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DEPARTMENT OF BUSINESS

OIL PRODUCTION MARKETING AND USE OF OIL IN LIBYA AND LIBYAN ECONOMY

MASTER'S THESIS

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THESIS APPROVAL PAGE

To Karabuk University Directorate of Institute of Social Sciences

This thesis entitled " **OIL PRODUCTION MARKETING AND USE OF OIL IN LIBYA AND LIBYAN ECONOMY**" submitted by **Ibrahim SEGHAER AL GHOWL** was examined and accepted/rejected by the Thesis Board unanimously/by majority as a MA / Ph.D. thesis.

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Signature : 6.4.2018

FOREWORD

I would like to express my sincere gratitude to my supervisor Dr. Fatih Bayram who provides me with helpful comments and feedback. Your instructions were very precious. A further gratitude goes to the staff of my university specially those at my department. I would like to that the participants of my study. Moreover, I would like to thank my mother, my wife and my children who supported me and encouraged me during my study, this would be impossible without your help and prayers. Finally, I would like to present my work to the soul of my father; I know that you are very happy for me. I will be grateful forever for your love.

ABSTRACT

Libya is one of the important countries of Africa. Libyan economy depends on oil and oil derivatives. After the 2011 Arab Spring, Libya has been faced some political and economic problems. This master thesis focus on actual situation oil producing and marketing in Libya.

Keywords: Oil Production, Oil Marketing, Libyan Oil Firms, Libyan Economy

ÖZ (in Turkish)

Libya, Afrika'Nin önemli ülkelerinden birisidir. Libya ekonomisi petrol ve petrol türevlerine bağlı olarak yaşamaktadır... 2011 Arap Baharı'ndan sonra Libya bazı siyasi ve ekonomik sorunlarla karşı karşıya kalmıştır. Bu yüksek lisans tezi, Libya'da petrol üretimi ve pazarlaması ile ilgili güncel durumu değerlendirmek amacıyla hazırlanmıştır.

Anahtar Kelimeler: Petrol üretimi, Petrol pazarlama, Libya petrol firmaları, Libya ekonomisi

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ARŞİV KAYIT BİLGİLERİ (in Turkish)

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ABBREVIATIONS

AGOCO	Arabian Gulf Oil Company
APO	Akakos Petroelum Operations
BP	British Petroleum
CSR	Corporate Socail Responsibility
EIA	Energy Information Administration
EOR	Enhanced Oil Recovery
EPSA	Exploration and Production Sharing Agreemet
GNMTC	General National Maritime Transport Company
IOCs	International Oil Companies
JVs	Joint Ventures
LERCO	Libyan Emirati Refining Company
LIA	Libyan Investement Authority
LNG	Liquefied Natural Gas
NEC	National Energy Council
NOC	National Oil Company
NTC	National Transitional Counsil
OPEC	Organization of Petroleum Exporting Countries
SOC	Sirte Oil Company
WLGP	Westren Libya Gas Project
WOC	Waha Oil Company

SUBJECT OF THE RESEARCH

Libya is fourth largest country in Africa. From the north, it surrounded by Mediterranean Sea. Furthermore, it bordered by five countries, which are Tunisia, Algeria, Niger, Chad, Sudan and Egypt. However, about 90% of Libya is desert or semi-desert. Before the discovery of oil in 1950s, Libya had very little financial and strategic resources. On the other hand, oil has become a crucial commodity as a source of energy and row materials in manufacturing. With regard to geological construction and basins of oil production, in Libya there are 5 main sedimentary basins. They refer to low zones in the earth's shell where residue can collect 4 of these are oil main makers. They are, in terms of importance, Sirte, Ghadamis, Murzuq and Tripolitanian offshore basin. The literature review part of this thesis will explain these producers in some details.

PURPOSE AND IMPORTANCE OF THE RESEARCH

This research aims to discuss the oil production in Libya throughout shedding the light on the biggest producing fields. In addition, an interview will carried out for four engineers who are working in the most famous oil producing factories in Libya. An interview has selected as a way of collecting data because, as Gary (2004) points out, it helps the researcher to gain highly personalized data as well as increase the chance for probing realistic information.

- To evaluate the oil production in Libya prior and after 2011.
- To discuss the most important national and international oil companies. Moreover, to talk about the oil terminal and shipping companies**.**

METHOD OF THE RESEARCH

This study used the qualitative research, which are individual interviews. I selected this method as it helps to access information that cannot access through more quantitative methods. In general, interviews are more effective to find out the information about the interviewees' beliefs and experience and they tend to elicit more detailed answers than questionnaires, (wellington, 2000). In a similar vein, Garry

(2004) argues that interviews help the researchers to gain highly personalized data in order to increase the chance for probing realistic information. However, the interview strategy followed in this study is through Skype as it is quite difficult for the researcher to travel to Libya at the current time. This is due to the load of work that I have to do. On the other hand, conducting interviews has some drawbacks. They can be time-consuming for both the researchers and the interviewees. For me, I waited for quite long time to be able to conduct these interviews, as I had to hang on until the interviewees finish their working shifts. To ask the participants the questions outlined above in point 4.1, a structured or standardized technique was follow. In that, the same questions and in the same order asked to each participant. The advantage of using this type is that the researcher can obtain reliably aggregated responses as the questions asked in constant way. In contrast, the main disadvantage of this type of interview is that it uses relatively restrictive questions that result in relatively restrictive answers. In addition, the time of the interview needs to be restricted so as not to impose too much on participants' time, (Richards, 2003).

A further important point that each researcher should consider is the context of the interview, in terms of time and place. In other words, the interview should not take too long time because its duration affects the quality of the interviewees' responses. With regard to my study, I asked the participants to select the time that suits them to feel comfortable as well as it was Ramadan month and many people feel tired during this month as they fast the whole day. In addition, I informed my interviewees that the interview was going to take only 30 minutes, which they agree it is not too long for them.

As was mentioned in before, the aim of this study is to discuss the oil production in Libya throughout shedding the light on the most important oil producing fields/companies such as Zawia, Zuetina, Ras Lanuf, etc. The discussion includes the situations prior and after the civil unrest in 2011 for these major fields. However, the scarcity of research that concentrates on these issues justifies the need for this research. In order to examine the capability of these fields, the difference between the international partners as well as the production capacity of these fields an interview will be conduct for four Libyan engineers who work in different fields. The interviewees would answer the following questions.

1. Are you working in gas or oil sector?
2. Do you think that oil and gas production is better before or after 2011? Why?
3. How many barrels per day do the field where you work produce?
4. In your opinion, which one of the international partners, who have shares in the field where you work, is better and why?
5. How can you help developing your work, especially in this critical time?
6. In your opinion, what is the best oil field working in Libya? Why?

The participants

As was mentioned earlier, the participants in this study are four Libyan engineers who work in oil and gas sector in four different fields. Their demographic details will given below. In fact, these participants are from my city, which is Zawia. I discussed with them the nature of my research and it will conducted for academic purposes. In terms of confidentiality; however, I informed them that their real names are going to be substitut with fictitious names or simply write the word "interviewees". These participants were happy to take part in this study. The background of the participants is as follows:

Participants one: Omar

He is twenty-five years old. He graduated from the STC (Specific Training Centre) at which the students study the subjects related to oil and gas industry and for three years after the Elementary school. After his graduation from the STC, he worked in Zawia Refinery at laboratories department. His job entitles the examination of samples.

Participants two: Ali

This participant is thirty years old. He also graduated from STC in Zawia city. Ali works in Arabian Gulf Company at the maintenance department. His is responsible for maintaining the instruments like ACs, generators and pumps.

Participant three: Abdullah

He is twenty-nine years old. As the previous participants, he also graduated from the STC in Zawia city. This participant works in Mellitah Company at the operation department. He is responsible for the implementation and functionality of the operation and control rooms.

Participant four: Amer

Amer is thirty-one years old. Just like all the participants and those engineers who work in oil and gas industry, Amer graduated from STC. He works in Ras Lanuf Refinery at the operation department. Just like Abdullah, Amer is responsible for functionality and implementation of the operation and control units.

SCOPE AND LIMITATIONS/DIFFICULTIES

In light of this study, I would like to recommend the following:

1. It would be useful to interview more sample of the Libyan engineers in order to gain a wider range of responses.
2. It would be interesting to follow face-to-face model of interviews with your samples. This type may help the researcher to gain more realistic and more accurate responses.
3. Finally, I would recommend the next researchers to go for a field visit in order to have a closer look for the company's capacity. Furthermore, this visit may help them to develop new ideas for their research.

Limitations of the Study

There are some points that may work as drawbacks of this study, and thus prevent us from generalizing its results. These points can be discuss below:

1. This study does not discuss all of the Libyan Oil Fields as well as the International Oil Companies. It just focused on the most important and effective ones.
2. I felt that the some participants tend to be protective. They escaped from answering the third question (how many barrels does your field produce).

3. A further limitation is that there were no female participants in the study. Although there were female engineers in Libya who works for oil and gas sector, I was not able to interview them and get different points of views. This can attributed to some traditional aspects.
4. A final and most important limitation, the sample of the participants was quite small. I asked other three engineers from different companies (rather than those where the main four participants work), but they refused. They said that they were very busy and cannot participate in any study recently.

CHAPTER ONE:BACKGROUND OF LIBYAN OIL AND GAS INDUSTRY

1.1 The Discovery of Oil

According to Libya: what happened and when? (2011), after creating the new revolution, both England and the United State of America gained authorization in Libya to create military headquarters. In 1956, the first surrnder on oil's reconnoitring granted to international association. However, after three years the initial effective drilling started when one of the prevalent oil fields in Libya, Zletin Oil Field, found out by Esso Libya. In 1961, Libya becomes an exporter for oil with achievement of a 167 km pipeline connecting the vital fields of oil in the internal of the Mediterranean Sea. This has clarified the start of a great increase in production, which would surpass 3 million barrels for evry day (Mb/d) in 1969.

After finding the oil during 1959, Libya was changing from being a poor country that depends on global assistance and the hire charge from USA & UK air bases to begin a rich oil state, (Encyclopedia Britannica, 2011).

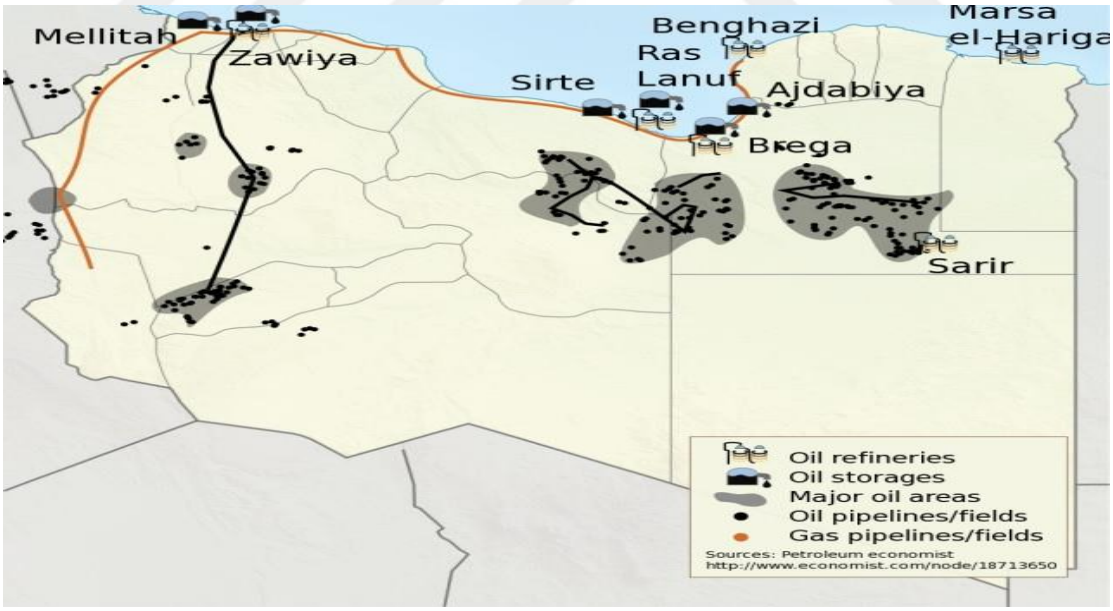

Figure 1: Shows the oil fields in Libya

1.2 Oil Industry Nationalization

The procedure of nationalization of the sector of oil and gas began at the beginning of 1970s. This process started with greater share of revenue, demanding for higher petroleum prices and more control over the improvement of industry. The foreign petroleum companies accepted an increase of the price of more than three times of the previous rate. In other words, the barrel prices rose from $0.90 to $ 3.45 per barrel. On the other hand, Encyclopedia of the nations (2011) points out that in March 1970 the regime of Libya suspended the Libyan Petroleum Company (lipetco). This company's function involved the administration and negotiation of oil enterprise agreements, substituting with the Libyan National Oil Corporation (NOC). However, that year, in July the government nationalized the systems for dispersing oil products that maintained by foreign association.That companey only had the authoroty to dispense such products through the company.

On the other hand, later in 1971 Libya nationalized British Petroleum (BP) as a signal of supporting the Arab as well as Islamic power. In 1973, the Libyan Government nationalized The Sarir field, jointly owned by a Bunker Hunt group and British Petroleum. In the same year (September 1973), Libya published 16-article low nationalizing 51% of the possessions of the all-remaining companies of oil that were working in Libya. This policy was not completely nationalization, but it was part of the plan, which related to Libyanising the economy.

However, Elwarfally (1998), argue that the complete nationalization could not be followed until the experts and technicians of the Libyan staff were ready to take over. Libya had an important fuction in Prohibition of Arab oil on the USA during the awake of the War between the Zionist entity and the Arab countries. Furthermore, in 1974 additional nationalization had occurred. Three American companies were seized the outstanding 49% portion of the following companies: the Libyan American Oil Company, American Overseas Petroleum and California Asiatic company. Then in 1971, Libya nationalized British oil exports as a gesture in support of Islamic ... BP) or completely hold by Libya, who held a 63% of the assets of German.Wintershall 85% of Austrian OMV. These changes were widely understood as the government using the oil resources as a political weapon.

1.3 Libya's Membership of OPEC

The word OPEC refers to Organization of Petroleum Exporting Countries. According to Industry (2011), the policy of Libya's price has confirmed in the meeting of OPEC, which the country has been member since 1962. However, the government under both King Idris and Gaddhfi used OPEC as a mean maximizing its oil revenues. This policy has led to continues relation with Western government as well as the international oil companies that working inside its borders. Nevertheless, in 1970s, Libya's military was to some extent in charge for the measures of OPEC to increase the prices of the oil as well as gain control of production.

On the other hand, Libya became member of OPEC two years after the creation of the organization. In 1962, Libya made 67 million barrels of oil. This amount increased rapidly to 445.4 million barrel in 1965. Nevertheless, Libya was in fourth place for non-communist oil producing countries, after Saudi Arabia, Iran and Venezuela (Taylor and Francis, 1980).

