



Organization of Arab Petroleum Exporting Countries (OAPEC)

The Secretary General's 39th Annual Report 2012 *39*



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Organization of Arab Petroleum Exporting Countries (OAPEC)

The Secretary General's 39th Annual Report



ORGANIZATION OF ARAB PETROLEUM EXPORTING COUNTRIES (OAPEC)

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PREFACE

PREFACE

The geopolitical events that took place in some Arab countries, termed as “Arab Spring” have been labeled as the main culprit for the state of instability that continued to prevail in those countries, as the main characteristic of 2012. Those countries are in the process of structuring their legislative and executive institutions with the objective of re-establishing political, and, consequently, socio-economic stability. The current state of instability dominating the scene in those countries reflects the fact that it is difficult to clearly determine the various features in the foreseeable future.

With regard to production, export and consumption, the implications of the geopolitical shifts in the region remained marginal. Whereas the petroleum conditions in Libya began to gradually move forward towards more stabilization, where crude oil production during the first nine months of 2012 registered 1.434 million b/d, the oil conditions in some other countries of “Arab Spring” have retreated to the extent of cessation.

Developing and improving the revenues of petroleum industry sector will leverage integration between other national business sectors, while serving this vital sector, which represents the main source of revenues in all our oil and natural gas dependent Arab countries, whether OAPEC members, or in other countries whose economies are not dependent on oil resources.

Due to the conditions prevailing in the Arab region, and the world at large, realizing this goal will represent the cornerstone for socio-economic stability at domestic, regional and global levels. It has been established that petroleum will remain, for decades to come, one of the main drivers of global economy, and a source of prosperity in many of our countries.

In 2012 global economic growth rates witnessed more than expected slowdown, and economic recovery remained stumbled, with aggravating pessimism about future prospects. Sovereign debt crisis of Euro zone weighed heavily on Greece, heralding spill to other countries in Europe. Economic



slowdown was not limited to industrialized economies. Yet, it also swept the major emerging economies, especially China and India, who experienced declining growth rates, compared to the previous year, although those rates remained relatively high.

The 39th Secretary General Annual Report is released amidst such unstable global circumstances. The Report addresses the developments and transformations witnessed by the oil and gas industry and all other sources of energy in 2012 at all national, regional and global levels, with a special focus on Arab countries. It should be noted that during 2012 global oil markets saw relative stability in the areas of supply/demand and prices, and appeared as if they were cured from the implications of the global financial crisis that took place in 2008/2009.

The relative stability in the market has positively affected the revenues gained by the petroleum exporting countries in general, including OAPEC member countries. They were able to enhance the investment momentum that began to return to the various circles of Arab petroleum industry. More investments were injected into the projects concerned with upgrading oil and natural gas production capacity in many of our countries. Furthermore, major national Arab companies continued their cross-border expansionary strategy by fostering cooperation with the consuming countries, especially in East Asia and Europe. They kicked off joint oil and gas projects, including refineries and petrochemical complexes, planned to construct offshore pipelines for natural gas transport, and contributed to establishing liquefied gas receiving stations and farms, as well as regasification processing facilities in certain Asian and European countries.

From this perspective, petroleum will remain one of the most important natural resources in the Arab region, and will continue to constitute an economic base for several countries of the region, forming a major part of their foreign trade. OAPEC member countries' revenues from exporting their oils amounted to about \$702 billion, up by \$77 billion, compared to the revenues realized in 2011 of nearly \$624 billion. It is worth mentioning that

the revenues of 2012 have, in fact, not exceeded \$536 billion, as measured by the real prices of the reference year 1995.

In 2012 global economy registered a growth of around 3.3%. Such growth is attributable to the fact that oil prices have relatively stabilized within an acceptable scope (despite the relatively low natural gas prices). This has reflected positively on the size of demand. However, the industrialized nations still anticipate the growth indicators to soar, as they registered only 1.3% in 2012. In the Asian developing countries growth rate stood at 6.7%. Those countries include China, whose economic growth slipped to 7.8%, after bordering on 10.5% two years ago. Latin America witnessed an economic growth rate of 3.2%, compared to 4.5% in 2011. As a result of such decline in economic growth, global demand for oil registered a notably slight rate of 0.9%, up from 88 million b/d in 2011 to 88.8 million b/d, an increase of about 800,000 b/d.

