

HYDROCARBONS IN LEBANON

FEBRUARY 2014

HYDROCARBONS IN LEBANON

Hydrocarbons Discoveries in the Levant

Lebanon Offshore Hydrocarbons

Attractiveness of Hydrocarbons in Lebanon

Monetizing Hydrocarbon Resources

SWOT Analysis

Recommendations

Timeline of Events



CONTACT US

Banque Bemo sal

Asset Management Unit Riad El Solh Square Esseily Building - 7th Floor P.O. Box: 11-7048 Beirut - Lebanon Tel: +961 1 992705 www.bemobank.com

Subsidiary/Sister Bank

Bemo Securitization sal—BSEC

3rd Floor Bloc A Two Parc Av. Blg, Minet El Hosn Beirut - Lebanon Tel: +961 1 997998

Bemo Europe - Banque Privée

Luxembourg 18 Bvd Royal, L-2449 Luxembourg Tel: +352 22 63 211

Paris 63 Avenue Marceau 75116 Paris - France Tel: +33 1 44 43 49 49

Advisor: Mr. Salim Chahine Phd

Analyst: Mr. Ramy Saadeh

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EXECUTIVE SUMMARY

In his book “Hubbert's Peak: The Impending World Oil Shortage”, geologist Kenneth Deffeyes put forward a grim precept that oil production should have peaked by 2010. Deffeyes applied the once prescient Hubbert Law to argue that Oil production has ebbed. Other corroborators of the Hubbert’s Law, such as Jean Laherrere and Colin Campbell called for the peak of oil production between 2004 and 2010 according to their Book "The End of Cheap Oil".

However, recent hydrocarbons discoveries in the Levant challenge these conjectures. Scant explorations for the past generation in the Levant were counterbalanced by vigorous exploration campaigns subsequent to the U.S. Geological Survey findings. With estimates of 1.7 Billion Barrels of Oil, supplying the regional demand for the next 20 years, and 122 TCF everlasting supply of Natural Gas, the eastern Mediterranean region is undisputedly a game changer.

In light of these discoveries, the Lebanese authorities have conducted geological surveys covering more than two third of the 22,730 Sq. Km Lebanese Offshore Area. The “guesstimated” results by various sources indicate that the Lebanese hydrocarbon potential ranges between 25-35 TCF of natural gas and 440- 675 million oil barrels. As such, the Lebanese government commenced the process for its first licensing round opting for a transparent hybrid model, which was adapted from the Norwegian model and based on both the work program and the profit sharing. The Petroleum Administration approved a map dividing Offshore Lebanon into 10 blocks covering around 17,900 Sq. Km and 46 international companies pre-qualified for the bidding according to the criterion set by the authorities. Still, the governmental impasse continues to impede the progress as the block demarcation and the exploration and production sharing agreement necessitate legislative ratification.

Based on preliminary assumptions, the total take of the Lebanese Government could average 40% to 45% of gross revenue. In addition to area fees, royalties and taxes, the government take will include a pre-tax share of the profit petroleum according to a Profit Sharing Contract, thus mitigating corruption. Moreover, the government announced that it completed a Strategic environmental assessment framework in line with international practices and the Petroleum Administration established a unit dedicated to the quality, health, safety and environment concerns.

Nonetheless, the situation is not that straightforward. The lingering Exclusive Economic Zone border dispute with Israel entails great risks. The two countries quarrel over an 854 Sq. Km area that seems to enclose noteworthy hydrocarbon resources. Escalation of this dispute brings about not only the abstention of international companies from operating in the region, but also the perils of a collusion.

The hydrocarbons unearthing could imply positive spillover effects to the Lebanese Economy. Though, the plain assumption of increased wealth due to hydrocarbon resources presence is not that simplistic. Prudence, awareness and appropriate policies and investments erect the pillars of a solid economy and avoid the “Dutch disease”. The authorities bear the responsibility of channeling the funds to promote sustainable development, job creation, diversification and debt sustainability through a potential sovereign wealth fund.

The strategic position of Lebanon endows it with diverse export options; Hydrocarbons can be exported towards Turkey or Europe through pipelines or compressed Natural gas vessels, towards Asia through Liquefied Natural Gas tankers, or towards Syria and the neighboring region through electricity. However, abridging the Lebanese export options requires an exhaustive analysis of their viability and ensuing client base.

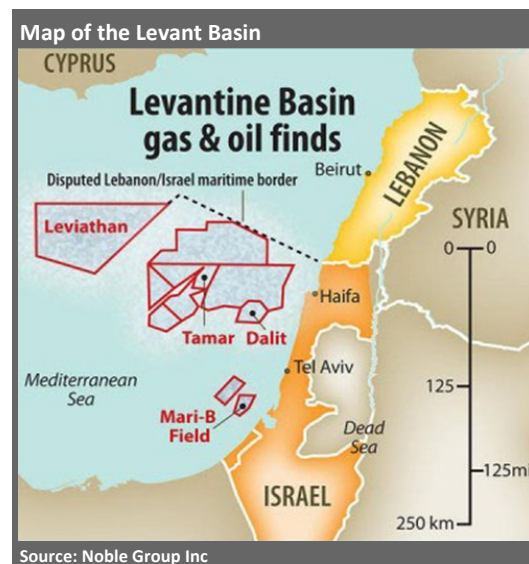
Experiences from Algeria, Nigeria, Morocco, Norway, the GCC, Cyprus and others could offer the Lebanese authorities diverse lessons to capitalize on the local resources. Minimizing bureaucracy, developing local skills and awareness are mainstays of success. However, it would be of utmost perspicacity to abstain from any conjecture and to refrain from erroneous investments as it is impossible to assess the authentic potential until exploration and drilling operations start.

HYDROCARBONS DISCOVERIES IN THE LEVANT BASIN

Depicted as a behemoth or even the sea-monster Leviathan, both divinely crafted creatures, the recent discoveries in the Levant Basin have considerably gained the center interest of the energy community. The eastern Mediterranean region encompassing Cyprus, Israel, Lebanon, Syria, and the Palestinian Territories is revealing mammoth gas and oil finds that has the propensity to saturate the growing regional energy demand while even spurring exports, radically altering the region's energy landscape.

The recent findings in the eastern Mediterranean region encompass eight noteworthy basins: Cyprus basin, Eratosthenes High, Latakia basin, Levant basin, Judea basin, Nile Delta basin, Western Arabian province, and Zagros province. Interestingly, and despite its successful development in Syria and minor attempts in Jordan and Israel, the Hydrocarbons sector in the region remained quite quiescent. For the past decade, the majority of the historical hydrocarbon production has been occurring in the Nile Delta Basin (within Egypt's territorial waters and a small area under Cyprus), the Western Arabian Province (large parts of Jordan and Syria), and the Zagros Province (which extends from Turkey to Iraq and Iran including Syria).

In a report published by the U.S. Geological Survey (USGS) in 2010, the Levant Basin Province was guesstimated to cover approximately 83 thousands Sq.Km2 of the eastern Mediterranean area. A geology based assessment approach for this area revealed an average of 1.7 Billion Barrels of technically recoverable oil and an average of 122 trillion cubic feet of technically recoverable gas. These findings in the Levant Basin are comparable to various other large provinces in the world; this even compelled the USGS Energy Resources Program Coordinator Mrs. Brenda Pierce to acknowledge the regions' gas resources to be bigger than anything assessed in the United States.



Although the unearthing chiefly consists of gas, there is good evidence to suggest considerable oil prospects in the basin. These allegations are well supported by recent discoveries of oil in the adjacent Nile Delta Basin and post tests of two old wells indicating approximately 800 bopd of light Jurassic oil. The vicinity of the wells to the edge of the basin makes it highly probable and reasonable to assume that the oil has migrated to the Levantine Basin. The region's Oil prospects, estimated around 1.7 Billion Barrels of Oil, would augment the region's proved reserves by north of 60%, meeting the regional demand for 20 years considering current levels of consumption. However, the natural gas potential, estimated at 122 TCF represents six folds the region's current proved reserves, providing regional supply ad infinitum.

In the light of these discoveries, regional developments in the Hydrocarbon sector were catalyzed momentarily. The corollary of a successful drilling campaign by the Noble-Delek group, which discovered three new large gas fields at Dalit, Tamar and Leviathan, sited the Levantine basin to become the focal axis for oil exploration. Accordingly, countries whose hydrocarbons exploration and development acquaintance remain in its infancy phase, namely Cyprus, Lebanon and the Palestinian Territory, are progressively pushing to build up their expertise and balance the exploration pace with neighboring countries.

Levantine Basin Province Assessment Results

Total Petroleum Systems (TPS) & Assessment Units (AU)	Field Type	Total Undiscovered Resources		
		Oil (MMB)	GAS (BCF)	NGL (MMB)
Levant Margin Reservoirs AU	Oil	857	1062	22
	Gas		5135	160
Levant Sub-Salt Reservoirs AU	Oil	548	679	14
	Gas		80758	2519
Plio-Pleistocene Reservoirs AU	Oil	284	351	7
	Gas		34393	353
Total Conventional Resources		1689	122378	3075

Source: USGS 2010

Middle-East Natural Gas Central Discoveries

Country	Date	Name	Reserves (TCF)
Cyprus	2011	Aphrodite	7
Israel	2000	Mari-B	1.5
	2009	Tamar	10
	2010	Leviathan	18
	2012	Tanim	1.2
	2013	Karish	1.8
Palestine	2000	Gaza Marine	1

Source: EIA Estimates

LEBANON OFFSHORE HYDROCARBONS

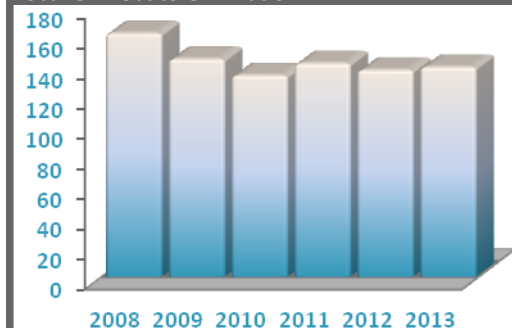
Hydrocarbons discoveries had brought pre-mature euphoria to Lebanon. The Lebanese economy suffers from USD 52.7 Billion net public debt as of November 2013, representing a debt-to-GDP ratio of nearly 140%. With one the highest debt-to-GDP ratios in the world, the Lebanese aspire to find in the Levant basin a revitalization Phoenix, similarly to the Cypriotes' Aphrodite and the Israelis' Leviathan. Strategically positioned in the Levant, with a total offshore area covering a total of 22,730 Sq. Km, Lebanon has contracted Spectrum and PGS Geophysical AS to conduct 2D and 3D seismic surveys whose data to the South and West suggested significant gas findings.

SEISMIC DATA

At the outset of the new millennium, The Ministry of Energy and Water has commissioned both 2D and 3D seismic surveys in preparation for the first offshore licensing round. In 1993, a limited area offshore northern was surveyed by Geco-Prakla, the Geophysical Company of Norway, acquiring 460km of 2D seismic lines. Subsequently, Spectrum gathered data including 2D seismic surveys which have been reprocessed along 3D seismic surveys in 2012 and 2013. New survey lines fell within licensing blocks 1, 3, 5 and 6 of the first Lebanese offshore licensing round as announced by the Lebanese government in its official round opening on April 30. Concurrently, PGS collected data including 2D seismic surveys which were complimented by several 3D surveys. Additionally, the MoWE has cooperated with PGS to further investigate the offshore petroleum potential giving a good regional understanding of the area, and covering attractive leads that are close to the Tamar, Dalit, and Leviathan discoveries in Israel. In Parallel, the MoWE hired the French consultant group Beicip-Franlab in 2011 to interpret more than 10,000 km of 2D seismic data and to prepare a regional interpretation report.

