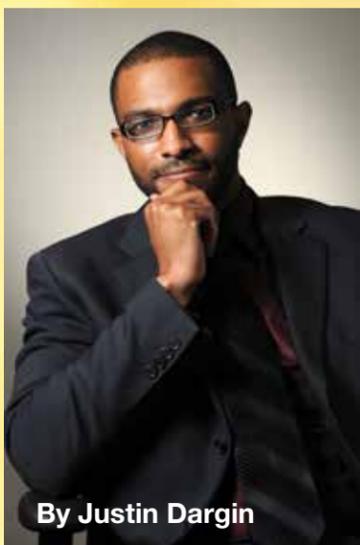


Sparking Reform: *Creating Dynamism in the* *Egyptian Energy Sector*



By Justin Dargin

Key Elements of Reform

- **Institutional Streamlining:** A fast track decision-making process should be instituted which encompasses a rapid and reliable approval process for project developments.
- **Creation of Attractive Fiscal Terms:** Investment terms which compensate for the costs of deep drilling in the Mediterranean.
- **Pricing Mechanisms:** Reconfiguration of the price floors and ceilings paid by the government to INTERNATIONAL ENERGY COMPANIES s. Indexation that tracks various fossil fuel benchmarks should be implemented.
- **Reduction of Payment Delays:** The government should prioritize payments to international energy companies for exploration and production activities.

Egypt has been at the center of the news for the past several years. Its constant political and economic turmoil have kept the country on a razor's edge. Since the 2011 revolution, Egypt's economy has sputtered. And, it has been extremely difficult for the country to retain and attract foreign revenue, as well as crucial tourism inflows. All of the preceding had a knock-on effect for the country's energy sector, and its underlying strength and vitality have been severely questioned. Consequently, investors have turned away from the Egyptian market

The Egyptian government has recognized this, and has taken several steps to revitalize the economy and energy sector within the past year. And, to turn things around, the Sisi administration recently formulated a series of bold proposals to eliminate the burdensome subsidy framework and stimulate investment in the country's stagnant natural gas fields and creaky power sector. However, in the short to midterm, Egyptian energy demand is still poised to rapidly outpace domestic production with Egypt obligated to turn to the international LNG market to meet the shortfall.

Beginning in 2013, Egypt took a number of positive steps to redevelop its energy sector. Several Gulf countries provided an invaluable lifeline in the form of aid, both monetary and in kind since the governmental transition of 2013. However, it is unlikely that this assistance will continue for the long-term. In response to these challenges, the Sisi administration rolled out a set of ambitious plans for crucial energy sector reform over the next several years. These plans, if implemented faithfully and comprehensively, should be quite effective in checking gas and power demand increases. In furtherance of that goal, Egypt also began issuing new exploration licenses and reducing outstanding debt alongside the subsidy reform plan. All of these actions are needed for Egypt to meet its objective of reducing energy consumption, creating incentives for natural gas exploration and production, as well as reducing its substantial governmental deficit that has ballooned due to subsidies.

In order for Egypt to create a sustainable growth model, it needs to implement a dual pronged strategy that focuses both on the short and long term. By focusing on the long term, it may stimulate natural gas production through the creation of an attractive regulatory/investment framework, and by reducing subsidies, it will be able to decisively reduce energy consumption. Moreover, to satisfy its short term peak natural gas demand needs, it should create a viable LNG import model. Additionally, Egypt should create a robust public-private partnership model to spur the entry of private capital to rehabilitate its domestic gas distribution network. Egypt's main challenge is not a dearth of natural gas reserves, but its ability to invest/produce its resources and to consume them in a sustainable fashion. As a result, this requires the development of a coordinated policy to implement LNG import and combine it with the development of attractive investment terms throughout every link in the natural gas value chain.

It goes without saying, Egypt's energy challenges are significant; however, they are not insurmountable if creative and proactive strategies are undertaken. The natural gas trends for Egypt indicate that increased domestic demand, tied to maturing natural gas reservoirs, will lead to a nearly unavoidable decline in Egyptian production-and therefore, export- capacity over the coming decade. Egypt is also challenged with retaining a large portion of the value of natural gas in the domestic economy. Additionally, to complicate issues, there are very weak forward and backward linkages throughout the economy. The low levels of integration between energy-intensive industries and the national economy have led to low rates of job creation and technology transfer for domestic industry. The value-added sector faces similar challenges, and the refining and petrochemical sector still suffer from a serious lack of investment capital due to low state liquidity on one hand, and stifling bureaucratic centralization of the sector on the other.

