آفاق اقتصادية

Āfāqiqtiṣādiyyaẗ

مجلة علمية دولية محكمة تصدر نصف سنوياً عن
كلية الاقتصاد والتجارة بجامعة المرقب

رقم الإيداع القانوني بدار الكتب الوطنية: 50/2017

E-ISSN 2520-5005

Oil and Gas Sector in Libya

SWOT Analysis to Evaluate Investment Environment (Post – 2011)

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Cite This Article **(APA)** إقتبس هذه المقالة **(APA)**:

Ben-Taher, Hasen A. (2020). *Oil and Gas Sector in Libya SWOT Analysis to Evaluate Investment Environment Post – 2011.* Āfāqiqtiṣādiyyaẗ Journal. 6[12] 1-23.

قطاع النفط والغاز في ليبيا

تحليل SWOT للتقييم بيئة الاستثمار للفترة ما بعد سنة 2011

المستخلص

قدمت الدراسة تحليل اقتصادي بأستخدام أسلوب التحليل الوصفي وأسلوب تحليل SWOT حول مسألة تقييم بيئة الاستثمار في قطاع النفط والغاز الليبي خلال الفترة ما بعد سنة 2011 ، وهنا تجدر الاشارة بأهمية دراسة جدوى الاستثمار في قطاع النفط والغاز خلال فترة تغيرت فيها بيئة الاستثمار بالكامل بالمقارنة بالفترة التي سبقت سنة 2011، حيث أُستهدف هذا القطاع بشكل مباشر من قبل النزاعات القبلية والسياسية والعسكرية داخلية وخارجية، وظهور بما يسمى بإقتسام الثروات بين الأقاليم الثلاثة الليبية، بإعتبار قطاع النفط والغاز القطاع الوحيد الذي يمثل ثروة البلاد، والذي عرض بعض الحقول والمواني إلى إغلاقات متكررة مما أثر بشكل مباشر على البنية التحتية للقطاع وعلى الكمية المنتجة والمصدرة من النفط والغاز ، وإلى جانب تلك المتغيرات الداخلية التي خصت بها ليبيا هناك تطورات أخرى خارجية طرأت على الأسعار العالمية للنفط فقد شهد قطاع النفط هبوطاً كبيراً في أسعاره إن هذا التراجع في أسعار النفط والمتغيرات الداخلية لها الأثر والدافع المباشر في إبراز أهمية القيام بدراسة جدوى الإ ستثمار في قطاع النفط والغاز الطبيعي الليبي، في إطار تقديم الدراسات والمعلومات التي يحتاجها المستثمرون لبناء قراراتهم عليها.

توصلت الدراسة إلى أن قطاع النفط والغاز في ليبيا أبو القطاعات الاقتصادية إن صح التعبير، لما يمتلكه هذا القطاع من نقاط قوة تفوق بكثير نقاط ضعفه، ويجب أن توجه كل الجهود نحوه سواء من جانب الحكومة أو من جانب القطاع الخاص الوطني أو الأجنبي، وأن حالة الضعف والعجز التي تعاني منه المالية العامة للدولة الليبية يجب أن تعالج بالبحث على بديل تمويلي آخر للمشروعات الاستثمارية بالقطاع بدل من توقف وتعطل برنامجه التنموي، ذلك لان انتعاش القطاع انتعاش المالية العامة للدولة انتعاش القطاعات الاقتصادية الأخرى.

واختتمت الدراسة بمجموعة من العناصر المشجعة وغير المشجعة للاستثمار في قطاع النفط والغاز تتغير بتغير نوع ومكان وحجم المشروعات الاستثمارية المرشحة للتمويل والاستثمار، وخلصت بأن مسألة إتخاذ القرار بالاستثمار في مشروعات قطاع النفط تتحدد من خلال استخدام تلك العناصر كمعايير تقيس درجات الفرص والتهديدات التي تحيط بمشرو ع موضوع جدوى الاستثمار، فكلما زادة الفرص وقلت التهديدات كلما صار المشروع مجدي للاستثمار والعكس صحيح.

الكلمات الدالة: قطاع النفط والغاز، تحليل SWOT، ليبيا.

Oil and Gas Sector in Libya

SWOT Analysis to Evaluate Investment Environment (Post – 2011)

Abstract

This paper aimed to study business environment in the Libyan oil and natural gas sector during the post-2011 period, using SWOT analysis with analytic descriptive approach for diagnosing the current and expected status of the Libyan oil and gas sector and identifying the strengths, weaknesses, opportunities and challenges facing the investment in the sector.

The main results of descriptive analysis showed that the strengths of the oil sector are much more than weaknesses and this proves the fact that the Libyan state is characterized by large and encouraging for production and investment in the oil sector. The descriptive analysis also showed that the oil sector has the highest priority in financing and investment and must be preceded by any other economic sector with concern by the Libyan government because it is the main driver of national economic activity.

The study also showed by using SWOT analysis that investment opportunities and threats points are equal with a slight advantage of opportunity over threats and that indicates the feasibility of investment depends on the types, sizes and locations of investment projects.

The study concluded the results cannot confirm the feasibility of investment projects in the oil and gas sector, but it can be used to assess the feasibility of investment in the projects by searching for projects that include the most points of opportunities and less points of threats compared to the study results.

Keywords: Oil and Gas Sector; SWOT Analysis; Libya.

1. Introduction :

The importance of studying business environment in the Libyan oil and natural gas sector at the present is much greater than it was during the pre-2011 period. Because the companies investing in oil and natural gas projects have entrusted the Libyan economic and political environment for decades, and gained significant and stable revenue due to the abundance of Libyan oil and its low density with lack of significant sulphur ratios and its nearness to export ports. In addition, the previous regime was concerned with the oil sector, which provided the sector with security stability and succeeded in keeping the sector as far as possible from internal and external conflicts, as the oil sector is the main sector that secures the sources of income of the regime.