In total, the Lebanese government was able to assemble 14,012 Km of 2D seismic data and 15,176 Sq. Km of 3D seismic data, covering more than two third of the Lebanese Offshore Area. The compilation of these seismic data and modeling has provided a new and clearer understanding of the nature and potential of the hydrocarbons in the Lebanese EEZ.

Lebanon Debt to GDP Ratio



Source: World Bank, Bemo Research

Offshore Seismic Data

Year	Company	Type	Area (Sq. Km)
1993	Geco-Prakla	2D	460 Km
2000	Spectrum	2D	2738 Km
2002	Spectrum	2D	2000 Km
2006	PGS	3D	1516 Sq. Km
2007	PGS	3D	682 Sq. Km
2008	PGS	2D	5000 Km
2011	PGS	2D	3814 Km
2011	PGS	3D	1356 Sq. Km
2012	PGS	3D	1083 Sq. Km
2012	PGS	3D	2774 Sq. Km
2012	Spectrum	3D	3052 Sq. Km
2013	PGS	3D	2143 Sq. Km
2013	PGS	3D	326 Sq. Km
2013	Spectrum	3D	2244 Sq. Km

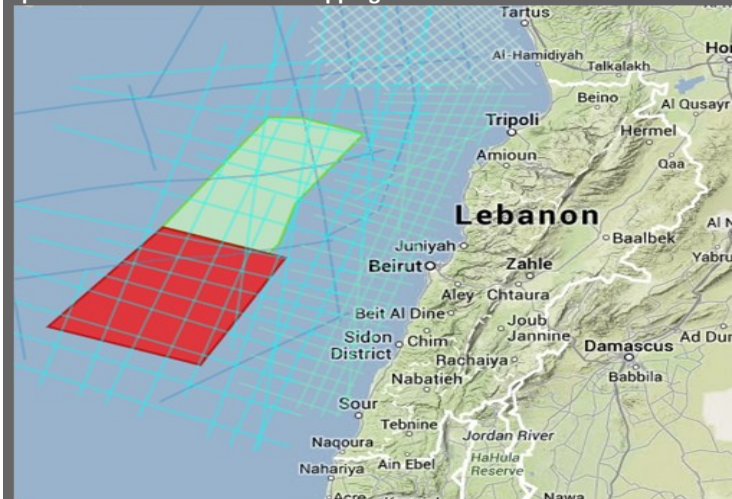
Source: Spectrum, PGS, MEW

Onshore Seismic Data

Year	Company	Type	Area (Sq. Km)
2012	Spectrum	2D	500 Km

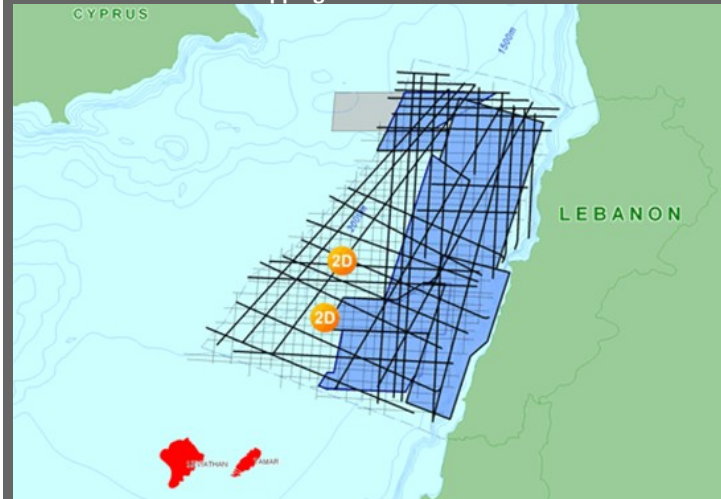
Source: Spectrum, MEW

Spectrum 2D & 3D Offshore Mapping



Source: Spectrum Seismic Data Library

PGS 2D & 3D Offshore Mapping



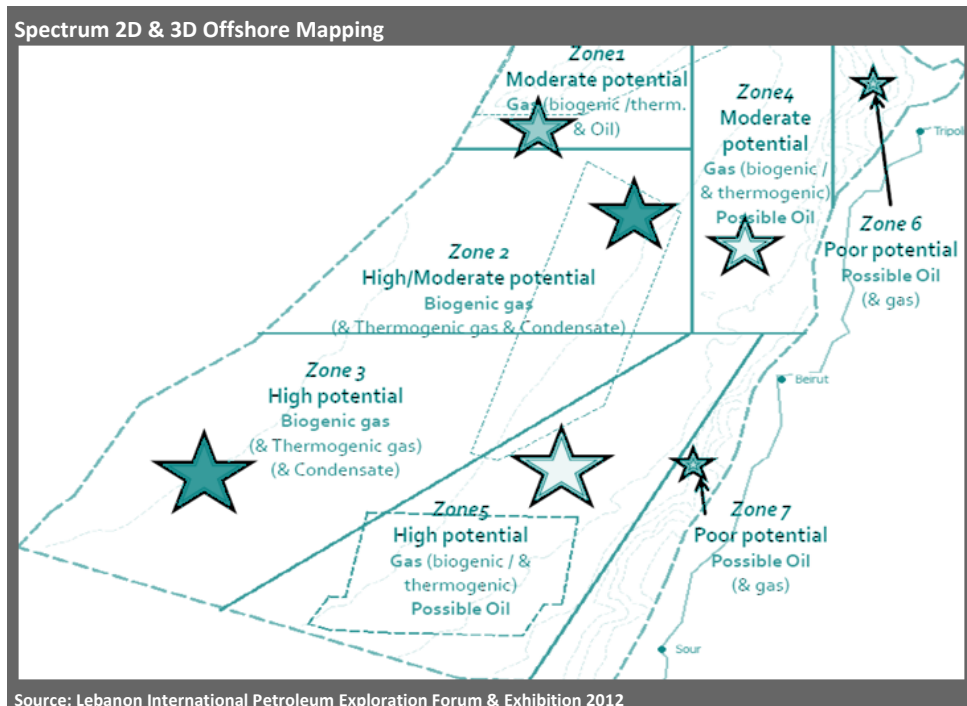
Source: PGS Seismic Data Library

LEBANON OFFSHORE HYDROCARBONS

HYDROCARBON POTENTIAL

The Lebanese government latest estimates reveal a potential exceeding 25 TCF of natural gas resources and into the hundreds of millions oil barrels located in its offshore territory. The early seismic results collected indicate that the resources in the southern sector of Lebanon's Exclusive Economic Zone (EEZ) alone could total 12 TCF. According to Mr. Wissam Chbat, board member of the Lebanese Petroleum Administration the estimated gas reserves sums up to 35 TCF.

Other estimates, including David Rowlands, chief executive of the British geological company Spectrum implied in September 2012 the presence of up to 25 TCF of gas and significant deposits of oil in the Lebanon's waters. Spectrum Findings also suggest greater potential. On the one hand, the survey did not cover the complete area and further scrutiny could insinuate new resources, and on the other hand, a single discovery for 12 TCF in Lebanon's EEZ was larger than the 6 TCF of gas announced in Cyprus' offshore bloc 12. This suggests there could be much more gas off the Lebanese coast. Additionally, Spectrum inferred the presence of on-shore oil reserves similar to Syria.



Another survey by the French consulting firm Beicip Franlab has indicated the existence of significant oil reserves in Lebanese territorial waters, specifically in the vicinity of Lebanon's northern maritime boundary with Cyprus and Syria. This discovery suggested oil reserves between 440 million and 675 million barrels, assuaging concerns over the potential.

In corroboration, the Lebanese Energy Minister Gebran Bassil announced that the current estimate, within more than 50% confidence interval, covering around 45% of the Lebanese waters has reached 95.9 TCF of gas and 865 million barrels of oil. Secretary General-Lebanon Member of the World Energy Council, Roudi Baroudi indicated that the estimation of Lebanon's offshore could produce up to 90,000 barrels of oil per day over the next 20 years. Under his model, the Foreign Direct Investment and production revenue based on USD 60/Barrel would gain Lebanon USD 3Billion/Year for 20 years, amounting to USD 60 Billion.

However, levelheaded observers and analysts remain dubious a propos the Lebanese offshore prospects. With a similar jubilation, the Israeli expected the Yam 3 reservoir to show significant signs of a hydrocarbon. Their findings were well supported by large international companies such as Shemen Oil and Gas Exploration, Caspian Drilling and Netherland Sewell and Associates Inc estimating 120 million barrels of oil with a net value exceeding USD 20 billion. However, after reaching 5,700 meters the drilling project tuned blackout as no oil was found.

Consequently, it would be of utmost perspicacity to abstain from the hydrocarbons prospects' conjecture and to refrain from erroneous investments as it is impossible to assess the authentic potential until exploration and drilling start.

LEBANON OFFSHORE HYDROCARBONS

FIRST LICENSING ROUND

Falling behind its neighbors, Cyprus and Israel, Lebanon announced on the 27th of December 2012 the first tender for oil and gas exploration for 1st February 2013. The Cabinet also set the 21st of March to publish the list of qualified firms and 2nd of May to receive formal applications.

The Lebanese government has decided on a transparent model for its offshore blocks bidding, other models would be less transparent such as direct negotiations or first-come, first-serve awards. Unlike the United States, namely Alaska, where Oil and Gas leases are awarded to the highest bidders, the Norwegian model awards leases to companies based on the company's experience and work plan to develop the field.

A Hybrid model, based on both the work program and the profit sharing, similar to the Cypriote Oil and Gas bidding practices, is the model to prevail in Lebanon. The evaluation of the tenders submitted by the interested energy companies and joint ventures is usually based on the total bid value which consists of the development plan and the profit sharing agreement. Other criteria include royalties, the company's liquidity, the level of technical competency in pertinent developments completed, the company's reputation, the environmental matters, etc.

In this respect, the Lebanese government has established a legal, technical and environmental framework for companies to pre-qualify before proceeding with the bidding. After pre-qualifying, companies are required to form consortiums of minimum 3 companies.

The three different types of Licenses identified by law are:

Reconnaissance: 3 years

Exploration: 10 years

Production: 30 years

The results of the first Offshore Licensing pre-qualification process, which opened on the 15th of February 2013 and closed 28 March 2013, were published on the 18th of April 2013. Lebanon's acting energy minister Gebran Bassil has announced that 52 firms from 25 countries have submitted applications for the pre-qualifying round for the country's offshore oil and gas. The firms are split between Operators and Non-Operators.

The firms were assessed individually on a set of eligibility criteria including:

- **Legal:** Joint Stock company conducting Petroleum Activities. This will allow any other entity to identify the consortium as a legal person.
- **Financial:** Total Assets of USD 10 Billion for Operators and total assets of USD 500 Million for Non-Operators. The purpose is to evaluate the company's financial strength and its capacity to sustain its oil and gas activities.
- **Technical:** Operatorship of at least one petroleum development in water depths to be in excess of 500m for operators and an established petroleum production for non-operators.
- **QHSE:** Quality Health Safety & Environment policy statement and appropriate management system.

The role of the Operators is to manage the day-to-day field operations on behalf of other right-holders including:

- The design and execution of the exploration program
- Well design, drilling, completion and production
- Engineering, infrastructure and facilities construction and maintenance
- Services and logistics
- Representing the consortium (joint venture of 3 companies)

The role of Non-Operators is to participate in the Managing Committee of the consortium along with operator and other right-holders providing:

Co-financing the project

Commercial and marketing activities

Technical input

Regulatory role

Successful companies will form consortiums of three joint venture companies. There will then be a six-month period of negotiation for companies to prepare their bids, with contracts expected to be signed subsequently. However, no agreements can be formally agreed until a new government is formed.



LEBANON OFFSHORE HYDROCARBONS

Out of the 52 companies that applied for pre-qualification, 46 had their applications accepted out of which 12 can bid as operators and 34 as non-operators. The formal licensing round began on the 2nd of May 2013, and the bidding process should conclude by the April 2014, with awards announced in March 2014. Excluding any further delays, development work could begin by 2016 and extraction in 2018. In February 2013, industry sources indicated that the Lebanese government would allow energy companies to operate in the country without Lebanese partners (previously, companies operated in conjunction with state-led companies).