Similarly, Egypt has lately (since 2008) experienced extreme power blackouts that have affected a large swath of the population. Fast-paced economic growth in the 2000s, as well as major expansion of the industrial and manufacturing sector led to electricity demand swelling by approximately 8 percent per annum, which placed enormous strains on the country's power supply. In response, the government pledged to expand power generation capacity by 58 thousand MW over the next two decades. But, this may be an extremely ambitious goal in the face of declining natural gas production, for without natural gas sector reorganization, it is difficult to foresee how rising power demand will be met.

Despite the current political travails, Egypt has taken steps to encourage natural gas production. Egypt was somewhat of an energy leader in the Middle East and North Africa during the 1990s and early 2000s for awarding the largest number of energy concessions in the region. Despite that early forward momentum, it is still facing looming supply shortages in the natural gas sector.

After the significant deepwater natural gas finds in the 1990s, it has not had comparable success in the last several years, and production has not matched the steadily growing rate of consumption. For instance, despite the economic slump following the 2011 revolution, natural gas consumption still increased by 10 percent, reaching 1.75 TCF (49.1 BCM) from 2010, while production steadily declined during the same time period.

The global financial crisis of 2008 and the political transition of early 2011 disrupted market confidence and led to repatriation of investments, causing stagnation of gas production in the face of rising domestic demand. Notwithstanding these structural problems, Egypt still has significant potential for increased gas production based on its substantial reserves. However, most of Egyptian incremental supply going forward will come from deep-water offshore in the Mediterranean, as these fields are estimated to contain approximately 75% of Egypt's total gas reserves.

These new reservoirs are geologically complex with high temperatures and reservoir pressure. To stimulate production, these fields require enormous investment, a specialized skill-set and advanced technology. Additionally, the production cost of these fields, while not inordinately prohibitive, is several fold higher than Egypt's associated natural gas fields and requires a substantial reworking of the investment terms to make production viable. Even though Egyptian prospects for an increase in natural gas production are immense, if proactive steps are not taken, then Egypt faces the risk under a worst case scenario of runaway gas demand growth over the next decade and becoming a long-term LNG importer (at international prices). Egypt is already on its way to becoming what is known as an "Export Land" country. An Export Land country is one that is caught in the iron scissors of declining energy production and rising domestic demand, which therefore reduces its ability to export. In that scenario, the decline in exports is disproportionately larger than the decline in production.

Considering that Egypt depends upon the oil sector for crucial hard currency generation, with the decline in oil output, natural gas will likely comprise a disproportionately larger share of revenue generation. Still, it appears that the natural gas sector is following the same seemingly inexorable logic as the oil sector, whereby demand is rising and production is plateauing/declining. The trend was starkly exemplified by the official announcement in 2008 that no new LNG contracts would be negotiated. And, to further illustrate the decline in gas production and the increase in demand, after the implementation of the gas moratorium, in 2013, Egypt began to divert gas shipments away from LNG plants to the domestic power sector. These diversions ultimately caused BG to announce force majeure for its international commitments.

Under a much more moderate forecast, it is likely that Egypt will still face a sharp curtailment of its natural gas exports in order to satisfy domestic demand. Although Egypt has continued to discover new gas reserves, gas production has slightly slowed down and its reserves-to-production ratios have begun to decline, these factors make discovery of new gas fields all the more essential. In any case, it is apparent that at least for the near term, unless gas production increases and demand stabilizes, Egypt will have to import LNG to meet peak demand requirements.

Policy Recommendations for a Sustainable Gas Future

How then will Egypt meet these challenges? While the dominant form of contractual model in Egypt - the production sharing contract based on a concessionary framework - has worked well for many years providing investment stability, there is still room for modification and further development. The Egyptian government promulgated the basic legislation which governs the sector in the 1950s. Now this model is extremely antiquated and does not meet Egypt's current needs. A new framework should be created recognizing the importance of developing the new high cost deepwater reservoirs through the use of the technology, expertise and managerial practices from international energy companies. Therefore, enhancement of the investment terms is perhaps the single most important method to stimulate upstream gas development.

