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Building the Lebanese oil sector

Strategic thoughts for a successful national experience

October 2018

Arthur D Little

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Executive summary

Lebanon has officially embarked on its oil & gas journey following the signature of the Exploration and Production Agreement (EPA), and declared its entry into the club of oil nations. With its limited national experience in managing an oil & gas (O&G) sector, what should Lebanon's strategy be in the coming years to enable active and, most importantly, successful national participation in the O&G upstream sector?

The state's involvement in the sector needs to be first defined. Currently the state is present on the legislative and regulatory side, but does not have an active role on the operations side, considering the emergence of the sector and lack of local know-how. However, as seen in most neighbouring and regional oil-producing countries, state participation in operations is the means to ensure maximum governance and control over national resources, as well as guarantee maximization of rent from oil activities. The question now becomes how to build this national role in operations.

First, Lebanon should establish a clear governance framework that will be able to build, nurture and grow the Lebanese state oil company. As several risks are involved when a country has a premature national oil company (NOC) with no serious levels of production, Lebanon should follow a gradual approach of building a core team of nationals, inspired by the consortium companies' operating model and housed at the Ministry of Energy. There are also several options to consider. With the expansion of different phases and oil activities, this core team will flourish and expand until a full-fledged NOC can be created, based on the solid experience that has been built.

Second, human capabilities need to be identified and developed in order to ensure maximized local participation in oil operations. Local technical know-how is an extremely strong advantage when negotiating with international companies. Thus, the country's university education sector needs to be modified and updated to suit the needs of the oil sector, in addition to the serious pursuit of training Lebanese nationals through EPA terms.

Third, a set of strategic enablers needs to be considered as early as possible to guarantee Lebanon's long-term interests. The history of the oil sector has proven that whoever controls transportation will be able to dictate their terms, even to the owner of the reserves. Also, bringing oil to shore will not only guarantee development of the downstream industry in the country, but also create direct and indirect industries in parallel, which will boost Lebanon's economy to new, unprecedented levels.

All of the above considerations and more can be defined along a national roadmap, with several phases that will maximize the use and benefits of all the country's offshore blocks. These will merge to create a successful oil & gas journey for Lebanon.

1. Direct state participation in operations

Lebanon has officially embarked on its oil & gas journey and “entered the club of oil nations”, as indicated by HE minister Cesar Abi Khalil following the signature of the first Exploration and Production Agreement (EPA) in December 2017. It is a major milestone indeed for Lebanon, considering its political and economic challenges, with big hopes expected from the oil & gas sector to support, and perhaps salvage, the national economy. Lebanon’s club entry seemed straightforward following the EPA signature, but it was not without major difficulties, given the political obstacles and lost time leading to it. If entering the club has been a difficult “simple” task, it is the membership tenure that will prove to be an enormous challenge, one that goes far beyond the local political tensions and complications. With limited national experience in managing an oil & gas sector, what should Lebanon’s strategy be in the coming years to enable active and, most importantly, successful national participation in the O&G upstream sector?

What level of state participation to pursue?

The early structure of the Lebanese oil sector was formed following the EPA signature, with several essential stakeholders

handling their own parts of the collective ecosystem. Leading the sector at the strategic and **legislative** level, the parliament is the official body that approves all major laws related to the oil sector proposed and sponsored by the Ministry of Energy and Water (MEW) and the Council of Ministers. Reporting to MEW, the Lebanese Petroleum Administration (LPA) was established as the leading **regulatory and advisory authority** in charge of supervising and managing the petroleum sector. Moving towards the **operating level**, the last major stakeholder in this sector puzzle is the consortium of companies that physically execute all necessary activities in the exploration and production agreement.

Looking at the Lebanese sector today, the state is present in the legislative and regulatory authorities; however, it does not hold a significantly active role on the operating side, given the emergence of the sector. This is expected to change in the future: Article 5 of the EPA clearly states that “the state or any entity owned by the state may in the future become a right holder”, floating the idea of creating a “national oil entity” that will participate in the operating activities of the oil sector.

Figure 1: Benchmarked countries showing state presence in operations



Source: Arthur D. Little

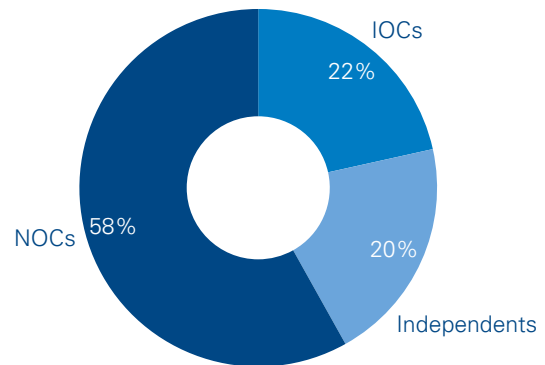
The first question that rises here is whether Lebanon should seriously pursue an active role in operations. More precisely, should Lebanon rely on royalties, government takes and taxes only to receive its share of the oil rent, as is the case with the current EPAs, or should the country consider activating its shareholding potential?

State presence – Regulator, operator or both?

As mentioned above, the Lebanese state is active on the regulatory side of the sector, a presence that is both natural and obligatory for any state to ensure the legal and controlled exploitation of hydrocarbon resources. However, most of the benchmarked countries in our study have secured their presence on the operating side. By the 1970s most oil-producing Arab countries had nationalized their oil resources and reclaimed ownership and control over them. This step not only was driven by the nationalistic fever that had swept oil-rich countries, but also was a sign of a state’s maturity to manage and decide its own economic destiny. Among the list of countries benchmarked (Figure 1), the United States of America and the United Kingdom did not opt for direct state participation. However, both countries are home to the largest international oil companies: ExxonMobil and Chevron in the US and British Petroleum and Shell in the UK, to name a few. For instance, as the state was not directly involved in operations in the UK, BP and Shell have been the main actors on the UK Continental Shelf (UKCS). BP is the field operator of the largest offshore field, “Clair”, owning 28.6 percent interest, and Shell has owned 27.9 percent subsequently.