The Petroleum Administration approved a map dividing Offshore Lebanon into 10 blocks covering around 17,900 Sq. Km (excluding a coastal buffer zone of 2 nautical miles). The Minister of Energy has submitted this map to the Council of Ministers for their approval. The suggested 10 Blocks disregards Israeli claims over a portion in the south of Lebanon's EEZ. The disputed maritime zone may overlap with offshore blocks for hydrocarbon exploration under Blocks 8 and 9 covering an area of more than 870 Sq Km.

Offshore Block Outlines

Block number	Area (Sq km)
Block 1	1,928
Block 2	1,924
Block 3	2,048
Block 4	2,030
Block 5	2,374
Block 6	1,721
Block 7	1,259
Block 8	1,400
Block 9	1,742
Block 10	1,475

Source: Lebanese Petroleum Authority

Offshore Blocks Map



Source: Lebanese Petroleum Authority

Oil companies will be given the opportunity up to April 2014 to nominate which of the blocks they would be interested to bid for. The MoEW has opened offshore blocks 1, 4, 5, 6 and 9 for exploration, and may make available the total of 10 blocks including some of the areas contested by Israel. Such nomination does not commit the relevant oil companies, but will be used by the MoEW and the PA to evaluate which blocks are of interest and determine which blocks should be put on offer during the first round. All the blocks will be open for bidding in the first phase, but only a maximum of four blocks will be awarded.

However, two pieces of legislation that need to be passed by the country's Council of Ministers remain necessary. The two legislations needed include the demarcation of the 10 offshore exploration blocks, and the terms of the exploration and the production sharing agreement between the companies and firms. The absence of these legislations is delaying the bidding process as no contracts can be agreed until the blocks are confirmed. Despite the absence of a government, the Committee of Legislation and Consultations ruled in August 2013 that it is within the power of the caretaker government to pass the legislations needed. Nonetheless, the two decrees essential for pursuing the first licensing round fail to be adopted by the Lebanese government, ensuing in the deferment of the bidding date.

Estimated Timeframe & Process

February – April 2013	Pre-Qualification
May – December 2013	Bidding Process
January 2014 – March 2014	Bid Evaluation
March 2014	Award

Source: LPA, Bemo Research

Accepted Operators

Anadarko International O&G	USA
Chevron EMEP Limited	USA
Eni International BV	Italy
ExxonMobil E&P Lebanon Ltd	USA
Inpex Corporation	Japan
MAERSK Olie og Gas A/S	Denmark
Petrobras Int'l Braspetro BV	Brazil
Petronas Carigali SDN BHD	Malaysia
Repsol Exploracion SA (REXSA)	Spain
Shell E&P (LXV) N.V.	Netherlands
Statoil ASA	Norway
TOTAL S.A.	France

Accepted Non-Operators

Cairn Energy Plc	Great Britain
Cairn India Limited	India
CC Energy Limited	Lebanon
Crescent Petroleum Int'l Ltd	UAE
Crescent Petroleum & Apex Gas	UAE/Lebanon
Dana Gas PJSC	UAE
Dana Petroleum E&P Limited	Great Britain
Dragon Oil	UAE
Edison International SpA	Italy
GDF Suez E&P International S.A.	France
Genel Energy Plc.	Turkey/Great Britain
GeoPark Holdings/Petroleb SAL	Bermuda/Lebanon
Heritage Oil Plc	Great Britain
INA-INDUSTRIJA NAFTE, d.d	Croatia
Japan Petroleum Exploration	Japan
JX Nippon Oil & Gas Exploration	Japan
KOREA GAS CORPORATION	South Korea
Korea National Oil Company	South Korea
Kuwait Foreign Petroleum	Kuwait
LUKOIL Overseas Lebanon B.V.	Russia
Marathon oil	USA
MDC Oil and Gas Holding LLC	UAE
Mitsui E&P Middle East B.V.	Japan
MOL Hungarian Oil and Gas Plc	Hungary
OAQ Novatek & GPB Global	Russia
OMV AKTIENGESSELLSCHAFT	Austria
ONGC Videsh Limited (OVL)	India
Petroceltic International Plc	Ireland
PTT E&P Public Ltd	Thailand
Rosneft Oil Company	Russia
Santos Limited	Australia
SOCO International PLC	Great Britain
Suncor Energy Inc.	Canada
Turkiye Petrolleri Ortakligi	Turkey

Source: LPA, Bemo Research

LEBANON OFFSHORE HYDROCARBONS

THE OFFSHORE PETROLEUM RESOURCES LAW & PETROLEUM ADMINISTRATION

In January 2011 the Lebanese Parliament enacted the Offshore Petroleum Resources Law # 132 dated 24/8/2010 providing the legal framework for the exploration and exploitation of offshore oil and gas resources in Lebanon; The OPRL was supplemented by a number of decrees (7968 dated 7/4/2012 The Petroleum Administration; 5818 dated 13/6/2011 Formation of Government; 9438 dated 4/12/2012 Appointment of the PA). The Hydrocarbon Law further grants the Council of Ministers the right to establish a national oil company once the existence of promising commercial opportunities has been confirmed.

In November 2012, the Lebanese government appointed the first list of the Petroleum Administration board members:

- Wissam Chbat as Head of Geology and Geophysics
- Gaby Daaboul as Head of Legal Affairs
- Nasser Hoteit as Head of Technical and Engineering
- Asim Abu Ibrahim as Head of quality control, health, safety and the environment
- Walid Nasser as Head of Strategic Planning
- Wissam al-Zahabi as Head of Economic and Financial Affairs

Article 10 of the OPRL stipulates the main responsibilities of the Petroleum Administration as follows:

- Conducting studies to promote the Lebanese Petroleum Potential
- Reporting to the Minister about the assessment of qualifications and capabilities of applicants and applications for Petroleum Rights
- Draft invitation for bids, conditions for applications, model exploration and production agreement and appurtenant licenses and agreements in accordance with the OPRL.
- Assisting the Minister in negotiating Exploration and production agreements and submitting reports on results of negotiations to the Minister to enable the Council of Ministers to take the final decision.
- Managing, Monitoring and supervising Petroleum Activities and the proper implementation of licenses and agreements, and in this regard submit quarterly reports to the Minister for approval.
- Evaluation of plans for development, Transportation and cessation of Petroleum Activities and decommissioning of Facilities
- Management of Petroleum Activities data
- Keeping and managing the Petroleum Register.

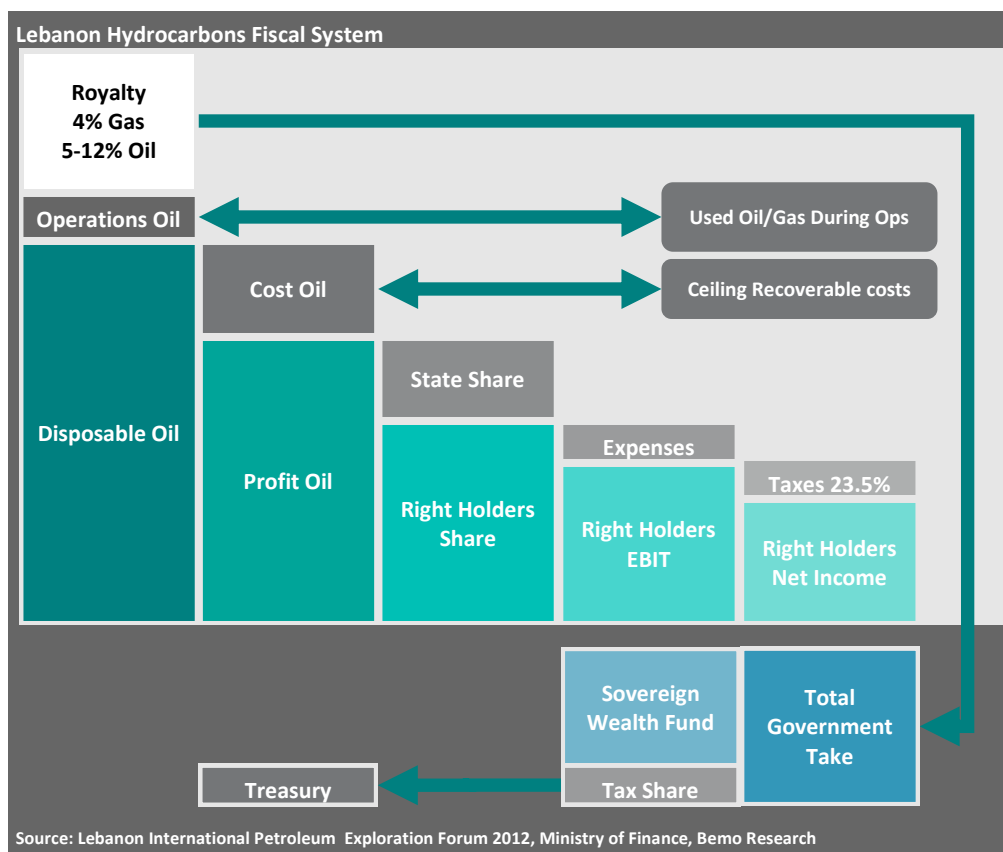
LEBANON OFFSHORE HYDROCARBONS

FISCAL & TAXATION REVIEW

The Lebanese Government, namely the Ministry of Finance, has contributed in drafting and reviewing the Offshore Petroleum Law and decided on applying the Lebanese Tax Regulation on the right holders as indicated in article 45 of the OPRL: “Petroleum Activities and Petroleum Rights pursuant to this law which are conducted in Lebanon and its Waters shall be subject to Lebanese tax as stipulated by applicable law”.

As a result, under an E&P (exploration and production) agreement, each contractor is considered a taxpayer in respect of its own taxable activities and subject to Lebanese tax law similarly to any Lebanese joint stock operating in Lebanon.

Additionally, the MoF was able to identify the State’s share and the Petroleum entitlements and fees. The Total government take will be composed of Area fees, Royalties, Pre-Tax Profit Petroleum Share according to a Profit Sharing Contract and Taxes. The Profit Sharing Contracts structure is the established in the countries neighboring Lebanon and it is more politically acceptable while developing local expertise. This structure mitigates corruption and offer companies access to international legal and judicial systems. The total government take will be split between the Sovereign Petroleum Wealth Fund and the Treasury share of Taxes. According to Globaldata analyst, the total take of the Lebanese Government could average 40% to 45% of gross revenue.



Area Fee

According to Article 41/Chapter 6 of the OPR Law, right holders shall pay an area fee for the block covered by an exploitation and production agreement from the first year following the expiry of the Exploration phase indicated in the E&P Agreement. The Area fee will be determined on the basis of a decree by the Council of Ministers, and will be progressive and calculated by the Sq. Km. As indicated in the LPA regulation, the first year Area fee shall be 350 US Dollar/ km² and 400 US Dollar/ km² in the second year with the acreage rounded off to the nearest km² and paid to the Lebanese Treasury in advance for each year.

LEBANON OFFSHORE HYDROCARBONS

Royalties

As for the entitlements, Article 42 stipulates that Petroleum extracted from a Reservoir in an E&P Agreement shall be split into Royalty, Cost Petroleum and Profit Petroleum, where each right holder contributes relatively to his participating interest share. The State has the right to collect royalties in cash or in kind on all petroleum extracted from a reservoir, except for petroleum re-injected in a reservoir within the same E&P agreement. Royalties taken in kind shall be delivered at no cost to the State at the point of delivery stipulated in the plan for Development and Production. At all times, the amount of the royalty due to the state is determined by the Council of Ministers with reference to the quantities and prices of oil and gas.

