BY KERRY DIMMER

From Cuts to Capacity

Egypt's Promised Renewables Projects Gain Momentum

Four years ago, Egypt experienced a dire energy collapse. With demand outstripping supply by 20 percent – more than its power stations could provide – up to six power cuts a day were common, many of those lasting up to two hours.

The ripple effect extended to the Suez Canal, its authorities declaring a state of emergency as all waterway communications were affected. Oil refineries, pumping stations, industries and retail businesses were seriously disrupted, stopped or discontinued.

The impacts on the economy meant that development plans were severely restricted. If Egypt was to endure, it was essential to prioritize power generation. The response was, in 2015, to announce a power generation capacity increase by at least 20 percent in five years, and from renewable energy sources.

Souhir Mzali, regional editor for Africa, at Oxford Business Group, which this year produced a comprehensive country profile on Egypt, *The Report: Egypt 2018*, has been monitoring the situation over the past few years. She said that the plans don't stop with the 20 percent increase: "37 percent of renewable energy is targeted for 2035. However there are competing claims regarding the government's goals with some media reporting that 42 percent renewable energy will be operational by 2025."

Souhir Mzali
Oxford Business Group

RIPE FOR THE PICKING

Looking purely at the immediate goal of 2 gigawatts from renewables to be split between wind (12 percent), hydro (5.8 percent) and solar (2.2 percent), the region is ripe for harvest.

Wind speeds, particularly the coastal region, are recorded at 10.5 meters per second, and according to Oxford Business Group, the sites that have been selected for wind farms, covering some 7,845 kilometers, are considered very strong with averages of 6.5 meters per second in the regions of the Gulf of Suez and near the Nile.

From a solar perspective, Egypt receives some 2 gigawatts per square meter per year of direct solar radiation. Its current solar-generating capacity, according to the World Energy Council's 2016 *World Energy Resources* report, is 45 megawatts, from two current sources: a 35-megawatt solar/

ABOVE: Together with its local Egyptian partners, Siemens has erected three gas-fired combined cycle power plants, each with a capacity of 4.8 gigawatts, for a total combined capacity of 14.4 gigawatts. / CREDIT: SIEMENS

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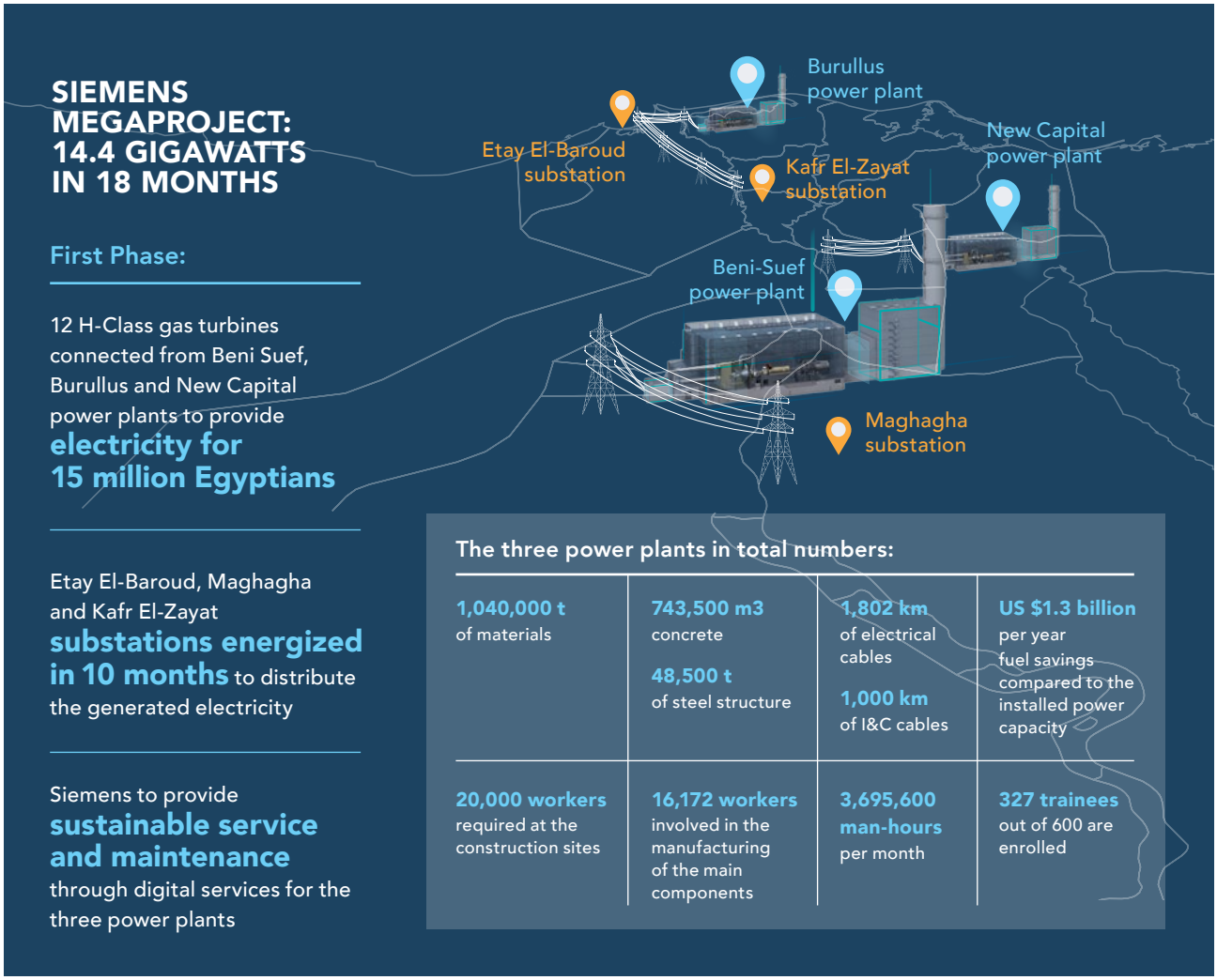