1.4 Oil Industry Regulation Today

The industry of oil in Libya isstate-owned and managed by the National Oil Corporation (NOC) has main authority for oil exploration and production sharing agreement (EPSAs) with the foreign companies. The international oil companies, in turn, are in charge of field improvements and downstream activities. On the other hand, IOC contribution in Libya's oil enterprises was primarily about 49%. Alterations to the manufacture sharing agreement by the EPSA IV in 2005 decreased the IOC of production shares. Since then, the Libyan government requested that IOCs already working in the country to reconstruct remaining contract to fulfil under the new frameworks, (Libya oil and gas profile, 2011).

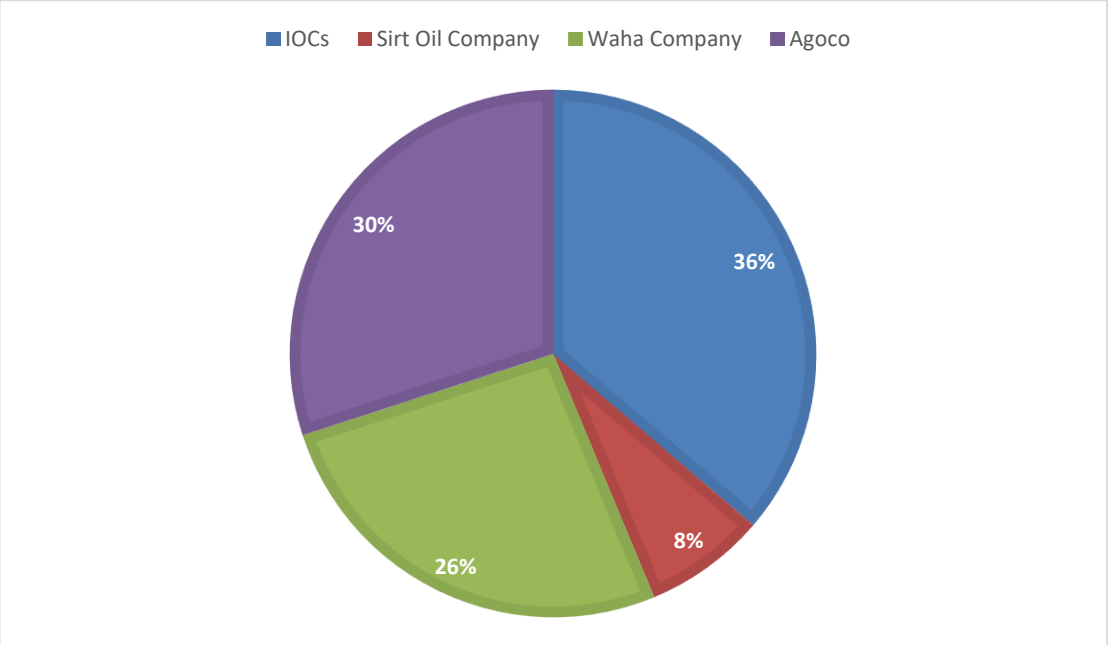

Figure 2: Illustrates the oil production in Libya by 2010

1.5 The Petroleum Law (1955)

Waddams (1980) point out that this law created in 1955. It offered an authorized basis for the industry of oil as well as caused a period of quick increase. On the other hand, the first concession were given in 1955 and during the end of 1968. 137 concession agreements had been given to forth two unlike enterprises. Before that, the 1953 Mineral Law was powered, which enables the exploring process and to be conducted. Nevertheless, the Petroleum Law was the first law to permit drilling operation. This law divided Libya to four areas in the regions of Cyrenaica, Tripolitania and Fezzan and planned to generate the policy of "open door". The quantified intention was to persuade big number of companies of oil to come to Libya in order to coduct oil processes. This showed a distinction compared with the rest of the Middle East countries during the period of big concession, that were approved to one oil main or a joint attached of two. The Libyan law confirms that was not favored country section as what happened in Iraq, Saudi Arabia and Iran. On the other hand, the Petroleum Law in 1955 as afflicted by the following version of the EPSAs continues to put on now. In 1998, Libya begun an evaluation of its Petroleum Law, but because of what happened in 2011 everything was stopped in relation to the new law.

1.6 The Oil State in 1970 And Beyond

During 1972, the National Oil Company (NOC) introduced participation agreement to replace the former concession agreement in order to nationalizing Libya's oil industry. This participation agreement transferred approximately 51% of all businesses to NOC. Many of International Oil companies agreed to the new agreement willingly, but others had their own safeties nationalized completely or partly. The British Petroleum company (BP) was the first company that had been nationalized. However, in 1974 the government of Libya presented the principal Production and Exploration Sharing Agreements (EPSA). About ten EPSA (I) contracts were sign between 1974 and 1979. Nevertheless, in 1979 the government presented EPSA (II) in order to decrease the anxieties over the placement ratios of the reserve. During 1980s, the NOC's improvised sign of allowing East European firms to discover oil joined with further interesting situations of the ESPA (II) agreement was unsuccessful to resolve the main problem of inadequate exploration of the country. Beside this, the country that time was incapable to induce many new corporations in spite of the known presence of the place, (Menas Local Content, 2011).

According to Vandewalle (2006), the Libyan government introduced the EPSA (III) after facing the oil prices' collapse during the mid of 1980s.The effect of the economic sanction as well as the financial difficulties are related to costs of the Great Man-made River. This version of law was introduc with developed terms to attract stakeholders. Special attractions for the IOCs were the rules, which are relevant to recovery of costs. From 1988 to 2001, Libya conferred 47 blocks on EPSA (III) terms. However, the present sample for the discovery as well as production in 2011was the EPSA (IV). This was first introduc in conjunction with the first sanctions adoption in Libya in January 2005.

1.7 Recent State Of Oil and Gas Sector

Both oil and gas form main source of income in Libya and for the Libyan people. The following section will talk about both of them in some details.

1.7.1 Oil Reserves

In Libya, The official estimate of crude oil reserves has risen from 20.3 billion barrels in 1980 to 46.4 billion barrel by the end of 2010. This shows that the Libyan reserves constitute 3.4% of reserves of the globe. Nevertheless, the official estimated reserve for Libya increased from 22.8 billion barrels to 29.5 billion barrels in 1995, where it kept the latter figure until 2000when exploration activity began to increase. Which in turn stimulates the estimated reserve to rise more steadily into the 21st century. On the other hand, Libya in 2008 was assumed to be extremely undiscovered, but with outstanding prospective for oil detections. The statue of Libya's under exploration said to be large because of large sanction. The modern technology's absence and to strict economic terms issued by the Libyan government on foreign oil companies, (CNN Money, 2011).

According to BP magazine (2008), the majority of the agreements that were contracted by international oil corporation starting from 2004 ahead, once sanction was elevated. These agreements termed for manufacturing increase. Nevertheless, there have been states that the capacity of the innovations did not reach to the prospects of some particularly when compared to Iraq. Jim Burkhard of HIS Cambridge Energy Research Associates said that there is not the kinds of discoveries that may end up with strong increase over the next decade.

On the other hand, exploration activities stopped when the war started at the beginning of 2011. However, in October the same year, the international companies begun to return to Libya.

1.7.2 Gas Reserves

By the end of 2010, the official estimated for the reserves of Libyan natural gas was 1.5 trillion cubic meters (tcm). This figure represented 0.8% of global reserves. Nevertheless, in 1980 the Libyan reserves of natural gas was 1.2 trillion cubic meters. This number began to increase throughout 1990s and jumped to 1.5 trillion cubic meters in 2003 before declining again to reach 1.3 and 1.4 trillion cubic meters in 2005 and 2006 respectively.

After the international sanction against Libya had lifted, from 2003 onwards the international oil companies started investment in exploration of hydrocarbon. Taking into cosideration the increase in approximations of proven reserves realized during this period. In 2011, the government of Libya planned for further development regarding its natural gas sector because the country carries on to recover from more that a decade of USA and international sanction. New investments and discoveries regarding the exploration of the natural gas stated at the start of 2011which predicted to increase the present estimations in the near term, (US energy information administration, 2011).

1.8. The Production, Export and Domestic Consumption of Oil and Gas

Oil and gas like any other products, they face many processes like production, exportation as well as the consumption of the producing countries. The following section will shed the light on these processes and activities.

1.8.1 The Production of Oil

The Oil and Gas Journal (2011) points out that the estimated reserves of Libyan crude oil was 46.4 billion barrels in January 2011. However, in 2010 Libya produced about 1.65 million barrel of crude oil per day. Around 150,000 billion barrel per day below the capability but still more than the production allowance established by the Organization of Petroleum Exporting Countries (OPEC), that was 1.47 million barrel per day. Energy analysts Mackenzine (2011) argues that Libya has the possible to make around three million barrel of oil per day, which was its estimated highest production at the end of 1960s.

Around two-thirds of the production of Libyan oil originates from Sirte basin, whereas around 25% derives from the basin of Murzuq and the rest comes from the Pelagian Shelf offshore basin neighboring Tripoli. Within February 2011, Libya prearranged to rise oil reserve through incentive for more investigation. Although suspicions resulting from OPEC quotes, infrastructure restraints and renegotiations of contract showed growth in foreign investment. On the other hand, the National Oil Corporation (NOC) manages Libyan oil manufacture and it is responsible for applying the Production and Exploration Sharing Agreements (EPSA) with International Oil Companies (IOCs). These companies operating works related to production, transportation, exploration and refining. Among these international corporations are

Eni, Total S.A., State oil, Occidental, OMV, BP, shell and Repsol. The major refineries in Libya include Ras Lanuf, which produces 220,000 billion barrel per day (bpd), Zawia produces (120,000 bpd), Tobruk produces (20,000 bpd), Sarir produces (10,000 bpd) and finally Brega produces (8,000 bpd).

- **Restoring oil production post 2011**

By August 2011, the production of oil in Libya dropped to less than 100,000 billion barrel per day because of the revolution. However, according to the National Oil Company the production increased to about 430,000 bpd in October the same year. It was predict to need up to $ 4 billion restoring the oil production of Libya to the levels it retained before the begining of the revolution. The National Oil Company said that on 2nd October 2011 the production of 1.6 million bpd of Libya's pre-war to be reached within the coming 14 months. Nevertheless, the former Oil Minister of Libya Shokri Ghanem assess that the full production wasnot predicted for another 18 months because of the missing and looting parts at oil installation. Energy consultant Wood Mackenzie, on the other hand, said that Libya requires about 36 months to restart the level of its pre-war production, (Petroleum Economist; 2011).

1.8.2 The Export of Oil

The economy of Libya depends heavily on its hydrocarbon exports. According to Energy Information Administration (EIA), the net oil export grasped to 1.53 million bpd in 2010 producing $41.87 billion or 90.4 % of the amount of its entire exports, referring to OPEC's 2010/2011 Annual Statistical Bulletin. On the other hand, around 13% of its oil exports delivered to Asia in 2010 and about 85% to Europe. In particular, Italy received the maximum proportion of the exported oil of Libya that is about 28%, France received 15%, Germany and Spain received the same amount that is 10% while China received 11%. Both the lighter (high API gravity) and sweeter (low sulphur content) grades of oil were naturally exported to Europe, Where the most intense crude oil was shipped to the Asian market, (petroleum Economist; 2011).

The main terminals of oil export in Libya involve Sider, Zawia, Tobruk, Marsa Albarega, Ras Lanuf, and Zuetina. According to National Oil Company, Libya stopped

export of oil by August 2011 because of the revolution but export were close to 400,000 bpd in October 2011.

1.8.3 Domestic consumption

Before the revelation of 2011, the Libyan energy market were small imports of the amount of their exports of oil, with the exhaustion of local oil in 2010 predicted at around 270,000 billion barrel per day. During 2010, the National Oil Company stated that Libya's oil use was increasing at the normal amount of 7 % yearly. Oil met about 72% of Libya's need of power during 2009 and the natural gas completing the lasting 28%.

1.8.4 The production of natural gas

According to Reuters (2011), in January 2011 Libya had reserves of the natural gas of about 1.55 trillion cubic meters at which the current new findings and investments in exploration of natural gas were estimate to increase. In 2009, Libya made around 29.3 billion cubic meters of gross gas. About 15.9 billion cubic meters of the total amount was marked dry natural gas whereas the remained vented or re-injected in order to enhance the recovery of oil.

On the other hand, Libya had a significant growth in the production of its natural gas in 2003, in the similar year when the sanctions of United Nations removed. In February 2011, the Libyan regime prearranged a massive expansion in the production of natural gas in order to rise its use in the sector of power as well as to release more oil in order to be exported. These aims were predicted to be achieved by expanding the improvement and decreasing the natural gas volume, which expected at 3.54 billion cubic meters in 2009. However, in September 2010 the Risk Analysis Agency Business Monitor International expected that the production of Libyan gas would hit twenty one billion cubic meters in 2014 and 27 billion cubic meters by 2019. The industry of Libyan natural gas is generally state-run by the National Oil Company. Nevertheless, many international corporations do work like production, exploration, and natural gas shippment for instance Eni, BP, Shell and Exxonmobile. The most important producing Libyan gas fields involve Attahadi, Defa-Waha, Hatiba, Zeleten, Sahl, Wafa and Bahr Essalam.

1.8.5 The export of natural gas

The Organization of the Petroleum Exporting Countries Retrieved (2011) points out that Libya shipped 9.97 billion cubic meters of natural gas during 2010. Many of traded natural gas in Libya flows throughout pipes rather than distributed as liquefied natural gas. The pipeline of Greenstream, which is the main characteristic of the Western Libya Gas Project with a capability of 11 billion cubic meters, suggestively added to the export capabilities of Libya's natural gas when it started working in 2004. In the past, only Spain was the buyer of Libyan natural gas, whereas in 2010 the pipeline of Greenstream delivered about 8.75 billion cubic meters to Italy after that it directed to what left of Europe.

In 1971, Libya has become the second country in the world to sell natural gas. However, its liquid natural gas export has persisted low since then mostly because of technical limitations. During 2009, the country distributed about 691 million cubic meters of the liquid natural gas to Spain. The provisions throughout the pipeline of Greenstream were suspended in February 2011 because of civil unrest. The restarted preliminary flow of 3 million cubic meters throughout pipes in the middle of October with authorized quantities to control from the end of November to mid of December 2011.

1.8.6 The domestic consumption of natural gas

According to Oil and Gas Journal (2011), in 2009 Libya used just over 6 million cubic meters of natural gas meeting about 28% of its entire need of energy. In spite of the strategies to increase the use of natural gas for generating the electricity, the consumption of natural gas comparatively constant over the past decade. This happend despite considerable increase in production. This is because project delays and limitations of infrastructure.