For the calculation of Royalties, which will be calculated on daily basis, the volume of Crude Oil and other Petroleum extracted shall be measured separately at the outlet of first separator and at the point of delivery as stipulated by the approved plan for Development and Production, with the point of delivery value being the base for calculation.

The Royalty rate for Crude Oil shall be assessed on the basis of escalating rates linked to the quantity of extracted oil. The schedule of escalating rates shall be set out in the E&P Agreement. The Royalty rate for other Petroleum than Crude Oil shall be a fixed percentage defined in the E&P Agreement. The Lebanese government will collect royalties at a rate of 4% for natural gas and 5-12% for crude oil production, as mentioned by Will Scargill, a GlobalData's upstream fiscal analyst.

Petroleum that is released, discharged, vented or flared shall be metered and subject to Royalty or estimated by the Ministry and the PA and subject to Royalty.

Disposable Petroleum, Cost Petroleum & Profit Petroleum

Disposable Petroleum is calculated quarterly on the basis of volumes extracted from all Reservoirs within a single E&P Agreement Area at the point of extraction.

Cost Petroleum is equivalent to a percentage of Disposable Petroleum stipulated in the bid invitation for exclusive E&P rights.

Profit Petroleum is the share of each contractor and the state in the extracted petroleum after deducting cost petroleum.

State Share & Right Holders Share

The method of calculation and allocation of Profit Petroleum shall be stipulated by a Council of Ministers Decree on the basis of a proposal by the Minister based upon the opinion of the Petroleum Administration as indicated in Article 44 of the OPR Law.

The Profit Petroleum shall be shared between the State and the Right Holder according to a scale varying with the value of the R-Factor, where the R-Factor is linked to the quarterly cumulative cash inflows and the quarterly cumulative capital expenditures i.e. the ratio of revenues to expenditure. The method of calculation of the R-Factor shall be specified in the Exploration and Production Agreement. Accordingly, the State Share will contribute to the total government take whilst the Right Holders Share will be subject to Taxation.

R-Factor Calculation & Profit Sharing Structure				
		R-Factor 3.0 Model		
		Market Price: USD 100/bbl		
		Royalty: 10%		USD 10.00
		USD 90/bbl		
USD 20.00		Cost Recovery: 100%		
		USD 70 USD/bbl		
		Profit Share (R-Factor)		
		90%	1.0	10%
		80%	2.0	20%
USD 45.50		65%	3.0	35%
		50%	4.0	50%
		40%	>4.0	60%
		Corporate Tax: 23.5%		
USD 65.50		Gross Revenue		USD 42.725
USD 57.275		Net Revenue		USD 42.725
57.27%		Total Share		42.725%

Source: Adapted from Bindermann, Bemo Research

Taxes

As stipulated under Article 45 of the OPR Law, Petroleum Activities and Petroleum Rights pursuant to this law which are conducted in Lebanon and its Waters shall be subject to Lebanese tax as stipulated by applicable law. Currently, the standard corporate tax in Lebanon stands at 15%, and foreign companies will also bear an additional 10% Branch remittance tax, enduring a total of 23.5% in direct taxes. However, the Ministry of Finance proposed amendments to the tax laws in order to create tax incentives that coincide with the proposed profit sharing agreement.

Audit

The Petroleum Administration may at any time audit the Operator and the Right Holder in order to verify information submitted in relation to measurement, calculation, valuation for the settlement of Area fees, Royalty, cost recovery and profit entitlement or in relation to any other required reporting to the Minister or to the Petroleum Administration.



LEBANON OFFSHORE HYDROCARBONS

ENVIRONMENTAL MANAGEMENT & IMPACT

The environmental protection related to the hydrocarbon industry received focal awareness from the Lebanese Government and became an integral part of the development process. The importance of the environmental impact of the hydrocarbon industry has gained pace after passing the Petroleum Law 132 in August 2010. The Law provides a framework for environmental safety consistent with the Barcelona Convention which states that all parties to the convention should take all appropriate measure to prevent, abate and combat pollution of the Mediterranean Sea resulting from exploration and exploitation of the continental shelf and the seabed and its subsoil, the law is equally in accordance with the Lebanese Law 444 (08/08/02) presenting the Framework Law for Environmental Protection in which Article 4 emphasizes the principle of Environmental Impact Assessment as a tool for planning & management and Article 21 stipulates that private and public proponents must undertake an environmental assessment for all projects which are likely to affect the environment due to their sizes, nature, impacts or activities.

The Lebanese Offshore Petroleum Resources Law mentions that “the State shall conduct a Strategic Environmental Assessment SEA prior to any petroleum rights being awarded or petroleum activities initiated”. An SEA has been defined as ‘the formalized, systematic and comprehensive process for evaluating the environmental effects of a public policy, plan or program and its alternatives, in order to ensure they are fully included and appropriately addressed at the earliest possible stage of decision making on par with economic and social considerations’.

Accordingly, and in line with the environmental protection conditions Article 7 of Law 132/2010 the government completed the Strategic environmental assessment completed in May 2012 organized in 8 volumes. In addition, the Petroleum Administration established a unit dedicated to the quality, health, safety and environment concerns.

The prioritized items that must be followed up and completed by the Quality, Health, Safety and Environment Unit of the Petroleum Administration are:

Development of Quality, Health, Safety, Environment (QHSE) standards and legislation:

Lebanon must have a HSE regulatory framework and clear institutional enduring adequate protection. The Lebanese Government must officially adopt the framework, the Environmental Impact assessment (EIA) decree and other environment decrees.

National Contingency plan

Lebanon has drafted a National Contingency Plan covering natural disasters and foreign invasions. The Plan must be finalized in consensus with all partners through the assignment of the roles and responsibilities of the different public institutions (Internal security forces, MoEW, MoE...) and the identification of equipment and resources needed.

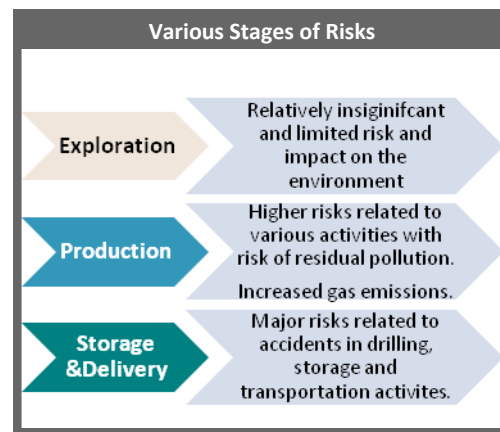
Environmental Awareness raising and Capacity Building in HSE for all concerned public institutions

The Lebanese Government should reconsider the offshore ecosystems along the coast of Lebanon, identify sensitivity hotspots and determine the most appropriate methods to the creation of Marine Protected Areas, strengthening existing marine environment regulations, training of concerned institutions...

Environmental baseline data collection and database creation

Operators will carry out comprehensive environmental and social impact assessment (ESIA) as a condition of any Block Licenses they acquire and also to meet the Lebanese legal requirements. The Lebanese Government should carry out surveys and complete any existing data gaps.

Various Environmental Impacts			
Social impact	Atmospheric impact	Aquatic impact	Terrestrial impact
E&P operations could induce changes in direct land use patterns, such as agricultural, fishing and indirect patterns such as new access routes. Furthermore, it might alter the demography as a result of immigration or internal migration. The E&P operation could also create income differentials and increase inflation.	The atmospheric damage is highly mitigated as worldwide authorities has prompted hydrocarbon E&P companies to minimize emissions arising from flaring, venting to purging gases and combustion.	The E&P operations progressively (From exploration to Production) produce aqueous waste related to drilling fluids, spills and leakage and others.	The E&P operations potentially impact the soil due to disturbance as result of construction, contamination from spillage and leakage or waste disposal.



LEBANON OFFSHORE HYDROCARBONS

LEBANON-ISRAEL BORDER DISPUTE

In the aftermath of the Eastern Mediterranean hydrocarbon discoveries, specifically in August 2010, the Lebanese government presented a chart of geographical coordinates defining the western, northern and southern limits of its Exclusive Economic Zone to the UN. Although the Lebanese official view regarding maritime border acknowledged the Tamar and Leviathan gas fields to be outside its territory, it argued that other prospective fields in the region may be within Lebanese territory.

In its official memorandum presented to the UN, the Lebanese government underlined its accordance with the United Nations Convention on the Law of the Sea, to which Lebanon acceded by virtue of Law No. 295 of 22 February 1994 and with the provisions of the Paulet Newcombe agreement of 3 February 1922, which entered into force on 10 March 1923, delimiting the southern border of Lebanon from Ra's Naqurah. It indicated that the baseline of the southern Lebanese coast was delimited using the admiralty nautical chart No. 2634 (Beirut-Gaza) and No. 183 (Ra's at Tin to Iskenderun) both produced by the United Kingdom Hydrographic Office and a chart produced by the office of geographic affairs of the Lebanese armed forces command. In respect to these documentations, Lebanon's EEZ was determined as the median line every point of which is equidistant from the nearest point on the baselines of Lebanon and Israel.

Lebanese Official Border Delimitation presented to the UN



Source: United Nations

In July 2011, Israel retorted by submitting its own official position on the delimitation of the border between the countries to the UN and objected on Lebanon's unilateral positions on both legal and cartographic grounds. Israel disputed that the 1923 Paulet-Newcombe Agreement, on which the Lebanese argument is found, is few meters away from the coast and never actually set a point on the coast between Britain and France adding that there is no agreed, signed map or set of coordinates attached to the Israel-Lebanon 1949 Armistice Agreement. Moreover, Israel claims that its submitted border should be accepted because Lebanon has already agreed in 2007 to the western point in its earlier accord with Cyprus.

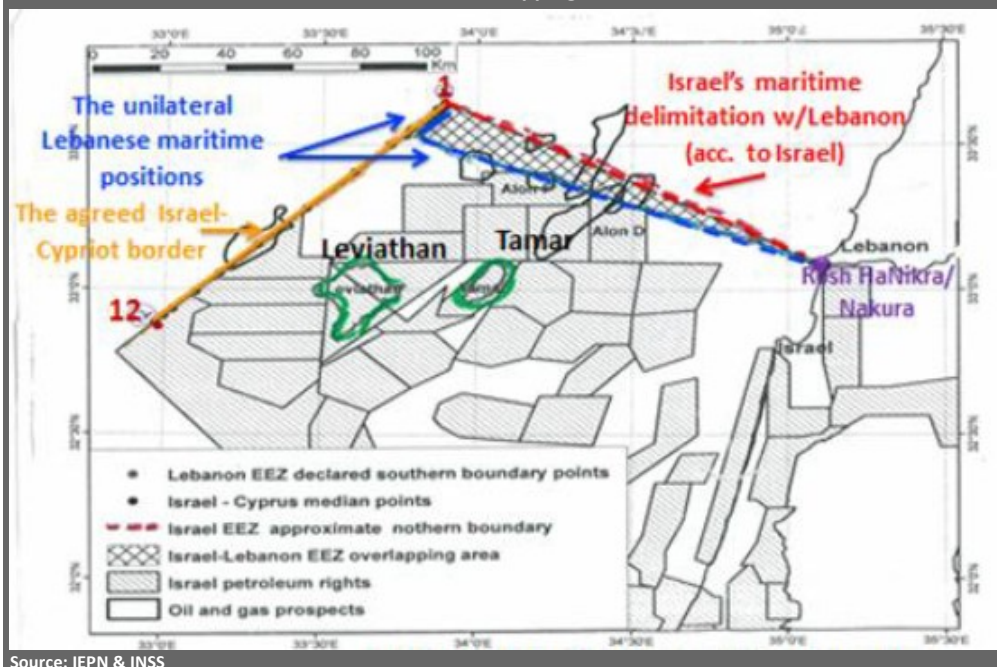
In 2007, Lebanon and Cyprus reached a covenant in respect to their EEZ in which Lebanon recognized the end of its southern EEZ at point (1) and the end of its northern EEZ at point (6), though they left a line of 17 Km from the South to what is referenced as point (23). This agreement purposed an interim solution between the two countries and lingers ungratified by the Lebanese parliament. In 2010, Israel reached another agreement with Cyprus using Point (1) as the northern most limit of its EEZ, confiscating 17 Km of the Lebanese maritime border.