CREDIT: SIEMENS

thermal power plant at Kuraymat, and a 10-megawatt plant in Siwa.

Resources are not in doubt. What is, however, is the time frames for the projects to come to fruition. The international energy developer and finance community sees the goals as ambitious. But that did not deter a couple of hundred of them from responding to the call, during 2015, for partnerships on renewable projects. The extent of services they provide are varied, inclusive of upgrades to transmission and distribution centers, and new high-voltage substations, required so that the main grid can handle the expansion.

Private sector investment is in play here, and encouraged by the government, so much so that policy changes have been enacted to ensure a more welcoming business environment. "Over the past three years the sector has undergone a period of significant growth and investment as a result," Mzali said. "There were considerable increases in investments into clean energy last year alone, driven primarily by the private sector.

"Egypt has put in place the right building blocks for industry growth. The regulations appear to be suitable and, as prices for traditional energy rise, interest in renewables and demand is thus growing significantly."

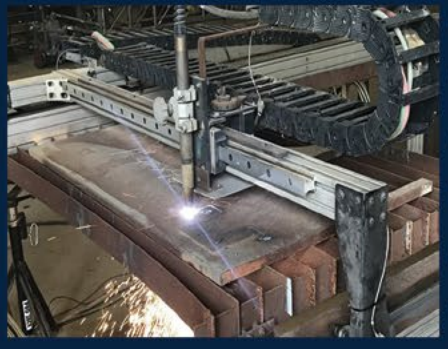
That said, one of the biggest challenges faced by the private sector lies in securing finance and determining a business model that allows for financial success, Mzali added. There are some huge numbers being reported. MIGA, a member of the World Bank Group, is guaranteeing up to US$106 million for the development of six solar power plants; US$97.6 million of cover has been provided to lender Industrial and Commercial Bank of China.

One media report indicates that Egypt is now the 11th-biggest investor in global renewable energy, with a budget of some US$2.6 billion.

SEEING PROJECTS THROUGH

There has been enough interest and investment to have already made a dent in the desired goal of 20 percent from renewables. Mzali said that in 2016 the country was sourcing 45 megawatts from solar and 550 megawatts from wind. "This has improved significantly. As part of the Siemens Megaprojects, there will be 12 wind parks with some 600 wind turbines generating up to 2,000 megawatts in the Gulf of Suez and West Nile.

"The EIB and KfW-funded Gabal El Zayet wind farm, completed in three phases brought in 200 megawatts in 2015, 120 megawatts in 2016, and



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220 megawatts in 2017," she said. "In addition, the 600-megawatt Gulf of Suez wind farm is scheduled to be operational by the end of this year in cooperation with KfW, Masdar and African Development Bank."

The Siemens Megaproject is one of the largest projects in the world, let alone in Egypt. The organization has a 115-year history with the nation in support of its development, and in 2015 signed a partnership agreement to build a power system to the highest international standards of efficiency.