In Libya, the natural gas produced around 40% of generated electricity until February 2011. In addition, the electricity demand is rising, the government arranged to surge the use of natural gas in order to meet the needs of domestic electricity generation.

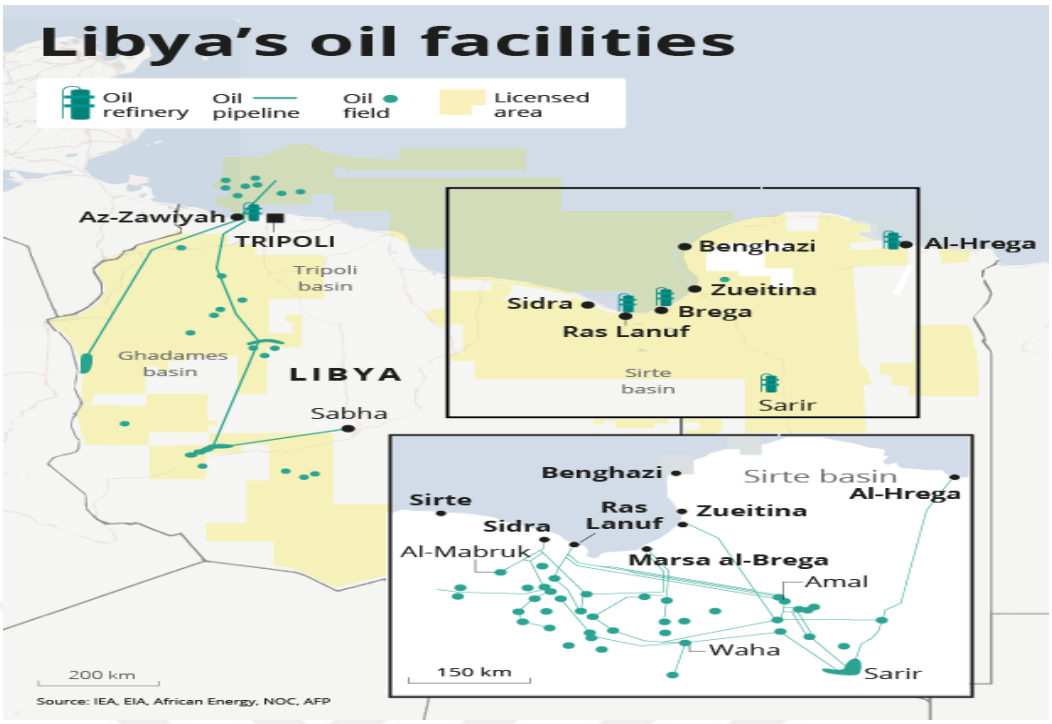

Figure 3: Oil producing facilities

CHAPTER TWO: OIL AND GAS FIELDS AND COMPANIES

2.1 Geology Background

As was mentioned in the introduction, Libya is the forth-largest country in Africa. About 90% of Libya is semi-desert or desert. Until the discovery of oil in the 1950s, Libya had very little income resources and considered promise other than presented by its 1770 km shoreline on the Mediterranean Sea. Libya's greatest noticeable natural landscapes are the Mediterranean coastline as well as the Sahara desert. Although Libya has some high ground, there is no real mountain series except these in the southern desert, nearby the Libyan border with Chad. On the other hand, the most industrious land is in the narrow low land sideway the Mediterranean shoreline and in high ground steppes directly to the south. Moreover, the coastline agriculture areas separated by the Sidra Gulf south of which extended around 800 km of desert.

In the past, Libya separated to three geographical areas, which are:

- Tripolitania in the north -west which covered about 16 % of the entire land area.
- Fezzan in the south-west, this covered 33%.
- Cyrenaica is located on the east and covered 51%.

However, in 1969 the revolutionary regime altered the design of the country Tripolitania to western of Libya, Fezzan to southern of Libya and Cyrenaica to eastern of Libya. Throughout the 1970s, the previous historical expressions frequently sustained to be applied. The counter's northwest is featured with coastal oases alternating with sandy zones, whereas the inland contains Jifarah Plain that terminates around 120 km southward and upswings to construct Jabal Nafuosah highland which stretches around 1000 meters.

The northeast, on the other hand, has less coastal oases and minor plains than northwest. It is featured with a limestone highland around 900 meters identified as Jabal Akhdar. Going directly to south, the belt of barren grazing ends with Sahara desert that spreads south until the border with Chad. The southwest of the country is

located near the desert and it holds the most famous mountains the Tibesti, which grows to more than 2,200 meters.

Libya fights against desertification and shortage resources of fresh water. No more than 2% of the country collects sufficient rain for cultivation. However, the region of Jabal Akhdar in the north-eat receives the heavies precipitation from 400 to 600 mm per annum. Droughts shared through the country and it sometimes ranged to more than two seasons. A lack of permanent rivers can be attributed to low rainfall yet the country has many springs containing large underground aquifers in both southeast and southwest.

The following figure shows the percentage of the National Oil Companies and the International Oil Companies in 2010.

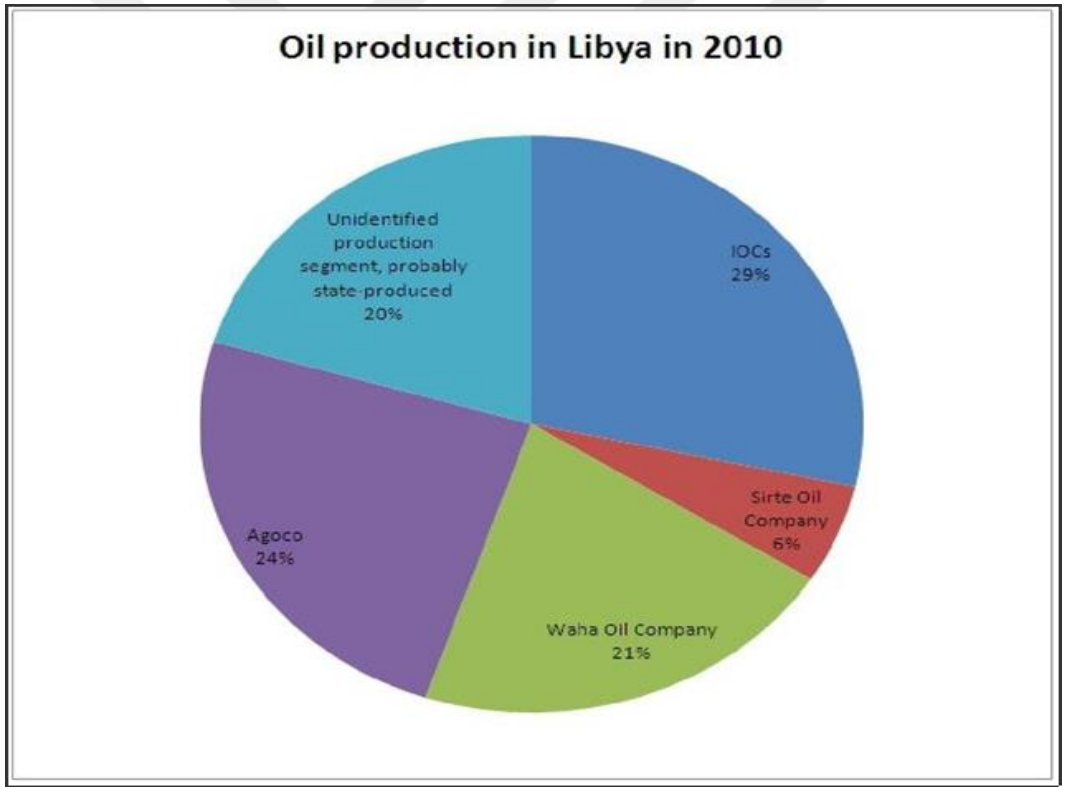

Figure 4: Oil production in Libya

2.2 Geographical Structure & Oil Producing Basins

In Libya, there are 5 main sedimentary basins pointing to low zones in the earth's shell where sediments form as well as economically possible reserves of oil can

be found. Four of these basins are foremost oil producers. According to their significance, they are Sirte, Ghadamis, Murzuq and the Tripolitania offshore basin. On the other hand, two basins are non-productive: Alkufra and the Cyrenaica platform that are located in the southeast and northeast respectively, (Michel; 2001). The following part will talk about these basins in some details.

2.2.1 Sirte basin

This basin is in the center-east of Libya. It is the newest and the most essential basin in this country, which encloses 16 massive oil fields. It contains over 500 million barrels of recoverable oil, while a huge field of gas has a minimum of 3 trillion cubic feet of gas. This basin includes about 45 billion barrels of oil as well as 33 trillion cubic feet of gas, which equals around 117 billion barrel of oil. Sirte basin is ordered 13^{th} in the world's list of petroleum basins, with 89% of petroleum reserves found as well as it is regarded the most productive in North Africa. The oil produced in Sirte basin is very light and sweet crude and its gravity rangs from 44 and 32 API, the amount of sulfur is low ranging from 0.15% to 0.66%. Sarir field, part of Sirte basin, has a capability of daily production of 200,000 barrel by the beginning of 2011, (Energy Information Administration; 2011).

2.2.2 Ghadamis basin

This basin is in the northwest of Libya. Covering about 390,000 square kilometers and includes zones of south of Tunisia and east of Algeria. Ghadamis basin is productive region with complete recoverable reserve of more than 3.5 billion barrels of oil equivalent, with a production of approximately 950 million barrels of oil equivalent in 2009. The basin is located at the Al Wafa Field site, an important gas supplier for Libya's gas projects.

2.2.3 Murzuq basin

It is in the southwest of Libya. It overlaps with the borders of Niger, Algeria and Chad. This basin contains reservoirs with more than 5 billion barrels of oil. On the other hand, the field of Shararah, which is located in Murzuq basin, had a manufacture capability of around 400,000 barrel per day in September 2011, while Elephant field made around 125,700 barrel per day in 2010.

2.2.4 Tripolitanian offshore basin

This basin is located on the seashore of northwestern Libya. The Maritime Tribulation Basin is the location of the Bouri field, with 2 billion barrels of proven oil reserves, the largest of which is in the Mediterranean Sea. The Al Bouri field produced about 44,500 barrels per day in 2009 (Petroleum Economics, 2011).

2.3 The biggest producing fields in Libya

According to Society for Sedimentary Geology (2009), Libya holds the main proven oil reserves in the African continent, however many experts think that many parts of the country are not yet discovered. Contracts covered just approximately 25% of Libya's land with oil enterprises. The under exploration of Libya is because the joined influence of sanction, absence of new technology as well as stringent fiscal terms forced by Libya on the overseas oil corporations.

2.3.1 Shararah oil field

Both Gulf Oil and Gas (2011) and Petroleum Economist (2011) point out that the Shararah massive oil field can be found in Block NC 115 of the Murzuq basin just about 800 km south of Tripoli. Petrom, a Romanian oil and gas company, discovered this field in 1980s. However, in December 1996 began its oil production and produced around 200,000 barrel a day of high value crude oil during 2006. This amount increased to 400,000 barrel per day by 2011.

In October 2011, the Spanish company Repsol has (10%) of the Shararah field in partnership with the National Oil Company, which hold (75%), France's Total (7.5%) and Austria's OMV (7.5%). On the other hand, since the mid of 1998 the light and sweet crude oil manufactured at Shararah oil field has been distributed via pipes throughout the terminal of Zawia west of Tripoli in July 2007.

2.3.2 Elephant oil field

According to the Arabic language, this field known as Elfeel. It has over than 1.2 billion barrel of reserves and it is the largest oil field in the basin of Murzuq. In 1997, this field was discovered by a association run via British company Lasmo in association with Italy's Eni in addition to five South Korean firms at the NC 174

Block in the basin of Murzuq about 750 km south of Tripoli. The production in this field began in 2004 at about 10,000 barrel per day, this figure rose to 125,700 barrel per day in 2010.

On the other hand, Lasmo operated Elephant oil field, which was a portion the energy group of Eni since the latter hold the corporation in December 2000.

2.3.3 Sarir oil field

This field situated approximately 500 km to the east of Tripoli in the basin of Sirte. It is a supergiant oil field containing about 12 billion barrel of oil, which considered being the largest in Libya. Sarir oil field found by British Petroleum in 1961 at a deepness of about 2,700 meters and has a daily capability of 200,000 barrel of oil in 2011, comparing it to 250,000 in 1992. The oil made at Sarir oil field is very waxy, with degree of 37.2 API gravity and it pumped throughout about 400 km pipes to the Marsa Alhariga terminal.

Nevertheless, National Oil Corporation with Arabian Gulf Oil Company (Agoco) runs Sarir. Hunt and British Petroleum (BP) each hold 50% of this field up until Libya nationalized BP during September 1971, after the National Oil Company attained the rest 50% from Hunt in July 1973, (Reuters, 2011)

2.3.4 Waha oil fields

According to Waha Oil Company (2011), this field is located in the southern part of the Sirte basin in the center of eastern Libya. However, Waha oil fields are the first manufacturing fields in the country, which started producing in 1950s. These fields hold measurements of about 350,000 barrel per day in 2009, a decline from around 1 million barrel per day in 1969 and 400,000 barrel per day in 1986.

Maintained by National Oil Company subsidiary Waha oil Company, the Waha oil fields are functioned by ConocoPhillips. The latter holds about 16.33% in the project, whereas the National Oil Company has the biggest segment of 59.17%. Other partners involve Marathon and Amerada Hess who hold (16.33%) and (8.17%) respectively. However, ConocoPhillips and its co-ventures signed a contract with

National Oil Company during 2005 to expand the concession of Waha by the next twenty-five years.

The Waha fields provide crude to the Es Sider's naval terminal, which located on the Sidra's Gulf throughout a 430 km of pipeline. This pipe starts in Gialo field, is directed via Waha and Samah after that it continue north until Dahra before getting to Es Sider, where the tankers are burdened.

2.3.5 El Bouri oil and gas field

This field is situat in the Basin of Tripolitanian around 130 km northwest of Tripoli. It is the first external field with a large lid of gas. Which is the biggest manufacturing oil field in the Mediterranean zone with capacity creation of 44,500 barrel per day in 2009. With regard to its gas production, it contains a predictable amount of 70.8 billion cubic meters of gas and from four to five billion barrel of oil. This field was found out during 1976 in Block NC 41-B in the Libyan part of Gabes' gulf. It is at the deepness of 2,650 meters and covers the area of 5 km.

Moreover, this field started working in August 1988 at the amount of 12,000 barrel per day. During the end of 1988, the production rose to 20,000 barrel per day and after one year (in 1989) the production continued to rise to reach 60,000 barrel per day after 23 new well hooked up. The measurements increased to 70,000 barrel per day by the mid of 1991 after another 27 wells were drilled using drilling service and processing units for the platforms offered by Saipem and Hyundai depend on a contract of $155m. The volume of second phase increased to 150,000 barrel per day met during 1995, demanding the drilling of 55 novel wells from other three zones. However, the field's production decreased posteriorly due to it needed enhanced oil recovery (EOR) amenities and during the year of 1998, the average production was around 60,000 barrel per day.

