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OVERVIEW OF LEBANON'S OPPORTUNITIES FOR OIL AND GAS EXPORT AND IMPORT

This paper presents a brief overview of where the volume of the Lebanese market needs to consume these materials and how to import and store them and the quantities found in the event of extraction operations and the need for markets close to Lebanon and the potentialities and capabilities available and obstacles in the way of export and import of oil and gas materials from Lebanon in addition to suggestions on progress in this area. So this paper proceeds as follows: Section one begins with a discussion of Lebanon's import options, with a focus on the high degree of uncertainty concerning prospective decisions and a discussion on the advantages of flexible LNG. Section two examines Lebanon's various export options; these remain highly time sensitive, and are hence indicative only. Section three offers some conclusions and suggestions.

Key words: LNG (Liquefied Natural Gas), EEZ (Economic Exclusive Zone), Import, Export, FSRU (Floating Storage and Re-storage Unit), GDP (Gross Domestic Product), AGP (Arab Gas Pipeline), CNG (Compressed Natural Gas), BOT (Build-Operate – Transfer).

Introduction. Exclusive of economic zone in Lebanon EEZ forms a part of the Levant Basin that has been estimated to hold up 122 trillion m^3 of recoverable by natural gas, with addition to some 1,7 billion barrels of recoverable oil [1]. Lebanon seabed could contain significant hydrocarbon potential, an initial estimate indicates up to 30 trillion m^3 of natural gas and 660 million barrels of oil. Seriously these varying estimates are representative of uncertainty considerable. In other hand a long-term importer of energy, Lebanon could benefit tremendously from developing its prospective gas reserves by generating a new and enhancing its reducing air pollution and potentially important stream of revenue and energy security by replacing fuel oil in power generation. However, a long history of paralysis in the decision making process due to the sectarian nature of the political system and long delays in the implementation of a suitable legal and regulatory framework, constrains Lebanon prospects for short-term development of gas reserves, taking the period time for possible Lebanese gas developments further in the mid of year 2020 [2].

Main part. In the short term, it is expected that Lebanon will import natural gas to help it prepare the domestic market for how may turn into gradually replace oil in power generation and a fundamental turn of fortunes. The successful development of Lebanon offshore gas resources could indeed turn Lebanon into a potential exporter of natural gas and a self-sufficient producer [2]. Central to the government objectives of maximizing economic gain from providing the right incentive structure for international oil and gas companies to develop these resources and the development of Lebanon offshore gas reserves will be decisions on whether to export part of Lebanon hydrocarbon wealth and how to secure and identify the export markets for natural gas, and what share of reserves should be earmarked for export [1].

Therefore, This paper provides an introduction of available options to Lebanon for the monetization of its expected offshore gas resources and give an diagnosis about the possibility of exporting Lebanon to oil and gas and evaluating its components, needs and capabilities as well as importing products of these materials, in addition while decisions concerning the destination of eventual hydrocarbon wealth of lebanon and when this materializes during year 2020 are key to putting the right policy framework in place where Lebanon will also needed to consider interim solutions in order to secure gas for its domestic energy market until the country own the Levant Basin is bordered by, Syria, Lebanon, Turkey, Israel, the Gaza Strip, Libya and Egypt.

For there, in my opinion, the Lebanese offshore gas production is qualified for to supply the domestic market. Where the Lebanese economy could benefit significantly from interim imports of natural gas, in the other hand flexible liquefied natural gas LNG imports would be the most practical option given the current lack of regionally available pipeline gas supply options. The late situation in Lebanon, as an importer of natural gas and as a potential gas producer and exporter, is likely to constrain its future political options. It is important to emphasize that the constraints affecting Lebanon are driven primarily by internal factors, due to the fragile political consensus and political polarization that have paralyzed major institutions for many years, and delays and inefficiencies in decision-making that have already lost many missed opportunities [3]. That more importantly, to assess the various import and export options for Lebanon would be the

timing of the export of gas. In addition to these internal dynamics, the complex geopolitical landscape and long-term conflicts across the region will affect Lebanon's options for possible liquidity options. The paper proceeds as follows: The first section begins with a discussion of import options in Lebanon, focusing on a high degree of uncertainty regarding future decisions and discussing the advantages of flexible LNG. The second section examines the various export options in Lebanon, which remain highly sensitive to time, and therefore are only indicative. Section three provides some conclusions and suggestions.

