

## Saudi Arabia's unstoppable utilities market

**Baset Asaba** , January 25th, 2016

Saudi Arabia's utilities market remains an attractive destination for ambitious investors, despite a sustained period of low oil prices and the resultant fiscal consolidation.

Resilience in the sector is underpinned by the kingdom's solid macroeconomic trajectory, supportive demographics and robust power sector capacity expansion plans.

Saudi Arabia is the biggest power market of all the Gulf Cooperation Council (GCC) countries and analysts forecast increased investment in utilities over the next ten years and beyond, to meet rising demand from a growing population.

Demand for electricity alone is projected to double by 2030, according to Business Monitor Intelligence (BMI).

"The integration of diversified generation capacity, primarily gas capacity over our 10-year forecast period - will reduce reliance on oil-fired power generation and enhance the kingdom's ability to absorb economic shocks to its oil-dependent economy," says a recent BMI report.

For instance, the power rental market in Saudi Arabia is projected to grow at a CAGR of 12.6% during 2015-20 at the back of increased infrastructure, manufacturing sector, construction sector and high demand for electricity and power requirements in remote areas.

Key companies in Saudi Arabia's power rental market such as Aggreko, Enerco, Hertz, Byrne Investments, Peax, Altaaqa, Cummins Olayan Energy, RSS, and SES are stepping up their investments in this segment amid projections of increased demand.

"In Saudi Arabia's power rental market, utilities, oil & gas, construction and industrial applications are the major revenue generating segments and would remain key contributing segments through the forecast period," says Avishrant Mani, Senior Research Analyst, Research and Consulting, 6Wresearch.

However, the growing prominence of renewable energy solutions is much likely to place breaks on sourcing of diesel generators on rent, but growth would still be witnessed in oil & gas, construction sites and areas lacking transmission & distribution networks.

### Renewable energy

Renewable energy has gained momentum in Saudi Arabia following February's announcement of a three year feasibility study to construct nuclear reactors at a cost of \$7.5bn in partnership with South Korea.

This initiative is part of wider plans by the King Abdullah City for Atomic and Renewable Energy (KACARE) to invest deeply in nuclear energy and renewables by 2032 in a bid to scale down heavy dependence on hydrocarbons.

Although KACARE announced last year that it was delaying its planned implementation of the Kingdom's energy mix by eight years to 2040, it is still committed to building up to 41GW of solar power plants and investing in an additional 21GW of wind and geothermal power in the next 25 years.

This is expected to present unprecedented business prospects for regional providers of specialised products and services.

"Local manufacturers are positioning themselves to tap into growing opportunities in renewable energy and aligning themselves



to the set standards. This is going to stem off foreign competition," says Andrew Shaw, Managing Director at DUCAB, regional cable manufacturers.

#### Capacity and demand

Current electricity demand in Saudi Arabia means that the Kingdom has to invest at least \$140bn by 2020 to uplift generating capacity from 51.5 GW to 71 GW at Saudi Electricity Company (SEC) power stations, according to the Electricity and Cogeneration Regulatory Authority (ECRA).

Saudi Arabia has also announced plans to boost total capacity to 120 GW by the year 2040.

In 2013 Saudi Arabia generated 292.2bn KWh of electricity, a 7% increase on the previous year, according to BP's "Statistical Review of World Energy 2014".

ECRA records show it had 76 power plants run by 15 different operators with a total installed capacity of 69.76 GW. Of those, SEC operated 46 with combined capacity of 51.53 GW, equal to 74% of the total; the Saline Water Conversion Corporation (SWCC) ran six with capacity of 5 GW; and Saudi Arabian Oil Company (Saudi Aramco) had six stations with a combined capacity of 1.19 GW.

There are also two major cogeneration stations producing significant quantities of both electricity and desalinated water. Jubail Water and Electricity Company's single station had capacity of 2.9 GW in 2013 and Shuaibah Water and Electricity Company's plant offered 1.2 GW.

In March, the Export-Import Bank of Korea (Eximbank) signed an agreement with the Saudi Electricity Company (SEC) for financial support worth \$3bn.

#### Water desalination

Although Saudi Arabia remains the world's largest producer of desalinated water, it is also facing rising demand for water and is investing heavily in enhancing its capacity. ECRA estimates that investments in desalination totalling \$80bn will be required over the next 20 years, including \$24.3bn before 2020.