However, at the global level, the majority of oil production lies in the hands of national oil companies (Figure 2), which produce almost 60 percent of the world’s hydrocarbons.

Figure 2: Global oil production split by type of company in 2016 (including crude oil, gas condensate, and natural gas liquids (NGLs))
Millions of barrels of oil equivalent (mmbbl/d) produced









Source: Rystad

Regulator presence – ensuring policy creation and implementation

By definition, a regulator is an entity that monitors an industry’s prices, products, and practices to ensure proper functioning of the market and consumers’ satisfaction. The state’s presence at this level ensures that there are enough comprehensive policies to monitor and regulate the rightful exploitation of the sector, and that these policies are well implemented by the sector players.

Figure 3: Policies managed by typical regulators in the oil & gas sector

Non-Exhaustive

Categories of policies	Example of policies
 General oil and gas policies	<ul style="list-style-type: none"> ■ Oil and gas fiscal / royalty policies ■ Oil and gas price setting ■ Tariffs and subsidies ■ Import / export policies ■ Foreign investment policies
 Exploration, development and production	<ul style="list-style-type: none"> ■ Depletion policy (whether and at what pace to explore for oil and gas) ■ Award concessions / licenses ■ Exploration and production location determination ■ Exploration and production contracting mechanism
 Infrastructure	<ul style="list-style-type: none"> ■ Permits for transportation, storage, distribution, compression, liquefaction, decompression, regasification, marketing, and sale of crude oil, oil products, and natural gas
 Decommissioning of petroleum activities	<ul style="list-style-type: none"> ■ Decommissioning program / policies (including entities liable for decommissioning costs)
 Environmental, health and safety	<ul style="list-style-type: none"> ■ Environmental policies ■ Health and safety policies
 Sanctioning	<ul style="list-style-type: none"> ■ Legal sanctions for violations in the oil and gas sector

Source: Arthur D. Little

This presence is important and needs to cover the entire value chain of the oil sector, typically holding three main roles:

- **Policy creation:** Setting policies for the oil and gas sector to achieve desired objectives (e.g., fiscal policies and tariff and subsidy setting). Example: develop HSE policies.
- **Policy oversight:** Monitoring and reporting the level of compliance with the agreed policies (e.g., enforcing policies to prevent environmental damage). Example: monitor HSE compliance based on HSE policies.
- **Policy implementation:** Ensuring the policies are correctly implemented across the operating activities (e.g., awarding concessions and licensing). Example: award operations license to private sector.

These separate roles do not have to be delivered by separate entities, but must cover the main roles delivered by the regulating bodies. As for the policies, there are six major categories which cover many of the oil & gas policies set, overseen and implemented by regulators.

Operator presence – securing national interest

Operating within the boundaries set by the regulating authority, oil companies perform technical activities to extract, treat and sell the oil and its products. The activities cover the entire value chain (Figure 4), which consists of three main phases:

- **Upstream phase:** The first phase of the value chain, starting with exploring for oil and ending with production of crude oil and gas.
- **Midstream phase:** Following the production of crude, liquids and gases will need to be transported and stored for sales or further treatment.

- **Downstream phase:** At the end of the value chain, crude oil and gas will be treated to produce refined petroleum products that fuel other industries, e.g., bringing gasoline to the tanks of commuter cars around the world.

The activities performed along the value chain are driven by oil companies, which can be national companies or international companies investing abroad. However, state participation at this level is the ultimate guarantee of securing national interest: technical, financial, managerial and even strategic decisions taken at the operating level will always be made with the interest of the operating company in mind. Therefore, it is only logical to assume that no company will prioritize the ultimate interest of a country unless it is that country's own national company.

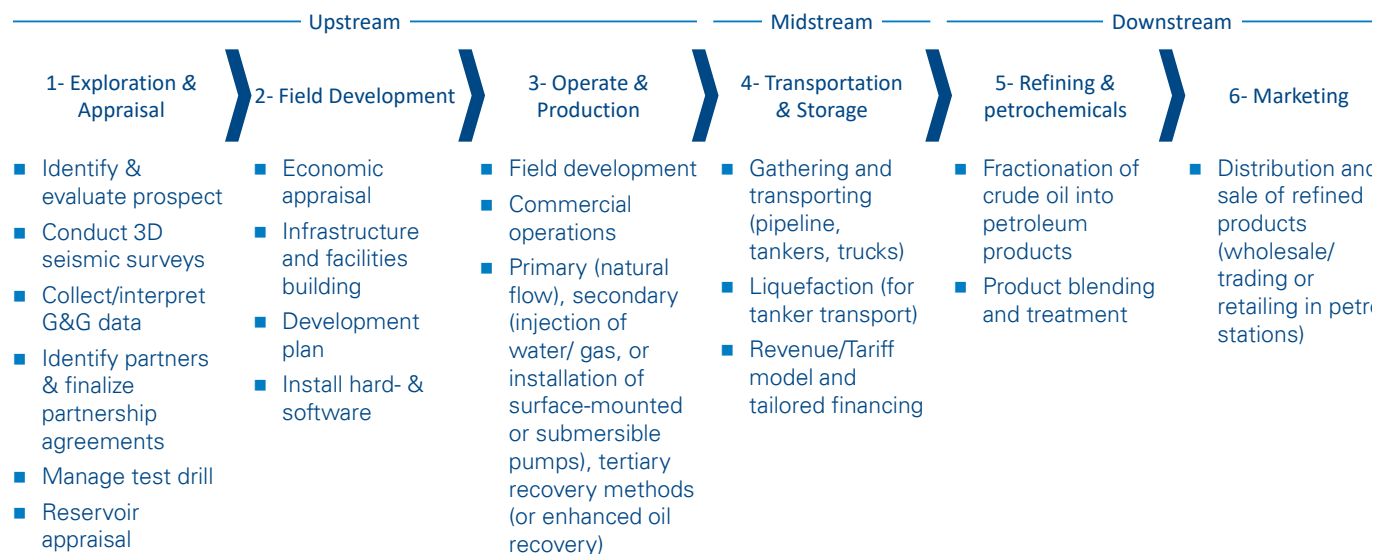
Direct benefits of national participation – maximizing oil rent