The dramatic changes witnessed by Libyan State after the fall of the previous regime in 2011, followed by political and social chaos that were largely reflected in the oil and gas sector, as this sector was directly targeted by tribal, political and military conflicts, and the emergence of the so-called wealth sharing between the three Libyan regions (Tripoli, Barqa and Fezzan), considering that the oil and gas sector is the only sector that represents the country's wealth. These recent unstable situation has imposed a new and totally different scene on what the oil and gas sector was like before 2011. Some fields and ports have been subject to frequent closures that directly affected the sector's infrastructure and the quantity produced and exported of oil and gas (while writing this paper the oil fields and export ports are closed by some tribes of the eastern region). The disturbances from the lawlessness and the spread of organized crime affected some oil fields from the kidnapping of workers and the emergence of the Islamic State "ISIS" in some areas near the oil fields.

In addition to those internal changes there are other external happens in the world oil prices. The oil price has witnessed a significant drop since June 22, 2014, from the level of $ 117 a barrel, bringing the price of a barrel of Brent crude to its lowest level by about $ 30 in Mid-January 2016, to settle during the last period between $ 55 and $ 65. This decline in oil prices and internal changes that occurred in the oil and gas sector have a direct impact and motivation in undertaking a study on the feasibility of investing in the Libyan oil and natural gas sector, within the framework of providing studies and information that investors need to build their decisions on.

The empirical work of this study relied on the official data and statistics issued by the

National Oil Corporation (NOC), and official statistics related to the oil and gas sector issued by the Central Bank of Libya (CBL), the Audit Bureau of Libya and some reports issued by international Think Tank in the field of oil and gas. It is also worth noting that there are inconsistencies in some data issued from those sources, however, the inconsistencies of data do not affect the reality of the results, because the study depends on the general trends of the data and not on its absolute numbers.

2. Reviewing studies using SWOT analysis:

SWOT analysis is a commonly used method for analysing and positioning an organization's resources and environment in four categories: Strengths, Weaknesses, Opportunities and Threats (Samejima et al., 2006). The internal controllable factors are Strengths and Weaknesses that support and obstruct organizations to accomplish their mission respectively. The external uncontrollable factors are Opportunities and Threats that enable and disable organizations from achieving their task (Dyson, 2004).

SWOT analysis is one of many analytical methods that can be used in an organization's strategic planning process by identifying the factors in these four fields, the organization can recognize its core competencies for decision-making, planning and building strategies. (Akiyoshi and Komoda, 2005). Regarding the survey based on the answers supplied by the Chief Executive Officers of wide range organizations, the SWOT analysis is the most widely applied strategic tool by organizations in the UK (Gunn & Williams, 2007). Recently, a survey about analytical methods used by enterprise in many developing countries for environmental scanning also shows that SWOT analysis is the most frequently used analytic tool (du Toit, 2016).

It seems that the use of SWOT analysis at the level of organizations is the most common, that most of the studies used SWOT analysis at the organization level, however in this study the analysis will be used at the sector level in determining the strengths and weakness of the Libyan oil sector, as well as identifying potential opportunities and threats and making use of them in testing the feasibility of investment in oil and gas sector. The previous studies that used SWOT analysis is not many at the sector level compared to organization level, there have been some studies that applied SWOT on sector level such as:

1) Studies concerned with analysing the oil and gas investment: study by Maryam Saghaei et al., (2012) used SWOT analysis on Iranian oil, gas and petrochemical

products exporters, study by Zhengwei Ma et al., (2014) focused on the development of shale gas industrial clusters in China - based on SWOT analysis,. 2) Studies concerned with analysing the other sectors: study by Kalsoom Akhtar and Syed Shahzaib Pirzada (2014): SWOT analysis of agriculture sector of Pakistan and B. O. Nuga and A.O.Asimiea1 (2015): SWOT analysis of the Nigerian agricultural sector. 3) Studies concerned with analysing business environment: study by Babalola, Yisau Abiodun and Tiamiyu Rashida (2013) SWOT analysis of Nigerian business environment, study by P. Deepa and. A. Latha (2017) mutual funds in India: SWOT analysis, study by Salem Abdulla (2014) Libya and foreign investments: using SWOT model to evaluate the Libyan business environment.

The main advantage of SWOT analysis is its simplicity have resulted in its continued use in both leading companies and academic communities (Ghazinoory et al., 2011). Despite those advantages, there are shortcomings existing in the SWOT method as it produces superficial and inaccurate group of factors relies on personal perception. Due to these disadvantages in determination of SWOT factors, a number of researchers proposed another variation approaches that integrated SWOT with others methods such as (Kurttila et al., 2000; Kangas et al., 2001), and (Lee & Lin, 2008) integrated SWOT with Analytic Hierarchy Process and (Y¨uksel & Dagdeviren, 2007; Fouladgar et al., 2011) integrated SWOT with Analytic Network Process. This study integrated SWOT with Analytic Descriptive Process, by diagnosing the current and expected status of the Libyan oil and gas sector during the upcoming period from an economic perspective at the same time identifying the strengths and weaknesses of the sector and identifying investment opportunities and challenges facing investment in the current circumstances surrounding the oil and gas sector.

3. The legal and technical framework for business in Libya’s oil and gas sector:

This part of the study concerns with analysing the legal, financial and administrative framework in Libya’s oil and gas sector and highlights the technical mechanisms of contracting for investment in the sector.

The Libyan Oil Law No. (25) of 1955 is considered the financial and administrative framework for the oil industry in Libya and the pattern of investment in the oil industry is in the form of concession contracts. Some articles of this law have been amended in the years following its issuance; the most amendments were under Law No. (77) of 1974, which raised the value of royalty due to the concession contracts from 12.5% to 14.5%,. The number of concession contracts concluded with international oil companies in the early 70s reached 137 contracts for 42 companies. Besides the concession contracts there are exploration and production sharing agreements EPSAs, the latest exploration and production sharing agreement form was EPSAs4, which was launched during the year 2008. The EPSA4 is considered the new contractual framework for the oil industry in Libya and during the same period many companies have shifted their contracting from concession contracts to EPSAs. These legislations regulating the oil industry in Libya are the main element that precipitated a rapid growth boom in the field of oil and gas exploration and extraction activities in Libya during the decades that followed the discovery of oil.