Natural gas plays a very limited role in the energy mix in Lebanon. The main obstacle to the penetration of natural gas into its energy mix is the lack of access to gas supplies. Lebanon does not have proven reserves of natural gas and its options for importing gas from neighboring countries have been limited. Moreover, relatively low global oil prices during the 1980s and 1990s reduced the incentive to shift from the use of fuel oil to the energy sector [3]. However, the rapidly increasing demand for electricity and the rising prices of crude oil and petroleum products in international markets since the mid-20th century have contributed to revisiting energy supply options in Lebanon over the past decade. Since end-user electricity prices are set by the government (at much lower levels than the full cost of generation), the budget of the state-owned power generation sector can save a large amount of money by switching from oil to gas [4].

The prospect of Lebanon establishing its offshore gas reserves and falling oil prices did not change this rationale. Although Lebanon's significant hydrocarbon reserves may ultimately turn into years of development and production, leaving the local gas supply gap short and perhaps medium-term, which could turn Lebanon into a net importer of natural gas.

By this time, Lebanon is likely to benefit from starting to address some of its structural problems in the energy sector, including: the urgent need to reform the energy sector, suppress illegal electricity connections, and reform social services that provide most of the needy elements in a society with stable access And safe for electricity, including those living in shanty towns and informal living spaces. The importation of natural gas, pending the development of potential gas reserves in Lebanon, could be useful in the light of self-sufficiency. While there is certainly potential for natural gas deposits in Lebanon to contribute to a more diversified mix Of energy and lower import costs, the country will need to be prepared – with on-site and end-user infrastructure [4].

Create market segments to absorb their natural gas production when the time comes. Steps to establish this state of preparedness include: the construction of new pipelines, the conversion of some existing power plants to the use of natural gas, investment in new gas-fired power plants and potential investment in other gas-dependent sectors [5].

The importation of natural gas during the rest of this decade can facilitate the transition to natural gas, allowing the gradual transition from oil-powered power generation to research and development opportunities in areas such as the application of natural gas in the transport sector.

Despite the potential penetration of gas in other sectors of the economy, the future development of demand for natural gas will be strongly linked to the demand for electricity. From 2000 to 2009, electricity demand in Lebanon increased at an average annual rate of 5.3%, slightly higher than the average real GDP (Gross Domestic Product) growth rate during this period. However, this average figure masks some important trends, where most of the growth in electricity consumption occurred in previous years of this period [3]. This is uncommon for a developing country such as Lebanon where electricity demand growth can be expected faster than GDP. In fact, publicly available data on electricity consumption do not accurately reflect the actual growth in electricity demand, given the fact that a large part of the demand is met by self-generation (mainly diesel), while a significant portion of demand remains on electricity is not satisfied due to lack of capacity to generate power. In Lebanon, combined power generation capacity remained stagnant during the millennium, growing only marginally from about 2,292 megawatts in 2000 to 2,314 megawatts in 2009, equivalent to an annual growth rate of only 0.25% during this period [5]. EDL (Lebanese Electricity) has huge financial and operational losses, which must be covered by direct transfers from the government. In 2008 and 2009, these transfers accounted for 25 and 20%, respectively, of government spending. EDL also suffers from a chronic lack of investment, which has prevented its network from being modernized and power capacity expanded so far. The slow pace of expansion in the capacity of the new generation in the face of rapid growth in electricity demand has had a major impact on the quality of electricity supplies in Lebanon; it is estimated that residential consumers suffer up to one hundred and twenty days of interruptions each year – the worst record in the Middle East And North Africa [6]. A similar situation prevails in the industrial sector, which, despite considerable investment in private energy.

