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LEBANON'S GAS MARKET DEVELOPMENT AND THE ROLE OF FSRU*

The Energy Policy and Security Program at the Issam Fares Institute for Public Policy and International Affairs at AUB

This policy brief is part of a series published by the Energy Policy and Security Program at the Issam Fares Institute for Public Policy and International Affairs at the American University of Beirut on the development of oil and gas sector in Lebanon.

Summary

The gas market in Lebanon is expected to be initially dominated by LNG imports and eventually replaced – partially at least - by indigenous gas. Additionally, gas from nearby Arab countries may be re-supplied in future. This means that different gas streams will enter the Lebanese market at different geographic locations and based on different contractual terms. Developed physical and legal gas infrastructure does not exist currently in Lebanon. Lebanese gas policy (laws) is at early stages of development with little detail on the gas market structure and ownership structure.

This policy brief questions the prospects of the recent Lebanese plan that consist of installing three LNG import terminals, which will be owned and operated by private investors and LNG suppliers. Our analysis suggests that the Government will need to play a central role in regulating the gas market.

MAIN RECOMMENDATIONS

- A state-owned entity that secures gas (LNG and indigenous) to customers is essential in the short term. However, there should be an option for private sector participation in the wholesale gas market in the medium term, thus enabling the traders and customers to negotiate and secure their own gas contracts.
- The Government is adopting the upstream vertical integration structure in its current tender, where the bidding consortium build, owns and operates the floating regasification terminal and the related infrastructure. Enforcing Third Party Access might prove very difficult in such a structure. Therefore, the gas off-takers are left with only one supplier that will most likely be contracted on long term contract basis (10 years), with no flexibility in the supply contract volume and prices.
- FSRU projects are known to be ideal "plug and play" venture: therefore, an important synergy must be in place, and run by a professional regulator, especially when considering future indigenous gas finds. The main role of the regulator will be to supervise the natural gas imports, trading and commercial terms, use of infrastructure and to set power sector market rules and regulations.

Drivers and prospects of Lebanon's gas market

The recent decision of the Lebanese Government to promote the role of natural gas in the country's energy mix could potentially lead to positive implications such as reducing power generation costs at existing plants by replacing more expensive fuel and Diesel oil as well as increasing generation efficiency by introducing combined cycle gas turbines for new power plants, last but not least, this will reduce pollution.

Historically, the relatively low price of natural gas, the current supply surplus and the environmental advantages, make the gas one of the most competitive sources to generate energy. Unfortunately, Natural gas has played a very limited role in Lebanon's energy mix[1] due to lack of access to gas supplies and political stalemates.

Worldwide, oil is mainly used for transportation. However, Lebanon is one of the few countries that still depend on Heavy Fuel Oil and Diesel Oil for electricity production. The country imports 93% of its total primary energy supply as oil, an economically and environmentally alarming percentage.

** FSRU: Floating Storage Regasification Unit*

1. Lebanon, Egypt and Syria have signed a swap gas contract back in 2009. Lebanon has received gas supplies, whereby Egypt exports its gas to Syria, and Syria supplied Lebanon from its own gas fields. The supply lasted for three months only, and it was transported through the Gaysle I pipeline, which extends for 45-kilometres from the main Homs-Tartus line in Syria to the Deir Ammar power plant in northern Lebanon, near Tripoli.

In December, 2017, the Council of Ministers (CoM) awarded two exclusive petroleum licenses for exploration and production in blocks 4 and 9 for the consortium composed of Total S.A, Eni International BV and JSC Novatek. In May 2018, the CoM approved the recommendation of the Lebanese Petroleum Administration (LPA) to prepare for Lebanon's second offshore licensing round. The exploration phase for the licensed blocks has already begun and will last up to six years. The ultimate goal of the exploration phase is to strike a commercial gas discovery[2].

The importation of natural gas, until Lebanon's own potential gas reserves are developed, could prove advantageous. Relying on imported gas from neighboring countries is perhaps cost-effective, however, it makes Lebanon's gas imports susceptible to supply shocks, especially when these countries witness economic and political crises. Given Lebanon's limited opportunities for securing pipeline gas imports from neighboring countries, LNG remains the country's only realistic option in the short term.

In 2013, Lebanon closed bids for two LNG tenders: One to install a Time Charter LNG import terminal and the other for an LNG import contract. A shortlist of several possible Floating Storage Regasification Unit (FSRU) candidates was reportedly prepared for submission, however, delays in decision-making tied to Lebanon's political deadlock stopped the process. A new tender was launched in May 2018 to design, finance, build and operate up to three LNG floating regasification import terminals and their related infrastructure, with the three vessels slated to be moored at Beddawi, Selaata, and Zahrani as recommended by US advisers Poten & Partners. It is understood that offers from the 13 prequalified companies are due by Oct 1st, 2018 and the decision on the preferred bidder will be made early next year. Accordingly, gas could flow to power plants as early as 2021.

What is an FSRU?