One of the main drivers to shed the light on when considering state participation in operations is rent maximization, in which the purpose of a country is to maximize the oil rent and bring more income to its society.

The UK and Norway oil and gas sectors provide an ideal example to compare the outcomes of two different approaches to oil sector governance. One is of Norway's active participation choice through its state-owned oil companies, and the other is of the UK's total privatization of sector operations.

The two countries have equivalent geology and similar resource bases. The UK and Norway both began offshore exploration and production in the mid-1960s, with the first oil discoveries made in 1969. From then until 2017, both countries produced similar amounts of hydrocarbons: the UK produced 45.3 billion

Figure 4: Typical operations along the oil & gas value chain



Source: Arthur D. Little

barrels of oil equivalent (boe) and Norway produced 44.5 billion (Figure 5).

Since 1986 the UK government has had effectively no direct equity participation in the North Sea and a fully private upstream sector, with taxation as the only channel of government revenues from hydrocarbons.

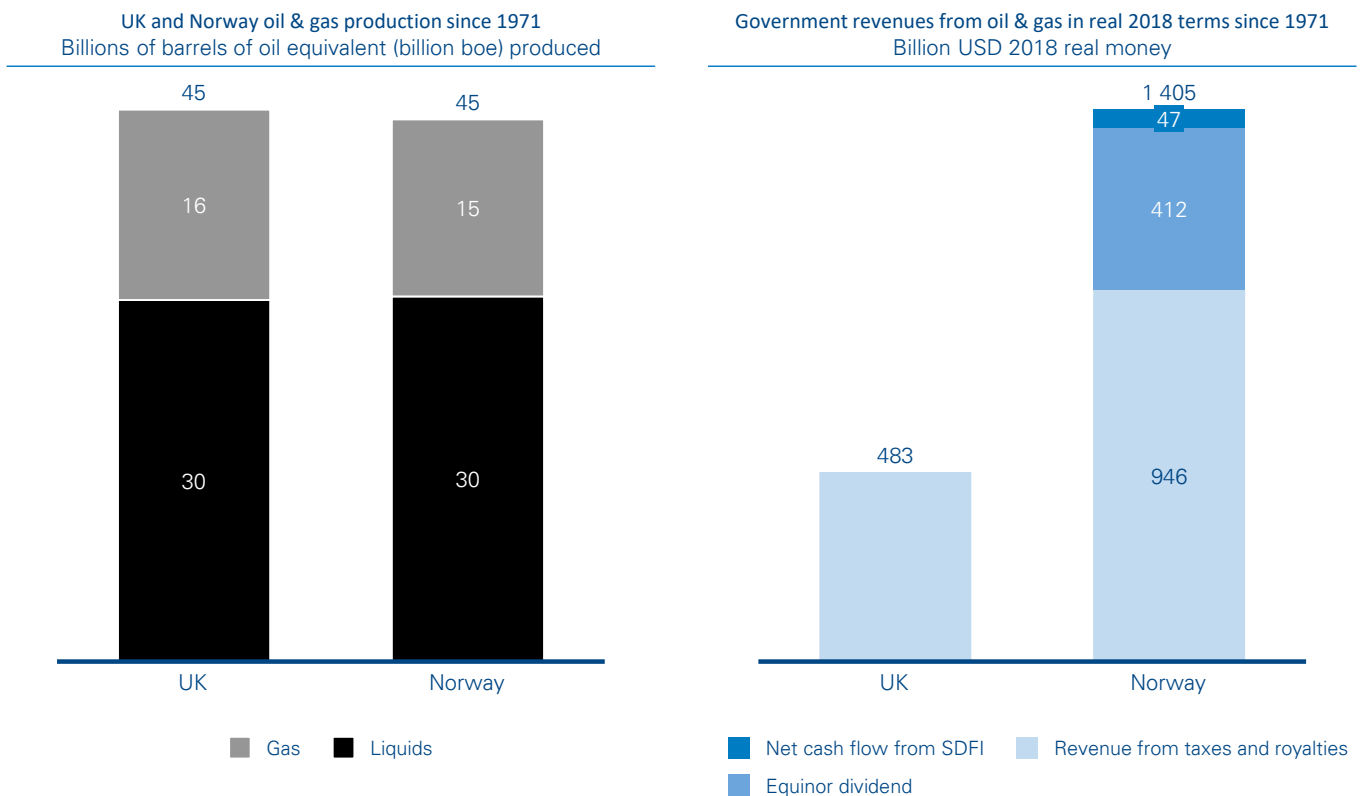
Norway has taken a different approach, with over 50 percent of production coming through Equinor (formerly Statoil, of which the state owns a majority) and state ownership of assets via the State Direct Financial Interest (SDFI), held through Petoro (wholly owned by the state). The comparison shows a rather surprising result: Norway generated more than double the revenue of the UK from each barrel it produced.

Analysis of official government statistics shows that the UK has generated \$483 billion in revenues, while Norway has generated \$1,405 billion since 1971 in real (2018) terms (Figure 5).