The ratio of oil and gas that points to the amount of petroleum and natural gas that instantaneously taken from the layers of ground, of the production of El Bouri has roughly 22.7-25.5 cubic meters per barrel. The accompanying natural gas is likely to discharge the solution of gas-oil upon extraction. This can happend at each step of processing and transportation, wells, which have high oil-gas percentage, considered economically undesirable. However, in 2005 there was a plan to reduce the gas-oil

proportion at this field to nearly 17 cubic meters per barrel, throughout the drilling of 15 horizontal wells. El Bori is functioned by Agip (the previous name of Eni) Middle East and North Africa.

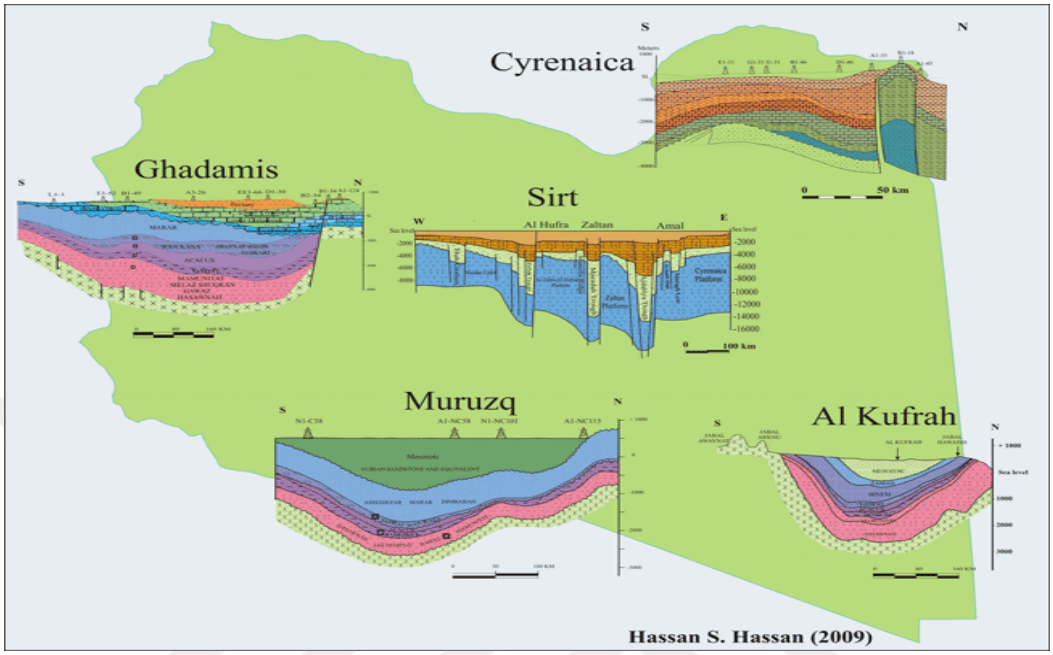

Figure 5: Illustrates the Libyan oil production (bpd) by field

2.4 Western Libya Gas Project

According to Eni Official Website (2011), this project (WLGP) is big integration of upstream, processing as well as services of export that is the first main enterprise to distribute Libyan gas to the European continent. In 1971, Libya come to be the second country around the globe to ship the Liquefied Natural Gas (LNG). Nevertheless, until the setting up of the WLGP in 2004, Spain's Enagas was the only purchaser for Libya's natural gas. Throughout this project, Libya exports compressed gas to Italy and the as well as the European market, besides providing the domestic Libyan market with gas for power generation or feedstock.

2.4.1 The capacity of the project

The WLGP entails transmitting gas from two fields, which are Bahr Essalam, which is, located about 110 km away the Libyan coastline as well as Wafa which is sited around 500 km inside nearby the Libyan border with Algeria, to a plant of treatment and compressor at Mellitah company, which lies nearly 80 km west of

Tripoli. The crude oil and gas with condensates from Wafa transported to the aforementioned company through double 530 km pipeline (which has diamensions of 32 and 16 inches). Nevertheless, two under sea pipes (36 and 10 inches) carry in gas from Bar Essalam. This gas transported from Mellitah to the island of Sicily through the Green Stream at the bottom of the sea pipeline, which placed at 1,127 m depth, it has a diameter of 32 inches and a length of 520 kilometers. This pipe is regarded as the longest pipe in the Mediterranean Sea. On the other hanh, in 2009 Green Stream BV, the firm managing and maintaining the pipeline of gas, amend it daily by 3 billion cubic meters (bcm/y), carrying its entire capability to 11 bcm/y.

During 2010, the project of WLGP created about 10.25 bcm, of which 8.75 bcm delivered through the Green Stream pipes to Italy whereas 1.5 bcm were traded on the Libyan market. Italy's Edison Gas takes about half the amount of the gas sent to Europe, which is about (four bcm) and it used for Italy's power generation. The gas, which is left, imported by other European corporations, among these companies Italy's Energia Gas and Gaz de France (about two bcm each), (Eni, 2010).

2.4.2 The development of WLGP

Bluewater retrieved (2011) argues that this project started in 1999 and accomplished in 2004 which costed 8.7 billion Euro. Eni and Libya's National Oil Corporation (NOC) are the operators; they both hold a 50-50 share in the WLGP's expansion. This project has confirmed Eni's place as the main contributer in the Libyan market of hydrocarbon. The day-to-day manufacture of the company in Libya increased from 230,000 barrels of oil for each day (boe/d) in 2004 to 273,000 (boe/d) in 2010.

On the other hand, in October 2007, Eni signed a new contract about gas and oil agreements with the NOC, spread out its gas enterprises in the coming 25 years to 2047. After that during 2009, Mellitah Oil and Gas BV started making a novel LNG capability at Mellitah intended to construct five bcm of natural gas annualy in order to be exported worldwide. The new capacity and the agreement with Eni have simplified the path to increase Libya's capacity of exporting of gas to about 16 bcm annualy. Eni's agreement development involved an investment of about $14 billion on infrastructure (coordinated by the NOC for a total of $28 billion) as well as the investment of about

$800 million for exploration. Although the contract reconfirmed Eni's essential function in the sector of Libyan gas, it was also seen by way of benefit for the NOC. This extracted the preffered conditions that have Eni covering taxes, royalties, and budgets of investigation and improvement, containing drilling of wells.

The position of NOC was additionaly empowered during April 2010, when Eni traded about 25 % of GreenStream BV to it, the enterprise possessing and running the gas pipe. This divestment added about 93 million Euro to Eni's income but also reduced its stake in the firm to 50 %. This means Eni no any more governs the firm and has accepted from the consolidation zone in May 2010.

Nevertheless, the inflexible trading the NOC employed in its debates with Eni have increased concerns between other main International Oil Companies about the popularity of signing the agreements of exploration and production sharing (EPSAs) with the NOC, which may end up with the participation of minor operators related to gas sector of Libya in the future.

2.4.3 The Effect of 2011 Revolution

The pipe of the project closed at the beginning of the Libya civil unrest in February 2011. Nevertheless, it restarted initial streams of about 3 million cubic meters via the pipeline in the middle of October 2011. According to the Chairman of NOC Nuri Berruien on 13 October 2011, who said that with approved quantities to be firmed by the end of November or mid-December 2011.

2.5 The Refineries in Libya

The following part will discuss the most important refineries in Libya and the effect of 2011 civil war.

2.5.1 Ras Lanuf Refinery

This refinery situated in Sidra's gulf around 370 kilometers west of Benghazi. The biggest oil refinery started working in 1985 in Libya. In addition, the products of this refinery sold inside Libya as well as exported to Europe and to the United States. There is also the harbor of Ras Lanuf and it is one of six oil terminals in Libya.

- **Capacity**

The daily capacity production of this refinery is about 220,000 barrels of oil. Furthermore, it hosts three pipelines of crude oil, which are Defa-Ras Lanuf, Messla-Ras Lanuf and Amal-Ras Lanuf. These refinery operations the oil from Messla and Sarir. However, a big part of its amount produced is delivered to run the fields on the Mediterranean coastline, whereas different portion is provided as feedstock to the plants of neighboring petrochemical, (APS Review Downstream Trends, 2005)

- **Development**

In March 2009, Libya's National Oil Corporation (NOC), the refinery's operator, signed an agreement to a joint venture with a company in Dubai known as Al Ghurair Group in order to spend about $2 billion in order to upgrade Ras Lanuf. Both of them owned half proprietorship of the novel created corporation known as the Libyan Emirati Refining Company (Lerco). This company possesses the refinery as well as runs its operations. On the other hand, manufacture for upgrading, will upsurge the production of the refinery and refining the expensive goods. This is likely to be finished during 2013 at the earliest, which was confirmed by the director of the development of business at Al Ghurair Energy, Sultan Al Ghurair, (The National, 2011).

- **The effect of 2011 revolution**

The Libyan Emirati Refining Company (Lerco) was obliged to close the businesses of this refinery in February 2011. The refinery of Ras Lanuf was taken over by rebels' armies during August 2011. Moreover, a violence that occurs in the refinery during September killed about 17 people and destroyed many small storage reservoir, but the substructure remained undamaged. At the begging of October 2011, the refinery did not receive crude oil, but the work was ongoing to return it to full job.

2.5.2 Zawia Refinery

This refinery is situated about 50 km west of Tripoli as well as accomplished in 1974. Furthermore, it is the second-biggest refinery in Libya**.**

- **Capacity**

This refinery started working in 1974 with a daily capacity of crude processing of about 60,000 barrels (bpd). This figure increased to reach 108,000 bpd through 1977 and in May 2011, it had a measurement of 120,000 bpd. It is a main refinery, which has no switcher to reduce its use for the making of gasoline. Nevertheless, Zawia hosts a production amount of approximately 25 % fuel oil, 40 % middle distillates and 35 % light concentrations good quality of crude oil. The field is able to produce 30,000 tons per year of oil to be sold in the indigenous market, achieving the requirements in Tripoli and neighboring areas. Nevertheless, some amount of this refinery's manufacture of jet fuel, gasoil and naphtha is for exporting. It processes heavy Syrian crude oil besides the light/sweet crude from the plant of Shararah that located in Murzuk Basin.

- **Development**

Zawia refinery requires some development and changes due to many of its products have low quality, depending on APS Review Downstream Trends (2011). However, the attempts of NOC is to find a collaborator in order to improve the refinery. During March 2005, about $280 million contract of construction, production and tracking down about to sign with Uhde (a German engineering company) and unit of ThyssenKrupp, was postponed. In April 2010, NOC tried to sell a 50% of the Zawia refinery in order to renovate and develop it to support the increased demand of national product. NOC's chairperson Shukri Ghanem stated that the NOC was in negotiations with European and American enterprises, yet he did not specify any of the interested companies, (Downstream Today, 2010).

- **The influence of 2011 revolution**

Throughout the revolution of 2011, Zawia was the final working refinery until protestors captured it in the middle of August. However, the oil drifting has stopped mainly since the summer. In contrast, Zawia refinery was working at around one-third of its volume, pumping the crude oil in its containers, when the revolutionaries take control of it. Zawia restarted working at the beginging of October 2011, processing the crude oil shipped from Tobruk basin.

2.5.3 Tobruk refinery

Tobruk refinery is sited on the coast in Libya's northeastern almost 160 kilometres west of the Egyptian border, started working in 1985.

- **Capacity**

The capacity of crude oil produced in this refinery has is approximately 20,000 barrels per day. Tobruk refinery is a section of compound, which comprises one of small terminals for oil export in Libya.

- **Development**

This fix works before the Arabian Gulf Oil Company (Agoco). It is a minor part of the National Oil Corporation (NOC). Toruk refinery experienced some advancements. For example, the recent development is at the beginning of 2000s for amenities including naphtha hydro-treatment, Paraffin isomracyption light, dissuycaneser recycling, and benzene restructuring catalyst, elimination unit (San Francisco Chronicle, 2011).

The effect of 2011 revolution

This refinery resumed working in the middle of September 2011. In other words, it restarted processing the crude oil that pumped from the Sarir field.

2.5.4 Brega Natural Gas Plant and Refinery

This compound is located on the Sidra's Gulf approximately 200 km west of Benghazi. It hosts the complex of second-largest hydrocarbon and comprises of the most ancient Libyan oil refinery (started working from 1970), the plant of gas manufacturing liquefied natural gas (LNG) besides a complex of petrochemical . In addition, Brega delivers gasoline to the zone reaching as far as Benghazi.

- **Capacity**

According to Information Handling Services (2010), the oil refinery of Brega is a covering layer and restructuring capability with a nominal daily ability of 8,400 barrels per day (bpd). The plant of LNG at Brega, which constructed during 1970, is the world's second plant to start working and producing. However, no extensive

modernizations have been done to this plant since it started working. Depending on economics organization IHS Global Insight, it was as of October 2010 requires modernization and repair. With its use of invalid services, with regard to Brega's gas, it is unsuited with international principles and can be shipped to only one recycling in Spain. Brega created yearly up to 3.6 billion cubic meters (bcm), but in October 2008 had not been able to produce over than 800 million cubic meters yearly for decades.

On the other hand, in 2005, Shell company sign up an agreement with Sirte Oil Company, a part of National Oil Corporation (NOC), in order to revitalize and increase the LNG field to iterate it to its main house sign manufacture for an entire of $643 million. However, this project has exposed many deferrals because of organizational difficulties within NOC and its pranches. Furthermore, Brega is located on the initial point of the 670-kilometer Marsa Al Brega-Khoms and Intisar gas pipe. This pipeline offers gas for two key plants of generating the electricity positioned in Zuwaytina and Ajdabya with a capability of about 750 megawatts.

- **Development**

Sirte Oil Company owns and operates this complex. It manufactured during 1960s as well as managed in association with Esso Oil during the 1960s and 1970s. In addition, Sirte Oil Company controled the facilities of Brega since the beginning of 1980s.

- **The influence of 2011 revolution**

Brega continually altered the controllers between Gaddhafi militaries and rebellious armies during the 2011 war, and the company was seriously destroy. In other words, NATO blown-up this complex, a tower of communications and other services in Brega after knowing that they used as weapons store. After leaving the complex afterward the fall of Tripoli during August, Gaddhafi supporters it said also left behind 40,000 anti-tank mines and anti-personnel round the city of Brega and around 6,000 mines on a neighboring beach. The processes in Brega broken up by the revolution in February 2011, due to some extent about 600 overseas labor force evacuated after rumors that Gaddhafi deliberate to bomb the complex, (The Seattle Time, 2011).