As result, the disagreement with Israel derives from the angle of the line drawn from Ras al-Naqoura toward the Cyprus EEZ. Lebanon argues it should be drawn towards point (23) while Israel alleges it should be drawn towards point (1). The resultant disputed area is 854 sq. Km in the shape of a triangle.

LEBANON OFFSHORE HYDROCARBONS

However, a clause in the agreement clearly stipulated that in consideration of article 74 of the United Nations convention on the Law of the Sea of 10th of December 1982, the geographical coordinates of point (1) and (6) could be reviewed and/or extended and duly revised as necessary in light of future delimitation of the EEZ with other concerned neighboring states. It also stipulates that if any of the two Parties is engaged in negotiations aimed at the delimitation of its EEZ with another State, this Party, before reaching a final agreement with the other State, shall notify and consult the other Party, if such delimitation is in connection with coordinates (1) or (6).

Lebanon and Israel Exclusive Economic Zone Overlapping Area



Source: IEPN & INSS

Lebanon contested the Cypriote-Israeli agreement by communicating their objection and claiming their rights in accordance with the UN demarcation and their rights stipulated in their 2007 agreement with Cyprus.

Throughout this dispute, Israel and Lebanon have abstained from direct or even indirect negotiations to reconcile the maritime incongruity. Nevertheless, it has been reported that Cyprus is attempting to mediate between the countries since a regional stability has the propensity to attract investors and promote joint exploration ventures. Further efforts were conducted by the United States proposing the establishment of a “maritime Blue line” similar to the U.N. drawn Blue Line to demarcate the maritime border while recommending to keep the disputed zone not exploited by any of the two countries until the demarcation ends.

ATTRACTIVENESS OF HYDROCARBONS IN LEBANON

POLICY PERCEPTION INDEX

Fraser Institute developed country rankings according to assess Hydrocarbons attractiveness based on a Policy Perception Index, which captures the perceptions of managers and executives regarding the level of investment barriers on a range of factors and conditions affecting investment decisions as well as capturing a wide range of energy policies. A large score on this measure indicates that investors regard the country as relatively unattractive for investment. According to this index, Lebanon ranked the 88th out of 157 members in 2013, while it held the 71st rank among 147 members in 2012. Amongst its neighboring countries, Lebanon is ranked 12th in relative attractiveness for investment. The report cited various inopportune dynamics that mar hydrocarbons exploration and production. Unfortunately, even though the report abstained to mention any observation on Lebanon, the comments attributed to other regional countries could provide a caveat to the Lebanese authorities.

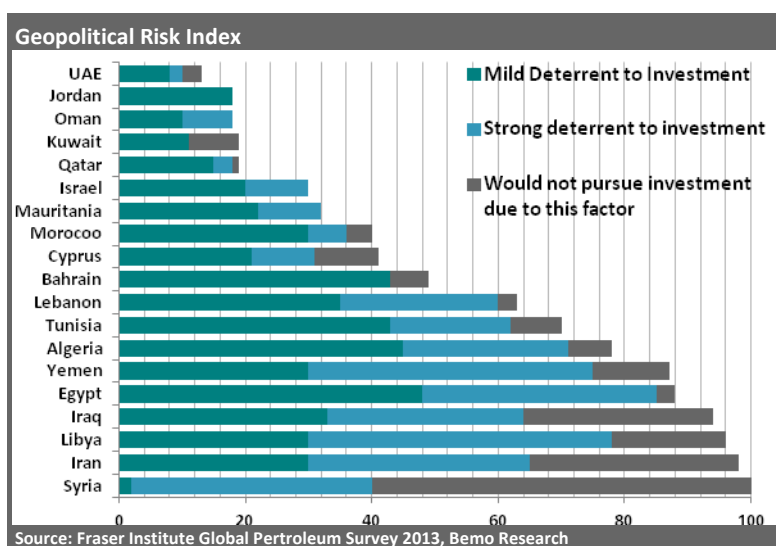
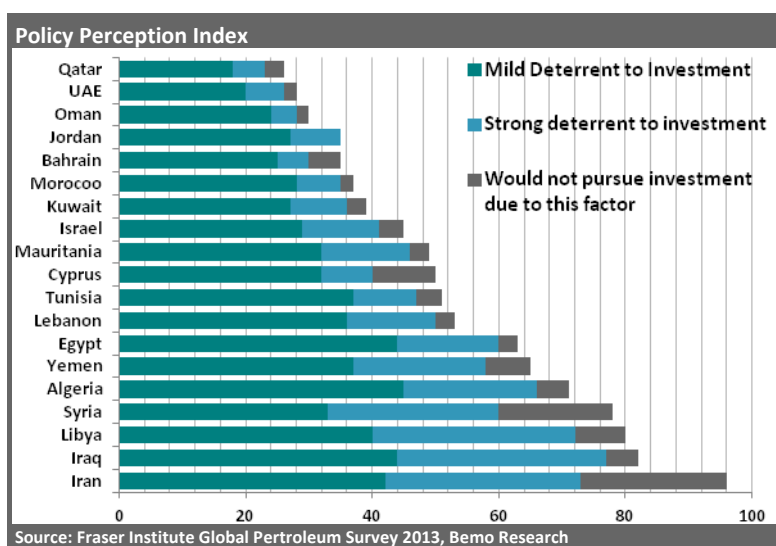
The Lebanese Tax on hydrocarbons E&P, which is subject to future amendment, could be uninviting for international companies as is the case in Algeria which imposes a punitive fiscal regime. According to EY global oil and gas tax Guide, Algeria's normal royalty rate is at 20% that could be reduced according to the Zones and companies face a 38% income tax burden along an additional profits tax and surface tax.

The Israeli milieu for oil and gas production, akin to the Lebanese setting, is off-putting companies due to political instability, anti-business setting, high and slow bureaucracy, lack of knowledgeable regulatory authorities and lack of experienced oil and gas professionals. The causality of the feeble sentiment in E&P Companies conducting business in a region where both Kurdistan and Iraq claim sovereignty is analogous to the Lebanese-Israeli border dispute.

The absence of government and legislation authority in Lebanon sends dreadful signals on the country's ability to ascertain an approval process and enforce time limits; such is the case in Tunisia.

GEOPOLITICAL RISK INDEX

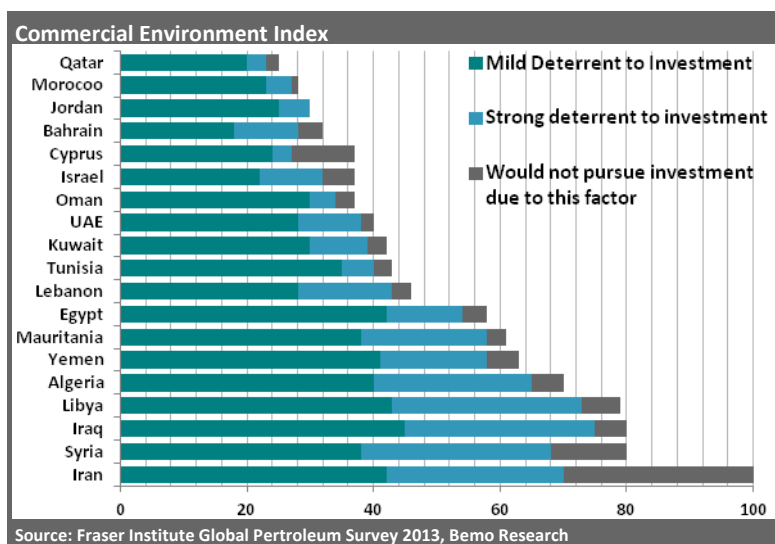
The geopolitical risk index assesses the political and security risks that could threaten the physical safety of personnel or present risks to an investor's facilities. Lebanon is ranked 11th amongst the 19 bordering countries in the Middle East, with the addition of Cyprus. Lebanon is slightly shy from the ominous risks witnessed in the countries that underwent political upheavals in the light of the Arab Spring. The United Arab Emirates tenders the ultimate sheltered environment between the countries surveyed followed by Jordan and Oman; Unsurprisingly, Syria is the most susceptible to deterrence from companies due to the prevailing fanatical civil war.



ATTRACTIVENESS OF HYDROCARBONS IN LEBANON

COMMERCIAL ENVIRONMENT INDEX

Qatar tops the ranking as the most commercially attractive country, followed closely by Morocco and Jordan. Lebanon is ranked the 11th, in the vicinity of Tunisia and Kuwait, while Iran is ranked at the bottom chiefly due to risk of a breakdown in negotiations over the country's nuclear program and deterioration of its relations with the West. The illustration of the Iranian case is of utmost importance to highlight the implications of a quarrel with western countries and the absence of a leadership with a capacity to circumvent and mitigate possible sanctions adding constraints on a country's ability to monetize its hydrocarbon resources. The commercial environment Index accounts for taxation, quality of infrastructure, trade barriers and labor availability and skills.

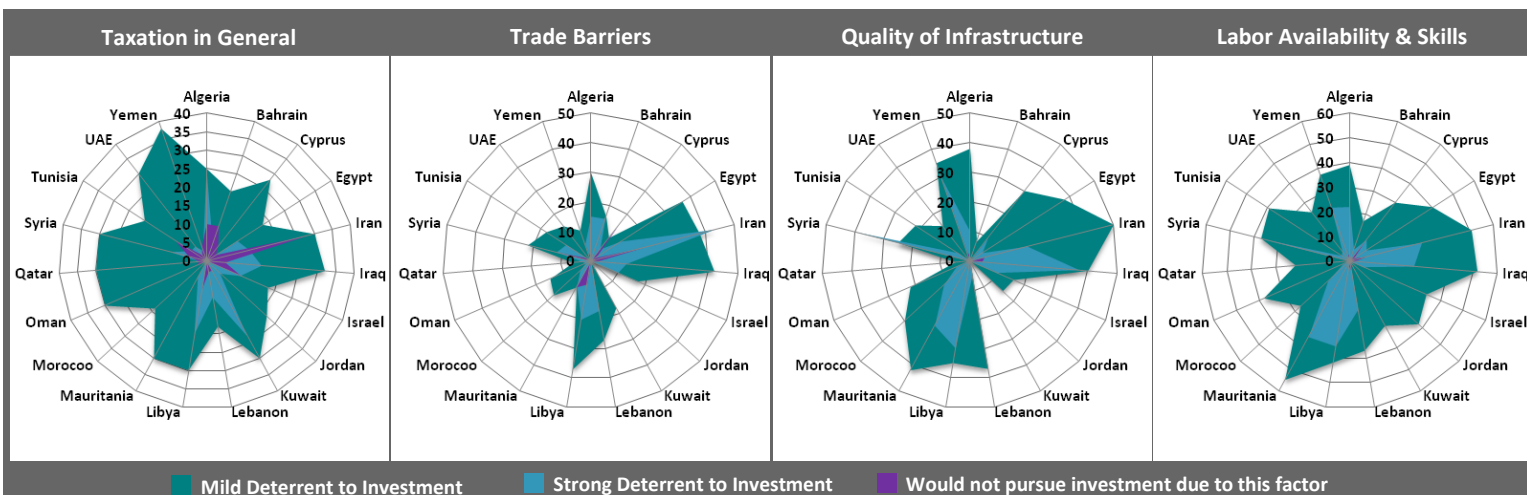


The general context for E&P companies from a fiscal standpoint remains attractive in Lebanon, which ranks 4th amongst peer countries. However, the Lebanese petroleum administration remains keen on proposing a new Tax Law to further create incentives for companies. Morocco offers companies the most attractive taxation scheme with an exemption from corporate tax for a period of ten consecutive years, while Algeria and Iran presents higher rate of deterrence to investment due to their punitive fiscal regime.