Siemens collaborated with local partners, El Sewedy Electric and Orascom Construction, to construct three 4.8-gigawatt combined cycle power plants, which were inaugurated in July. The three broke all records in terms of modern power plant construction delivering 14.4 gigawatt of power in just 27 months. Those plants are sited in the administrative capital east of Cairo, Kafr el-Sheikh on the Nile of Delta, and Beni Suef, south of Cairo. They meet the requirements of some 40 million people, and will realize some US$1.3 billion in fuel savings annually.

The 12 Siemens wind farms will produce some 2 gigawatts of green power. The largest was recently inaugurated by Egypt's President Abdel Fattah al-Sisi.

SOLAR PLANT PLANS

From a solar perspective, the Benban complex, covering 37 square kilometers some 650 kilometers south of Cairo, is considered key, says Mzali. "With a planned 1.8-gigawatt capacity it will be one of the world's largest solar farms."

Benban is separated into 30 solar plants in the eastern region of the Sahara Desert. Anticipated to be completed by the middle of 2019, 29 of the projects are believed to have reached financial closure (US$2.2 billion) through a mix of various governments and investment groups, with a total cost expected to be in the region of US$3.5 million to US$4 million.

"There's more in the pipeline," Mzali said. We can highlight, for example, the announcement last November 2017 that the EBRD, or European Bank for Reconstruction and Development, is to finance 16 new solar power plants with 750 megawatt capacity. Along with Green Climate Fund funding, the EBRD will be using the Renewable Energy Financing Framework to firstly enhance policies and planning, and second to scale up investments of renewable energy projects.

Wind power projects are also being prepared in cooperation with Japan, Spain, Germany and investment/development banks including KfW (Germany); the EBRD, the European Investment Bank, the French Development Agency, and the UAE's Masdar.

One of the catalysts that will pull all of the renewable energy outputs together is the introduction by the Egyptian government in 2014, of the Feed-in Tariff (FiT) system. Mzali explained its importance: "The first challenge that alternative energy must overcome is the cost to consumers of

traditional energy in Egypt, which is currently low because it is subsidized.

"As subsidies are lifted, which is ongoing, and consumer demand rationalizes, the cheaper alternative energy option becomes much more desirable. But this is only true if the use of such energy is able to be integrated with the regular utilities network."

LOCAL OPPORTUNITIES

Opportunities are increasingly there for local businesses, such as Emco Logistics. Emco plans to expand in energy projects, with the company's operations manager, Mohamed Hamouda, telling local press that the company is already involved in the construction of the wind power project in the Gulf of Suez.

Hamouda added that Emco has been participating in energy projects over the past two years, be that shipping, unloading, storage, transport and customs clearance, for, among others, the Gamesa KFW 120 megawatt wind farm and the Siemens Borollos power plant.

Hamouda said that along with the development of the Suez Canal Economic Zone, Emco is keen to participate in projects related to all logistics areas in the region, inclusive of storage areas, purchase of logistics equipment, display of storage areas and shipping services. This is in addition to the navigation consultancy service that Emco provides in the procedures of transiting the canal.

It's not just local businesses that Egypt's renewable sector is impacting on, though. In May, China's Wuzi Suntech Power Co. Ltd. reportedly shipped solar modules to Italian Enerray SpA for a project in Aswan. This is for three solar parks in the Benban complex, that have a combined capacity of 115 megawatts, and is in collaboration with UAE-based Desert Technologies.

While opportunities for local manufacturers may be increasing, as is the case with a range of industries in Egypt, an important share of raw materials and components will continue to be imported.

Here, Egypt has a solid port infrastructure to cater for breakbulk and project cargoes. Most imports are via Alexandria, Port Said, Burullus, Damietta and Sokhna, and there are projects underway to increase and develop road and rail infrastructure. While those will have a significant impact on trade generally, it's unclear how those will affect the alternative energy sector.

The General Authority for Ports & Dry Land in Egypt is pursuing an integrated plan to build several dry ports and logistics areas, injecting some US$9 million into port development at 6th of October city, the 10th of Ramadan, Sadat city, New Burj Al Arab, New Beni Suef, and New Sohag. Some of this spend will certainly aid the necessary movement of international project cargoes as Egypt continues on its energy strengthening project. BB

Kerry Dimmer is an award-winning freelance journalist, focused on African business affairs.