There are several factors that have led to this result: namely, the difference in tax regimes between the two countries and the timing of each country's production relative to oil & gas prices. Also, active state participation has heavily maximized Norway's overall sector returns, unlike the UK's fully privatized approach, although this has not been the only factor.

Considering this interesting comparison that proves the benefit of active state participation in maximizing oil rent, our question thus becomes: **How should Lebanon proceed in building active state involvement in operations?**

Figure 5: Comparison between the UK's and Norway's oil & gas production and government revenues



Source: Statistics of government revenues from UK oil and gas production, Table 11.11., Ministry of Finance, Statistics Norway

2. How to launch national sector participation

Strategic framework for launching the sector

The oil sector has an extremely heavy progression inertia, translating into large commitments and long journeys: contracts are in the order of hundreds of billions of US dollars, commitments among nations and giant companies go as long as 40 or 50 years, and the risks involved are the highest in terms of impact and rectification. This is why it is the very early decisions and strategies that will have the most considerable effects on the future of the sector. If the Lebanese state wishes to ensure a successful start to its long oil club journey, there are multiple strategic dimensions that need to be considered early on.

- First, the state needs to design clear **sector governance**, where national participation in operations can be incorporated, nurtured and grown. Several options will be discussed in this regard; the ultimate objective will be assurance of national governance and control over resources.
- The second dimension that needs to be considered is **human capability building**, a crucial requirement that ensures local technical know-how, which, if non-existent, will keep the Lebanese state at the mercy of international

obligations and terms during negotiations and future expansions.

- The third and last dimension is a collection of **strategic enablers**, which should be considered as early as possible; this will prove to be crucial if Lebanon wishes to have strong control over its resources and ultimately develop a thriving oil sector that will also be able to create wide ripple effects into other economic sectors.

Designing the sector governance - The necessity to establish national governance and control

Creating a state-owned oil company to assert national ownership and governance – Across most of the oil-producing nations, the national oil company is the strong vehicle through which a country can assert its ownership and governance over the sector. The first step in the launch of the sector involves the country's clear decision to create its own national oil company. This decision needs to be taken clearly by the political leaders of the state, so as to start drawing the overall strategy of the sector and the important strategic steps as early as possible.