This Report seeks to highlight the above-mentioned issues with more detail and further analysis to draw a clear picture of the developments in petroleum industry, in particular, and energy industry in its broad concept in 2012. The Report pinpoints the various efforts and endeavors exerted by our member countries to upgrade their petroleum industry, on one part, to mitigate the implications of the economic situation for our countries and the world, on the second part, and to strengthen contacts with oil-related international authorities and organizations, on the third part. In its relentless efforts towards implementing its planned petroleum industry related activities, OAPEC General Secretariat held numerous conferences, seminars and meetings to this effect. The General Secretariat continued its efforts, in full capacity, to effectively participate in the endeavors aimed at deepening and reactivating the dialogue and discussions between the various authorities and organizations representing petroleum exporting and importing countries, to the common interests of both sides.

Part 1 of this Report exhibits an analytical picture, supported by data and statistics, of the development of crude oil and natural gas industry, in particular,

and energy, in general, both at Arab and global levels, and how this reflected on the economies of OAPEC member countries. It provides a clear view of the different factors affecting the market, whether those relating to the market fundamentals, such as supply/demand and oil inventory, or those playing a major role in affecting the supplies, demand and prices, such as geopolitical turmoil, and energy policies adopted by the industrialized nations.

Part 2 reviews OAPEC's activities in 2012, covering the meetings of the Council of Ministers, the Executive Bureau, the studies conducted by the Organization, and the seminars, meetings and conferences in which OAPEC participated, at Arab and global levels. This part also contains a review of the achievements realized by OAPEC sponsored ventures, and their efforts to overcome the implications of the events witnessed by the country in which they have presence. It sheds light on the efforts made by sponsored ventures to cope with the developments in the markets where they operate, thus realizing good results.

In conclusion, we aspire that this Report will contribute to providing a clear preview of the developments witnessed by the Arab and global petroleum industry in all its circles and stages, and that it will provide the readers with the data and information they need to broaden their knowledge of this vibrant industry, keeping them abreast of OAPEC's activities and objectives.

Abbas Ali Al-Naqi
Secretary General

PART ONE

INTERNATIONAL DEVELOPMENTS IN OIL AND ENERGY



CHAPTER ONE



**DEVELOPMENTS IN GLOBAL MARKETS
AND THEIR IMPACT ON OAPEC MEMBER
COUNTRIES**



PART ONE
**INTERNATIONAL DEVELOPMENTS
IN OIL AND ENERGY**

CHAPTER ONE
**DEVELOPMENTS IN GLOBAL MARKETS AND
THEIR IMPACT ON OAPEC MEMBER COUNTRIES**

FOREWORD

Year 2012 witnessed a more than expected slowdown in global economic growth rates, the continuation of faltering economic recovery and the growing pessimism about future prospects. This is due largely to concerns about the sovereign debt crisis in the Euro zone that started in Greece and spread to include other countries in Europe, which is an extension of the global financial crisis that hit the world in the summer of 2008.

The slowdown in growth has not only hit the industrialized economies, but included the major emerging economies, especially China and India, which have witnessed some decline in their growth rates compared with the previous year, although those rates are still relatively high.

In light of the continued availability of supplies, global oil market has witnessed a state of balance and relative stability. Global oil market has achieved several records during the year whether it is

on the global oil demand side, which reached 88.8 million b/d or on the oil supply side, which amounted to 90.0 million b/d. Despite of the American and European embargo on Iranian oil exports, OPEC's share of total oil supply accounted for about 41%, which represents 37 million b/d.

In 2012, the annual average of OPEC basket of crudes was at an unprecedented level of \$109.5/b, representing an increase of up to \$2/b, which is equivalent to 2% compared with 2011. Although the monthly averages of OPEC basket have stabilized and moved within the range of \$108 to \$118/b in most months of the year, the difference between the lowest and highest monthly price has reached \$29.0/b during the year, compared with \$25.3 / b in the previous year .

The constant follow up of the oil market by the Organization of Petroleum Exporting Countries (OPEC) played an important role in oil prices stabilization, especially during the second half of the year. However several other factors influenced oil prices, the most important of which was the worsening geopolitical situation in the main oil production areas, including the Arab region, and the resulting consequences of the political changes during the year. In addition to intense controversy and tensions over Iran's nuclear program. In contrast, slowdown in global economic growth and its outlook was the most significant driver towards curbing price increases during the year.