The function of an LNG import terminal is to receive LNG cargos, store LNG and re-vaporize/ re-gasify the LNG to its gaseous state. There are currently two types of LNG receiving terminals: Onshore and floating. The difference is that in the former, the terminal receives the LNG from the methane carrier, where storage and regasification is done onshore and is composed of a storage tank and land based equipment, whereas in the latter all the processes are done offshore, on an FSRU.

Most FSRUs are leased as the vessel is owned by a shipping company and can be reassigned on project completion. Additionally, the FSRU has the advantage to be mobilized and commissioned in a swift way, thus, delivering gas within a short period of time. If an FSRU is readily available[3] , this could offer flexibility and better project economics. A recent example of this, is the second FSRU for Ain Sokhna, Egypt, which commenced operation in just five months after the issue of tender documents.

To put this into perspective, onshore terminal can take up to three years to be commissioned.

The FSRU option, also has its own drawbacks such as storage limitations, weather sensitive and the reduced local content participation from host country.

FSRUs and gas market structure lessons

A fundamental question to consider for any newly developed gas market is its structure. The market structure defines how the market operates and which entities are legally allowed to buy and sell natural gas, this in turn defines the pricing mechanism, the ownership, as well as the financing aspect of all relevant stakeholders.

An additional important aspect to consider for Lebanon is that there will be only one group of gas off-takers in the short term: The power sector (Independent Power Producers (IPPs) and the public electricity company EDL). This is due to the fact that other customers such as industrial and residential are, – either supplied by substitutes that are cheaper than gas, an example of such customer is the cement producer which currently consumes coke, – or need huge time and money investment in downstream infrastructure, such as the need for transportation and distribution pipeline in the residential sector. Thus the electricity sector, in Lebanon will be closely linked with the gas sector, and both structures shall be considered in parallel.

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Benchmarking can support the selection and planning of such a structure, and for that reason, it is essential to have an idea of gas markets in nearby countries (Turkey, Egypt, Jordan and "Israel") and draw lessons from it.

The first market option is the ***competitive market***: Consumers have the choice between a variety of different supply sources, where each supplier competes on price and volume flexibility, and where consumers can determine contract terms. In "Israel", the electric utility company provided the bulk of the LTC for the first gas fields, as well as partnering with Excelerate Energy to provide LNG as a supplement to its existing domestic natural gas production. This is a competitive market based on long term contracts (LTC).

This model is neither advisable nor practical for Lebanon in the short term since during indigenous production; any domestic gas supply could at least in part be sold to a Government entity as per the Exploration and Production Agreement[4].

2. The geological petroleum system identified in the Lebanese Exclusive economic zone consists mainly of gas. Liquid could potentially be found on the margin.

3. Re-assigned from another project or constructed on a speculative basis.

4. Gas can be sold to Lebanon regardless to whom, but the Minister may require these sales to be to the State or to a State owned Entity. EPA article 14.8

Thus, in a market where IPP and EDL may compete in the electricity sector, authorities can curtail gas supply, since the latter will be the only gas supplier. This can discourage potential IPP investors.

This however can be a solution in the long term, subject to the development of a competitive gas market, with several producers/suppliers.

The second market option is the ***monopolistic market***: It consists of one state-owned entity being responsible for selling gas to domestic users. The gas market in Egypt, pre-liberalization, was dominated by a single state owned entity, EGAS. EGAS participates in joint ventures of domestic production and imported LNG and sells gas to all users at below cost of gas. This is also the case of Cyprus, where DEFA, a state-owned entity is responsible for all gas purchase agreements from one side, and selling gas to domestic users from another. This option can create an inefficient market, with heavily subsidized prices, signs of political manipulation and an indebted sector.

The third market option is the ***two tier market***: It is a combination of the above mentioned options. One group of eligible consumers can choose their supplier and negotiate their own contracts. All remaining consumers face regulated prices and can only be supplied by the public supplier.

Turkey and Egypt-post liberalization[5] are an example. Initially BOTAS, a state-owned Turkish company, secured all import contracts; however, since the passing of the natural gas market law, private companies are allowed to secure their own gas as well. Turkey is hoping to increasingly cover supply-demand gaps via spot LNG imports, if the price is advantageous compared to pipeline gas, with private suppliers securing import contract themselves.

In the short term, the lack of any current private electricity off-takers, and since most of the gas produced locally may be sold to a Government state entity (As per the EPA); mean that a state-owned entity that secures gas to customers is essential initially. The plans to introduce IPPs in the future mean that there should be option for private sector participation in the wholesale gas market in the medium term.

"Private sector participation in the power sector through IPPs, means that there should be an option for private sector participation in the wholesale gas market as well. "

Therefore, the two tier market could be the best suited market structure for Lebanon in the short term. Nonetheless, such market would require non-discriminatory access to LNG terminals for some customers/ traders, as well as third party access on gas transmission systems.