As for the legal authority represented Libyan state in contracting in the oil industry, according to the General People's Congress decision No. (10) of 1979, the National Oil Corporation (NOC) is the primary responsible for managing the oil industry in Libya, and it is mandated to achieve the objectives of investment plans in the oil fields, through develop oil reserves and manage its investment in order to achieve the best returns in a way that promotes the Libyan economy. Besides that responsibility, the NOC carries out exploration and production operations through 10 own companies or through participation with others. The corporation also carries out oil and gas marketing operations inside and outside Libyan state.

Table (1) the companies owned by NOC and funded from its budgets

Arabian Gulf Oil Company	Sirte for oil and gas
Harouge Oil Operations	Mellitah Oil
Mabruk Oil	Ras Lanuf Oil & Gas Processing Company
Waha Oil Company	Zueitina Oil Company
Mellitah Gas	Acacus Oil Operations Company

Source: Annual Report of Libyan Audit Bureau, (2016)

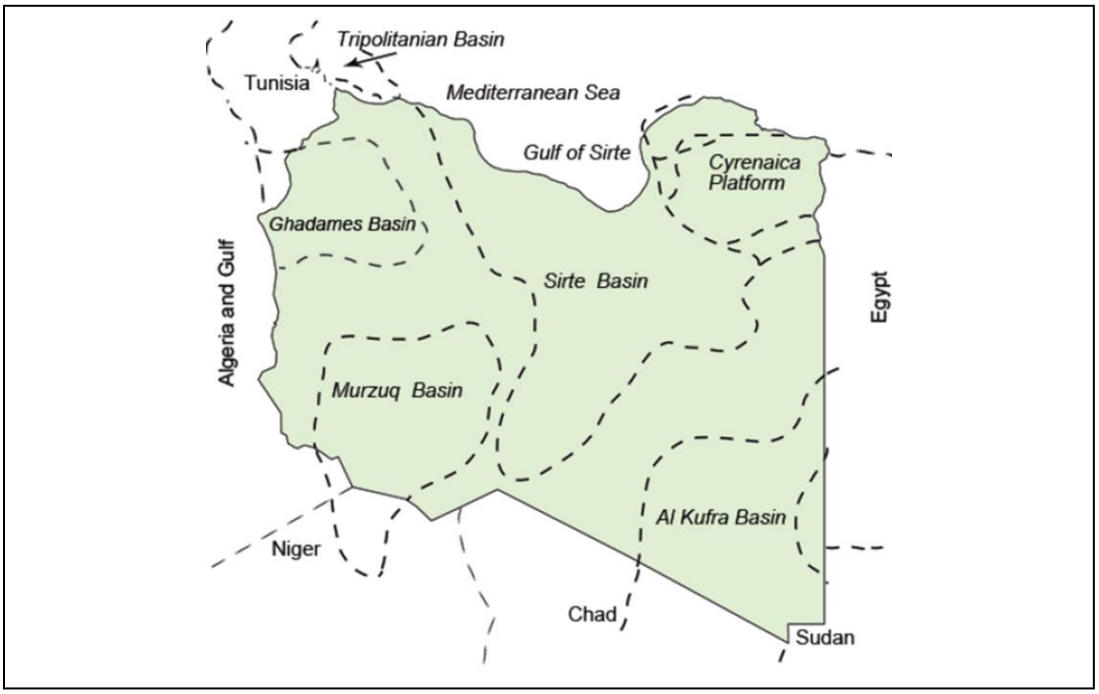
4. Oil and Gas Reserves and Investment Environment in Libya:

4-1 Oil and Gas Reserves:

Investing in the oil field is not like other areas of other investments, as going into oil exploration and investment operations require a lot of expertise and modern technologies in the field of oil industry plus to the big capital, such those capabilities owned only by companies operating in the world with long experiences in the oil field, with financial resources and specialized technical competencies. Also, the oil investment contains risks, as international oil companies often spend their capital on exploration without producing their efforts in achieving commercial discovery of oil, especially in areas that do not contain economic quantities of crude oil, so companies balance between its profits and losses and searching on areas that have proven oil reserves to achieve big profits, and compensates for its potential loss in areas that do not succeed in obtaining investment oil resources.

The Libyan country has encouraging opportunities to invest in exploration and production operations, due to its classification as one of the largest African countries that maintain oil reserves in the interior of the lands, according to BMI Research report (Q2, 2018). Libya has more than a third of the oil reserves in the region, with 80% of proven reserves concentrated in the Sirte Basin, from which most Libyan products are currently extracted from crude oil, while the rest of the Sedimentary Basins producing crude oil and gas: Alkfra Basin, Ghadames, Barqa Platform, Murzuq Basin, Sabratha (in offshore, a distance of 120 kilometres northwest of Tripoli). The figure below shows the locations of proven crude oil reserves on the Libyan map.

Figure (1) Libya main sedimentary basins



Source: BMI Research report (2018).

4-2 Oil and Gas Products

Forty million barrels per year of crude oil production are directed to local refineries for local consumption and the rest is directed to countries that depend on Libyan crude oil production, more than 85% of crude oil production goes to Europe, about 50% to Italy, and about 13% to France, while about 13% go to China via the Suez Canal. As for Libyan Gas production, Al-Wafa and Bahr al-Salam fields are considered main source of Gas production and various fields are located in the Sirte basin, about 60% of natural gas production is directed to domestic consumption and the rest is exported abroad. The foreign participation in the Libyan gas sector is limited, the Italian company ENI is the largest gas producer by WLGP project that is located in western Libya and the majority of its products are exported to Italy via the Green-stream pipeline, (Libyan Organization of Policies and Strategies, 2016).