Figure 6: The strategic framework for launching the Lebanese oil & gas sector

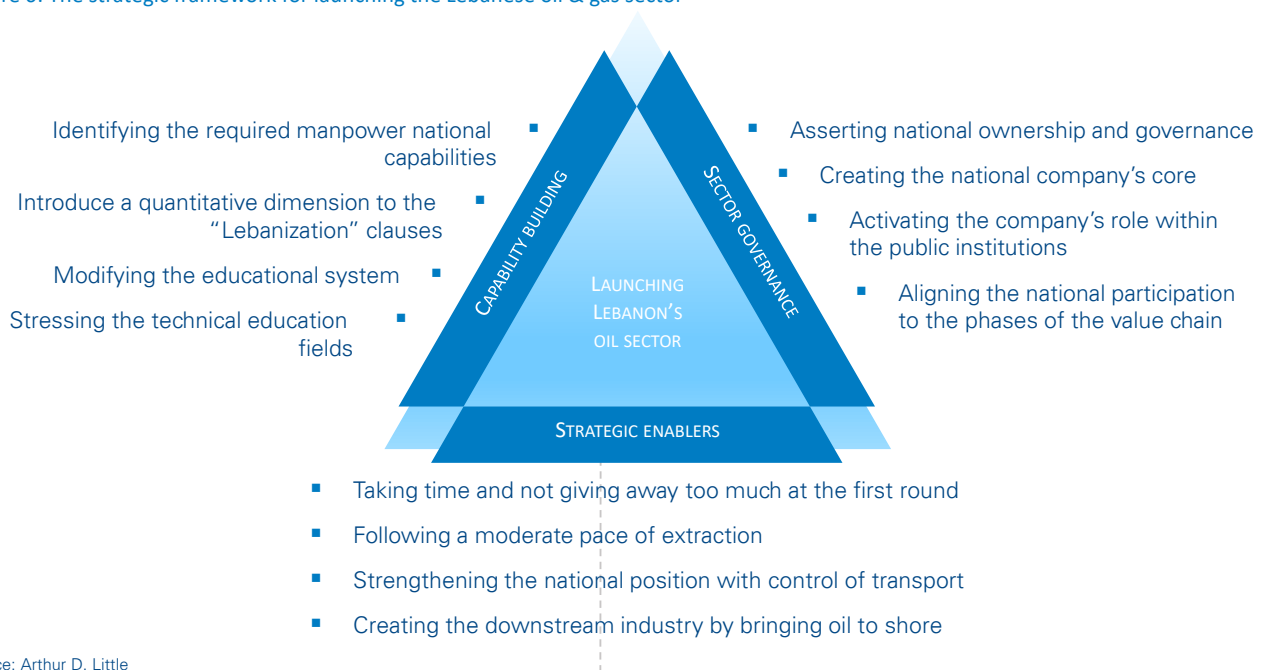


Figure 7: The main reasons behind establishing national oil companies



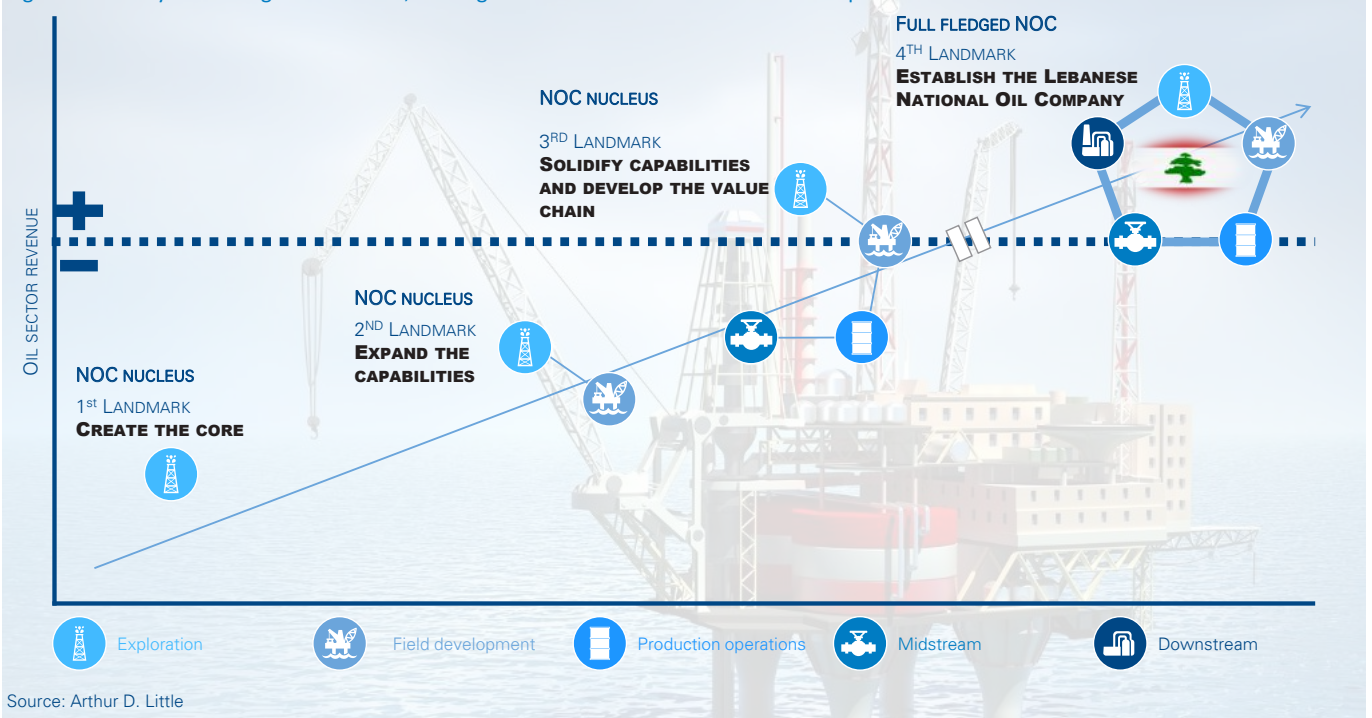
Source: National Oil Companies and Value Creation, Silvana Tordo, 2011. Arthur D. Little

Governments have historically set up and maintained NOCs for a variety of reasons, as clarified below (Figure 7), all of which apply directly to Lebanon:

A first stage of building the nucleus of the future NOC – Oil is still an assumption today, an exciting one, indeed; however, it remains an assumption till the first well is drilled and physical evidence of hydrocarbon is proven. Until then, and until oil is discovered and produced and sizable income is flowing to the state treasury, the creation of a full-fledged NOC will be more of a financial burden to the government because it will be managing a not-yet-existing resource. Many considerations need to be taken in this case, as illustrated by **Dr. Valerie Marcel** in her article¹ on Lebanon's NOC creation. However, in the long run there is more benefit to having direct state participation in the sector, as Norway's experience tells us.

The above means that state participation should be put in motion as early as possible, especially considering the monumental learning curve and know-how that needs to be built over decades. However, decisions will need to be made with careful considerations and an optimized approach. The starting step that Lebanon can consider is the establishment of a **small, efficient core team of nationals** who will make up the **nucleus of the future national oil company**; this team will be ready for expansion once production is at serious levels. As to the structure of the team, many states have followed a clear approach of mirroring the structure of their international operators in their fields, learning from their existing processes and procedures and covering all operating aspects, including operations management, safety, HR, etc.

Figure 8: Journey of building Lebanon NOC, starting with a shadow core team before oil is proven



1 The Lebanese Center for Policy Studies – Establishing a National Oil Company in Lebanon; Dr. Valérie Marcel

With an established consortium of companies already in Lebanon, a core Lebanese team can be created that will accompany the operators throughout their activities from the start of the exploration phase. The main objective of establishing this “shadow” team will be to gain local, hands-on experience throughout the critical activities of operations.

Housing the core team: leveraging existing entities – The core team suggested needs to be established under an official entity, which raises the question of whether to leverage existing entities as interim shelters until the NOC can be successfully established, or to launch stand-alone new entities. Looking at the current status, it is clear that the LPA can become this interim shelter, as it already has an established role as a technical advisor to the Ministry. The viability of this core team will be sustained through the established LPA, and eliminate the risk of premature creation of a national company that might overburden the state’s treasury.

A second option would be to create (or transform existing oil-managing entities) a stand-alone operating entity within the Ministry of Energy and Water – a team that is close enough to the LPA to maximize knowledge sharing, but far enough as to not discourage international watchers when they see

both regulators and future operators under the same roof. Both options need further detailing and assessment, but they constitute viable possibilities to ensure early state participation in operations from the start of the sector journey.

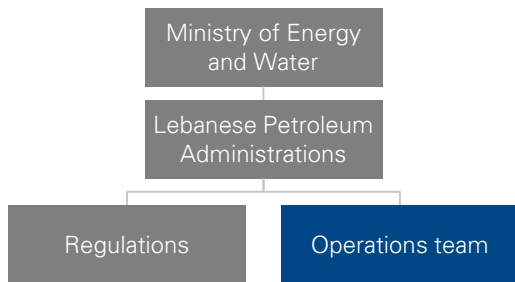
Building national capabilities - growing the local know-how of managing the oil sector

Identifying the required capabilities to launch the oil sector– Article 20 of the EPA stipulates that at least 80 percent of total personnel of rights holders, their contractors and subcontractors shall be Lebanese. This stipulation is clearly in support of achieving active national participation, which is why Lebanon needs to clearly identify and size the required manpower as soon as possible, as to ensure sufficient numbers and quality of skills to drive the sector with national manpower.