Figure 1, illustrates the three different Value chains (LNG, gas and electricity), the different form of agreements and the different types stakeholders. The role of the regulator is very important, in overseeing the institutional and regulatory arrangements in order to ensure the creation of a smooth functioning internal gas market in Lebanon.

LNG ownership and financing

The FSRU can be developed as various business models. The choice of these different models will depend on the risk appetite of the different stakeholders, the financial viability of off-takers and the acceptance of Government involvement along the LNG value chain. Three models are identified in nearby countries: Tolling arrangement, downstream vertical integration and upstream vertical integration. Our understanding is that the latter model is currently considered in Lebanon.

The landed LNG prices in the Middle East are mostly indexed to Brent, albeit with modest spot contracts purchase where the price is linked to a certain gas hub. This offers an extra degree of price protection to the buyers and is less impacted by geopolitical risk, unlike the oil indexed.

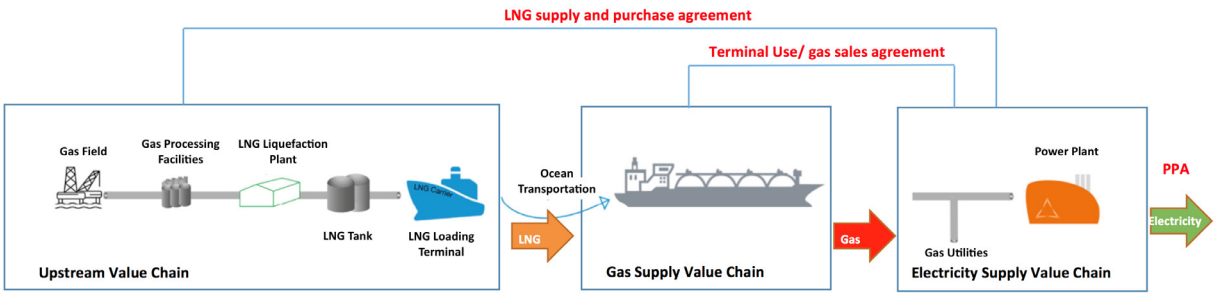

Figure 1: Value Chains (LNG, gas and electricity)

5. 2017- Gas market liberalization in Egypt sponsored economic reforms designed to reduce energy subsidies. Upstream producers with contracts signed post-2013 will be able to sell their profit share gas on to end users and private companies will be able to import LNG and piped gas.

If the Lebanese Government awards the three FSRUs, there is a risk that the large capacity will be underutilized and that the overall project efficiency and competitiveness will be low, which might imply a higher cost on the off-takers. This needs to carefully considered, and such plans for large FSRU capacity, have to take into account that potential indigenous production might soon be on stream[6].

In addition, if the companies adopt a long-term contract pricing mechanism indexed to oil, there is a risk that the wholesale price of gas will be substantially high.

The prices can be as high as 10-13 $/ MMBTU and with such prices gas can lose its competitive edge and can be quite similar to the prices of Heavy Fuel Oil (depending on international crude prices in the years to come) currently used as the primary fuel in nearly half of the Lebanese electrical installed capacity.

FSRU is essential for Lebanon, and gas is an inevitable cheaper substitute fuel for the Lebanese gas sector, however two things should be carefully considered, in order to maintain the competitive edge of such a commodity: It is recommended to reconsider the choice of awarding three FSRUs, and the structure can be improved and flexibility can be added.

6. With advancement in technology, oil and gas companies can now produce from newly discovered fields in very short time. An example of such fast production is found in Egypt, where Eni company has produced its first gas from the supergiant Zohr field in a record time for this type of field, less than two and a half years from the discovery.

The Energy Policy and Security Program

The Energy Policy and Security Program at AUB's Issam Fares Institute for Public Policy and International Affairs was launched in 2016 as a Middle East-based, interdisciplinary platform to examine, inform and impact energy and security policies, regionally and globally. The Program closely monitors the challenges and opportunities of the shift towards alternative energy sources with focus on nuclear power and the Middle East. The Program has been established with a seed grant support from the John D. and Catherine T. MacArthur Foundation to investigate the prospects of nuclear power in the Middle East and its potential to promote regional cooperation as a way to address the security concerns associated with the spread of nuclear power.

Issam Fares Institute for Public Policy and International Affairs at the American University of Beirut

The Issam Fares Institute for Public Policy and International Affairs at the American University of Beirut (AUB Policy Institute) is an independent, research-based, policy-oriented institute. Inaugurated in 2006, the Institute aims to harness, develop, and initiate policy-relevant research in the Arab region.

We are committed to expanding and deepening policy-relevant knowledge production in and about the Arab region; and to creating a space for the interdisciplinary exchange of ideas among researchers, civil society and policy-makers.

List of Abbreviations

FSRU: Floating Storage Regasification Unit

LNG: Liquified Natural Gas

CoM: Council of Ministers

LPA: Lebanese Petroleum Administration

LTC: Long Term Contracts

IPP: Independent Power Producer

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