Reserve supply plants continue to suffer significant financial losses due to power cuts, with the average company losing up to 7% of its sales value. It is unlikely that public investment in

the new generating capacity needed to meet this increase in electricity demand will occur anytime soon; this indicates that even if (or when) their natural gas supply is available, the electricity supply problem in Lebanon will be far from the solution. The Lebanese government has very ambitious plans to increase the share of gas in the power generation mix. The 2010 Electricity Sector Policy Paper prepared by the Ministry of Electricity and Water proposes a diversified fuel supply with an ambitious plan to increase the share of natural gas from its current zero to two thirds of the fuel mixture by 2030 [5]. But this requires significant investments, not only in the construction of new gas-fired plants, but also in changing the composition of existing power plants. In Lebanon there are two combined gas turbines with a combined net capacity of 435 megawatts, accounting for about 50% of the generation capacity in Lebanon. These plants could operate on gas-fired raw materials but did not work optimally because of the gas shortage. In 2011, after the Egyptian gas imports stopped, the share of gas in the fuel mix in the energy sector fell to zero. In addition, Deir Ammar is currently the only power station in Lebanon that can burn gas without re-formation, making it necessary to make technical upgrades to the three other power plants in Lebanon to use gas in the energy mix in Lebanon Efficiently. Although the Department of Energy and Water also has ambitious plans to expand the use of natural gas to include industrial, commercial and residential sectors, and to convert the country's land transport fleet to Compressed Natural Gas (CNG), it is unlikely in the time frame of this study. That the appropriate distribution system would be in place. It is therefore safe to assume that the energy sector will remain the main source of demand for gas. Regardless of estimates of potential demand for gas in Lebanon, there remains a major problem: how can Lebanon secure gas supplies to meet the expected increase in demand for gas over the next decade.

The main historical barrier to increasing the share of gas in Lebanon's energy mix was access to gas supplies. Natural gas entered the energy mix for the first time in 2009 when the Arab Gas Pipeline, which also supplies Jordan, began supplying about 200 million cubic meters of Egyptian gas to the Beddawi power plant. Of natural gas was very brief [1]. Since 2009, the flow of Egyptian gas has been subjected to frequent disturbances due to delays in payment, and more recently due to a series of explosions targeting AGP. The last Egyptian gas was delivered to Lebanon in November 2010, while Jordan has since been subject to a frequent reduction of deliveries, reductions in contract volume and parallel price increases. Egypt's precarious political situation and growing domestic demand for natural gas have raised serious doubts since then about its ability, or indeed its willingness, to continue to supply regional partners with short- and medium-term low-cost pipeline gas; other neighboring countries appear to be suffering from gas shortages themselves. In 2003, Lebanon signed a 25-year contract with Syria to import about 1,5 billion cubic meters of natural gas. In 2005 the Gazelle pipeline, a 32 km pipeline with a capacity of 3 cubic meters per day, was completed from the Syrian border to the Beddawi power station. However, Syria was unable to supply Lebanon with gas because its production was not. Enough to meet domestic consumption [1]. At the time of writing, the country's ongoing civil conflict casts serious doubt on Syria's ability to dramatically change its natural gas supply over the next decade. Iran was discussed as a potential supplier of gas to Lebanon. A pipeline project that carries up to 25 billion cubic meters of Iranian gas to neighboring Iraq and Syria (the Islamic Line) could become lifeblood for Lebanon's gas industry. However, since its launch in November 2012, the project has suffered from a series of funding issues and over-the-ground operational issues related to the continuing complex security situation in Iraq. Since 2011, the political and security situation in Syria has worsened. Similar considerations can be applied to gas imports eventually via Turkey, possibly using gas supplied by Russia, Azerbaijan or Iraq. Current AGP delivery plans have been discussed in Turkey for many years and in practice will be clear and cost-effective, especially when compared to LNG imports that consume a lot of capital and infrastructure. However, the central government's plans to produce enough natural gas for export have fallen [3]. Once again, the political turmoil in Syria, Iraq and Turkey puts any prospects for the near-term progress of gas imports through Turkey from any country far away, at best far away, after Lebanon's point of import natural gas. Flexible LNG Imports Given Lebanon's limited access to pipeline gas imports from neighboring countries, liquefied natural gas remains the only viable option in the country. Lebanon announced plans to start importing liquefied natural gas from 2015 onwards, anticipating the importation of 12 years until its domestic production (currently allocated for 2020) replaces imported liquefied natural gas [6]. These plans are not new; liquefied natural gas has been considered an option since the 1990s, but the initially high construction costs of the land resettlement plant have shifted policy efforts towards securing low-cost regional gas pipeline imports. The government expects demand for liquefied natural gas in Lebanon to reach 1.7 million tons per year by 2016, up 4,2 million tons per year by 2030, although there is still no

