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Investment Guide

Egypt 2019

Economy	Energy	Real Estate
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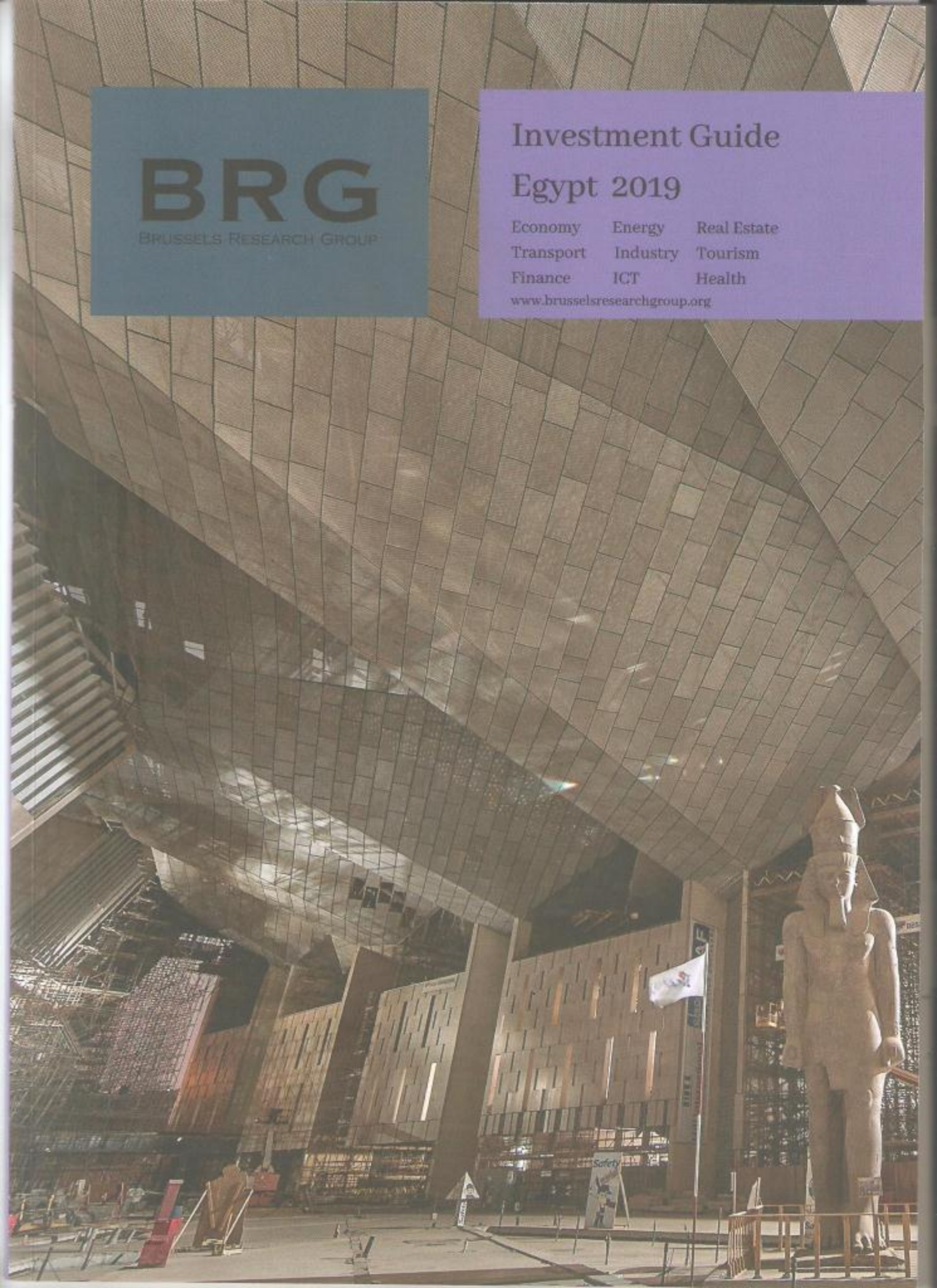

SUPPORTING EGYPT

BRG interview with Mohammed Saad Eldin Chairman - Saad Eldin Group

Saad Eldin Group. The highly diversified vertically integrated Oil & Gas holding was founded in 1985 and is focused on servicing LPG, LNG, CNG and other industrial gases. Saad Eldin Group subsidiaries and factories are dedicated to manufacturing, filling and delivering of gas cylinders throughout Egypt. Its facilities include gas processing plants, LPG container manufacturing facilities, and gas storage terminals.