ECRA estimates that rising demand dictates that by 2020, SWCC alone will have to produce 6m cu metres per day, a 64% increase on 2013.

The idea of privatising the Saline Water Conversion Corporation (SWCC) has been debated for several years and the state-owned company, which is responsible for almost 60% of desalination in the Kingdom, has been making changes to its structure and operations to facilitate the move for some time.

According to a Reuters report in January 2015, the proposal reportedly being studied involves the creation of a joint stock company with capital of SR60bn (\$16bn), 30% of which will be floated on the Saudi Stock Exchange (Tadawul).

The Electricity and Cogeneration Regulatory Authority (ECRA) has reported that SWCC's reorganisation would result in a holding company, which would keep transportation, some production units and research and development in public hands, but allow partial private ownership of subsidiaries including plants serving Yanbu, Al Khobar, Khafji, Ras Al Khair, Jubail, Shuqaiq and Shuaibah.

"The private sector share in the ownership of the subsidiary production companies will depend on the investment attractiveness of each plant," the report states.

#### Emerging desalination trends

Currently, desalination plants in Saudi Arabia use a wide range of processes with 64% of the desalination capacity relying on the multi-stage flash process (MSF), 20% on reverse osmosis (RO) and 16% produced using multi-effect distillation (MED).

The Shuaibah Water and Electricity Company plant uses MSF, while the Jubail Water and Power Company's desalination centre uses MED. SWCC's output relies on all three technologies, with 47.8% of its input to national capacity relying on MSF, 2.2% using

MED and 9.5% based on RO.

“There is growing need for investment in research and innovation on more energy efficient methods for desalination to make it more sustainable,” says Dr. Bader Al Busaies, Attorney at Law and managing partner at Al Suwaiket & Al Busaies.

Al Busaies points out that besides available opportunities in technology, growing demand for water desalination will enable companies to participate in engineering, procurement and construction (EPC) tenders for SWCC schemes, as well as building independent projects when subsidiaries are privatised.

Potential is also high for firms to bid for the construction, operation and maintenance of both pipelines and production plants and for the manufacture and supply of spare parts for desalination plants.

Production began at the new \$7.2bn Ras Al Khair desalination plant for SWCC, around 75 km north-west of Jubail on Saudi Arabia’s east coast. The facility will be able to produce 1.025m cu metres per day, making it the world’s biggest desalination facility when it is running at full production capacity.

On Saudi Arabia’s Red Sea coast, work on the \$4.3bn Yanbu 3 desalination plant for SWCC is also under way. This will provide an additional 550,000 cu metres per day to 1.8m residents in the industrial city of Yanbu and to people in the Medina area. Doosan Heavy Industries and Construction of South Korea won the contract to build Yanbu 3.

In January, a joint venture involving Riyadh’s ACWA Holding and Japanese engineering firms Itochu Corporation and Sasakura Engineering was awarded a \$120m contract for the expansion of the Shuaibah 2 desalination plant. The 91,200-cu-metre-per-day plant will use MED with thermal vapour compression technology. Shuaibah 2 was first opened in 2003 and has the capacity to produce 880,000 cu metre per day.

The push for sustainable desalination techniques is giving rise to technology that leverages renewable energy. In January, Advanced Water Technology (AWT), a newly formed company based in Riyadh announced it would be working with Abengoa, a Spanish global technology firm, to develop the world’s first large desalination plant powered by solar energy.

The new \$130m plant is designed to deliver 60,000 cu metres per day to the city of Al Khafji in north-eastern Saudi Arabia and is due to come on-line in 2017. The desalination plant will use the RO technique and an associated 15-MW photovoltaic (PV) plant will provide all the facility’s power needs. The use of renewable energy will also reduce the plant’s operating costs.

KACST predicts that this pilot project will pave the way for a future where desalination powered by renewable energy will replace fossil-fuel-powered desalination in the Kingdom from the late 2020s onwards.

#### Energy efficiency

With nearly 40% of all power stations in Saudi Arabia more than 25 years old, SEC is now upgrading many of its older power stations to make them more efficient. By converting all open-cycle power plants to combined-cycle power plants, average plant efficiency will be boosted from 33% to more than 45%.