The petroleum products from gasoline, diesel, heavy oil, cooking gas, and kerosene, do not cover the domestic demand for fuel. The Libyan state sacrifices about half of its financial resources to import fuel and the total quantities of crude oil transferred to domestic use and received by local refineries instead of exporting them, the Libyan state costs twice the value of the fuels produced from local refineries and allocated for local consumption, (it is needed a review of local refineries if we consider the principle of benefit and cost). The one barrel contains 159 Liters of crude oil and about 169 Liters of various petroleum products as shown in below figure.

Figure (2) Contents of the crude oil barrel

2.9% associated gases

1.3% light naphtha

0.2% light jet fuel

5.6% naphtha jet fuel

0.8% kerosene

16.6% heavy diesel

0.9% asphalt

3.7% LPG

38.9% gasoline (automotive fuel)

18.2% light diesel

2.3% oils and greases

2.5% petroleum coal and wax

5.9% for the values of the petrochemical factories

0.2% lost

Source: BMI Research report (2018).

4-3 Investment Opportunities in Oil and Gas Exploration and Production:

Despite the promising reserves, the operations of oil exploration have been stalled for years, due to political instability and the security chaos taking place in the country, which has created an environment that is not encouraging to continue in exploration operations. The discontinuation of oil exploration operations is not only due to the deteriorating internal situation, but also because the decline in world oil prices in recent years, specifically since mid-2014, is another external reason that reduces the opportunities of continuing with exploration operations considering it needs to Capital density and has a high cost.

There is also a major factor that significantly limits potential returns on investment, as the report issued by BMI Fitch Group Company (2018) described the terms contained in the EPSAs4, as unfair and not incentivizing to attract investments, especially in the unfavourable conditions in Libya. The report states that the royalty value of the company owed by the National Oil Corporation (NOC) amounts to 16.67% of the production value, the corporate income tax reaches 20%, and a Jihad tax of 4%, the agreement includes some grants (bonuses) that must be paid to the Libyan State once signature for an agreement and commercial advertising. Plus, there are other grants when the cumulative production reaches 100 million barrels (bbl) and at every 30 million barrels per day, there are also additional taxes (or an increase in the royalty rate) imposed on companies when the total value of taxes paid is less than 65% of profits. The share of the investing company from production can be tendered in tenders. The tender is awarded by contracting with the company that provides the lowest percentage of shares, (this percentage range from 7-25% of profits).

On the other hand, there are some incentives included in EPSAs4: the relations between the investors (companies) and National Oil Corporation’s affiliated companies are not directly in the oil field development projects, but are negotiated directly with NOC, this will lead to avoid the traditional resistance to investments by local companies, which is filled with surplus of employees, reached to more than 50.000 employees working for the NOC and its affiliated companies. Although there are some incentives in EPSAs4, the agreement contains requirements that make exploration on a wide range unattractive in a high-risk market such as Libya. Plus, the increase in royalties, grants and taxes have negatively affects on the development of small and medium fields in the areas where oil activities are initiated for the first time and in the absence of the necessary infrastructure to develop the oil fields, this may contribute to a dramatic reduction in the Libya state's share rather than contributing to increase its share.

To confirm the above analysis, a new agreement (EPSAs4) has not been signed since 2007, despite the encouraging environment for investment was existed in the period pre 2011, according to a report issued by BMI Fitch Group Company (2018), in light of the high degree of risk and expectations that international oil prices will not exceed 80 US dollars per barrel for the next ten years, it is unlikely that major companies will sign EPSAs during the coming period unless the terms of the agreement are reviewed to be more attractive in the field of exploration and oil production, by restructuring terms of agreement to motivate investors and encourage them to invest and exploit the underground oil reserves, especially the re-stimulation and encouragement of abandoned and suspended companies that have completed the period of exploration in Libya without positive drilling results and other companies stopped the operations due political instability and the security chaos. Tables below show those companies as well as the operating companies of the most important fields of oil and gas exploration and production.

Table (2) Abandoned companies after the expiration of the exploration period

No	Company	Abandonment Date
1	Occidental Oil and Gas - Libya	17 June 2013
2	O.N.G – Libya Ltd	6 Feb 2011
3	Shell Exploration and Development - Libya	9 June 2013
4	Total for Exploration and Production	10 Dec 2010
5	Turkish Petroleum Overseas Company Limited'in	12 June 2009
6	CNBC – Libya Ltd	12 Jan 2011
7	Statoil	9 Dec 2010
8	ExxonMobil	9 Dec 2010
9	TIKUKU Japanese	9 Dec 2010
10	Nippon Oil Exploration Ltd - Mitsubishi Cooperation	9 Dec 2010
11	Japex / Nippon Mitsubishi	9 Dec 2010
12	Chevron-Texaco- Libya Ltd	29 Mar 2010
13	Pertamina	8 Mar 2012
14	ENI North Africa	6 Jan 2011
15	Woodside Energy - Ltd	–
16	B.B International – Ltd	9 Dec 2010

Table (3) Suspended companies in the most important fields of Oil and Gas

No	Company	Activity	Field area
1	Government of Libya	Oil	Zultun
2	Eni S.p.A, National Oil Corporation (NOC)	Oil	Abu-alttifel Jalo
3	Waha Oil Company	Oil	Jalo 59
4	National Oil Company (NOC), Total	Oil	Almabrook
5	Wintershall, Gazprom (49%)	Oil & Gas	C7
6	Wintershall, Gazprom (49%)	Oil & Gas	C6
7	OMV, Total, Repsol, National Iranian Oil Company (NIOC)	Oil	NC 115 & NC 186 – Murzuq Basin

Source: Annual Report of Libyan Audit Bureau, (2017)