A new regulatory framework governing investment terms would overcome one of the central ailments afflicting upstream development, and that is the high cost of extracting natural gas from the Mediterranean reservoirs. An incentive based structure promoting a sufficient rate of return would attract large investments from international energy companies interested in deeper engagement in the Egyptian natural gas sector. Likewise, operating as yet another barrier, military permits, which are necessary for each step of the exploration and production process, are often not clearly understood. This process has sometimes subjected investors to significant delays, at times reaching over two years. As it is the government's stated goal to increase economic growth to 5-6 percent per year and natural gas production to 8

percent per year, regulatory enhancement and transparency are a must.

The Implementation Process

Egyptian authorities should implement a three-stage process of regulatory reform focused upon enhancing the investment terms for deepwater exploration and production, expediting the approval process through institutional reform and energy price reconfiguration.

Investment Terms: The dominant form of contractual model in Egypt has been the production sharing contractual framework built upon a joint venture framework. This has been the standard model in place for decades. But, given the current bottlenecks in the sector and the need to produce from complex reservoirs, this does not continue to offer a flexible exploration and production model for international energy companies. To stimulate reinvigorated exploration and production in the Mediterranean, Egypt should eliminate the obligation of creating a joint venture model and instead allow full ownership of the gas field in question to vest to the international energy companies. By that method, while the energy company would be fully responsible for investment risk, it would at the same time still encourage investment. Such a policy has already been deployed for some natural gas reservoirs in the Nile Delta. Furthermore, there should be a contractual stipulation to allow a robust cost recovery mechanism which would allow the parties to renegotiate the price mechanism if it is not economically viable.

Institutional Streamlining: Implementation of an expedited regulatory regime should focus on three elements: The application process, the permit-issuing process (i.e., military) during exploration and production and the payment and cost expenditure recovery framework.

Investors are reassured when they understand that decisions will be made and implemented in a timely manner. As stated above, the delay (sometimes longer than two years) for an approval is an unnecessary hindrance for investment. Rapid decision-making is critical to encourage investment when a company applies to develop a particular field.

In addition, the regulatory authorities should draft a clear and transparent framework for military permits. The governance framework regarding the issuance of permits is unclear and creates additional transaction costs. There should be a system of pre-approval from the military for the entire development project once a project's general parameters have been approved. Furthermore, if additional modifications take place outside of the original project specifications, a clarified permit submission system should be developed with a provision that a decision should be forthcoming within a pre-specified time, and if the decision is delayed beyond that, the permit application should be deemed approved.

Lastly, the process for reimbursement of expenditures should be expedited and set within a clear regulatory framework. The Sisi administration already indicated that energy sector debt repayment will be granted priority and paid as quickly as possible. The Egyptian authorities formulated this policy in recognition that payment delays create severe obstacles for the additional investment needed to stanch further natural gas production decline.

Pricing Framework: The majority of Egypt's concessions have a natural gas price floor and ceiling paid by the government to the investing company that does not adequately reflect the cost structure of producing from complex reservoirs, especially deep-water reservoirs in the Mediterranean. The current contractual model for upstream investment continues to stipulate predetermined price negotiations between the parties. However, while allowing some flexibility, this upstream model creates uncertainty as negotiations are not directly based on market signals and an evolving cost environment.

Nonetheless, in order to be truly attractive, the authorities should create an indexation model, either linked to cost of production, a natural gas benchmark price, export price, or to the global price of oil. Without an indexation model subject to clear market signals, companies will not be able to sufficiently plan future investment, nor would capital markets continue to finance projects based on the current somewhat rigid price structure that may not incorporate future cost shifts due to reservoir complexity and market shifts.

Justin Dargin is a leading Middle East energy expert specializing in the Gulf energy sector, emergent carbon markets, and regional industrialization. He was a former Research Fellow with The Dubai Initiative/Harvard University, where he won a Harvard award for his research on the region, and is a Fulbright Scholar on the Middle East/North Africa