders. But perhaps the biggest question mark over the future shape and direction of the Middle Eastern power sector is whether that private involvement will remain limited to IPP and IWPP projects operating under the single buyer model, or whether the region goes further down the liberalization route and embraces competitive electricity generation and supply.

Given the generally conservative nature of Middle Eastern economic activity, a move to merchant generation and contestable consumers might seem improbable any time soon. In particular, to have any real meaning a move to competitive electricity supply would require a shift to cost-reflective retail tariffs, which would be unlikely to be politically popular.

But given the cost of subsidizing power use, retail tariff hikes are not out of the question. And wholesale competition between generators would not necessarily impact on retail prices and thus may prove easier to adopt.

Some Middle Eastern countries have in fact already prepared detailed roadmaps for the transition to a more competitive market. Most notably, the privatization and liberalization of the Saudi Arabian power market is planned.

The country’s state-run Electricity and Cogeneration Regulatory Authority (ECRA) said in 2008 that a three-phase program was under consideration. This would see the state-controlled Saudi Electricity become a holding company from 2010 with its power plants being unbundled into four generating companies and its transmission assets being transferred to the proposed Saudi Grid Company. ECRA envisaged that at least three of the generating companies would be privatized, while the grid company might either seek a strategic partner or tender out projects on a build and lease basis.

A second phase of the program running to 2013 would involve the introduction of wholesale competition and a spot market. It would also involve the corporatization and possibly sale of
Saudi Electricity’s distribution and supply assets in the ECRA blueprint.

The third phase from 2013 to 2016 would involve the full introduction of wholesale competition and the start of retail competition, according to ECRA.

While the timetable attached to the Saudi Arabian liberalization program may prove ambitious, the radical nature of the program in one of the region’s more conservative jurisdictions is indicative of the wider potential for change. And as the Middle Eastern power market becomes more interconnected, and fueling and technology issues become increasingly pressing, it seems likely that the pressure to introduce competition into the wholesale market will grow as a way of securing cost and efficiency gains.

Regardless of the various question marks, one thing is clear—going forward the Middle Eastern electricity sector will require close attention both from power industry players and the wider energy community.

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**Table 1. Financed IPP and IWPP projects in GCC countries by year of operation.**

<table>
<thead>
<tr>
<th>Country</th>
<th>Project</th>
<th>Type and fuel</th>
<th>mw</th>
<th>migd</th>
<th>Op</th>
<th>$m</th>
<th>Key investors</th>
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<tbody>
<tr>
<td>Oman</td>
<td>Manah-1</td>
<td>IPP (oc-g)</td>
<td>90</td>
<td>-</td>
<td>1996</td>
<td>216</td>
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<td>Manah-2</td>
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<td>2001</td>
<td>541</td>
<td>Taqa, Marubeni</td>
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<td>Kamil</td>
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<td>285</td>
<td>-</td>
<td>2002</td>
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<td>IP</td>
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<td>Ras Abu F-1</td>
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<td>377</td>
<td>-</td>
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<td>213</td>
<td>QEWC</td>
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<td>Salalah</td>
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<td>-</td>
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<td>270</td>
<td>Dhofar Power</td>
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<td>2007</td>
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<td>-</td>
<td>2007</td>
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<td>2009</td>
<td>1,360</td>
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<td>Mesaiaed</td>
<td>IPP (cc-g)</td>
<td>2,000</td>
<td>-</td>
<td>2010</td>
<td>2,400</td>
<td>Marubeni, Chubu</td>
</tr>
<tr>
<td>Saudi</td>
<td>Shuqaiq</td>
<td>IWPP (st-o)</td>
<td>1,020</td>
<td>47</td>
<td>2010</td>
<td>1,870</td>
<td>Mitsubishi, GIC, Acwa</td>
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<tr>
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<td>Jubail</td>
<td>IPP (cc-g)</td>
<td>2,750</td>
<td>210</td>
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<td>3,443</td>
<td>GDF, GIC, Acwa</td>
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<tr>
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<td>Fujairah-2</td>
<td>IWPP (cc-g)</td>
<td>2,000</td>
<td>130</td>
<td>2010</td>
<td>2,800</td>
<td>Taqa, IP, Marubeni</td>
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<td>Bahrain</td>
<td>Al Dur</td>
<td>IWPP (cc-g)</td>
<td>1,234</td>
<td>96</td>
<td>2011</td>
<td>2,100</td>
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<tr>
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<td>Shuweihat-2</td>
<td>IWPP (cc-g)</td>
<td>1,500</td>
<td>100</td>
<td>2011</td>
<td>3,200</td>
<td>Taqa, GDF, Marubeni</td>
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<tr>
<td>Qatar</td>
<td>Ras Laffan-C</td>
<td>IWPP (cc-g)</td>
<td>2,730</td>
<td>63</td>
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<td>3,800</td>
<td>GDF, Mitsui, Chubu</td>
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<tr>
<td>Saudi</td>
<td>Rabigh</td>
<td>IPP (st-o)</td>
<td>1,200</td>
<td>-</td>
<td>2013</td>
<td>2,700</td>
<td>Kepco, Acwa</td>
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Note: IPP = independent power producer, IWPP = independent water and power producer, AE = acquire and expand, cc = open cycle, cc = combined cycle, st = steam turbine, g = natural gas, o = oil, Taqa = Abu Dhabi National Energy Corp, IP = International Power, QEWC = Qatar Electricity & Water Co, GDF = GDF Suez Energy International, GIC = Gulf Investment Corp.

Source: Platts, based on national and company data