The quality of infrastructure is preeminent in Kuwait, ranking at top spot and followed by Qatar and Bahrain. Lebanon seizes the 9th rank with Morocco, with a milder deterrence to investment due to lower infrastructure quality. Iraq struggles with the lowest quality of infrastructure in the countries observed, with Iran Syria and Yemen presenting respectively slightly improved quality.

In addressing trade barrier concerns, Lebanon is pulled to the 13th rank followed by Syria and Algeria. Trade barriers were indicated to be of no or little concern in Jordan, Qatar and the UAE. However, Iran, obviously, is bottom ranked as a corollary of the western oil embargo.

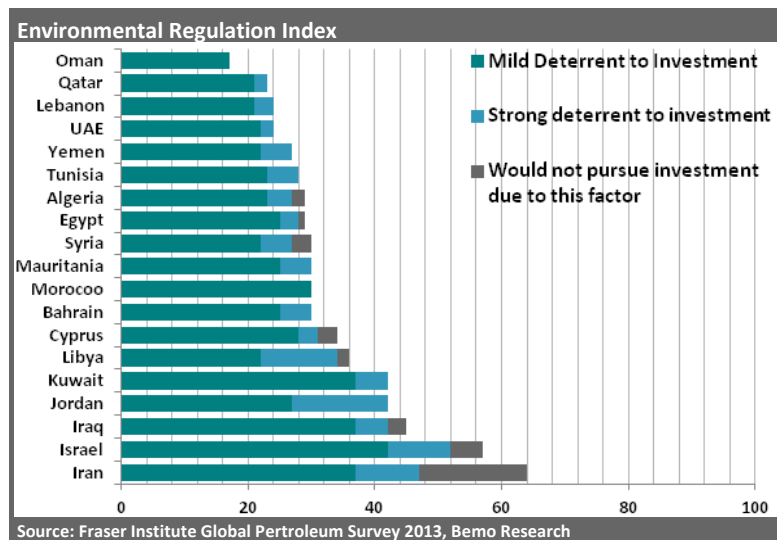
The top 3 attractive countries in the pool monitored are Qatar, Bahrain and Kuwait. Lebanon controls the 12th rank, well below Israel and Cyprus, which were both brought to the hydrocarbon industry concurrently with Lebanon. This emphasizes the need of the Lebanese authorities to satisfy this deficiency in the availability of adept labor through university programs, workshops and external assistance.



ATTRACTIVENESS OF HYDROCARBONS IN LEBANON

ENVIRONMENTAL REGULATION INDEX

Uncertainty regarding environmental regulations is of least concern in Oman, Qatar and Lebanon, which ranks 3rd amongst the 19 countries observed. Lebanon has launched its Strategic Environmental Assessment (SEA) in May 2012 as guide to the government and the Petroleum Administration on the potential environmental impacts of any extraction, ranging from air pollution to more catastrophic scenarios such as spillage. Proper environmental standards took center stage in the Lebanese Petroleum administration agenda, dedicating a unit for Quality, Health, Safety and Environment in the PA. These practices are less stringent in Lebanon's current contenders such as Cyprus and Israel, with the latter presenting significant menace of deterrence to investment due to environmental practices just before Iran, as indicated in the Institute's report.



MONETIZING HYDROCARBON RESOURCES

The Hydrocarbons industry could make enormous contributions to the Lebanese Economy. The industry has widespread economic impact throughout all sectors resulting directly from the production of hydrocarbons and indirectly through investment in the value chain of the industry. Though, the plain assumption of increased wealth due to hydrocarbon resources presence is not this simplistic; prudence, awareness and appropriate policies and investments erect the pillars of a solid economy. According to a 2009 American Petroleum Institute (API) report, the indirect economic impact of investments throughout the supply chain of the hydrocarbons industry in the United States surmounted those in the direct investment. Hence, investments in the value chain leads to sustainable development, job creation, economic growth and long term gains. Thus developing local capabilities and building a local skilled workforce are major milestones to maximize the return for the Lebanese economy.

GOVERNMENT REVENUE

The Lebanese government will benefit directly from hydrocarbons activities through imposing area fees, Royalties, Profit sharing contracts and taxes. These will increase the government revenues. However, high dependence of the government revenues on its resources could have negative and destabilizing effects on the budget due to uncertainty and price volatility. This inconvenience was witnessed in the 1980's *Zambian Crisis*, which depended highly on copper, where the economy contracted by more than 30%.

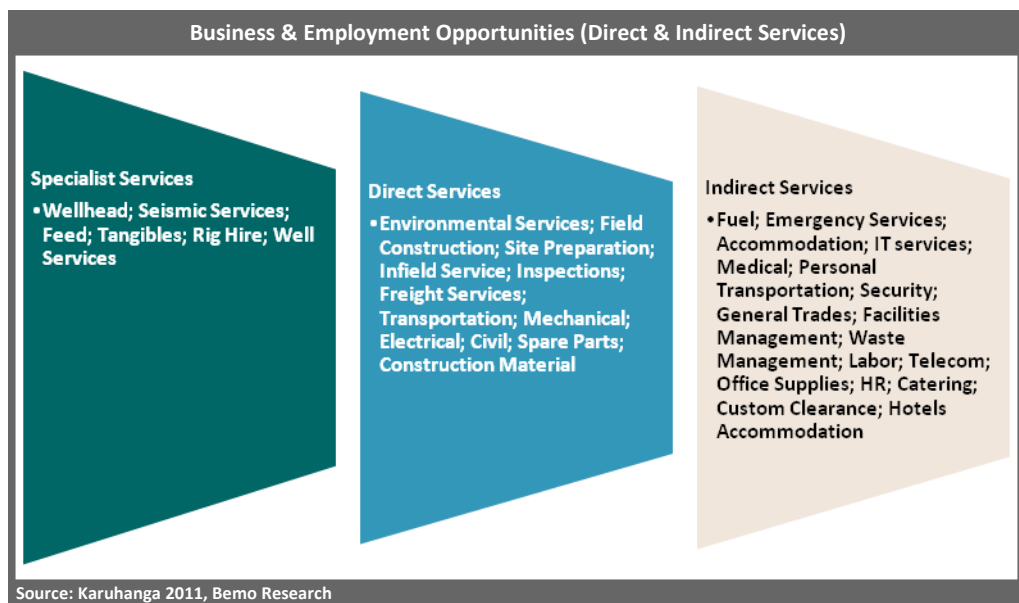
Lebanon has decided on adopting the Norwegian model channeling its hydrocarbons revenues into a sovereign fund. Based on a report published by the Oxford institute for Energy studies in May 2012 and which used the example of Chile and Norway, governments might follow a conservative approach, *the Bird in Hand Rule*. Under this approach, all the net cash flow received for the Hydrocarbons extraction and production were allocated to a Sovereign Wealth Fund, which would later diversify the investment of government revenues and reduce the impact of potential external shocks.

JOB CREATION

The Hydrocarbon industry, inherently contribute to the Labor market through its specialists services, direct services and indirect services stemming from its supply chain. The supply chain extends from the exploration phase, to the development process and the production and is complemented with the transportation, refining and marketing services.

The regulations and laws covering Hydrocarbons in Lebanon offer preferential opportunities for the Lebanese workforce. The Offshore Petroleum Resources Law Article 67(2) stipulates that Right Holders and subcontractors shall employ qualified personnel of Lebanese nationality whenever available.

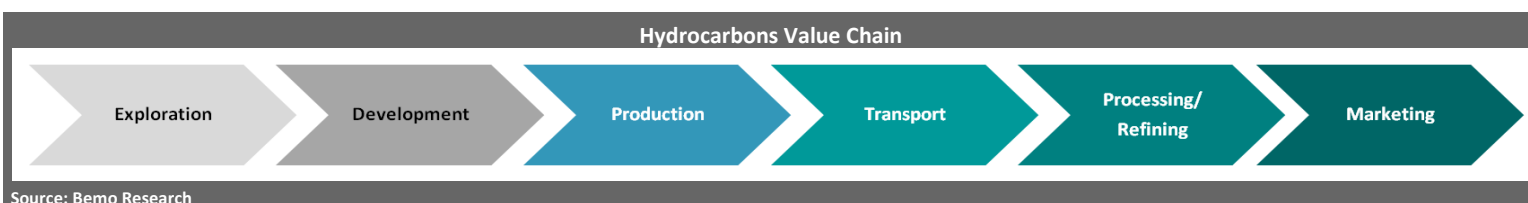
The Petroleum Activities Regulations Article 155 clearly mentions that Right Holders and contractors shall give priority to training of Lebanese in order to facilitate the employment of Lebanese at all levels. Furthermore, the petroleum administration's exploration and production agreement requires Lebanese employees to contribute to 80% of the total workforce. Therefore, developing local skilled workforce in coordination with academic bodies and technical institutions should invite the focal interest of the Lebanese community. Additionally, the industry will have spillover effects on a number of industries creating numerous employment opportunities in real estate development services, hotels and accommodation, insurance services, rental and leasing, financial services and others.



MONETIZING HYDROCARBON RESOURCES

INVESTMENT

The Laws and regulations give preferential rights for Lebanese goods and services, thus promoting Lebanese investments. The OPRL Article 67 (1) demand Right Holders and subcontractors to give priority to Lebanese persons in the award of contracts for construction of Facility and supply of material, goods and services related to Petroleum Activities when terms and conditions offered are equal to their competitors, the PAR Article 157 gives preferential rights for Lebanese originating goods and services when internationally competitive (quality, availability, price and performance). While the specialist services will be exclusive for the bidding companies, an array of business opportunities is accessible for the Lebanese investors. These ventures range from transportation, mechanical, electrical, telecom, HR, accommodation and other solutions in the direct and indirect services component of the supply chain.



INFRASTRUCTURE

Liquefied natural gas facility:

Lebanon has launched a tender for the construction of a liquefied natural gas (LNG) floating storage and regasification unit at Beddawi to supply up to 3.5m tons of LNG a year. Furthermore, the MoEW has commenced an assessment of the practicability of a coastal gas pipeline along offshore import terminals "Floating Storage Regasification Units" and refining facilities. The project covers a length of 173 Km with an expected completion time of 28 months, 19 companies have prequalified for the construction of the pipeline.

Port of Beirut:

The development of the port is necessary to allow Lebanon to accommodate the traffic and act as support center for offshore platforms. Furthermore, the development is strongly required should the country opt for the export options as competition amongst neighboring seaports will become more stern.

Rafic Hariri International Airport:

Development of the airline transportation capacities will be required to provide accommodation for inflow/outflow of workers and tourists. Lebanon as both a touristic and business destination will need to increase the capacity of its airport to avoid being congested and may even seriously consider creating another airport for business-related issues in the north of Lebanon.

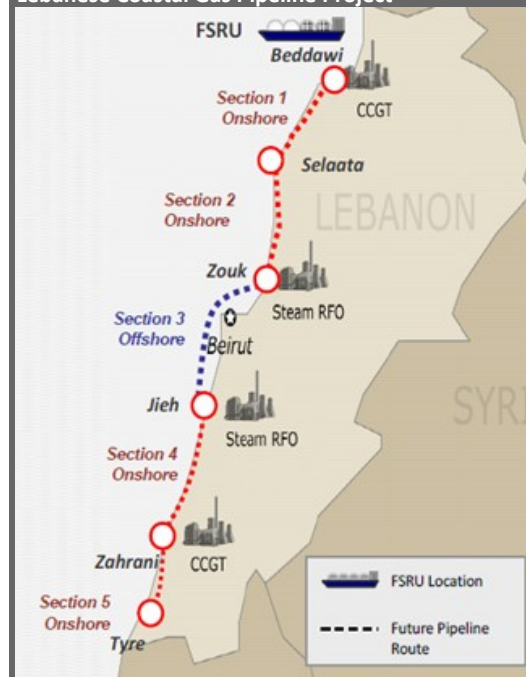
Lebanese Electricity and Power Generation Facilities:

Altering the adaption of power generation facilities from Gas Oil to Natural Gas could narrow the power supply deficit which currently exceeds USD 1.9 Billion per year. According to a report published by the Lebanese MoWE (Ministry of Water and Energy), the deficit increases relatively to rising fuel prices. With fuel prices at USD40/Barrel, the deficit is around USD 368 Million and it increases to USD 1.3 Billion at USD90/Barrel and reaches USD 2.2Billion if the fuel prices surges to USD140/Barrel. The high dependence of the Lebanese economy on imported energy along the deleterious impact of the Electricity deficit negatively affects the balance of payments. Undisputedly a shift of the energy model towards the locally extracted natural gas would absorb Lebanon's external shortfalls.