2.6 Petrochemical Industries

Libya has eight services of petrochemical manufacturing. The industry of petrochemicals in Libya flourished in the 1980s. However, later it exposed to tentative progress as the developments prearranged to the two biggest complexes, Ras Lanuf and Brega, delayed because of some reasons like financial limitations, a decline in the global business of petrochemical during the 1990s, and a volatile political climate. The sector of petrochemical in Libya received a helping hand in the late 2000s from Gulf, European and US investment. During 2009, the Libyan Investment Authority signed a contract with the producer of the Norwegian fertilizer (Yara) is set to improve amenities at Brega. Nevertheless, since 2008 some companies like the American Dow Chemicals planned to renovate the petrochemical facilities of Ras Lanuf has been on hold.

The main petrochemical companies in Libya are:

- **Ras Lanuf**

Ras Lanuf petrochemical plant placed on the Mediterranean Coastline as well as operated by the National Oil Corporation (NOC). Since starting their working in April 1987, Ras Lanuf's petrochemical facilities have been a vital supplier of olefins, which is organic combinations that are use as the essential chemicals to create other polymers and petrochemicals, to clients in the basin of Mediterranean. The complex has a nameplate capability of the following elements, about 330,000 tons per year (t/y) of ethylene, 80,000 t/y of high-density polyethylene, 80,000 t/y of linear low-density polyethylene, 170,000 t/y of propylene and 585,000 t/y of butadiene. These plastics are used to build a variety of goods ranging from packing materials and plastic tankard to interior design of vehicles. In addition, Ras Lanuf makes about 300,000 t/y of pyrolysis gasoline.

However, through April 2007, the NOC announced that it agreed about fifty: fifty venture with the American enterprise Dow Chemical in order to develop, enlarge as well as activate the Ras Lanuf's petrochemical complex. However, the project has been waiting since the financial disaster that occure in 2008-2009, (ICIS, 2011).

- **Brega**

Marsa al-Brega's petrochemical plant started working in 1978 and made mainly methanol and fertilizers. It experienced the second and third part of enlargements in 1985 and 1991 respectively. This compound hosts two units of methanol with a capability of nearly 720,000 t/y and a production facility of urea for a capability of around 900,000 t/y. In addition, a facility production of ammonia with an ability of approximately 700,000 t/y. However, Brega's facilities were running fewer than 60% ability during 1992 as well as nearly 35% volume at the beginning of 2000s. During 2009, both of the Libyan Investment Authority (LIA) and National Oil Corporation (NOC) reached an amount of $225 million contract with Norwegian fertilizer producer of Yara Foundation to form a joint fertilizer project and renovation amenities at Brega, as was mentioned earlier. The joint venture, known as the Libyan/Norwegian Fertilizer Firm (Lifeco), involves Yara having 50% proprietorship in the production complex of ammonia and urea, with the NOC and LIA both holding 25% proprietorship, (All Business, 2011).

- **Abu Kammash**

The petrochemical complex of Abu Kammash started working during the 1970s. It embraces three departments to make 104,000 t/y of ethylene dichloride, 60,000 t/y of vinyl chloride monomer (VCM), 60,000 t/y of polyvinyl chloride (PVC), 50,000 t/y of caustic soda, and 45,000 t/y of chlorine. A big amount of Abu Kammash is production is conducted outside the country.

2.7 Oil Terminals in Libya

In Libya, there are six key oil terminals as well as storage amenities on the Mediterranean coastline, embracing five in the west of Libya. These oil terminals are Es Sidra, Zueitina, Ras Lanuf, Marsa El Brega and Marsa El Hariga and Zawiya in the West. In January 2011, before starting of rebellion, those terminals joined to produce about 1.157 million barrels for each day (bpd). However, some minor oil stations overloaded about 333,000 bpd, making Libya's overall packing size, just beforehand civil unrest in 2011, 1.491 million bpd, (OPEC Retrieved, 2011). These six terminals can summarize as follows:

- **Es Sidra**

It is an offshore terminal of oil, which positioned in the Gulf of Sidra. Nearly 200 ships yearly frequent it. Moreover, it is Libya's principal terminal with regard to filling capacity, which was 447,000 barrel per day during January 2011. This oil terminal has four loading berths for uploading crude oil, two conventional buoy berths besides two points of buoy-mooring (SBMs) in order to upload tankers of up to 250,000 dead weight tonnage (dwt) at a supreme amount of 6,600 tons per hour.

- **Ras Lanuf**

Ras Lanuf's export terminal positioned 600 km east of Tripoli on the Gulf of Sidra. It accepts almost 300 ships for each year and has uploading measurements of 195,000 barrel per day. This oil terminal contains two conservative buoy docks as well as two Single Buoy-Mooring Point. They have the ability to load the containers of up to 250,000 (dwt) with crude oil products or high-level products of 7,000 tons/hour.

- **Zawia**

Zawia is lokated in about 50 km west of Tripoli. It operates 24 hours daily, receives roughly 480 containers each year. Zawia has uploading amount of 199,000 barrel per day with five offshore docks, which serve containers of untill 140,000 dwt for both crudes as well as oil products. Crude oil are loaded at a highest amount of about 4,500 tons/hour and the refunded industrial products at 500 tons/hour.

- **Zuetina**

This oil terminal lokated in about 130 km south of the city of Benghazi and deals with roughly 270 ships every year. It has a filling amount of around 214,000 barrel per day and five offshore crude oil uploading dockyards. They serve containers of untill 270,000 dwt, uploading this amount at a highest ratio of 6,500 tons hourly.

- **Marsa Albarega**

This oil terminal lokated in the Sidra's Gulf almost 270 km west of Benghazi city. It contains uploading capacity of 51,000 bpd via three crude oil berths for containers of up to 300,000 dwt. However, Brega comprises a port for containers in order to upload or liberating the refined goods, one port each for LNG as well as LPG

containers. In addition, there are three landing stage to upload ammonia, methanol, caustic soda and urea.

- **Marsa Alhariga**

Marsa Alhariga sited nearly two km west of Tobruk. It contains two loading docks and a loading capacity of 51,000 barrel per day or 8,000 tons per hour for containers of untill 120,000 dwt. Its terminal made of tanks for storing oil products with a quantity of 116,500 cubic meters and 2 10-inch, 25 km pipe for products of oil from the strainer at Tobruk.

On the other hand, to finish the shipping process, sometimes it is important to deal with shipping companies. The following part will illustrate this issue in addition to the effect of 2011 revolution.

2.8 The Shipping Companies

Oil and Gas Directly Middle East (2011) points out that, there is an adjacent combination of both public and private benefits in shipping industry of Libya and up to the 2011 war, the family of Gaddhafi control this sector. In other words, the fourth son of Muammar Gaddhafi (Hannibal al-Gaddhafi), possesses as well as leads the company of private shipping (Mariner for Maritime Transportation Ltd). In addition, Hannibal controls a directing stake in the state-owned Company of General National Maritime Transport (GNMTC). Hannibal's precise responsipility in GNMTC is uncertain, according to provenance that referring this person as a counsellor and others pointing that he plays a significant controlling position in the firm.

This enterprise, Mariner, started working during 2000. It comprises three main operation zones: offshore oil/gas platform backing, shipping management and refined oil product shipping from the country abroad. During August 2008, Mariner had principally no competition within the country, affording up to 75% of National Oil Company's necessities for shipping clean and refined products to overseas marketplaces, particulary Europe. On the other hand, Mariner does face competition in the zone of offshore provision from both French and Italian enterprises, whereas Greek and Greek-Cypriot corporations contend in the area of oil shipping. Because of its political relationship, this company has received a high-level of governmental help.

Besides, it received economic funding from National Oil Company, depending on a provenance at the National Engineering and Supply Services Company (NESSCO).

In March 2009, the GNMTC had a navy of 18 complete tankers, 13 of those are crude carriers, three of them are transporters of oil products and two are LPG carriers. GNMTC managed seven of these and a further three by outside ship managers. UK-based ship controlling firm V.Ships runs the remaining eight. The decision by GNMTC to stop all oil cargos to Switzerland straightaway afterward Hannibal's seizure there during 2008 points the size of Hannibal's effect on this enterprise. However, Hannibal had used his power over the GNMTC to broker the obtaining of new vessels, via which he has obtain millions in individual profit.

2.8.1 The Influence of 2011 Revolution

EU sanctions as well as NATO activities at the Mediterranean zone minutely intermittent GNMTC's capacity to play its regular transaction methods. In the middle of 2011, there was some news assumption that Hannibal Gaddhafi was attempting to sell off a navy of oil containers of GNMTC. This selling was first to companies in Hong Kong and Singapore during July, after that to a group of Russian stakeholders in August, trying to resolve debts and upsurge the cash for the regime's effort of war. There were no targeted sanctions GNMTC, but accourding to Hannibal, its put in blacklist, and any transaction ending with economic positive effects to the regime of Gaddhafi would have broken the conditions of the sanctions.

2.9 Oil Companies in Libya

There are many oil companies in Libya, some of them are new and the others are old. Their profiles are as follows.

2.9.1 National Oil Corporation (company)

- **The company's profile**

The National Oil Company (NOC) of Libya owned by the state enterprise that determins oil and gas production in Libya via a group of entirely possessed branches. In combination with its subsidiaries, accounting for almost half of Libya's oil production. This corporation established during 1970, the original company counted

around 700 workforces in 2008. The Firm oversees all activities related to petroleum in Libya comprising exploration of oil and gas, drilling and manufacturing, petrochemical production, refineries setting up, selling and distribution of the products of petroleum and petrochemicals. The NOC has a complete manufacturing capacity of 2 million barrels of oil for each day (bpd).

During 2010, the Energy Intelligence Group including the NOC registered at 25th company depending on their classification of the Top 100 World Oil Companies. Nevertheless, during 2008 the Corporation widely indicated that it is desir to upsurge oil manufacturing from 1.7 million bpd to around 3 million bpd through 2012. The significances of the struggle during 2011; nonetheless, is because of setting progress in achieving these goals has declined (National Oil Corporation, 2011).

- **Establishment in 1970**

The NOC found during the 5 March 1970. It replaced the old Libyan General Petroleum Corporation (Lipetco, formed via royal announcement during 1968). Its aim was to endeavor to stimulate the Libyan financial prudence by way of undertaking advances, managing and taking advantage of oil resources as well as to take part in the scheduling and policy implementation of the state oil. Formed as piece of Colonel Gaddhafi's image of Libya after the projection of the kingdom in 1969. On the other hand, it was just like its antecedent in that it would perform under the observation as well as control of the Minister of Petroleum. Its first chairperson was Salem Mohammed Amesh .

However, the regulation depending on the NOC had created constrained novel projects with foreign corporations to those in which the latter purchased all dangers of the pre-commercial exploitation era. The NOC occupied most important function in the Libyan government's innovative approach of upper oil prices and the steps in the direction of the arrangements of a norm of sharing production and phasing out of the previous concession.

Nationalization during the 1970

The 1970s were an era during which advanced consolidation of the NOC's authority was occured. Nationalizations, the take hold of enterprise assets, and

purchasing enterprise's parts were amongst the Corporation's actions. during 1971, the NOC conducted in excess of production procedures at the field of Sarir subsequenting the National BP's Libyan franchise during 1974, where a reference was made to the area of production division with Exxon, Mobil, Frankis de Pietrolis, Epitaine Akitin and Agip, each based on 85/15 on land and 81/19 bases abroad. However, the intercontinental oil companies that did not voluntarily give up business entirely have been asked by the new strategies to completely abandon those businesses to the State Oil Commission.

- **Turning To Europe During 1990**

During the 1990s, Libya started to be further isolated following the annoyance of UN sanctions during 1992 forbidding sales of tools for oil refining as well as transporting it. However, in 1996 the US Congress approved on the Iran-Libya Sanctions Act, which also suggestively impeded the NOC's allowance to establish industry round the world.

Because the sanctions of UN were no more, complete than the US's, which prohibited US pioneer from functioning in Libya, the NOC retained near relations with a group of European firms. More precisely, the chief overseas worker in the country during the 1990s was Italian enterprize Agip. Moreover, during 1990s both Agip as well as the NOC established a development of Bouri gas area and begun functioning on a 1,040 km line of pipes towards Italy. Besides, the NOC did some commerce with Elf Aquitaine and Total of France, Spain's Repsol and Austrian OMV.

- **International reintegration during 2000**

The sanctions of UN versus Libya deferred during 1999 succeeding ambassadorial transfers by the Libyan Government. After that, Libya started to review its petroleum terms and conditions over the years in order to be followed. In 2003, when sanctions of the UN insistently raised, the foreign minister of Libya stated that country's objective was to rise the production of oil from 1.2 million to 3 million bpd in the coming 15 years, to allow the contracts of NOC with overseas firms to be long time. Because of that, during 2003 the NOC sign up novel onshore and offshore exploration treaties with Austria's OMV and Spanish Repsol. The country had to hold

until 2004 and advanced diplomatic maneuvering in advance US individual sanctions raised, after which the NOC released hire to US-based IOCs.

On the other hand, in 2006, the ex- Libyan Prime Minister Shukri Ghanem come to be NOC Chairman. Again, during 2006, the National Energy Council (NEC) was constructed. It consists of Ministers of Industry, Planning, Economy, Finance and Labor, besides Ghanem and PM-equivalent Al-Mahmoudi. The unit anticipated as a counselling body; however, anxieties increased related to the prospective ending politicization of the subdivision of energy. During 2008, rumors began that Ghanem was searching to accept as NOC manager, after a demand for $1.2 billion by cash or by cargos of oil by Muatassim Gaddhafi, a son of Muammar Gaddahfi, who lately been nominated to be National Security Advisor. When Shukri's prolongation in the position approved, there was apparently relief among overseas stockholders at the reappearance of a Western and Libya friendship at the controls of the NOC, (National Oil Corporation, 2011).

- **The future of the NOC**

In fact, there was plentiful argument related to system the NOC will be next to the Gaddhafi's regime dismiss during 2011. Information during September 2011 argues that national power fight was evolving bacause Libya's main cities (Tripoli and Benghazi) challenged to house the Corporation. Nonetheless, in October 2011, headquarter of NOC stayed in Tripoli .

Mustafa El Huni, NTC fellow Energy Policy Supervisor, stated a single notion under introductory contemplation was to divide the NOC into three companies: the first concentrating on the operations of upstream (reconnoitring and production), the second on downstream actions (purification) and a final focuses on natural gas. However, the firms would be scattered over diverse towns. Javier Blas a reporter of the Financial Times comments that the NTC may build a Ministry of Oil, which finish several of the NOC's authority, (Financial Times, 2011). However, the chairperson of this company are changing depending On the situations

Table 1: NOC'S Chiarmen

period	NOC Chairmen
1970s	Salem Mohammed Amesh
1980s	Omar Muntasir
1990 - 2002	Abdulla Salem El-Badri
2002-2006	Abd-al-Hafi Mahmud AlZulaytini
2006-2011	Shukri Ghanem
2011 -	Dr. Nuri Berruien

2.9.2 Sirte Oil Company

- **The company's profile**

This Enterprise (SOC) is a completely state branch of the National Oil Corporation (NOC). Headquarter is in Brega. However, SOC's procedures involves investigation, production as well as manufacturing. The Department of US State considers the company one of the most essentials subsidiaries of the NOC.