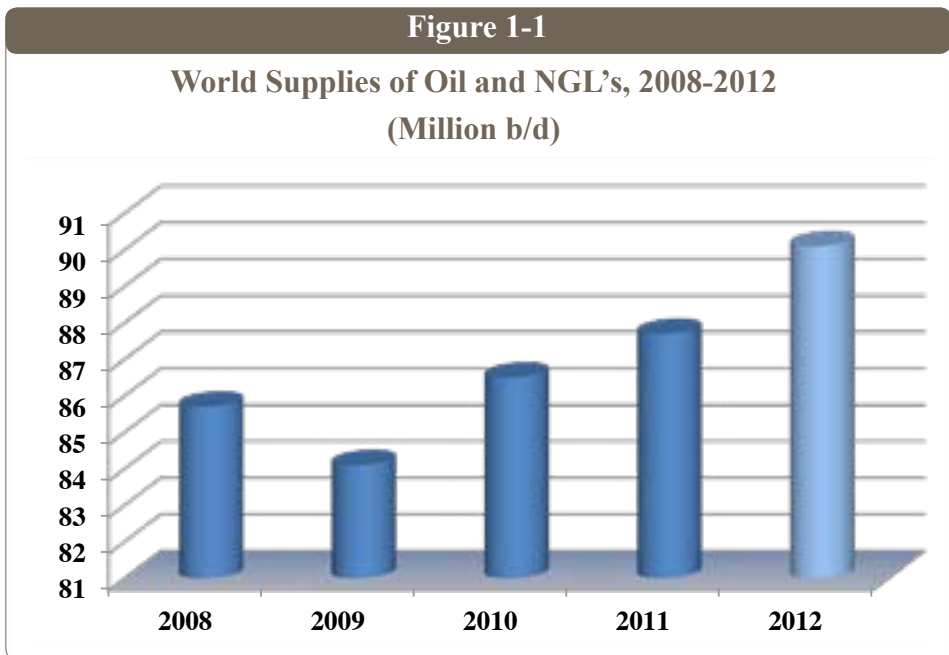
Chapter One of the Report deals with the main parameters of the oil market and the main factors affecting it and the implications for the value of oil exports of OAPEC members. This Chapter also reviews developments in oil and energy consumption in the Arab countries in general, and in OAPEC members in particular.

I. MAJOR DEVELOPMENTS IN THE WORLD OIL MARKET IN 2012 AND RELATED FACTORS

In order to shed some light and take a comprehensive look at major developments taken place in global oil market in 2012, the following sections review in some details various aspects of the market, in particular world oil supplies, world oil demand, trends of crude oil and major oil products' prices, crude oil freight rates, changes in global oil inventories, and their impact on the value of OAPPEC members' oil exports.

1. Supplies

Average oil supplies (crude oil and natural gas liquids) went up in 2012, by 2.4 million b/d, or 2.7%, compared with the previous year, to reach 90.0 million b/d, as shown in [Table \(1-1\)](#) and [Figure \(1-1\)](#).



On quarterly basis, the first quarter of 2012 has witnessed an increase in global supplies by nearly 1.4 million b/d comparing with last quarter of 2011 to reach about 90.0 million b/d. Then oil supplies declined in the second quarter by 200 thousand b/d comparing with first quarter. Same trend persisted in the third quarter of 2012 as oil supplies decreased by almost the same amount registered during the second quarter. Then oil supplies changed course in the fourth quarter and went up by 700 thousand b/d comparing with third quarter to reach 90.2 million b/d. It is worth mentioning that the main source of increase in supply was from OPEC production of crude oil and natural gas liquids.

1-1 OPEC Supplies

In 2012 OPEC countries' oil supplies (Crude oil and Natural gas liquids) hiked by around 1.8 million b/d, or about 5.1 %, to stand at 37 million b/d, representing a higher pace increase comparing with the increase of 1.0 million b/d in 2011. The increase brought OPEC countries' share of total world oil supplies to 41.1 %, in 2012 compared with 40.2% in the previous year, as shown in **Table (1-1)**.

OPEC supplies of natural gas liquids and unconventional oils rose from 5.6 million b/d in the first quarter of 2012 to 5.9 million b/d in the fourth quarter. On the other hand, OPEC supplies of crude oil amounted to 31.2 million b/d in the first quarter of 2012 then went up in the second quarter, and changed course in third and fourth quarter reaching 30.7 million b/d in the fourth quarter of the same year.

OPEC countries redoubled its efforts in order to meet the global oil demand by increasing the supply of oil despite the uncertainties

surrounding the global economic recovery, especially in OECD, which resulted in repeated revisions concerning the global economy and global oil demand growth. Thus, OPEC was keen to play its role as a major oil market supplier. Reflecting its sense of responsibility towards the oil market, OPEC kept meeting market needs, which had a significant impact on the stability of the market and prices during the year.