An illustrative manpower analysis (Figure 10) shows the typical ramp-up of the manpower required to manage the oil sector, drawn from Arthur D. Little’s projects and experiences. Surely, each country, sector and even field will require its own analysis; however, the main domains, skill levels and education backgrounds can already be identified and prepared for. The next step is to undertake the necessary exercise of defining and

Figure 9: The main reasons behind establishing national oil companies

1 Housing the core team within the LPA



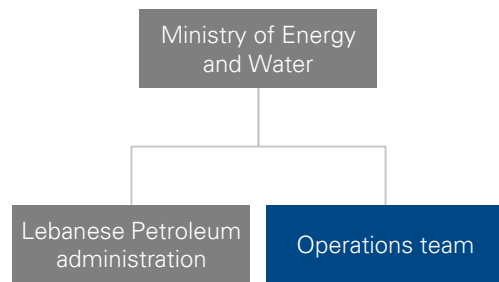
Description

- LPA consists of 2 parts
 - Regulatory functions
 - Operations functions (upstream at the start)
- LPA to have separate regulatory body for policies, sector objectives and operational aspects of O&G sector

Assessment

- ⊕ Full control and authority within one entity
- ⊕ Removes the need to create a national oil company from scratch
- ⊖ Possibility of decreasing international investment appetite
- ⊖ Possibility of repeat resistance from multiple stakeholders, increasing lawsuits
- ⊖ Possible chances of impartial treatment to IOCs

2 Establishing a new entity within the Ministry of Energy and Water



- LPA to be a full time state regulator for all O&G related activities within the state
- A new operations core team to be created within the Ministry of Energy and Water

- ⊕ Full control and authority within the ministry of Energy and water
- ⊕ Independence of regulation and operations
- ⊕ Maximized knowledge sharing
- ⊖ Bureaucracy may increase within the ministry
- ⊖ Capability building and budget requirements to establish new operating entity

sizing the right manpower that will ensure the 80 percent rule is respected, and that Lebanese nationals are directly recruited in the oil sector.

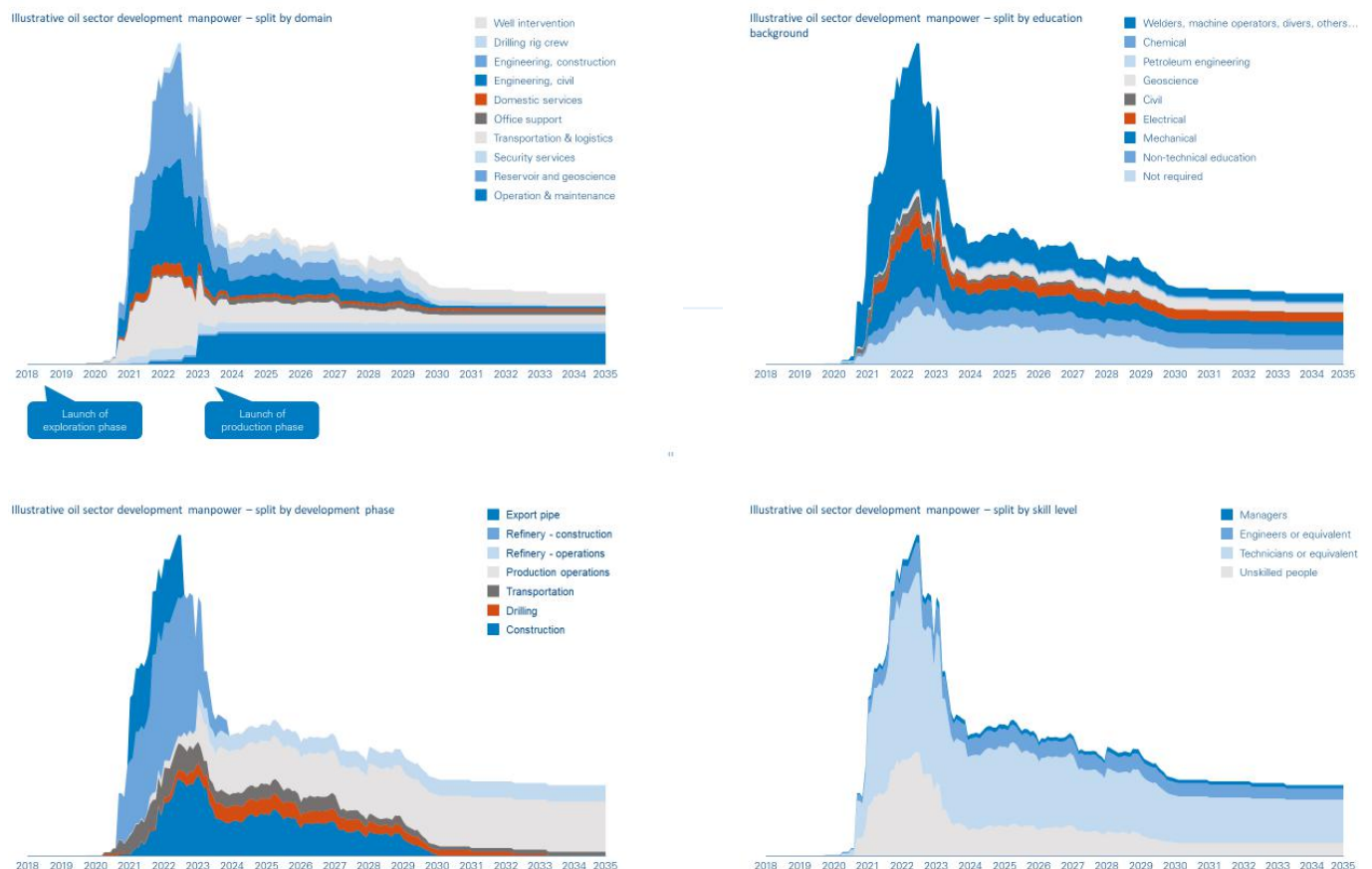
Qualitative stress on the “Lebanization” and training obligations – In addition to the 80 percent condition in the EPA, yearly funding of \$300,000 is agreed to train public sector personnel, with 5 percent yearly increments until production begins, which then goes up to \$500,000 yearly, also with increments of 5 percent. Both requirements clearly support the participation of Lebanese manpower in the sector, but they are so far quantitative only, and do not alone ensure a comprehensive national cadre capable of later independent management of the oil sector. The Lebanese state should therefore assess the possibility of introducing a qualitative condition in addition to the quantitative one, a condition that ensures not only the amount of local participation, but also that the critical positions are filled by national personnel. Together with a serious follow-up to the training agreement, Lebanon can gain solid local know-how, with the numbers and positions enough to maximize its sector independence.