As a private sector businessman, how do you evaluate Egypt's economy?

Security has brought stability. GDP growth has increased from 2.3% in 2013 to 5.4% in 2018. Net international foreign exchange reserves in Egypt have increased from USD 12 billion in 2013 to USD 44.5 billion in 2018 at the Central Bank. We see tourism and foreign direct investment returning and are optimistic of growth prospects in the market.

In addition, the government is continuously working to facilitate private sector investments. They have updated Egypt's legal framework through the new investment law, and manpower legislation has been enhanced. We see massive improvements in national infrastructure through the extensive network of newly built roads, the Suez Canal expansion, and new electric power stations. Government is strategically building key national infrastructure with Egypt's long term growth prospects in mind. New infrastructure is able to exceed current needs allowing for export and will cover much larger national needs in the future if needed. This all indicates that Egypt is on track.

How do you assess Egypt's natural gas reserves and energy hub strategy?

Historically Egypt has been an excellent partner exporting gas via pipelines to the region since 1999. Egypt constructed many pipelines and two liquefaction plants on the North coast for this purpose. Although they have been underutilized for years, Zohr's increasing national gas production levels will capitalize on this pre-existing infrastructure. Liquefaction plants, for example, can take five years to construct and cost USD 10 billion. We already have these facilities to receive production from neighboring countries and export to Europe for example.

How is Saad Eldin Group capitalizing on new natural gas production in Egypt?

Egypt is floating on a sea of gas. Egypt has enormous high-quality gas reserves which will bring affordable energy to the market. However, building pipelines is extremely costly, and one of the biggest challenges within the Egyptian market has been the transportation of this gas to clients.

Saad Eldin Group's subsidiary Gastone, signed a protocol with the government allowing the transport of all gases nationally via gas cylinders to final consumers. Our subsidiary Gastone specializes on the transfer and delivery of liquified gas between ports, the groups production sites and end consumers. We efficiently supply industry, end users and have large plans to grow.

For example, the government aims to convert diesel cars to run on nationally produced natural gas and bring natural gas to every home. At the beginning of 2019, Egypt will start placing trailers to deliver 250bar Compressed Natural Gas (CNG) Cylinders in petrol stations to meet local needs. This government strategy will reduce Egypt's demand for diesel which consumes much needed foreign exchange reserves when imported. The move will also improve Egypt's budget deficit and strengthen national economics. The move is a business opportunity. It will increase the use of cylinders and requires strategic transport, delivery, and logistics operations. This is an opportunity for Saad Eldin Group to help the government achieve its goals while growing our business. Saad Eldin Group has brought leading technologies to Egypt to CNG bar requirements, and we are using our expertise to meet local demand.

Do you see opportunities to develop Egypt's renewable energy sector?

Egypt has excellent locations to produce solar and wind energy. We have fantastic weather allowing for 6-8 hours of direct sunlight per day and extensive land in the desert which is ideal for large solar projects. The Benben SolarPark project in Aswan is an excellent example of this potential. It aspires to provide 2GW of solar power by 2020 which means almost 20% of Egypt's power has the potential to come from a renewable energy source very soon. The government is facilitating the use of renewable energy and promoting it in homes throughout Egypt. Egypt has many opportunities to develop renewable energy projects, and Saad Eldin Group is positioning itself to improve the sector further.

productions of 2 700 million cubic feet per day by the end of 2019. Eni has won many concessions in Egypt in recent years and is making new discoveries.

Atoll field natural gas field has reserves of 1.5 Tcf and is producing 0.35 Bcf/d of natural gas and 10,000 b/d of condensate.

Egypt is also collaborating with BP to develop West Nile Delta (WND) projects. WND project will produce close to 1.5 Bcf/d in 2019. Fayoum and Giza have an estimated gas production potential of 400 million cubic feet per day in 2019, and over the next, year an increase to 700 million cubic feet is expected. In addition to other locations, BP recently began the production phase of the Raven field.

Egypt also has promising projects on the East Nile area, like the Atoll gas field which was discovered by BP in 2015. The field is located 80 kilometers north of Damietta and is estimated to have approximately 1.5 trillion cubic feet of natural gas and 31 million metric barrels of condensate. The first production phase started in 2018 at the cost of EUR 829 million while the development of the full field will cost EUR 2 632 million. At the end of 2018, the field's first production phase reached 350 million cubic feet through its three wells.