Table (4) the operating companies of the most important fields of oil and gas

Company	Operation	Activity	Field area
National Oil Company (NOC)	Production	Oil & Gas	Altahdi
National Oil Company (NOC) (100%)	Under development	Oil & Gas	North Hamada Area 47
Occidental Petroleum, Mubadala Petroleum (20%)	Discovery	Oil & Gas	Block 103-Alnafora
Hess Corporation (8.17%), ConocoPhillips (16.33%), National Oil Company (NOC) (59.17%), Marathon Oil (16.33%)	Production	Oil	Waha- Sirt Basin
Oil India (50%), Indian Oil Corporation (IOC) (50%)	Discovery	Oil & Gas	Bloсck 86- Sirt Basin
Oil India (50%), Indian Oil Corporation (IOC) (50%)	Discovery	Oil & Gas	Block 102/4- Sirt Basine
Oil India (25%), Indian Oil Corporation (IOC) (25%), Sonatrach	Discovery	Gas & Condensates	Area 95-96 Ghadames Basin
Pertamina (100%)	Discovery	Oil & Gas	Block 17-3
Pertamina (100%)	Discovery	Oil & Gas	Block 23-3
Arabian Gulf Oil Company (100%)	Production	Oil	Misla
Eni S.p.A (100%)	Discovery	Gas & Condensates	Area D South of Bahr al-Salam
Gazprom	Discovery	Oil	Block 64 - Ghadames Basin
Gazprom	Discovery	Oil	Block 19
Eni S.p.A (100%)	Discovery	Gas & Condensates	Area D North of Bouri
Zueitina Oil Company (100%)	Production	Oil	103
Saga Petroleum (2.4%), Total (2.88%), Repsol, OMV, National Oil Corporation (NOC)	Discovery	Oil	Block (NC) 186 - Murzuq Basin
NIOC (50%), Eni S.p.A (50%)	Production	Oil	Area A Alrimal
NIOC (50%), Eni S.p.A (50%)	Production	Oil	NC 125 Block District B & F
NIOC (50%), Eni S.p.A (50%)	Production	Oil	Block 118 - Ghadames Basin
Eni S.p.A (100%)	Discovery	Oil	Block 186/1
Eni S.p.A (100%)	Discovery	Oil	Block 186/2
Eni S.p.A (100%)	Discovery	Oil	Block 186/3
Eni S.p.A (100%)	Discovery	Oil	Block 186/4
Arabian Gulf Oil Company (100%)	Production	Oil	Sarir
Hess Corporation (8.17%), ConocoPhillips (16.33%), Marathon Oil (16.33%), National Oil	Production	Oil	Wafa, Jalo, Sidra, Samah and Dahra

Company (NOC) (59.17%)			
Mellitah Oil and Gas (Eni and NOC) (100%)		Oil & Gas	Block NC - 41 Bouri
Total (37.5%), National Oil Company (NOC) (50%), Winstershall (12.5%)		Oil	Block C 137 - Juruf

Source: BMI Research report (2018).

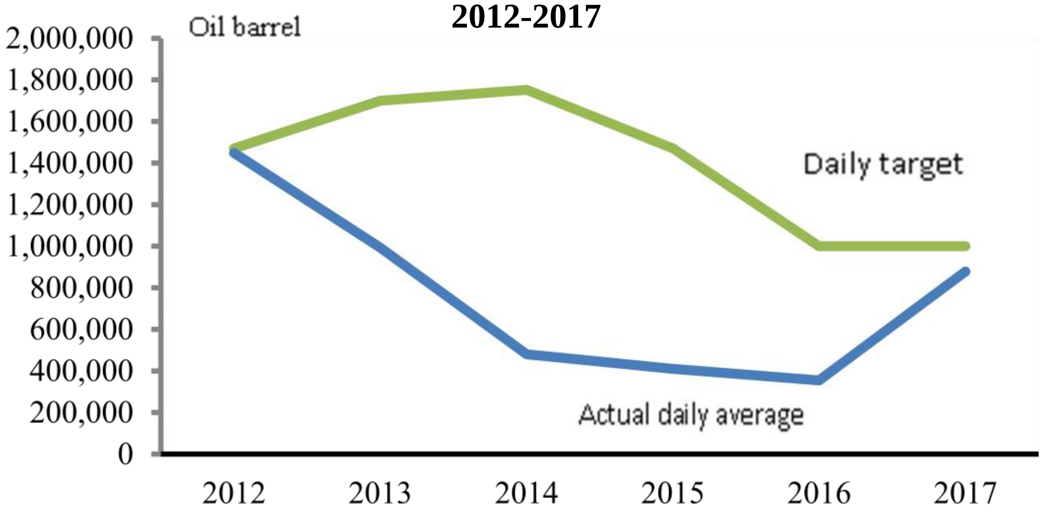
5. The Expected Production of Libyan Oil and Gas for the Next Five Years:

This part of the study is describing and analyzing the current status and production capacity of the Libyan oil sector, in order to estimate the expected production volume and the required investment that increases the sector's capabilities in oil and gas production over the next five years.

During the period 2009-2013, the Libyan oil and gas sector was unable to achieve the goals of the planned development program, the goals aimed to bring the level of crude oil production to 2.25 million barrels per day, and bring the level of natural gas production to 113 million cubic meters per day, by the year 2013, Libyan Audit Bureau (2017). On the contrary, the sector's capabilities decline at the levels of production that it was achieving before 2011, as a result of the closure of the main ports exporting crude oil in August 2013, until the end of the year 2016 and it has been closed again since December 2019, (is still closed while writing this paper).

In fact, when tracking the quantities of oil and natural gas production in the years 2017, 2018 and 2019, the Libyan oil sector has achieved a kind of recovery and a slight increase in the volume of production, but it was not able to reach and return to its previous levels or to the target of production in that years. Despite the opening of oil ports, the internal political division and the international division on a road map that enables the Libyan state to exit from the current crisis is still the main factor affecting the country's operating environment in the coming years, thus the exploration and production operations will be greatly limited during most of the coming period due to the factors that were mentioned in the previous section of this study.