Modifying the educational system to meet the industry requirements – The strong positioning of the state in front of international companies is only made possible through strong

local technical know-how, and it is through young talent that Lebanon will achieve this objective. Looking at the current educational system, most of the oil sector requirements, especially on the upstream side, are not met by local universities and subsequent degrees. Geological and geophysical studies, subsurface engineering, and several other critical specializations simply do not exist in the local curriculums. Imminent and urgent collaboration between the sector authorities and local universities is required to modify the educational system and make it more adequate to the oil sector.

Promoting technical education fields – As seen in the illustrative manpower benchmark, technicians and field workers constitute the vast majority of direct oil-sector employees necessary to enable the expected construction and installation activities. With a fairly advanced higher education sector, the Lebanese state should work on promoting technical field studies, which are often neglected within the mainstream culture, especially within the thriving young population. With maritime offshore, and potential industrial onshore projects expected in Lebanon, the technical workforce will be highly in demand, as there will be a fear of facing shortage of local employees and the resulting search for foreign, cheaper and available hands.

Figure 10: Illustration of required oil sector manpower split by domain, education background, development phase, and skill level



Source: Arthur D. Little

Activating strategic enablers - crucial strategies for strong national leadership

Taking time and not giving away too much in the first round

– History shows that the longer oil reserves stay in the ground, the more they are worth, simply because oil is a highly desired and limited resource. Norway has applied this lesson very well, since it did not rush into giving away a lot of blocks in the beginning. At the start of its journey, Norway did not have any oil experience, and thus its stake in the first rounds was minimal. However, when Norway took its time to develop its capabilities, its share in the remaining blocks grew, and it is in the later licensing rounds that the largest discoveries have been made (Frigg, Statfjord, Gullfaks, etc.), which has ensured higher oil rent for the state company.

Moderate pace of licensing to establish the national learning curve

– Lebanon does not have a very vast offshore surface to exploit – rather, a confined 10-block area with two blocks already licensed. If Lebanon wishes to build a successful operating role, the national teams need to get direct experience throughout the steps of the value chain, starting with the early regional geological studies. A critical way to ensure a comprehensive learning curve would be through a moderate pace of licensing and awarding, since awarding too many blocks too fast will deprive Lebanon of repetitive and deep experience in its own offshore, forcing the country to rely on international capabilities to do the job. The current licensed blocks might be labelled “exploratory” blocks, and Lebanon should move quickly towards establishing “training” blocks, where local teams are better positioned to train throughout the exploration of future blocks. Later, “implementation” blocks will be able to witness local personnel taking a leading position in operations.

Ensuring an attractive investment opportunity in the neighbourhood

– There are numerous factors that international companies consider before investing in licensed areas, and among those is the “welcoming environment” that a country can set for the interested parties. Denmark, for instance, at the start of its oil sector journey, had given a monopoly of its blocks to one consortium of companies, A.P. Moller – and thus had offset the interest of other international firms. The UK, which shared the same continental shelf, also already had two major international oil companies, BP and Shell, and therefore it was normal to believe that the government would give those two companies a more central role than it would give other IOCs. Both of these countries did not provide appealing environments to international investors at the beginning of their oil production journeys. This is a lesson that Lebanon needs to carefully consider, with its absence of local oil companies and know-how.

Strengthening the national position with control of transportation

– The history of oil is full of examples of how controlling the transport network has dictated who secures the

greatest possible share of rent. A prominent one is Rockefeller securing his share of economic rent from the Pennsylvanian oil fields and becoming the largest oil power in the US and the world. When Norway signed its first contract to create a legal basis for exploiting its field, “Ekofisk”; it did not specify where the pipeline would be laid out, or who would have control over these pipelines. Naturally, the exploiting company, Philips, had aimed to have control over the potential pipelines, but Norway’s Statoil saw the strategic importance of how the Ekofisk pipeline would become a trunk pipeline for potential fields further north. The Norwegians reached an agreement in which they allowed Philips to own and operate the pipeline, but with the state reserving the option to come in with 10 percent ownership after two years, using a newly created transport company that would be 50 percent owned by Statoil. This gave the company additional operating roles across the oil & gas value chain, starting with upstream and moving to midstream.

Creating the downstream industry by insisting on bringing oil to shore

– After every field discovery offshore of Norway, committees have been raised to study the possibility of bringing oil ashore, starting as early as 1968. At first, the economic arguments were not in favor of that decision. The market for the fields discovered had clearly been the European continent and the UK. Because of its water power, Norway did not need much of the oil. In addition, looking at the map (Figure 11) and the Ekofisk field discovered at the time, it did not make sense to bring oil to Norway and then back in the same direction.