West El-Brulus field is estimated to produce 100 million cubic feet of gas a day and 1 400 barrels of condensates, along with investments of EUR 437 million. South Seth and North Tort fields will produce 100 million cubic feet of gas per day.

Other natural gas projects to be developed in the following years include Merit and Aten fields, Salamat field, and Al Amal field.

61% of local natural gas consumption is for electricity, while industry represents 23%, petroleum 11% and residential/CNG only 5%. The natural gas market has over 19 000 commercial customers including 2 400 factories, 56 power stations, 8 million households, and 230 000 CNG vehicles.

Energy Consumption: Egypt is the largest oil and natural gas consumer in Africa. Egypt currently consumes 22% of petroleum and 37% of dry natural gas consumption in Africa. Energy *subsidies have not encouraged efficiency. Even* with subsidy reduction, population growth is expected to lead increased consumption. The goal is to remove them by 2022 entirely.

Electricity: In 2016 Egypt had a total installed capacity of 38.86 gigawatts (GW). Egypt is battling electricity blackouts caused by natural gas shortages and inadequate generation and transmission capacity. Shortages become acute, particularly in the summer months. New projects are under development to increase capacity diversifying the energy matrix being fueled by coal, solar, and wind amongst others.

Egypt's grid is connected to transmission *grids in Jordan, Syria, Iraq, Turkey, and Libya.* Plans for a new 3 GW electricity cable worth EUR 1 404 million to connect with Saudi Arabia signed are ongoing.

Nine public generation companies generate a total capacity of 43 GW, while three private generation companies working under a build-own-operate-transfer (BOOT) program generate 2 GW capacity and several Isolated Power Plants sell power directly to end users. The Egyptian Transmission Company has been the sole entity responsible for all transmission activities in Egypt holding a full monopoly.

In 2015, a new electricity law allowed the privatization of electricity production, transmission, and distribution. This could bring in much needed FDI from the private sector.

Renewable energy: Egypt has traditionally relied on oil as the main source of fuel and power. With the production decline in the 90s, natural gas rose to be the second major source. Egypt is highly reliant on petrochemicals for its energy needs with 88% coming from oil and gas, and the remainder from renewable power sources including hydro, wind and solar.

Egypt has various ideal areas that can be capitalized for large-scale renewable energy projects. High levels of the solar radiation in Aswan and high wind speeds near Hurghada and Zaafarana on the Red Sea make renewable projects in Egypt attractive segments for investment. Developing renewable energy projects has become a necessity to diversify the energy sector and decrease reliance on fossil fuels while attracting foreign direct investment.

In 2008, Egypt presented a new strategy for renewable energy which aims at developing the sector and increase its overall market share to reach 20% of national energy use. Ambitious targets of developing 4.3 GW of wind and solar in power generation capacity were set.

Wind energy: The Suez Gulf area is Egypt's ideal area for generating wind energy as it has an average wind speed of 10.5 meters per second. The Nile Valley area also offers abundant wind. Egypt's first wind farm was built in Hurghada in *1993 with a total capacity of 5.2 MW. Since 2001,* Egyptian NREA signed deals with German KFW, Danish DANIDA, Japanese JICA, and Spanish companies and built many large-scale wind farms *which reached a capacity of 753 MW. Total wind* power generation in Zafarana is 547 MW, Gebel El-Zeit 200 MW, and the Hurghada wind farms 5MW.

Remarkably, Siemens Gamesa is deeply engaged in Egypt's wind energy market, between 2005-2009, the company has installed four wind farms in Zaafarana having 478 G52 turbines with 850KW power capacity for each.

Gabal El Zayt project is planned to be one of the biggest wind farms in Africa. Egypt's biggest wind energy project is located in Ras Ghareb on the Red Sea. It was inaugurated in 2018 at the cost of EUR 324 million and built on a 35 square kilometer area.

Solar Energy: Egypt's unique topography, climate and high levels of solar radiation make it an ideal destination for solar energy electricity generation and to develop thermal heating applications. Egypt has between 2 900 and 3 200 hours of sunshine annually, and a total radiation intensity between 2 900 and 3 200 kWh/square meter per year. Nonetheless, Egypt only has 30 MW of solar power generation capacity.