indication of how and whether to meet demand for natural gas Liquefied natural gas (LNG) by 2015 by building LNG import capacity by 2015. At the same time, the Ministry of Water and Electricity has proposed the establishment of a Floating Storage and Re-storage Unit (FSRU) in the coastal Lebanese coastal areas. The FSRU is designed as a bridging measure and provides relatively shorter construction times than those associated with a permanent beachfront resettlement facility, with some potential for additional moderate cost savings. In 2013, Lebanon closed tender tenders for liquefied natural gas: one to install FSRU for building and operation (BOT) and the other for an LNG import contract. A shortlist of three potential candidates from the FSRU was reportedly prepared for submission to the Cabinet by the Ministry of Electricity and Water in April 2014, with similar steps on the verge of holding LNG supply. However, the persistent delays in decision-making related to the political impasse in Lebanon (which also affect the now-stalled pipeline system, with the aim of linking Beddawi as an entry point for imported gas, to the other three power plants in Lebanon) raise doubts about it when this plan has been advanced [2, 5].

Medium term export options for Monetizing Lebanese Gas. Assuming that Lebanon is finally developing its natural gas reserves, the country will face a range of options on how to liquidate its hydrocarbon wealth through gas exports. The location of Lebanon in the eastern Mediterranean, with access to coastal and marine areas, provides a natural advantage for gas exports. Lebanon has a number of regional trading options. Export potential will be essential to secure initial interest for foreign investors. Lebanon's final export strategies depend to a large extent on: the price range it can secure (this will be determined by the final size of its reserves, its production targets, and the cost of its gas production). First gas exports, given the dynamics of the surrounding gas market, other external factors, such as gas price levels in potential export markets by the time production begins, may affect Lebanon's potential for cooperation with neighboring Cyprus over LNG facilities on export options. Lebanon provided that these options are still available by the time the Lebanese gas production begins [5]. While many foreign investors may already press Lebanon to consider LNG exports as a first priority, it would be better for Lebanon to carefully consider all available export options, including regional pipeline exports to the Middle East, as well as Turkey (and possibly To Europe). Recent options may prove particularly valuable if Lebanon's final reserves prove to be well below current government estimates, placing restrictions on LNG export trade under long-term contracts. In fact, the degree of application of all these options is likely to depend largely on the timing of LNG exports and the ability of the country to use the appropriate time windows to enter its preferred markets. The long-delayed bidding round in Lebanon, the tender process, the length of time (from initial drilling, and eventually drilling, production and export) all mean that the current forecasts for Lebanese gas exports are only four years away from the time of comments Which was made in 2013 is at best ambitious and very unrealistic [7]. The Lebanese government's recent debate on an eight-year timeframe, with exports beginning in early 2020, seems to be much more realistic, but may be delayed by further political stalemate. By this time, Lebanon will

Is likely to find itself in a fundamentally different market than it is today, the last country in the region will choose how and where to market natural gas, and thus may have to target distant markets. Pipeline Options (I) Traditionally, the Middle East was the first option to be considered for the export of natural gas through the export of regional pipelines to neighboring countries near natural gas producers [1]. While natural gas trade is gradually moving towards more flexible exports via LNG, there are good reasons to consider the pipeline option before others, including: the general shortage of natural gas throughout the Mashreq region Regional pipeline exports require lower infrastructure costs, especially when exports above the ground (rather than via subsea pipelines tend to be more expensive), which (at the prices of well-negotiated contracts) are considered to be high rates of export rents to primary prices VC promotes relationships (Such as Turkey, Syria and Iraq) as a logical gas trading partner with those countries that are and will likely remain important growth markets for at least a few more decades. Low infrastructure costs make the pipeline option affordable even for countries with limited public financial resources (With the additional benefit of reducing the number of available elements by the adoption of foreign partners by newly producing States). This makes regional pipeline exports the most viable option for export to Lebanon if reserves become less than expected and not enough to allow the export of LNG. Therefore, pipeline exports remain the most realistic option if Lebanon's natural gas reserves prove to be much smaller than the current government estimates. Lebanon is no less than gas-hungry neighbors, and given the expected growth in the Middle East and North Africa region in demand for natural gas in the next decade, it may already find itself in a favorable position to negotiate with many countries around Gas exports through pipelines as soon as the Lebanese gas is operational. This is likely to be the case even if gas exports do not begin by

the 1920s, because the expected increase in demand for natural gas in the Middle East [8].