- **Its history**

This company designed as a part of the NOC during 1982, once Esso Sirte enterprises (Esso's Libyan companies) resigned 50% of their portions to NOC and Exxon's part in Esso Sirte (Exxon being the original corporation of both Esso and ExxonMobil) the NOC bought it and changed to be Sirte Oil Company. During 1986, the SOC took over the belongings of Grace Petroleum, among the five American firms enforced by US personal sanctions for leaving Libya. However, the UK- educated Ali Sugheir was the head of the SOC. This person briefly came to be provisional chairperson of the NOC itself during 2009, swapping Shukri Ghanem. Through 2000,

the SOC made a 13 billion cubic meter annualy of the natural gas that discovered in the Sirte Basin.

On the other hand, during 2008 the enterprise declared that it had made a new discovery of oil at a novel well located in the basin of Ghadames, which situated nearly 310 km southwest of Tripoli. During 2009, the NOC point out in the Department of US State cable that the SOC was contributing in the regime's long-term visualization of converting the country to a center for shipping gas to Europe. To this end, the SOC was digging out gas from the field of Marsa el Brega for carrying it to Benghazi, 480km east of Tripoli, (Penn Energy, 2011).

- **Recent activities**

This company runs the field of Raguba in the centre zone of the Basin of Sirte. The field linked via line of pips to the key line in the midst of the Nasser field, which is regarded one of biggest fields in the country, and Marsa Albrega. In addition to field of Nasser, SOC is in control of two further fields of gas, which are Attahaddy and Assumud in addition to the Marsa el-Brega plant of liquefied natural gas (LNG)

In September 2011 next to the revolution in Libya, a Libyan authorized source informed that this had started again the production of natural gas at the Attahaddy and Hateiba fields in Eastern of the country, which applied to generate the domestic power. Nevertheless, Attahaddy field daily produced 270 million cubic feet, besides about 35,000 barrels per day (bpd) of condensate. There was no clear reports informing how much fuel Hateiba was manufacturing, (Fox Business, 2011).

2.9.3 Arabian Gulf Oil Company

- **The company's profile**

Arabian Gulf Oil Company (Agoco) is an entirely possessed part of the National Oil Corporation (NOC). This company started working in 1980 and it is Libya has second biggest nationalized oil company. Moreover, Agoco designed subsequent the nationalization of assets belonging to BP, Chevron and Texaco. It is involved in the production as well as refining activities related to crude oil and natural gas, and it's headquarter is located in Benghazi.

On the other hand, in 2011 revolution, Agoco overdrawn from the Gaddhafi loyality NOC and announced strategies to spend the income from the oil sales in order to supply the opposition rebel forces, (National Oil Corporation; 2011).

- **Agoco's history**

During 1980, the NOC established the Libyan Arabian Gulf Oil Company when merged the Arabian Gulf Exploration Company and the Company of Umm-al-Jawabi Oil. During 1989, the production of Agoco was about 400,000 barrels per day (bpd), turning it the leading singular manufacturer of oil in Libya. Agoco was involved in the regime's larger procedure of oil, which was to start as well as capitalize in novel plans during maintaining control.

- **Activities**

This company activates five foremost plants of oil, which are Sarir, Messla, Naffora, Beda and Hammada. Besides, it activates refineries in Tobruk and Sarir. Nevertheless, this company's key concern is producing oil from its plants, which are in the desert and pumping the oil throughout miles of kilometers of pipes to the coastline. Beforehand the civil unrest during 2011, Agoco was a strategic part of the manufacturing that support Gaddhafi's system and was making 440,000 barrels of oil daily of its plants located in the south-west of Libya maybe one barrel in every 100 operated on markets around the world each day. This production embodied approximately 40% of complete production of Libyan crude oil.

On the other hand, reports during September 2011 presented that the company's production hit the point of 160,000 bpd behind the revolution in Libya, (ibid).

2.10 Refining and Marketing Companies

There are very important companies, which are responsible for refining and marketing activities in Libya. Moreover, they are fully owne parts or branches, of the National Oil Corporation (NOC), these companies are as follows.

2.10.1 Ras Lanuf Oil & Gas Processing Company

This Company controls the Ras Lanuf Refinery and transports the manufacture of petrochemicals, plastics and ethylene.

2.10.2 Zawia oil refining company

Company of Zawia Oil Refining is following the NOC, which runs the Zawia refinery.

2.10.3 Brega Petroleum Marketing Company

This company established during 1971 and it is lokated in Tripoli. It deals with selling and handing out petroleum products and relevant commodities all over Libya. Its activities involve launching and sustaining gas stations as well as storage tanks; renting and running tankers of petroleum, vessels and constructing pipe networks. It made to be the dealer and provider of petroleum products of the Libyan state's portion of the production of oil and gas in Libya. However, in current years several small private spreading enterprises have permitted within Libya, (PetrolPlazo, 2011).

2.10.4 Jowef oil technology

This company is lokated in Benghazi. The Oil Company of Jowef provides oil enterprises with mud drilling as well as all the equipment of drilling and safety.

2.10.5. National oil wells, drilling and work over company

Positioned in Tripoli, this entirely possessed part of the National Oil Corporation (NOC) offers technical assisstant, conducts all of the services of land and seafaring drilling (involving digging of water wells). In addition, it is responsible for repairs of oil wells for operator firms and the other works accompanying with digging processes, (Oil Voice, 2009).

2.11 Companies of Joint Venture

2.11.1 Waha Oil Company

Table 2: Waha Oil Company's information

Headquarter	Tripoli
Establishment	1986
International partners	Hess, ConocoPhillips, Marathon
%held by NOC	59,16%
% held by IOCs	Hess (8.16%), Marathon (16.33%), ConocoPhillips (16.33%).
Production output	350,000 (bpd) in 2011

- **The company's profile**

The location of Waha Oil Company (WOC) is in Tripoli. It possessed by a joint venture in association with US international oil firms ConocoPhillips, Hess and Marathon. Among all the subsidiaries of the National Oil Corporation (NOC), Waha is a biggest manufacturer of oil and is the second main creator of oil in Libya. However, at the beginning of 2011, the enterprise laboring 3,200 staff and the Chairperson was Dr. Bashir Elshahab, (The Wall Street Journal, 2011).

- **WOC's history**

The company that later became the WOC was founded in 1955 and started working on Libyan lands during 1956 under the name of Oasis Oil Company. Conversely, during 1986 the Waha Oil Company founded when it took over from the Oasis Oil Company.

On the other hand, the WOC was one of the enterprises most unpleasantly influenced by the US embargo executed in 1986. This is because its oil plants were equipped primarily using American utensils, for which the WOC could not get replacement parts. Therefore, production at the enterprise's massive Waha field decreased dramatically about 1 million barrels of oil per day (bpd) at its highest ratre at

the end of 1960s, to about 350,000-370,000 bpd during 2008. During December 2005; nonetheless, the old Oasis Group (Hess, ConocoPhillips and Marathon) signed an contract with Libya in order to return to the country for the first time since 1986 and accepted to pay Libya $1.8 billion to come back to its acreage in the Sirte basin. Nevertheless, the NOC now has a 59.16% stake, leaving ConocoPhillips and Marathon with 16.33% each, and Hess with only 8.16%.

After 2008, a plenty of international enterprises functioning in Libya were obliged to reconsider their agreements with the NOC. There are no statements that the Waha Group rediscussed cinditions. Aligned with the novel EPSA IV framework during the time that conflict started in 2011.

- **Activities**

Before the civil unrest during 2011, Waha Oil Company manufactured over than 350,000 bpd. Besides functioning the oil plants under its leadership, the WOC deals with big amounts of oil for a group of enterprises via its construction lines running from the Sirte Basin to the Sidra terminal. After the projection of Muammar Gaddhafi during October 2011, the WOC has afflicted via rebels get on by workforces who were requesting for the deletion of Chairman Elshahab, who was on relation with regime of Gaddhafi.

On other hand, in October 2011, Waha faced the contest of resuming production at its fields. This is because the damages seemingly has suffered to employees' lodgings, compounded by fears that the damage may reach plant there during the latest struggle. Moreover, events had not restarted at the terminal of Sidra, from which Waha's oil usually streams to international markets. However, the oil docks faced destruction through the war, after its metering scheme wrecked, (The Wall Street Journal, 2011).

2.11.2 Mellitah Oil & Gas

Founded	2008
Headquarter (administration)	Tripoli
International partners	Eni
Production output	323,000 (bpd)
%held by NOC	%50
% held by IOCs	Eni (%50)

- **The company's profile**

This company is a joint program where the Libyan National Oil Corporation (NOC) and Italian oil company Eni are identical companions. Both of them have 50% each.

- **The history of company**

Mellitah Oil and Gas, the Libyan Branch, launched during 2008 through the General People's Committee Resolution No. 253. This happened in arrangement between the National Oil Corporation (NOC) and Eni in North Africa.

- **Activities**

Regarding to Mellitah's official website (2011), in 2006 the program made 323,000 barrels of oil (boe) per day, which constituted a rate of record production. Products consist of crude oil, natural gas and condensates. On the other hand, the venture runs the Sabratha platform, which sited offshore 110km North West of Tripoli. It manufactures gas from the field of Bahr Essalam, which is a part of the major fields in Libya. In addition, it is a significant gas supplier for the Greenstream pipeline and for indigenous consumption of gas in the country.

After the conflict in 2011, statements informed that all of Mellitah Oil and gas, the NOC and Eni were operating together to revive manufacture. This production is on offshore platform of Sabratah sited 110km off the shoreline and at the accompanying treatment and dispensation amenities at Mellitah Company, (Pipeline International, 2011).

2.11.3 Zuetina Oil Company

- **The company's profile**

This company is a joint program between the Libyan National Oil Corporation (NOC) and international oil enterprises OMV and westerly . In 2009, Zuetina laboring 2474 staffs, 2264 of whom were indigenous workforces.

Founded	1986
Headquarter	Tripoli
International partners	OMV and Occidental
Production output	60,000 (bpd)

- **Its history**

After the possessions of Occidental suspended during 1986, Zuetina Oil Company incorporated as a Libyan held enterprise with a command to conduct a variety of oil procedures. This happened with business agreements to the Production Sharing Agreements signed from the NOC as well as the international oil companies (IOCs) did: Occidental and OMV.

Whenassets were lift the freez and the American IOCs came back to Libya, contracts signed in relation to the arrangements of EPSA IV during June 2008.

- **Activities**

After the formal acceptance of the Production Sharing Agreement (PSA) during 2008, the NOC held an 88% portion in Zuetina's functioning amount of mony and the global followers Occidental and OMV hold a 12% stake. On the other hand, in 2011, this company was manufacturing 60,000 barrels per day (bpd) from its plants. Furthermore, the crude oil made has recognized to the global market as 'Zuetina Blend' from end of 1960s and it traded through the terminal of Zuetina, (Fox Business, 2011).

2.11.4. Harouge Oil Operation

- **The company's profile**

This operation previously famous as 'Veba Oil Operations'. It is a joint program of the Libyan National Oil Corporation (NOC) as well as Canadian oil enterprise Petro-Canada.

Headquarter	Tripoli/ Benghazi
Founded	1987
International partners	Petro-Canada
%held by NOC	%51
% held by IOC	%49
Amount of production	100,000 (bpd)

- **History**

During 1987, Veba Oil Operations launched via the NOC as well as Veba Oil Libya in order to discover, improve and eight concessions being usd, primarily sited in basin of Sirte. In 2002, Veba Oil Libya's privileges besides requirements in this renunciation gained through Petro-Canada. Two years later (during 2004), Veba Oil Libya was change name to 'Petro-Canada Oil Libya'. During 2008, the NOC and Petro-Canada agreed to sign six novel Exploration and Production Sharing Agreements (EPSAs) for the eight former concessions, as well as approved that Harouge Oil Operations would carry on developing plants of oil in those enterprises. Nevertheless, the activities of discovery within the novel agreement parts assigned to be under Petro-Canada's responsibility.

- **Activities**

Through 2009, this company as well as improving and manufacturing petroleum after five agreement parts with over 20 plants. However, the crude oil is drove from the several plants through shipping pipelines to the terminal of Ras Lanuf, where it kept in 13 containers then overloaded to transporters to export. Furthermore, Harouge is in charge for the transport of crude oil from fields run by other operators from Ras Lanuf .

On the other hand, Harouge Oil Operation employed more than 2,000 staffs in 2009, in their administrative centers in Tripoli and Benghazi. In addition to self-sufficient plant camps at the oil fields in all of the following: Amal, Ghani, Jofra, Tibisti and En Naga, and at the Ras Lanuf's terminal.

2.11.5 Akakoss Petroleum Operation

- **The company's profile**

Akakoss (formerly known as Repsol Oil Operations) is a joint program between the Libyan National Oil Corporation (NOC), Spain's Repsol, Austria's OMV as well as France's Total.

Founded	1996
Headquarter	Tripoli
International partners	OMV, Repsol, and Total
Production output	340,000 (bpd)

- **History**

In 1996, Akakoss started manufacturing, at the amount of 50,000 barrels for each day (bpd). In December 1997, accomplishments in block NC-115 specially made. However, during October 1998 a storing station and 720km of spread pipe bagan operating. Early manufacturing started at the NC-186 block during 2004.

On the other hand, in April 2007 all joint ventures (JVs) including overseas enterprises producer of oil and gas in the country had to transform their forenames to new names in order to create a good image of Libyan history and geography. The JV run by Repsol at this level converted to Akakoss Petroleum Operations (APO), reffering to the Akakoss Mountains that are located in the south of Libya.

- **Activities**

In the Sahara desert, Akakoss functions two businesses. The first is the NC-115 concession area about 680km south of Tripoli. During 2010, it has a daily production capacity of 230,000 barrels of oil per day (bpd). However, the second is close to NC-

186, where during 2010 the manufacturing was about 130,000 bpd. The latter field (NC-186), the NOC has an 88% stake and Repsol the remaining amount, which is 12%. Oil is after that transformed from plants of oil in the previuos zones to the terminal of Zawia, which is located on the Mediterranean coastline.

2.11.6 Mabruk Oil Operations

- **Its profile**

This operation is a joint venture that functioning in the country stuck in the Libyan National Oil Corporation (NOC) as well as international oil companies (IOCs). The program's fundamental industry actions are the enlargement as well as manufacture of plants of oil and gas. However, the venture activates two foremost positions, the onshore Mabruk field as well as the offshore Al Jurf field. In 2011, at the former (onshore Mabruk field), the NOC has a 73% stake, Total had percentage20.25 portion and Statoil Hydro had 6.75%. The latter (offshore of Al Jurf field), the NOC likewise possessed a 73% stake, with Total taking 30% as well as German Wintershall 10%.