As Egypt tries to enhance its renewable energy matrix mix, many projects have been presented with several already working. In 2018, Egypt inaugurated its biggest solar plant, Ben Park at Aswan. It is located 650 kilometers south of Cairo. Once completed its 32 units will make it the biggest solar plant in the world with a capacity of 1.8 GW. Benban park was developed by German company Ib Vogt GmbH and Egyptian company Infinity Solar. Chinese company TBEA Sunoasis started to engage in the project in the later phases.

In 2017, Scatec Solar and other companies announced six solar plants in Benban Park totaling 400 MW at a total investment of EUR 394 million by the United Nation's Green Climate Fund and other European and Arab investors.

The Benban Solar Park is financed by a number of global funding agencies and banks, including the Asian Infrastructure Investment Bank and the Industrial and Commercial Bank of China. Saudi Acwa Power is set to build three solar PV plants with a total capacity of 120 MW at Benban.

Two other large-scale photovoltaic plants were presented by the NREA in Hurghada and Kom Ombo, with a capacity of 20 MW and 26 MW respectively. The first plant is financed by Japanese JICA and the latter by French AFD. These should come online in mid-2019.

TAQA Arabia inaugurated a 50MW solar power plant in Aswan's Benban complex worth EUR 66 million. Commercial operations will be ramping up early in 2019. It is part of the Egyptian government's feed-in tariff program.
These investments in solar power will not resolve Egypt's energy concerns but will diversify its energy matrix and mitigate pollution.

Hydroelectric energy: Hydroelectricity was Egypt's major energy resource in the 1970s when it used to generate more than half of the country's domestic energy needs via the massive national Aswan Dam. It produces 13 545 GWh annually. However, as a result of the increase in the share of other energy resources, hydropower represented 7.2% of Egypt's total electricity generated in 2015. Hydropower is Egypt's third-largest energy source after natural gas and oil. Egypt has an installed capacity of 2.8 GW.

In the last few years, the government announced new plans to upgrade many hydropower facilities along the Nile river. By the end of 2018, Egypt announced plans to build a large hydropower plant at a capacity of 2 400 MW at Ataqa Mountain in Suez.

Ethiopia's plans to finish a 6 GW EUR 4 211 million Grand Ethiopian Renaissance Dam (GERD) in 2022 could affect Egypt's Aswan High Dam. Most of the Nile River's hydropower potential has already been exploited.

Nuclear energy: Egypt has nuclear research programs and operates two research nuclear reactors.

Currently, only South Africa has a commercial nuclear power plant in Africa. In 2015, Egypt and Russia signed an intergovernmental agreement to collaborate in the construction and operation in El Dabaa, west of Alexandria near New Alamein City. It will be Egypt's first nuclear plant with four 1.2 GW units. The first reactors will start by 2020. At the cost of EUR 25 231 million, the plant will be finished by 2026. El Dabaa nuclear plant will produce 4.8 GW which is enough to deliver electricity to more than four million homes across in Egypt. These plans have been repeatedly *delayed, and it is unlikely to be operational in the* near term.

Petrochemicals: This local demand for plastics is filled by imports. It has become a priority to increase domestic production.
The EUR 1 754 million Misr Fertilizers Production Company (MOPCO) expansion tripled its total annual production capacity.

The Egyptian Ethylene and Derivatives Company (ETHYDCO) opened a new EUR 1 667 million poly-ethylene complex.

Egyptian Petrochemicals Holding Company's (ECHEM) EUR 2 632 million petro-refinery is being built inside the Suez Canal Economic Zone. In addition, at least five additional projects are under construction with minimum investments EUR 1 140 million each.
Outlook: Egypt has several competitive advantages seeking to become the regional energy hub including its strategic location, proximity to massive gas reserves in the Mediterranean Sea, and extensive infrastructure.However, these are not enough to create the energy hub.

Egypt must continue to modernize, invest and create policies that support this energy hub. Becoming a center for trade and exports requires a regulatory environment that is business-friendly and can compete in the region. Most countries in the region will compete with Egypt to become the energy hub of the region. Although Egypt is ahead and possesses strong advantages in this regard if the execution falls behind its regional competitors will quickly overtake Egypt.

A second level for improving the energy hub *strategy would be selling the national oil* infrastructure and bringing in mid players. The midstream has always been seen as a security concern needing to be controlled. The government is sitting on potential capital that could be monetized. On the oil side, some of that money could be invested in looking for more oil which would continue to exceed demand and increase exports.