Industrial, transportation and utilities:

Natural Gas availability could attract energy intensive industries, replace gasoil in public and private transportation and be delivered to home utilization and heating where possible reducing greenhouse emission and reducing considerably the energy cost.

Lebanese Coastal Gas Pipeline Project

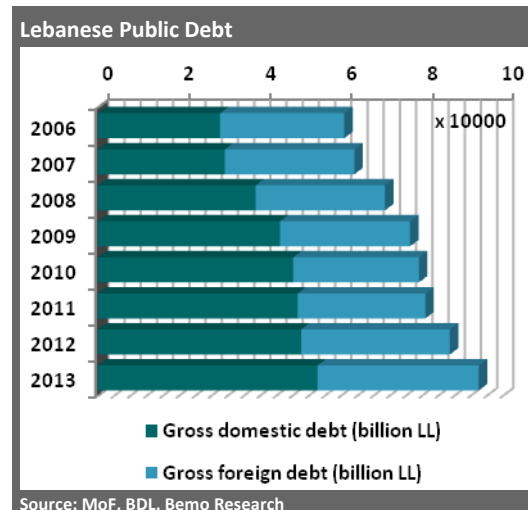


Source: Poten & Partners, Lebanese international petroleum

MONETIZING HYDROCARBON RESOURCES

PUBLIC DEBT

A typical inference would consider the limitation of the country's indebtedness and a gradual absorption of the public debt through hydrocarbon resources. However, the impact of those resources is highly dependent on the country's management and the independence of the economy on Hydrocarbons. A high dependence could expose the country to a lengthy period of financial instability as witnessed in Algeria after the 1986 oil shock. Algeria leveraged its oil wealth in the 1970's and 1980's, massively developing its petro-industrial base disregarding other segments of the economy such as agriculture, education, health, consumer products, etc. Algeria's external debt escalated from USD 1 billion in 1970 to \$16 billion in 1980 and \$19 billion in 1988. In the aftermath of the 1986 oil shock, the poor return from state industries along the drop in oil prices drove unemployment to 22% by 1989 and the service on debt reached 3 times the export income threatening social stability.



The IMF working paper on natural gas and debt sustainability in Mozambique presented a blueprint for resources management. Mozambique's narration is exceedingly analogous to Lebanon as they both crossed a civil war, need a high infrastructure development, and are aliens to the hydrocarbons sector. The IMF suggested three different approaches to the country's management of its resources. A *conservative approach* would abstain from indulging in spending until the production of hydrocarbons starts. As a result, public debt will be maintained for the short term and progressively decline on the longer run. After the production, strong fiscal buffers would be built and the economy would have absorbed any inflationary repercussions. A *gradual approach* would anticipate the resources and bring the government to undertake more spending assuming the future revenue. Public debt will rise over the short term before declining on the longer term and could necessitate a fiscal adjustment through tax increase limiting private consumption. An *aggressive strategy* would recognize early on most of the future revenues and increase public spending accordingly. The economy will be highly dependent on hydrocarbon resources and dampen non-hydrocarbon related growth along private investment and consumption, similar to the Algerian case. In this context, both the public debt and the Debt/GDP ratio will increase, which would induce brutal fiscal adjustments to service the accumulated debt.

The Lebanese government should thus advocate prudence and endow the necessary funds for the development of its infrastructure, sustaining the current debt levels.

CURRENCY & FOREIGN EXCHANGE

Hydrocarbons resources will inevitably increase the value of the Lebanese Exports causing an increase in the real exchange value of the currency. However, this could render current exports more expensive resulting in their decline and bringing the country to be more dependent on its oil exports. This pattern is recognized as the "Dutch Disease", originating from the Netherlands large natural gas field in 1959. Australia and gold, Russia and natural gas, Chile and copper are examples of the "Dutch Elm". However, none of the GCC member countries suffered from the "Resource Curse" despite having oil as their prime export; they have managed their economies through diversification measures and the currency peg.

MONETIZING HYDROCARBON RESOURCES

EXPORT OPTIONS

According to Energy Information administration, Lebanon's current natural gas consumption remains diminutive. However, and despite the expected growth of the local consumption, the anticipated available resources will far exceed the projected demand. Therefore, exporting natural gas presents a rewarding challenge for the Lebanese government. A Mediterranean paper series published in 2013 discussed the emerging natural gas export options in the region: Natural gas can be exported via pipelines, converted to LNG or CNG, or generated to exportable electricity.

Pipeline options

An option for Lebanon is to export natural gas via a gas corridor traversing Syria/Iraq towards Turkey, a large market, and accessing the European pipeline in Bulgaria and Greece. This option will confer Lebanon with not only with a cheaper solution, but with a great advantage over Israel, which is unlikely to bear the political risk of transporting its resources through hostile countries.

Another option would be the development of a Subsea pipeline to Turkey, though this option is by far more costly and introduces the inconvenience of the United Nations Convention on the Law of the Sea (UNCLOS) whereas is stipulated that any hydrocarbon pipeline passing through a country's EEZ would need its approval. However, provided harmonious relationships among each of Lebanon, Cyprus and Turkey, the Lebanese could combine their gas resources with the Cypriotes and piped to the Vassilikos energy center then to Turkey and accessible to the European gas grids.

The gas could also be channeled through pipelines to Greece, though such infrastructure is of colossal cost and would only be worthwhile if it transported Lebanese and Cypriot Gas, along other regions.

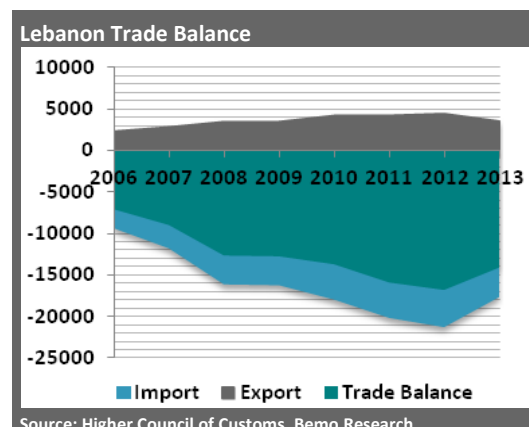
Additionally, a viable option for Lebanon is to develop the initially set infrastructure of the Arab Gas Pipeline. Future extensions for the trans-regional gas exportation pipeline to the Turkish border and will facilitate the export of Lebanese natural gas to Europe.

Compressed Natural Gas (CNG) options

Compressed Natural gas is cheaper to produce, is less pollutant and more efficient; nonetheless, it requires a much larger volume to store the same mass of gasoline or petrol and requires the use of very high pressures therefore high costs, limiting its potential to be transported by sea or pipeline. However, its transportation remains a new-fangled technology and could offer Lebanon an alternative for short distances especially that its use is increasing across the globe and namely in Europe due to rising gasoline price in response to environmental awareness. Most importantly, deepwater or submarine hazards can make pipelines extremely expensive or technically impossible, as observed in the Libano-Cypriot-Greek Scenario while CNG ships are unaffected and impervious.

Liquefied Natural Gas (LNG) options

Liquefied Natural Gas is a costly and dubious investment for the Lebanese authorities. According to Walid Khadduri, an energy consultant at The Middle East Economic Survey, the cost of establishing an LNG Plant is estimated around USD 4 Billion. Since the local potential remains tentative it is a dim-witted venture to consider this option. However, once fields are more explored, a partnership with Cyprus improves the prospects for a common LNG plant. The Cypriot government reiterated its commitment to develop an LNG plant in Vasilikos and is seeking partnership from Israel and Lebanon. Partnership between Cyprus and Israel will eradicate any affiliation with Lebanon. However, Lebanon could doubleback its option by proposing Cyprus to pool its resources with Lebanon in an Onshore LNG plant in Lebanon. Such option will have greater propensity to access the Asian Market, which subsists an increasing demand, unlike the European market where home-production is decreasing. Nevertheless, this option remains limited and will require first-rate negotiations as Cyprus might rebuff having gas export installations in another country.



MONETIZING HYDROCARBON RESOURCES

Another Option for Lebanon is to opt for Floating Liquefied Natural Gas (FLNG), these are usually LNG solutions coupled with shuttle vessels or tankers and ideal for small quantities. The Lebanese government could divert some of the LNG produced for electricity generation and export the remaining. However, despite the cost and environmental efficiency attributed to this technology, it's still in its infancy. Furthermore, even though no bilateral agreements are needed for such a project, the political risks associated are imperative; the facilities are highly exposed to any "Terrorist" or "Adversary" attack.

Electricity Export

An incongruous option for a country currently importing electricity, voltage exports, the case between France and Britain, presents an opportunity for Lebanon. Authorities could use the gas to fuel electricity plants and export the electricity to Syria. According to a report on the daily star by *Agence France Press*, Syria suffers from a major shortfall in electricity supply and has limited ability to open the sector for private investments, especially after the US sanctions. Furthermore, the MENA region has been identified to have one of the fastest growing rates of power demand; this could position Lebanon as a strategic provider of electricity through inert-countries cables. Nevertheless, this alternative requires significant investment in the Lebanese power generation facilities and extension cables. Additionally, potential competition could arise from Iran which currently halted its intention to export electricity to Syria and Lebanon via the Iraqi power grid due to geopolitical tensions.

Abridging the Lebanese options requires exhaustive analysis of their viability and potential clients, proper scrutiny cannot be concluded nor estimated until drilling works commence and a pragmatic assessment of the local potential is measured. A rule of thumb would favor pipelines for exports towards Turkey and Europe, while LNG option would be of more convenience to export towards Asia. In all cases, the Lebanese authorities should consider all options available and diversify its client's base whenever possible.

MONETIZING HYDROCARBON RESOURCES

SOVEREIGN WEALTH FUND

Under the Offshore Petroleum Resources Law Article 3, Lebanon has to set up a sovereign wealth fund (SWF) to channel the profits from the hydrocarbons E&P activities. The Law on the management structure of the fund and its investment principles must yet be ratified in the Lebanese Parliament. In a United Nations report “Optimizing Value retention in host countries”, evidence substantiated in Norway, Chile and Indonesia indicated that the negative macroeconomic effect coupled with to the emergence of new natural resources could be diminished through the introduction of sovereign wealth funds. The main rationale of the fund is to generate sustainable revenue for the present and future generations.

In a UNDP publication entitled “Lessons learnt from the south”, the introduction of a sovereign wealth fund to investment in human capital was cited to potentially mitigate the risk. Thus, the Lebanese Government should avoid high dependency on hydrocarbons and must diversify its economy through targeted public expenditure, maintain a stable exchange rate and proceed with the establishment of the Sovereign Wealth fund.

Sovereign Wealth Funds are differentiated from central banks, as they can venture in riskier investment and in longer durations. According to a publication in “The American Review of Political Economy, June 2010”, SWFs contributed to a sustained growth in country’s foreign exchange reserves, referring to China, Russia and India as exemplars. Additionally, the SWF ensured both: the stabilization of the government budget by balancing the volatility in revenues and the combat of inflation by absorbing excess liquidity.