During 2008; nevertheless, this compant has nearby 379 workers, about 59 of them were expatriates and the rest 320 were residents. Workforce are scattered across three key operational positions, with the head office, which situated at the Dhat El Imad Complex in Tripoli**.**

Headquarter	Tripoli
International partners	Total, Wintershall and Statoil Hydro
% held by NOC	%73
Name of the fields	Onshore:Mabruk Offshore: AlJurf

- **Its history**

During March 2007, the NOC declared that this joint venture, just like the others for instance Akakoss and Harouge, who changed the forename to Mabruk Oil Operations for revealing the history and geography of Libya in better way.

On the other hand, in June 2009 the conditions of the joint pragram's agreement reconsidered. This contract demanded that the IOCs Total as well as Statoil Hydro accepting a minor production rate. According to the new arrangement, the Total-Statoil and Total-Wintershall associations funded signing amount of about $500 million to the NOC, $200 million when signing and the lasting $300 million on the capability of gas utilization at the Al Jurf plant was completed. However, the ending date of deal increased from 2027 to 2032 related to Mabruk field same as start in 2017 to 2032 related to Al Jurf field, (Mabruk Oil Operations, 2011)

- **Activities**

As was mentioned earlier, this field functions two major oil plants. One of these is the onshore Mabruk plant, sited nearly 170km south of the town of Sirte. The expansion began in 1994 but the usual manufacturing during 2009 was nearly 20,000 barrels for each day (bpd) .

The second one, on the other hand, is Al Jurf field, located nearby the border of Tunis and 100km off the coastline and 150km from Tripoli, which is functioned via Mabruk. During 2009, this plant produced 45,000 bpd (cable link). Nevertheless, the Zarzis Marine Base was before 2009 an onto land logistical support for the Al Jurf field, sited across the border in Tunisia. The base enclosed Mabruk's storing space, amenities, material, utensils, maintenances the drilling as well as the operations of construction and production. Nonetheless, during July 2009, the base transferred to work outside of the port of Tripoli.

2.12 Overview of the International Entities

According to Mbendi (2011) and Deliotte (2011), from 1973 the rights petroleum approved depending on a sequences of Production Sharing Agreements (PSAs). However, from 1979 the National Oil Corporation (NOC) permitted to enter into treaties with overseas enterprises. With regard to overseas oil manufacturers in Libya, they now work via Joint Ventures (previously discussed) with the NOC. Starting from 2003 ahead, the NOC started to change all agreements signed up with International Oil Companies (IOCs) to further strict EPSA IV forms that declined IOCs revenue shares in reoccurrence for increasing the period of their licenses.

Nevertheless, by the time rebellious started, which ends with the revolution in 2011, not all agreements had been transferred to the new outline.

As mentioned earlier, in 2007 Joint Ventures (JVs) concerning overseas companies who works in the production of Libyan oil and gas requesting that their names be changed to provide new information on the country's history and geographical details. For example, the JV run by Spain's Repsol became Akakoss Petroleum Operations (APO), pointing to the chain of Akakoss Mountains in the south of Libya. Similarly, Italian Eni changed its name to Mellitah Gas, this name derived from the area where it functions west of Tripoli. In addition, Total Company turn out to be Mabruk Oil Fields, the expression 'mabruk' means 'congratulations' in Arabic Language. In 2008, the highest operative in the country, by acreage, was the NOC. However, the company's Occidental, Repsol, BP, RWE, OMV, ExxonMobil, Woodside, Eni and Statoil- Hydro came after it.

2.13 International Oil Companies Producing

The following part will clarify the most important IOCs currently

Producing Oil in Libya:

2.13.1 British Petroleum (BP)

Kind	Public Limited Company
Trades as	LSE: BP
Founded	1909 (as Anglo-Persian Oil), from 1945(as BP)
Headquarter	London, UK
Basic people	Carl-Henric Savenberg (Chairperson), Bob Dudley (CEO)
Production	Petroleum products, derived products and petroleum station
Revenue	US $308.9 billion in 2010
Functioning profits	US -$3.7 billion in 2010
Net revenue	US -$3.3 billion (2010)
Complete equity	US $94.98 billion (end 2010)
Entire assets	US $272.2 billion (end 2010)
Workforces	79,700 by the end of 2010)

- **The company's recent profile**

According to Platts Energy (2011), BP is a British international energy enterprise. Platts ranked it during 2010 as the second biggest power enterprise in the whole world constructed on economic performance, trailing Exxon Mobile. This company upgraded its situation from fourth in the classifications during 2008. Nevertheless, BP started industry as Anglo-Persian Oil during 1909 that shipped the initial shipment of oil through March 1912 from Abadan in Iran. Between 1914 and the 1980s, the regime of Britain were the firm's basic investor. After that, this company has attained the Standard Oil Company in 1987, combined with the US Company Amocco during 1998 and gained Atlantic Richfield & Burmah Castroland in 2000.

On other hand, since 2010 BP has big business with the outcome of the Macondo oil slick in the Gulf of Mexico during April 2010, the US's biggest ever oil catastrophe. The well oil of Deep-Water Horizon, which exploded and killed 11 employees and it is expected to destroy nearby 1,000 miles of oceanfront, of which 200 miles were seriously oiled'. Nevertheless, different parties have disputed the exact extent of the spill. BP created the judgment to sell none-core possessions in order to pay for the cleaning procedures as well as to pay damages of fatalities. In October 2011, this company eventually gained approval to take up again the drilling at the location.

- **The company's report highpoints**

The Annual Report of BP revealed in 2010 acknowledged the serious sercumistances of the last year, given the blast at the Deep-Water Horizon rig, declaring that this increase into a corporate catastrophe, which endangered the presence of the enterprise. The reports declared a damage of about $3,324 million in 2010, compared to 2009 annual profits of $16.76 billion.

Nevertheless, during October 2011 BP declared a dramatic increase in third-quarter revenues to £3.2 billion (about $5.4 billion). This amount is proximate tripling of the $1.85 billion replacement cost earnings, which gained in the same era the preceding year. The CEO stated that BP Enterprise get hold of a 'turning point' for its oil and gas procedures as well as manufacture, (The Guardian, 2011).

- **Implementation in Libya**

During May 2007, the BP Company approved a main reconnoitring and Production agreement with Libya. This announced as BP's particular largest reconnoitring commitment, besides its Libyan partner the Libyan Investment Corporation (LIC). The preliminary investigation adherence started at a lowest of $900million. In addition to some further significant appraisal and enlargement expenditures upon exploration success. depending on this contract, BP was to discover about 54,000km of the offshore Ghadames and onshore frontier Sirte basins. This was equal to over than ten of BP has operated Deep-Water blocks in Angola. Nevertheless, it supposed that effective examination could end with the drilling of about 20 rating wells. Throughout the investigation and appraisal part, BP prearranged to obtain 5,500km of 2D seismic and 30,000km2 of 3D seismic as well as drilling 17 wells of exploration wells.

In addition, BP dedicated to use about $50 million on learning and training workshops for Libyan employees for the duration of the investigation and evaluation. If this worked, an extra $50 million from commencement of manufacture. The programs of teaching and training proposed to be constructed as well as ran in corporation with the NOC.

On the other hand, during the Civil Unrest throughout 2011 BP was not conducting any manufacture jobs in Libya. The enterprise had begun exploratory drilling programs in the west of Libya. This company's jobs in Libya were postponed at the beginning 2011.

During March 2011, the BP's spokesperson declared that the state being supervised. In addition, the company understood that the new government would respect their exploration agreement, (The Telegraph, 2011).

- **CSR activities**

The CSR stands for Corporate Social Responsibility. However, depending on BP website (2011) the next explanations constructed related to preceding year's corporate social responsibility activities:

1. BP is in charge of cleaning up after the Macondo spill instantly. This operation at its highest rate involved 48,000 employees, 6,500 ships and 125 jet. This corporation spent about $20 billion Deep-Water Horizon Oil Spill Trust for claims and special other costs. Moreover, it spent millions of dollars on financial, health and ecological programs.
2. During 2010, BP had some difficulties related to the victims outside the Deepwater Horizon accident.
3. BP build its industry in natural gas, offering a lower-carbon substitutional to coal. The company besides includes a value of carbon in new project improvement strategies in order to encourage effectiveness and carry on investing in renewable energies of low-carbon.
4. The company started novel protection and operational danger that work with specialist personnel and it is co-operating with a sequences of investigations.
5. Since 2005, the company has spent over $5 billion in its substitutional energy businesses and predicted to put in additional $1 billion during 2011.

- **Transparency**

With regard to UN Global Compact, BP has been a part of this global agreement since 2000, (BBC News, 2011).

2.13.2 Conoco Philips

Table 3: Conoco Philips Firm Structure

Type	Public Limited Company
Established	1875 (Conoco Inc.) in 2002 (merger with Phillips Petroleum)
Headquarters	Houston, Texas, USA
Significant people	James Mulva (Chairman and CEO)
Production	Oil, natural gas, petroleum, lubricant and petrochemicals
Profits	US $195.5 billion in 2010
Functioning income	US $19.75 billion in 2010
Net revenue	US $11.4 billion in 2010
Entire assets	US $156.314 billion by the end of 2010
Entire equity	US $69.109 billion by the end of 2010
Workforces	29 ,800 by the end of 2010

- **The company's recent profile**

In 2002 and despite constructed next the union with Phillips Petroleum Company, Conoco started working during 1875 in Utah since it created as the Continental Oil Company. Phillips Petroleum created 30 years later. However, these two enterprises combined forces during 2002; they formed the third biggest energy firm in the US. Through 2011, ConocoPhillips occupied the fourth place in the Fortune 500 list of highest-ranking US enterprises by income, (ConocoPhilips, 2011).

On the other hand, by the end of 2010 ConocoPhillips was the seventh-biggest possesser of confirmed reserves, with 8.3 billion barrels of oil amounting. Moreover, it is the fourth largest refiner universal, among non-government organized firm. This company work four main activities, which are petroleum investigation and manufacture, natural gas collecting, preparation and marketing (this includes 50% interest in DCP Midstream), oil refining, marketing supply and carriage, and chemicals

and plastics creation and shipment (this is via a 50% interest in Chevron Phillips Chemicals). By the end of 2010, ConocoPhillips took investigation actions in 17 countries and manufactured hydrocarbons in 14 states. Within the Exploration and Production (E&P) portfolio for 2010, 25% of industry was from the US, 20% from Europe, 16% from Canada, 14% from Alaska, 16% from Asia (Pacific/Middle East), 6% from Africa and more than 3% from Russia, (ConocoPhillips, 2011).

During 2011, the US oil major attracted a substantial media blame when it culminate an offshore leak at China's Bohai Bay. Furthermore, during August at the same year the company started apologizing because it did not deal effectively with the event, beside state-owned operating partner CNOOC. The leak poisoned a region of 840 square kilometers. On the other hand, in July 2011 this company declared that during 2012 it could detached its profitable upstream industry from their minor according to procedures for refining and selling. CEO Mulva stated that the integrated structure is no any more making the value it had done in the past. They claimed that this may assiss in bringing more concentration on managing both businesses. Through breaking in two, ConocoPhillips will be the US main pure Exploration and Production (E&P) company, and will be more than bouble the size of its closest concurrent, Occidental Petroleum.

- **The company's report highpoints**

As a part of multi-year strategy to start conclusive actions to make profits, the company created the following actions :

a. It gathered $15.4 billion in profits from advantage divestments. It sustained to upsurge importance of reconnoitring and Production, to which 86% of the program devoted, with 89% planned for 2011. In addition, this firm retired $5.1 billion in debt through the year, the money left in cash for the repurchase process, and the acquisition of small assets selectively.
b. To enlarge chances in North America, the company added property in shale drilling. Moreover, they extended actions in Canadian oil lands and expand their existence in the market of global liquefied natural gas (LNG) via the startup of the Qatargas 3 project during 2010.

c. In April 2011, the financial results showed a decrease in production of 5.5% to reach 1.64 million bpd. This result was because of stop in manufacture happaned through the war in Libya and to asset sales.

- **Implementation in Libya**

This firm implement in the country as a part of the Waha (Oasis Group) integration in Sirte basin, which is rich of the hydrocarbon. The Waha Concession is functioned by the Waha Oil Company that completely possessed by Libyan National Oil Corporation (NOC). However, ConocoPhillips has about 16.3% stake in the venture; Marathon Oil Company owns additional 16.3% and Hess 8.2%. In 2010, Waha concession manufactured nearly 340 million barrel per day and covers about 13 million gross acres in the basin. Three major increased projects under enlargement by the co-ventures contain Faregh II, North Gialo and NC-98.

On the other hand, US oil companies had their agreements postponed during the 1980s after the US forced sanctions on Libya. Nevertheless, during 2005 ConocoPhillips and other companies like *ExxonMobil* begin again their jobs in Libya after an absence for 19 years. In a corporation with Marathon and Hess, ConocoPhillips form the Oasis Group, paid $1.3 billion to restart actions. In 2008, many of international oil companies (IOCs) had the terms of their agreements with the NOC rediscussed. The varied expectations held that the Oasis Group would also moved to the new contracts, according to the new Exploration and Production Service Agreement system EPSA IV. Nonetheless, there have been no news that the agreement with this group in fact renegotiat before the civil unrest in 2011, (Petroleum Economist, 2011).

With regard to the civil unrest in 2011, during March 2011 ConocoPhillips claimed that it had shortly stopped its work in the country and asked to leave the employees and their families. It assured that it complied with sanctions and was not distributing oil from Libya. In October 2011, the group in which the firm take part in Libya after the upheavals had encountered no reports of a recommencement of production. The assessment of damage claimed to be in progress. However, there was serious destruction to the Sidra terminal besides complaints demand for changing management. The Waha Group plants had a capability of 400,000 bpd before the war.

On the other hand, The Libyan National Transitional Council (NTC) indicated in September 2011 that it would honor the existing agreements sign up with big enterprises of oil, counting contracts with ConocoPhillips, (ibid).

- **CSR activities**

The 2010's Annual Report as well as the certified website of ConocoPhillip point out the coming accomplishments on the Corporate Social Responsibility over the current years:

a) During 2010, this firm extended their convenient gift program. This improved participated and greater volunteerism by ConocoPhillips workers and retirees.
b) ConocoPhillips supports the St Andrews Prize for the Environment. It is a yearly competition carried on conjunction with the University of St Andrews in Scotland.
c) A 120-acre forest built in the Humber refinery, called Mayflower Wood, which is the biggest plan of its type in the country. From 2005, over 67,000 trees and shrubs from a diversity of instinctive classes planted.
d) On an annual base, the employees of the company demanded to verify their individual compliance with the Company Ethics code. As a term of occupation, workers are in charge of reporting assumed violations of ConocoPhillips strategies or the law to the firm.