Figure (3) The target and actual daily production of oil during the period 2012-2017



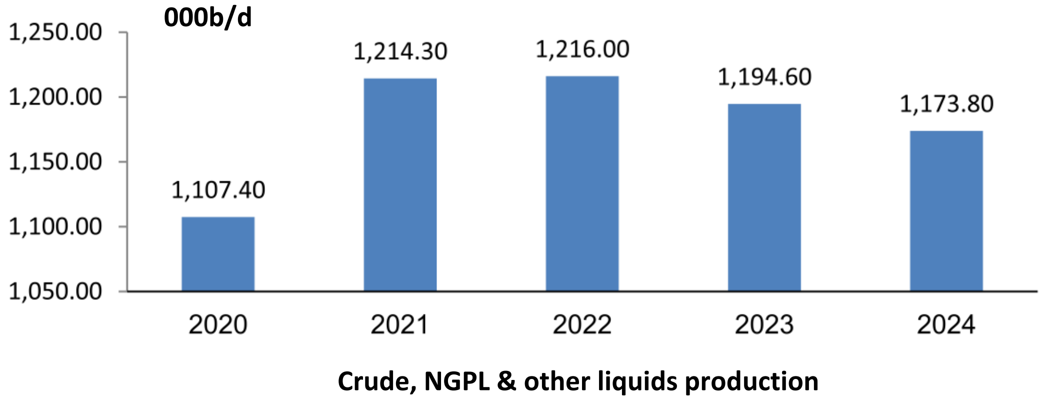
Source: Annual Report of Libyan Audit Bureau, (2017)

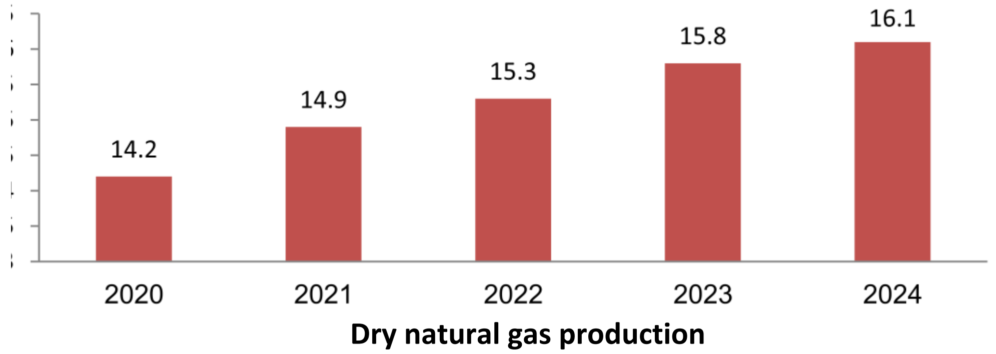
The expectations of recovering the oil and natural gas sector and return to what it was before 2011 is still unexpected for at least the next five years, the slight recovery in the production of the sector may be due to the progress made in the peace talks mediated by the UNSMIL in the call to hold constitutional and parliamentary elections that will appoint a National Unity Government (NUG) to eliminate the political division in the coming period, especially after entering other international parties and proven its ability to influence the parties to the military conflict in Libya, and realise the reality that there is no military solution to the Libyan conflict and start reopening political dialogues between the conflicting parties for the power in Libya

In one hand, the prospects for the Libyan oil sector to recover high levels of production will not be realized during the short coming period due to continue the security chaos and the control of a number of armed militias on part of the infrastructure of the oil sector, as well as emerging operational problems and deficiencies in infrastructure as a result the long stops that occurred in many oil fields. In addition, the deterioration of oil and gas transportation networks, and leaks in production and shipping lines when production resumes in many oil fields and in light of the absence of service companies specialized maintenance work due to lack of security conditions, many oil wells cannot be operated on in short coming period.

On the other hand, the hypothesis of the low possibility of reaching high levels of crude oil and natural gas production during the next five years, may be unrealistic due to the large and proven reserves of crude and gas reserves in the ground and the seriousness of the NOC in engaging the foreign and demotic investors and benefiting from its capital in expanding the financing and investment of projects that encourage exploration and production operations in near future.

Figure (4) Expected Libyan Oil and Gas Production for the Next 5 Year





Source: BMI Research report (2018).

6. The Correlation of the Oil Sector with the Public Budget and Libyan Economy

The period that followed 2011 is considered the most damaging period for the fiscal position of public budget. The country witnessed low production and export quantities of oil because of the closure of oil fields and ports and armed conflicts around the oil crescent as well as low oil global prices, these factors led directly to the decline in the financial flows of the Governmnet Trasury from oil revenues.

The table (5) shows, the overall oil revenues have witnessed a significant decline during the period 2012-2017, achieving an estimated decline of 71% of the amount of revenue in the year of the beginning of the period. This decrease has been directly reflected in the public budget considering that oil revenues form a percentage of about 95 % of the public revenue.

According to the report of the Audit Bureau in 2017, the estimates of the losses of closing the oil ports reached $ 107 billion, equivalent to 150 billion LYD, with a total production loss of 1.5 billion barrels.

Table (5) Oil revenue in Libya for the period (2012-2017)

Billion $

Years	2012	2013	2014	2015	2016	2017
Crude Oil	40,644	31,041	11,748	5,456	3,715	12,147
Gas	2,984	3,040	2,758	1,645	0,539	0,464
Petroleum Products	1,964	1,312	0,793	0,442	0,408	0,543
Petrochemicals	0,119	0,159	0,109	0,66	0,33	0,49
Total	45,711	36,038	15,408	7,609	4,736	13,205

Source: Annual Report of Libyan Audit Bureau for, (2015, 2016, 2017)

Given the actual amount of public expenditures and revenue flows during the same period, it can be seen that the fiscal position is very weak and that the ability to continue to finance development projects has diminished, as shown in the table below the Chapter three was more affected from the decline in public revenues and the ability of the state to cover development expenditures did not exceed 11% of the total public expenditures for the period and the accumulation of the public deficit decreased from 67 to 58 billion LYD in last year of the period as a result of the revenues that was obtained from tax imposed on sales of foreign currencies since 2018. This debt was obtained by the government to cover the shortage of public revenues in the form of loans provided by the Central Bank of Libya (CBL); the amount of this debt is expected to increase during the upcoming period as a result of the re-closure of oil ports since Dec-2019. This situation makes the government reviews notably its ability to maintain the spending levels for all chapters of public budget in upcoming period.