The Kingdom is adopting a sterner approach on driving energy efficiency practices in construction to ensure that new buildings use power effectively. Inefficient air-conditioning units can no longer be imported or manufactured in the country, and a royal decree was issued in 2013 demanding better insulation in all buildings, following a Saudi Aramco report on energy efficiency found 70% of buildings in the Kingdom to be uninsulated.

#### Waste energy

Saudi Arabia is stepping up its innovations on waste to energy generation solutions and it is now conducting public campaigns to educate people on proper disposal of waste, with the Kingdom ranking among top waste producers in the world.

The government has approved the construction of a \$300mn facility to turn waste into energy. The facility will process 180 tons of waste per day, producing 6 MW of electricity and 950 m<sup>3</sup> of distilled water.

New laws have been introduced requiring all waste to be disposed of in municipal landfill sites, which could provide those

municipal authorities or private sector firms with the opportunity to use this waste as a meaningful alternative fuel source

## Privatisation

Saudi Arabia is increasing space for private participation in the utilities sector, a move it considers not only essential, but a priority. Private funding for projects in the electricity segment alone for the period 2009-20 is estimated at \$140.2bn.

According to ECRA, contracts worth \$12.8bn were signed in 2013, with \$3.9bn spent on building and expanding power generation plants; \$6bn on transmission, including construction of an overhead line from Rabigh to Madinah and three 380-V transformer stations; and \$2.3bn spent on distribution projects in towns and cities.

It suggest that by 2020, opportunities will exist for firms in developing independent power projects and independent water and power projects; building, leasing and/or operating transmission lines and pipelines; forming power generation and desalination companies; obtaining leases or concessions for existing generation and water production facilities and obtaining facility management contracts.

"Privatisation is positive — it can create a source of funding and let the private sector do more of the heavy lifting for growth," says Farouk Soussa, Citi's head of Middle Eastern Economics. "But this is a rather inopportune moment — markets are depressed, and there could be a tussle later when the market recovers."

## GCC Grid

Saudi Arabia's electricity distribution network allows spare generation capacity to be directed to areas that need it most at any particular time or season, and for the last four years the GCC countries have integrated their networks so that the constituent countries can help each other cope with unexpected disruptions to supply.

The advantage of this would be that as countries in the region build new power plants anticipating higher future consumption, their neighbours in the region would be able to buy that electricity as an interim measure while they are constructing their own improved facilities.

For example, Abu Dhabi, which plans to open its first nuclear power station by 2017, would be able to sell its electricity to Saudi Arabia, where the first feasibility study on nuclear power is due to be concluded with South Korea by 2018.

Beyond the GCC, plans are moving ahead to create a 3-GW power link between Saudi Arabia and Egypt so the two can share generation capacity and so smooth over any peak-load demands. In 2015 the project, estimated to cost \$1.6bn, is at the bidding stage.

## Subsidies

In April, Saudi Arabia, like several other GCC countries hinted on easing subsidies on domestic water and power prices to limit rapid growth of consumption, amid soaring demand.

Power and water use are growing about 8% per year, putting greater strain on government finances.

"One of the most important challenges that the water and electricity sectors face is the high consumption growth rates, which mean we as citizens have to review our consumption patterns," said Saleh Al Awaji, chairman of SEC in April.

"If we look 20 years from now and if growth (in demand) remains at current levels, it won't be possible to provide services with the same reliability and at current prices," he said.

"When we talk about legislation we also talk about prices - they are one of the effective tools to control these kinds of challenges. But if prices get revised, they should take into consideration those who deserve a subsidy."

In common with many other oil-producing nations in the GCC and beyond, Saudi Arabia spends billions of dollars every year in subsidies for fuel used in transportation and utilities.

In its September 2014 report on its Article IV consultation with Saudi Arabia, the IMF revealed it had discussed the gradual

removal of energy subsidies with government officials, arguing for a well-planned and clearly communicated policy adjustment with the introduction of compensatory measures for low-income members of society.

However, the IMF reported that officials “expressed concern about the macroeconomic and social implications of an adjustment to energy prices”. The IMF report added that the authorities felt major public transport projects such as the Riyadh metro would have to be completed before any reforms were considered. However, those working in the utilities sector are debating the subsidy issue.