- **Transparency**

ConocoPhillips is a corroborator company of the EITI. Nevertheless, the company is not a contributor in the UN Global Compact.

2.13.3. Eni

Headquarters	In Rome, Italy
Activities	Oil and gas exploration, production, refining. In addition to marketing, electricity generation, oil and gas engineering and construction
Key people	Roberto Poli (Chairperson)
Working income	€16.11 billion in 2010
Net revenue	€6.318 billion in 2010
Revenue	€99.48 billion in 2010
Entire assets	€131.86 billion by the end of 2010
Entire equity	€55.73 billion by the end of 2010
Founded	In 1953
Employees	79 ,940 during 2010)
Website	www.eni.it

- **The company's recent profile**

According to EU Business (2009), this company is one of Italy's largest companies. Its activities includes oil and natural gas, petrochemicals, and services industries of oil plants. In addition, it has increased the activities into generating power. However, the Italian regime has a portion of over 30% in the firm, which at the current time functions in over 70 countries .

During 2009, the European Commission proclaimed that it had stuck official antitrust charges against Eni Company. This was after doubts increased that the company conspired to keep contestants from consuming its gas pipe, after taking initial measures to combat monopolies that began in 2007

- **The company's report highpoints**

During 2010, this Italian company stated a net profit of about €6.32 billion. Accustomed net income showed an increase of 32% before one year ago. This was because of a recovery in the oil price environment. After that, the manufacture increased by 1.1% for the full year, thanks to transport of 12 start-ups, specially the

Zubair plant in Iraq, which donated with about 40 kilo barrels of oil amounting (kboe)/day of new production.

On the other hand, in Eni's Financial Report of the Second Quarter of 2011, it declared that net income had decreased by 31%, which equals €1.25 billion in the quarter. Moreover, that regulated functioning revenue had declined by 3% to € 4 billion in the quarter. Nevertheless, CEO Scaroni emphasized that the key features affecting Eni's outcome in the first half of 2011 was the interruption in provide of oil and gas from Libya, which influenced all business accomplishments.

- **Implementation in Libya**

Eni started working in the country from 1959 and it is the biggest international player in Libya regarding hydrocarbon production. In 1997, an important detection that end with the started of manufacture in the Elephant oil field in January 2004. However, between 1996 and1999 Eni determined some further contracts with the National Oil Corporation (NOC) over a joint improvement program in the Wafa field and in the Bahr Essalam field, which is sited offshore 110km north of Tripoli. During 2008, the Italian company, besides other international oil companies (IOCs), rediscussed the conditions of the production agreements with the NOC. The terms which requiring these companies to pay considerable upfront bonus payments to the Corporation.

Before the civil unrest in 2011, Eni was the biggest international oil manufacturer in the country for about 13-14% of its overall construction. Nevertheless, the plurality of operations postponed from February 2011 ahead because of the civil unrest. Eni's entire production through the struggle decreased from around 280,000 barrels per day (bpd) before war started to 50,000 bpd during July. On the other hand, in September 2011 Eni restarted the production of oil in Libya, it is expected to recover a large part of its production by the end of the year. When manufacture resumed, the company was driving about 32,000 bpd from 15 wells at Abu-Attifel field, which is located 300km south of Benghazi. Nonetheless, in October 2011 the leaked documents from the NOC stated that the Abu Attifel field, in which Eni is a functioning companion, was producing about 65,650 bpd from 25 wells and proposed that output was recovering more quickly than foretelled, (Petroleum Economist, 2011).

- **CSR Activities**

Eni's corporation social responsibility policies and accomplishments contain :

a. During 2009, the company was bestowed "Best in Class" for the "Code of Conduct/Compliance" area within the Dow Jones World Sustainability Index .
b. In 2005, Eni combined the Extractive Industries Transparency Initiative with the purpose of increasingly incorporating the notion of transparency into its management scheme .
c. Eni is dedicated to protect as well as promot human rights in all its zones of procedures in compliance with the Guidelines implemented during 2007.
d. Eni is dedicated to the remediation of the environment-contaminated parts by approving technology of state-of-the-art like bioventing and phytoremediation, (ibid).

- **Transparency**

The Italian company is a supporter of the EITI.

2.14. The Libyan economy growth and the export of oil

According to Libyan Oil Official Sees Exports in 10 days, Wall Street Journals (2011), about 50% of the world's oil supply is from the developing countries. Big portion of these productions comes from the developing nations who has an OPEC membership. These countries are Gabon, Algeria, Ecwador, United Arab Emirates, Indonesia, Iraq, Iran, Libya, Kuwait, Nigeria, Saudi Arabia, Qater, and Vanezuela. İn the same vien, Libya has been exporting crude oil for quite long time. İn 1963, the amount of exported oil was around 99% of total community exports. This percentage declined over the following 45 years. İn other words, the percentage was about 95% in 1981, about 90% in 2004 and around 86% just before 2011 revolution when the percentage started to fluctuate and reached its lowest rates since more than four decades.

With regard to the relationship between the Libyan oil export and the growth of Libyan economy, the former affected the latter positively. This means that, the growth of Libyan economy has florished after the export of oil. On the other hand, the periods and the rates of oil production and export has experienced sharp raises and dramatic declines which resulted in fluctuations in the prices of oil, these periods can be cronologically divided as:

From 1963 to 1973

From 1974 to 1981

From 1982 to 1998

From 1999 to 2004

From 2004 to preset

With regard to the first and third periods, they can be regarded as the years of stagnation where there was not big changes in the rates of production as well as exportation and therefore in the oil prices. While the second and the forth periods represented the sharp increase in oil prices. The growth of the rates calculated using the following equation:

$$\text{Log}_e Y_i^t = b_o + b^t t + \mu^t$$

Where $Y_{i,t}$ resemble the country's output in the period (^{t}) and t represents time. However, coefficient (b^t) resembles the constant growth rate. İn other words

$$b^t = [(d M/d t)/M]$$

The amount of the growth of Libyan oil export's output can summarized in the following table:

Period	1963-1973	1974-1981	1982-1998	1999-2004
Percentage of oil export	20.6%	13.6%	-2.65%	13.4%

On the other hand, the final period (from 2004 to present) suffered from many fluctautions as well. Especially after the revolution in 2011, there is no exact figures regarding the production and export of oil. However, as the Libyan Dinar was (and still) highly devaluated against the US dollar, the cost and the prices of oil has increased. Therefore, the Libyan economy has declined.

CHAPTER THREE: FINDINGS

3.1 The Finding and the Analysis of the Interviews

Conducting the interviews revealed some important information about the oil and gas sector. The results are as follows:

1. The most significant point that all the four participants agreed on is that the oil and gas production in Libya is better before 2011. This is because there were many laws that regulate the production.

All the participants confirm that working in oil and gas sector before the civil unrest in 2011 thought to be better. In their own words:

I think working under laws and regulation is the best thing for working especially if the work related to the country's source of income, which is oil and gas production (participant one: Omar).

Although before 2011 the majority of the companies worked under pressure, there were some laws that controlled the oil production. In addition, it not allowed to anybody who is not related to the oil companies (not working at these companies) to interfere because their cousins or families work among the administration team (participant two: Ali)

It seems to me that the whole atmosphere for working these days is not completely suitable. Some people (who call themselves rebellions) think that they are free to do anything even it was goes on the national or international companies (participant three: Abdullah).

In fact, I do not like to work under random regulations, which formed by random people who want the workers and engineers to work according to their mood or their problems. Consequently, working in this field before 2011 is safer for us than after it (participant four: Amer).

2. **The majority of the participants (three out of four) think that it is important to develop their levels if they want to develop their companies and therefore their country.**

Workers and engineers in different companies are required to submit annual reports regardless their specialism and departments. In order to develop their working levels as well as these reports, they have to improve their education.

Personally speaking, developing my work level is very important and it contributes to the development of my department. Sometimes my colleges and I have to work overload in order to prove our abilities. Therefore, I feel that our department is improving as I noticed some positive changes (participant one: Omar).

In fact, developing the work place and its environment depends heavily on the people who work there. The engineers in the Arabian Gulf Company (where I work) try to help each other. For instance, if there was any problem needs maintenance our department and the other departments help each other in order to fix it especially if this problem was emergency (participant two: Ali).

I feel that my company (Mellitah) is a perfect place where we can develop our abilities. In addition, the company provides us with the needed atmosphere for improving our departments. In other words, the company provides us with some courses outside Libya in order to develop ourselves (participant three: Abdullah).

I think that I am not sure if I want to develop my work level or not. This is due to that sometimes our company do not offer suitable promotions. So that, my position will not change (participant four: Amer).

3. The participants confirm that Eni is the best international partner.

Eni is the international partner of Mellitah Oil and Gas Company. It shares about 50% of the latter who, in turn, has 50%.

I think Eni is really an important partner, this can be seen from the Mellitah's engineers (appearance and level). This partner is interested in developing the engineers' level.

Consequently, they sent them to study courses outside Libya, in Italy for example (participant one: Omar).

For me there is no difference between the foreign partners especially in the current time, which I believe it is so bad for both home and international partners (participant two: Ali).

Definitely, the international partner of the company where I work is the best one. They care about the improvement of the company's strategies and instruments. The most important thing for me is developing the level of the workers as well as the engineers. In 2009, I was lucky as I was selected from the company's administration team to go for a course in Italy. Although it was a short course (about one month), but I have benefited a lot (participant three: Abdullah).

In my opinion, the international partners are very important parts for the Libyan companies. From the reputation and the location of Mellitah, I can say that Eni is good partner. When a visitor just enters this company, s/he can notice that the location seems that in Europe and not in North Africa. In addition, a person can notice to what extend the reputation of Mellitah is perfect from the reaction of people when tell them "I work for Mellitah" (participant four: Amer)

4. The participants agreed on that it is difficult to know what the best oil field is in Libya. In addition, it is quite hard to tell how many barrels the fields produce as this depends on special circumstances.

Nowadays, it can be difficult to evaluate the oil and gas fields. Furthermore, if we wish to evaluate them this requires better situations and better laws. Since 2011, oil and gas production is going backwards. We honestly do not know the amount of oil and Zawia company has produced gas (participant one: Omar).

It seems to me that because of the current situations in Libya it is unfair to assess the oil fields and to say this field is good but the others are bad. Being good or bad demands perfect working situations as well as trustworthy standards. On the other hand, some oil fields faced quite big destruction and fires for example Sirte and

Sidrrah. However, the Arabian Gulf Company produces about 44,000 bpd (participant two: Ali).

Unfortunately, it is difficult to judge the oil and gas production. This is because it is not produced regularly and is not under laws (participant three: Abdullah).

Sorry I cannot evaluate the production of the oil fields. I think this is the reflection of politics not more than that (participant four: Amer).

CONCLUSION

The oil and gas production is very important sector in Libya. It is the most crucial (if not the only) source of income. However, after 2011 some changes happened to this sector, which may result in very bad actions.

On the other hand, before the discovery of oil in 1950s, Libya had very low economic and strategic promise. After that time, oil has become a vigorous product as a source of energy and row materials in manufacturing. Regarding the geological structure and oil producing basins, Libya has five major sedimentary basins. These basins refer a lower areas in the earth's crust where sediments can accumulate four of these are oil main producers. They are, in order of importance, Sirte, Ghadamis, Murzuq and Tripolitanian offshore basin. While in terms of the oil production companies which operate in Libya are wide and different where we can give a summary for each one of them starting with Waha Oil Company where this company is established in 1986 and its production output reached to 350,000 (bpd) in 2011. Headquarter of this company is in Tripoli. The other company is Mellitah Oil & Gas Company where this company is established in 2008 and it's headquarter is in Tripoli while its production output reaches to 323,000 (bpd). Mellitah Oil & Gas Company is joint program between the Libyan National Oil Corporation (NOC) and Italian oil company Eni. Both of these two companies have 50% for each one of them. The other large company is Zuetina Oil Company and it is established in 1986 and its headquarter is in Tripoli City where this company is also a joint program between the Libyan National Oil Corporation (NOC) and international oil enterprises OMV and westerly . The number of employees in this company in 2009 is amounted about 2474 employee and 2264 belong to the national workforce. It must be mentioned that the production output of this company reaches to 60,000 (bpd). Harouge Oil Operation Company is established in 1987 and also it is a joint company between the Libyan National Oil Corporation (NOC) and Canadian oil enterprise Petro-Canada. Headquarter of this company is in Tripoli/Benghazi and its production output is 100,000 (bpd). Akakoss Petroleum Operation is founded in 1996 and it is a joint company program between the Libyan National Oil Corporation (NOC), Spain's Repsol, Austria's OMV and France's Total. The total amount of production for this company is 340,000 (bpd). The last company is Mabruk Oil Operations where it is also

a joint company between the Libyan National Oil Corporation (NOC) as well as international oil companies (IOCs). Headquarter of this company is in Tripoli.

The aim of this study is to discuss oil and gas production in Libya by shedding the light on the most important producing fields and companies. On the other hand, the division of this study is as follows: chapter one introduces a background of Libyan oil and gas industry by clarifying some point like *the* membership of OPEC, the oil law and the domestic consumption of oil and gas. Chapter two discusses the oil and gas fields and companies and the producing basins. Chapter three evaluates the results of the study as well as its limitations.

The oil sector is the most important sector in the Libyan economy, as it is the main source of income in addition to being the highest percentage in the composition of Libyan GDP. The Libyan oil has known many fluctuations and imbalances since. The start of production and export in economic quantities in the early sixties of the last century. The most prominent of which known as the shock of oil and the first and second shocks have had a negative impact on the economic and social situation, because of the way of public financial management and public spending and management of the Libyan economy since the end of the 1970s. It has been entirely at the mercy of the state.

After the February 17 revolution, oil prices have fallen sharply and especially since the last quarter of 2014 until now. Oil prices have fallen from the $ 112 ceiling in July 2014 to $ 41.5 a barrel on January 13, 2015, the lowest level six years ago, with the relative rise of 2016, it is still very low and below the level, that balances the revenues and public expenditures.

With the decline of Libyan, oil extraction from the level of 1.5 million barrels for each day on average in 2012 to less than 400 thousand barrels currently. In light of a significant imbalance in the composition of the general budget facing. The country's financial crisis will have severe consequences on the economy, on politics and society. The sharp decline in public revenues of the state, the depletion of the reserves of foreign exchange during the past years, and the creation of an unprecedented historical deficit presaging a succession of consequences difficult to limit or predict the size, affecting the lives and security of citizens.

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CURRICULUM VITAE

Ibrahim SEGHAER ALGHOWL. I was born in Libya the city of Zawia. I am born in (7\10\1971) and have three children. I graduated from the faculty of Economic department of business administration in 2000. I sent by the Libyan government to the State of Turkey to study masters.