The export options for Lebanon's pipelines are not limited to the Middle East Alone. Its proximity to Turkey, and therefore to the European markets, too The possibility of exporting Lebanese gas to the north, Turkish market and / or nutrition in pipeline options from regional sources Towards Europe. So, there are potential benefits can be multiple [1]:

– Turkey's explicit interest in becoming an energy center for pipeline gas awards Europe making it a potential major transit market for Europe Gas pipeline from the eastern Mediterranean as well as the Caspian Sea, thus providing a great opportunity for Lebanese gas to feed European Market;

– the cost of the gas pipeline to Turkey is much lower than the initial infrastructure to establish a LNG plant (as seen above in the pipeline discussion export options to the Middle East), especially as part of the pipeline Infrastructure (even the Syrian border) already exists, Also to be a commercially viable option even in the face less than expected natural gas reserves;

– pipeline options can complement Lebanese LNG in particular providing ample reserves for parallel export options as is currently being considered in Israel.

Therefore, many issues will determine the validity of this option through the time comes when the production of Lebanese gas. The Turkish and European demand for gas is an important source of uncertainty given the other supply group – pipelines and LNG options – that will appear on the horizon during early 2020. Not only demand for European gas fell in early 2000, but a number of planned pipelines projects Ranging from the south and blue to Nabucco, to the intensification of The North Stream pipeline, which was recently opened by Russia – all Compete for the European market share. This makes the south the corridor (which will feed the Lebanese gas) away from the completed deal.

The demand of the Turkish market may slow down, or the State may secure adequate supplies of gas from alternative suppliers by early 2020, these supplies could range from LNG to Israel.

Perhaps Cyprus, for new gas supplies from Iraq, and even from Iran as international sanctions eased recently pricing mechanisms, including Europe's accelerating moves towards gas-to-gas pricing under long-term contracts may eventually provide Small gas exporters more returns, perhaps less, returns. This is the issue is particularly acute for Lebanon, which retains its marine gas reserves May prove to be the highest cost of alternative European cost [1, 3].

Gas suppliers such as Russia, all these doubts raise the basic question about whether Turkish or European gas markets will be presented to Lebanon The type of proceeds you want for their gas exports, draw attention to LNG option.

Conclusion. Lebanon's road as a gas producer is a long and dangerous road with many doubts. In the next few years, the Lebanese government will be In front of the face of many complex decisions. Where one of these decisions relates in liquidating its gas reserves, assuming the success of future extraction operations. Size Reserves, timing of their development, and balance the use of gas to meet domestic demand and for export purposes, will it is ultimately determined whether Lebanon will be able to export gas. Discovery of small commercial gas resources can provide Lebanon has an opportunity to satisfy its homeland fundamentally And then marketing and developing small-scale exports to neighboring countries Turkey, Syria, Egypt and Jordan. In a more appropriate scenario if the acquisitions are more in line with the government's initial estimates Lebanon can finally adopt the export strategy for LNG, Taking into account different opportunities Limitations that LNG may face as Lebanon enters the market.

Significant uncertainty regarding the passage of relevant legislation, the response of companies initially interested to the delay of several years in the Lebanese bidding round means that Lebanon is still far from being able to plan future export earnings. With no solution to the continued political deadlock in Lebanon So far, as well as prospects for exploration in Lebanon at any time Soon it is still far away. By the time that Lebanon may be in a position to begin In production will face the country The dynamics of the regional and global gas market are very different from those we see today. This makes our discussion above indicative of the opportunities currently available if there is further delay in the direction of the extraction operations we will have more of lost development opportunities.

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