However, prudent and proficient management are fundamental to capitalize on the available funds. Appropriate investment, both locally and internationally should be shielded from political decisions; Local investments should be oriented towards education, health and infrastructure while international investments should be aimed at diversification.

A report published by ESADEgeo, Center for global economy and geopolitics analyzed the activity of sovereign wealth funds. The total reported value aggregated USD 54.6 Billion in invested funds, mostly endowed to projects in the developed markets, chiefly in Europe which alone represented 54% of the total value (Infrastructure assets). Financial services, real estate, commodities and infrastructure accounted for almost 80% of sovereign wealth funds’ investment in 2012.

Potential new Funds		
	Sovereign Wealth Fund	Country
1	Slovenia SWF	Slovenia
2	Papua New Guinea SWF	Papua New Guinea
3	Japan SWF	Japan
4	India SWF	India
5	Israel SWF	Israel
6	Philippines SWF	Philippines
7	South Africa SWF	South Africa
8	Lebanon SWF	Lebanon
9	Bolivia SWF	Bolivia
10	Georgia SWF	Georgia
11	Sierra Leone SWF	Sierra Leone
12	Tunisia SWF	Tunisia
13	Kenya SWF	Kenya
14	Uganda SWF	Uganda
15	Zambia SWF	Zambia
16	Mozambique SWF	Mozambique
17	Namibia SWF	Namibia
18	Rwanda SWF	Rwanda
19	Tanzania SWF	Tanzania
20	Liberia SWF	Liberia

Source: ESADE center for Global economy and geopolitics Sovereign Wealth Funds Ranking 2013

MONETIZING HYDROCARBON RESOURCES

According to Sovereign Wealth Fund rankings, published by SWF institute, Norway's government pension fund tops the rankings with USD 818 Billion in Assets under management, followed by Saudi Arabia's SAMA Foreign Holdings with USD 676 Billion and UAE's Abu Dhabi Investment Authority with USD 627 Billion.

The rankings features the Linaburg-Maduell Transparency Index which evaluates SWF transparency according to 10 principles including the history and reasons for the creation of the fund, independently audited annual reports, transparent ownership and holdings details, total portfolio market value and returns, management compensation and other details. For a SWF to be characterized as Transparent, a minimum rating of 8 is required. Norway's fund grabs hold of the highest transparency standards with a score of 10, with most developed countries ranging in the upper percentile, while emerging and middle eastern countries, with the exclusion of UAE scoring 9, have indicated to be less transparent.

The IMF has been increasingly stressing the importance of SWF transparency as in respect to their impact on global financial stability and capital flow. In this respect it has introduced a set of generally accepted principles and practices GAPP for its international working group of sovereign wealth funds.

The Lebanese authorities are invited to establish their SWF based on the above principles and standards. High transparency will provide a vigorous introduction of the Lebanese SWF in the financial arena and would limit corruption and political misuse.

Top 25 Sovereign Wealth Funds by Assets Value

Country	Sovereign Wealth Fund Name	Assets (in bln)	Inception	Origin	Linaburg maduell Transparency Index
Norway	Government Pension Fund-Global	818	1990	Oil	10
Saudi Arabia	SAMA Foreign Holdings	675.9	n/a	Oil	4
UAE	Abu Dhabi Investment Authority	627	1976	Oil	5
China	China Investment Corporation	575.2	2007	Non-Commodity	7
China	SAFE Investment Company	567.9	1997	Non-Commodity	4
Kuwait	Kuwait Investment Authority	386	1953	Oil	6
China-HK	Hong Kong Monetary Authority Investment	326.7	1993	Non-Commodity	8
Singapore	Government of Singapore investment Company	285	1981	Non-Commodity	6
Singapore	Temasek Holdings	173.3	1974	Non-Commodity	10
Qatar	Qatar Investment Authority	170	2005	Oil & Gas	5
China	National Social Security Fund	160.6	2000	Non-Commodity	5
Australia	Australian Future Fund	88.7	2006	Non-Commodity	10
Russia	National Wlfare Fund	88	2008	Oil	5
Russia	Reserve Fund	86.4	2008	Oil	5
Kazakhstan	Samruk-Kazyna JSC	77.5	2008	Non-Commodity	n/a
Algeria	Revenue Regulation Fund	77.2	2000	Oil & Gas	1
UAE-Dubai	Investment Corporation of dubai	70	2006	Oil	4
Kazakhstan	Kazakhstan National Fund	68.9	2000	Oil	8
UAE-Abu Dhabi	International Petroleum Investment Company	65.3	1984	Oil	9
Libya	Libyan Investmetn Authority	65	2006	Oil	1
South Korea	Korea Investment Corporation	56.6	2005	Non-Commodity	9
UAE-Abu Dhabi	Mubadala Development Company	55.5	2002	Oil	10
Iran	National Development Fund of Iran	54	2011	Oil & Gas	5
US-Alaska	Alaska Permanet Fund	46.8	1976	Oil	10
Malaysia	Khazanah Nasional	40.5	1993	Non-Commodity	5

Source: Sovereign Wealth Fund Institute, Linaburg maduell Transparency Index , Bemo Research

SWOT ANALYSIS

STRENGTHS

- Transparent Offshore bidding Model
- Favorable Tax regime
- Extended double taxation treaties
- High environmental awareness
- Absence of regional boycott (Except for Israel)
- Strategic location in the vicinity of Turkey, Europe and Suez Canal
- Low incorporation cost and capital requirement in Lebanon

WEAKNESSES

- Underdeveloped infrastructure
- Political instability
- Governmental & Legislative impasse
- High & Slow bureaucracy
- Lack of Hydrocarbon conversant regulatory authority and professionals
- Limited local funding capacity
- High Public debt
- High Corruption

OPPORTUNITES

- Additional Tax breaks for operating firms can attract stronger players
- Regional stability can promote joint exploration ventures and ensure greater export options
- Energy sufficiency, through the development of power generation facilities
- Increasing Demand from Asia
- Potential Demand from Europe
- Increasing global gas demand: The International Energy Outlook 2013 (IEO2013) projects that world energy consumption will grow by 56% between 2010 and 2040
- Natural gas an alternative for power generation
- Fast growing rates of power demand in the MENA Region

THREATS

- Establishment of a National Oil Company: Overstaffing, Corruption, less efficient
- Dispute with Israel
- Uncertain revenue stream: Cyclical Industry, High Price volatility, Long investment lead time, Capital intensive, High variable costs
- Competition from Azerbaijan, Iraq, and neighboring countries
- Environmental and Operational Risks
- Legal Risk
- Adverse Changes in Tax regulation
- Mandatory local workforce quota of 80%

RECOMMENDATIONS

- To consider a privatization model for oil extraction to reduce the adverse effects of potential inefficiency, overstaffing and corruption.
- To minimize bureaucracy and promote the operational ease for companies.
- To gain a competitive advantage by attracting and implementing new technologies
- To develop local awareness and understanding of the implications of the resources on the Lebanese Economy
- To invest in Human Capital and develop local skills through academic support (Technicians and Engineers)
- To consider the need of the Lebanese government to develop the airport, the port, transportation infrastructure and power generation facilities, while maintaining the public debt/GDP ratio at current levels in order to avoid the dreadful implications as observed during the Algerian Crisis.
- To establish an anti-corruption framework
- To consider the creation of a sovereign wealth fund to channel oil revenues and support economic diversification:
The Saudi Arabia experience revealed that two third of the kingdom's oil exports revenues were spent to develop and sustain economic growth and increase employment opportunities. Each of the oil rich GCC countries endeavored in diversifying their economies and specializing in alternative sectors, Saudi Arabia in Steel and Aluminum, Dubai in Trade and Tourism, Bahrain in Banking. Lebanon has the ability to develop both its industrial base and services sector.
- To provide companies operating in the hydrocarbon industry with a temporary Tax exemption to encourage exploration and attract investors as evidenced in Morocco.
- To consider the Nigerian specialized Hydrocarbons Free Zone Model to create further incentives and attract Foreign Direct investment in addition to operational and practical ease thus promoting efficiency, technology transfer and employment opportunities.
- To uphold a prudent and un-exhilarated standpoint in assessing the local hydrocarbon potential to circumvent any disillusionment when exploration and drilling starts as observed in Yam3 reservoir in Israel.





TIMELINE OF EVENTS



2001: Southampton Oceanographic Center was asked to carry out boundaries delimitation for the Lebanese EEZ

1975: Exploration Licenses cancelled as civil war burst out

1953: Well Drilled in Yohmor-Bekaa (depth 2672 m)

1990: A Committee of Cooperation between Lebanon and Syria for Oil Exploration in Lebanon was formed

1960: Well Drilled in Al-Qaa-Bekaa (depth: 2557 m) & Adloun- South Lebanon (depth 2150 m)

1940s: Inauguration of Onshore Hydrocarbons Explorations in Lebanon

February 2007: PGS conducted Multi client 3D geophysical survey

January 2007: Lebanon and Cyprus signed a maritime border agreement, delimitating the EEZ.

July 2011: The French consultant group, Beicip-Franlab was contracted to interpret more than 10,000 km of 2D seismic data and to prepare a regional interpretation report

7th November 2012: The Lebanese government announced the list of the Petroleum Administration's board members.

18th April 2013: The Lebanese government unveiled a list of the companies that are eligible for Lebanon's first offshore hydrocarbon exploration licensing round

4th October 2013: The deadline for submitting bids for the first licensing round was extended for a second time from the 10th of December 2013 until the 10th of January 2014

8th January 2014: The deadline for submitting bids for the first licensing round was extended for a third time from the 10th of January 2014 until the 10th of April 2014

1948: The IPC (Iraq Petroleum Company) created 12 companies including the Lebanon Petroleum Ltd with concessions or exploration licenses

1963: Well drilled in Tell-Znoub-Bekaa (depth 1421 m) & Sohmer-Bekaa (Depth 1423 m)

1990: Presence of Offshore Hydrocarbon deposits were indicated through Geological seismic surveys

2002: The Lebanese government agreed a contract with Spectrum Geo to carry out two-dimensional seismic surveys of offshore resources

August 2010: Lebanon submitted a unilateral maritime border demarcation of the Lebanese-Israeli borders to the UN

January 2012: Lebanese Council of Ministers ratified the OPRL

6th February 2013: The Lebanese cabinet adopted the decree specifying the conditions and qualifications of companies wishing to bid for an offshore exploration license

2nd May 2013: Official Opening of Lebanon's first licensing round

2nd September 2013: The Lebanese government failed to adopt the two decrees essential for pursuing the first licensing round. As a result, the deadline for submitting bids was extended from the 4th November 2013 until the 10th of December 2013

8th November 2013: Cyprus and Lebanon have agreed to start negotiations for a production-sharing agreement concerning their adjoining offshore hydrocarbon resources

1948: Well Drilled in Terbol-Zahleh (Depth 3065 m)

2000: The Lebanese government abandoned proposals for additional onshore drills, altering its focus to offshore hydrocarbon reserves

2006: Norwegian Petroleum Geoservices performed the first three-dimensional survey offshore Lebanon

February 2012: No agreement to form the Petroleum Administration as government deadline expired

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Our aim is to act as financial advisers to our clients' personal and family businesses offering them:

- Professional management approach
- Access to financial markets and prime foreign exchange dealings
- Access to private and asset management banking for corporate and personal needs
- Competitive pricing
- Wide network of prime correspondent banks all over the world

Banque BEMO sal can contribute to the hydrocarbon industry through:

- Offering Facilities for companies associated with the industry's supply chain
- Acting as an intermediary for settlement
- Coordinating with major specialized international banks
- Offering trade finance services
- Offering FX Hedging Solutions
- Managing and hedging interest rates

Bemo Securitisation SAL - BSEC can contribute to the hydrocarbon industry through:

- Bond issuance
- Equity raising
- Asset-Backed Securitization
- Future Flows Securitization
- Company valuation



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