Table (6) The situation of public finance in Libya during the period (2012-2018)

Billion LYD

Year	Actual Revenues			Actual Expenditures					Surplus & (Deficit)
	Oil	Non-Oil	Total	Ch (1)	Ch (2)	Ch (3)	Ch (4)	Total*	
2012	67	3	70	17	13	5	11	49	21
2013	51	3	55	25	14	13	10	65	(10)
2014	20	2	22	24	3	4	13	44	(22)
2015	10	2	12	20	4	4	8	36	(25)
2016	7	2	9	19.5	2.8	1.5	5.8	30**	(21)
2017	19	3	22	20.3	4.4	1.9	5.9	32	(10)
2018	33.5	15.5***	49	23.6	5.7	3.4	6.6	39.8	9
Total of Period	207.5	30.5	239	149.4	46.9	32.8	60.3	295.8	(58)

(*) Including the amount of the public debt

(**) Including contingency expenditures

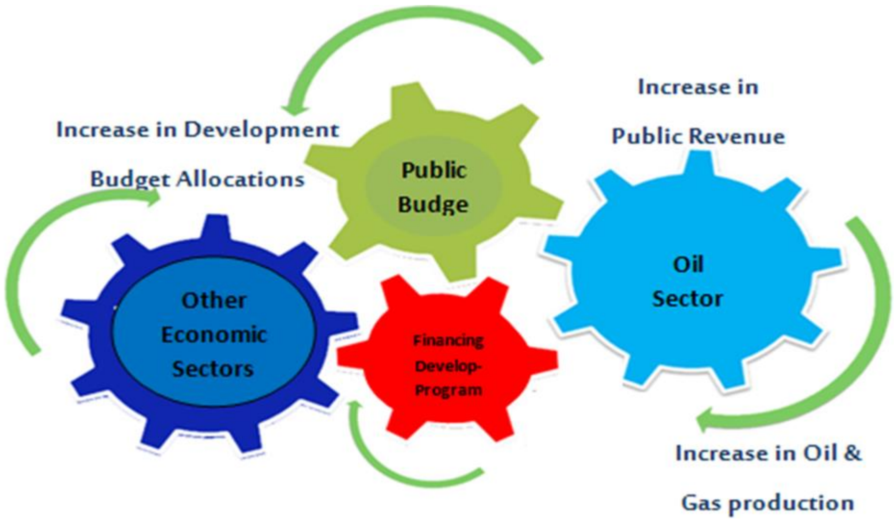
(***) Including revenues from tax imposed on sales of foreign currencies.

Source: Central Bank of Libya, economic bulletins, various issues

The connection of the oil sector with the public budget in Libya is more complicated. On the one hand, the oil sector affects on the size of the annual budget and the main driver of the economy, on the other hand, the oil sector is also affected by volume of the budget and this kind of effects is called two-way relationships. Looking at the figure (5) it can be seen that the decline in public revenues as a result of the drop in oil exports directly affects the allocations of the development program to the oil sector. According to Libyan Audit Bureau report (2017), the implementation of the development program for the oil and gas sector, which aims to increase the production capacity of oil sector at a rate of 755 thousand barrels per day, has been suspended because of shortage of public budget. This program targeted to develop oil fields, gas production and exploitation, and finance 56 projects for the period 2010-2014, with a financial allowance of 15 billion LYD.

However, according to the same report, during the period 2010-2016, the total amount has already been liquidated from the public budget allocations for oil and gas development program did not exceed 4 billion LYD, as a result of financial deficit, that led to wasting the opportunity to increase the volume of crude oil and natural gas production, and then lost the opportunity to increase the volume of public revenues for the Libyan state. In other words, the investment multiplier effect of oil sector is very big, as any increase in investment will lead to an increase and improvement in the quantity of production, which will lead to an increase in the public revenues obtained from oil exports, which in turn will lead to an increase in the allocations of development budget, and from then the increase in investment spending on other economic sectors.

Figure (5) The relationship between the oil sector and public finance



Source: Developed by researcher

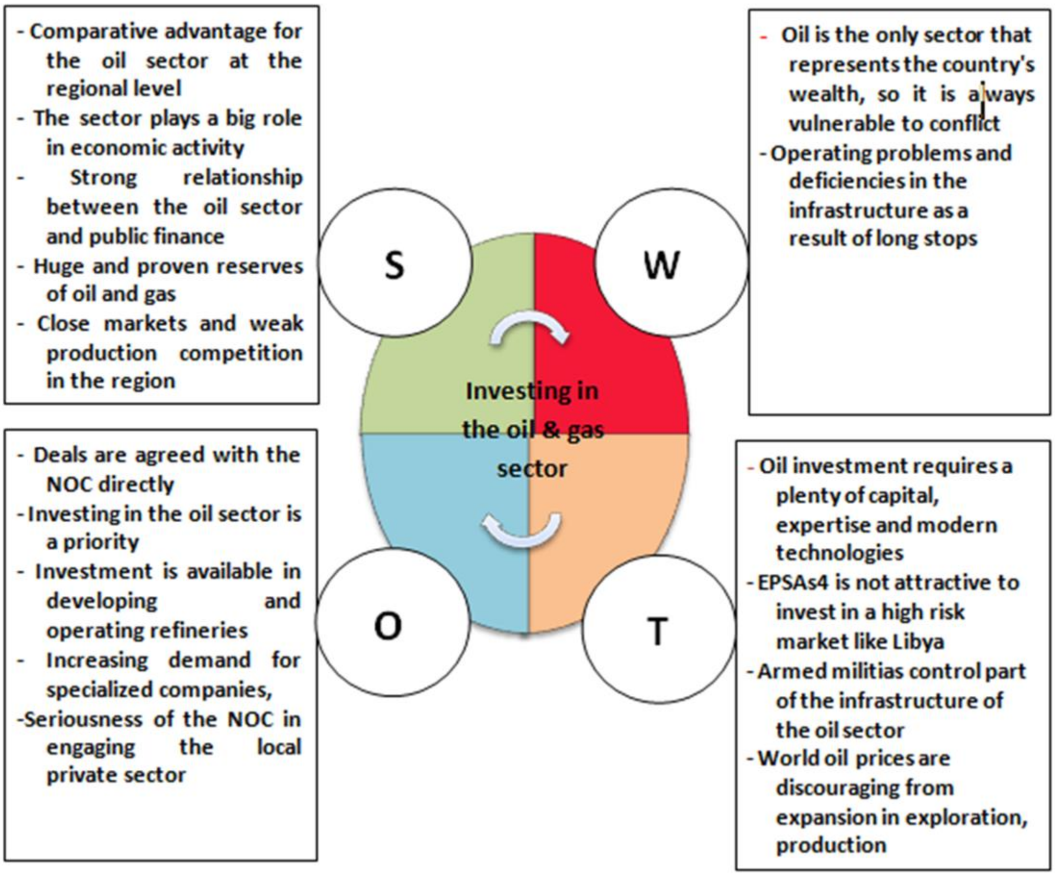
7. Feasibility of Investment in the Libyan Oil and Gas Sector- SWOT Analysis:

This part of the study interested in analysing the Strengths and Weaknesses of Libyan oil and gas sector and analysing threats and opportunities investment in the sector using the SWOT method. As mentioned at the beginning of the study, the area of use SWOT analysis may be unfamiliar at the sectoral level; however, this type of method is favourable for use in this case, especially after the descriptive analysis that preceded this section showed the availability of the elements of SWOT analysis. Realistically, it is not enough to make an investment decision in the Libyan oil sector only based on setting up a general impression of the current status of the sector, but must show the internal features of the sector (strengths and weaknesses) and external influences surrounding the sector (opportunities and threats) to assist the investor to determining the types of projects that make the most of the sector's strengths while avoiding its weaknesses, which are the biggest available opportunities and the lowest risk in the sector.

Table (7) SWOT analysis of the Libyan oil and gas sector

Strengths	• Libya has a comparative advantage in the oil sector, which gives state a regional role in specialising in the oil industry and no other economic sector. • The oil sector revenues directly affect the Libyan economy, especially in light of the inability to diversify the sources of income in Libya during the near future. • There is a strong two-way relationship between the oil sector and the public budget. • Libya is one of the biggest countries that have encouraging opportunities to invest in oil and gas exploration and produce its proven reserves in the ground. • The largest demand for Libyan crude oil and gas comes from Europe, which is characterised by near geography and also low transportation costs because the sea transport is considered one of the lowest costs of oil transportation.
Weaknesses	• The oil and gas sector is the only sector that represents the country's wealth, so it is always vulnerable to tribal, political and military conflicts inside and outside country. • The oil sector suffers from operational problems and deficiencies in infrastructure as a result of the frequent stops in many oil fields.
Opportunities	• The deals in the oil and gas transitions are agreed with the National Oil Corporation (NOC) directly. • Investing in the oil sector is the priorities of the Libyan state. • Investment is widely available in upgrading existing refineries, building new refineries and increasing the manufacturing capacity. • The increasing demand for service companies specialised in maintenance and development work and the seriousness of the NOC in engaging the investors and benefiting from their investment in covering the deficit of NOC budget. • The need for funds out- public budget, by opening investment in projects of the sector’s development program.
Treats	• Investing in the oil field requires a lot of expertise and modern technologies in the oil industry, in addition to the availability of large capital. •The terms and conditions stipulated in the EPSAs4 are not attractive for investment in a high risk market such as Libya. •Insecure situation and armed militias controlling part of the oil sector eliminate hopes that the sector will recover in the coming period. • World oil price forecasts are discouraging for expansion in exploration and production operations that require large capital.

Figure (6) SWOT analysis of the Libyan oil and gas sector



The SWOT analysis shows that the strengths of the oil sector are much more than weaknesses and this proves the fact that the Libyan state is characterized by large and encouraging for production and investment in the oil sector, with its large oil reserves spread over all Libyan regions and also because of its geographical nearness from the countries consuming crude oil and natural gas, as well as its distinction by the comparative advantage of oil in its location with the countries of the region.

These strengths have formed a market environment conducive to investment and development of production in the oil and natural gas sector in Libya, as the competitiveness in the region's oil supply is not tough and at the same time the oil production is very large demanded from the countries of the region. Simultaneously the previous sections of this study confirmed that the oil sector has the highest priority in financing and investment and must be preceded by any other economic sector with concern by the Libyan state because it is the main driver of national economic activity.

The current environment for investment in the Libyan oil and gas sector which is represented in points of investment opportunities and threats, the SWOT analysis shows that points may be even with a slight advantage of opportunity over threats and that indicates the feasibility of investment depends on the types, sizes and locations of investment projects. In other words the results of the analysis cannot confirm the feasibility of investment projects in the oil and gas sector, but it can be used to assess the feasibility of investment in the projects by searching for projects that include the most points of opportunities and less points of threats compared to the study results.

8. Conclusions

The study provided an economic analysis on investment in the Libyan oil and gas sector with its current and expected status during the upcoming period and concluded that the oil and gas sector in Libya is the “father” of economic sectors because this sector has much more strengths than its weaknesses and all efforts should be directed towards this sector, whether by the government or the foreign and national private sector. The weakness and shortage that the Libyan public budget suffers from must be addressed by searching for other alternative financing for investment projects in the oil sector instead of stopping and stalling its development program, because the recovery of the oil sector means the recovery of the public finances that lead to the recovery of all other economic sectors in Libya.

In conclusion, the study presents a set of encouraging and non-encouraging elements for investment in the oil and gas sector related to the type, location and size of nominated investment projects for financing and investment and concluded that the decision to invest in oil sector projects is determined through the use of these elements as criteria that measure degrees of opportunities and threats surrounding the investment project, that means the more opportunities and less threats of projects make them viable for investment and vice versa.

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