Figure 11: North Sea continental shelf showing the Norwegian, British and Danish economic zones and the positioning of the Norwegian Ekofisk field



Source: Arthur D. Little

However, in 1981, after Norway had developed its engineering know-how and position, the decision to construct the Statpipe

was finally taken. As answered by Arve Johnson at the 20th anniversary of Statoil, this decision was the biggest during the company's first 15 years². And, indeed, it was a great decision, considering the main political and technical goals of establishing Statoil: all the major petroleum projects constructed along the Norwegian shore would not have been possible if it weren't for the Statpipe. It was this decision that raised Statoil's operatorship role, and with it, expanded the state's participation to engulf the entirety of the value chain, all the way to downstream. Not only did this decision expand the national role along the oil value chain, but its ripple effects helped create additional economic activities in industries and sectors that supported or benefited from the onshore oil activity.

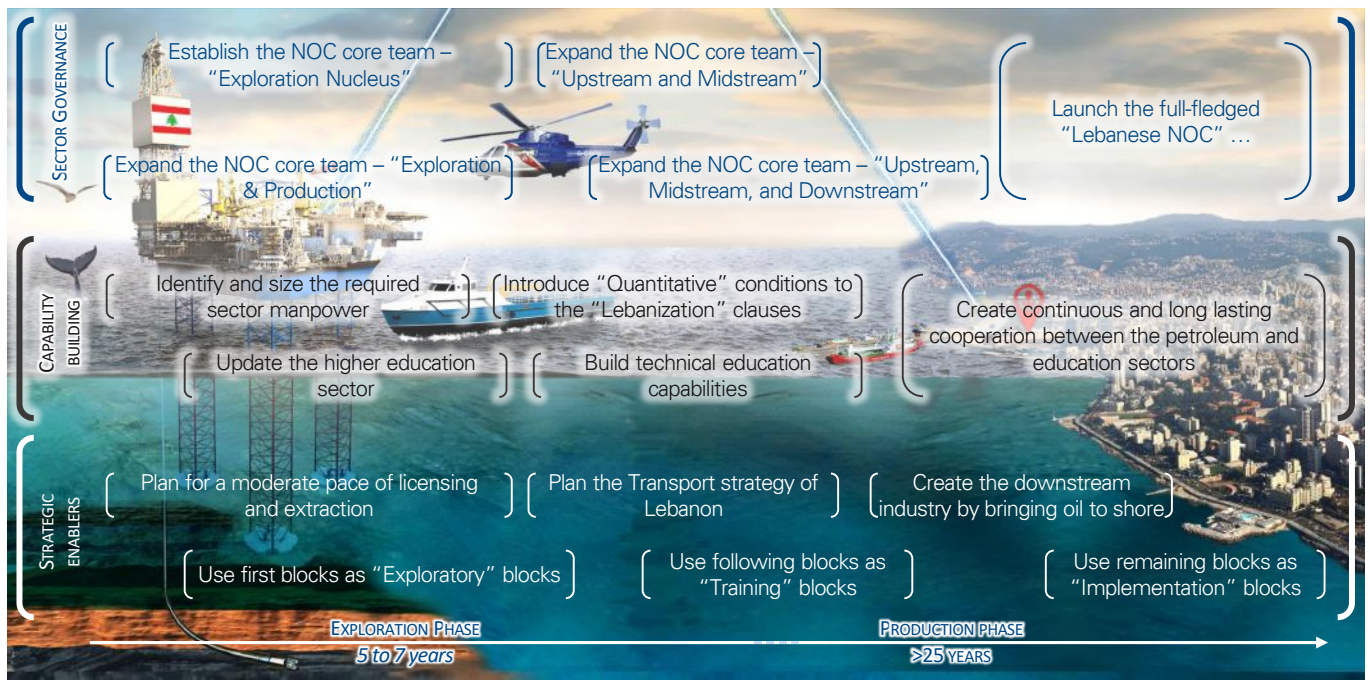
² Source: The Norwegian oil experience - Helge Ryggvik

3. Sector roadmap: how to build the national operating role?

The major driver for successful national involvement in the oil sector is the achievement of governance and control supported by local technical know-how. The Lebanese authorities need to start acting fast and align over the objective of building a solid local sector. The first dimension to stress is the early creation of a state core team, one that can replicate the consortium IOCs model and learn from their experiences to build the local learning curve. The other critical dimension to focus on is the raising of national capabilities. The state needs to take the training and Lebanonization clauses very seriously and stress effective learning methods, along with a qualitative approach to the Lebanonization factor of 80 percent. In addition, this factor cannot be guaranteed without procuring local talents. This issue needs to be quickly acted on by adjusting the local educational system to suit the oil sector requirements.

The Lebanese oil sector journey, similar to that of many countries, is a long and perilous one, faced with tremendous challenges along each step of the road. If the Lebanese state wishes to activate its operatorship role, a choice that would help maximize its oil rent, it will need to take strategic, bold and, most importantly, wise steps in the early years of the journey. As history has proven with numerous oil-producing countries, the ultimate guideline for success is the establishment of strong local know-how that is capable of activating the national role in oil activities, as well as supporting a strong position in front of international oil companies.

Figure 12: Overall roadmap to implement the strategic framework for launching Lebanon's oil & gas sector



Source: Arthur D. Little

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Building the Lebanese oil sector - Strategic thoughts for a successful national experience

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Our consultants have strong practical industry experience combined with excellent knowledge of key trends and dynamics. ADL is present in the most important business centers around the world. We are proud to serve most of the Fortune 1000 companies, in addition to other leading firms and public sector organizations.

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