Through frequent monitoring of the global oil market situation, OPEC held two ordinary meetings in the course of 2012. Below are some details of those meetings:

- OPEC held its first ordinary meeting at its headquarters in Vienna on 14 June 2012. The Conference reviewed recent oil market developments, noting that the heightened price volatility witnessed during the early part the year 2012 was a reflection of geopolitical tensions and increased levels of speculation in the commodities markets, rather than solely a consequence of supply/demand fundamentals. The Conference observed, however, that, more recently, downside risks facing the global economy, e.g. heightened Euro-zone sovereign debt concerns and the consequent weakening economic outlook, with its concomitant lower demand expectation, continue to mount. In light of this, the Conference decided that Member Countries should adhere to the production ceiling of 30.0 mb/d.
- In its second ordinary meeting which held at its headquarters in Vienna on 12 December 2012, The conference reviewed the oil market outlook, noting that the price volatility witnessed throughout 2012 remained mostly a reflection of increased

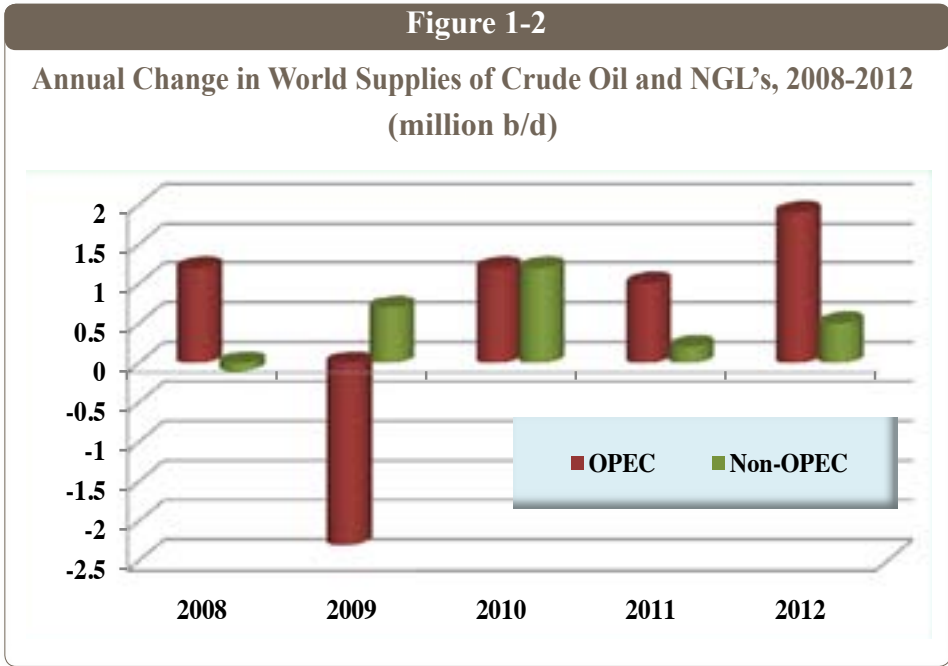
levels of speculation in the commodities markets, exacerbated by geopolitical tensions and, latterly, exceptional weather conditions. The conference observed: the mounting pessimism over the global economic outlook, with downside risks continuing to be presented by the sovereign debt crisis in the Euro-zone; high unemployment in the advanced economies, especially the Euro-zone; and inflation risk in the emerging economies. Given the demand uncertainties, the conference decided to maintain the current production level of 30.0 mb/d.

1-2 Non-OPEC Supplies

Non-OPEC oil supplies came to 53.0 million b/d in 2012. This is an increase of 600 thousand b/d compared with an increase of 100 thousand b/d only in 2011, as shown in **Table (1-1)**.

Despite the traditional decline experienced by many countries outside OPEC, Non-OPEC group was able to achieve a significant net increase in production during 2012, defying expectations that refer to the arrival of peak oil production. The bulk of the increase in Non-OPEC oil supplies, came from the United States where production increased by more than 900 thousand b/d in 2012 compared with 2011. Canada's production rose by 170 thousand b/d, Former Soviet Union supplies increased by 70 thousand b/d. As a result, OECD countries were able to increase their supplies to a level of 21 million b/d, while developing countries oil supplies went down by 500 thousand b/d in 2012 compared with last year level.

Figure (1-2) shows the annual change in oil supplies from OPEC and non-OPEC producers in 2008-2012.

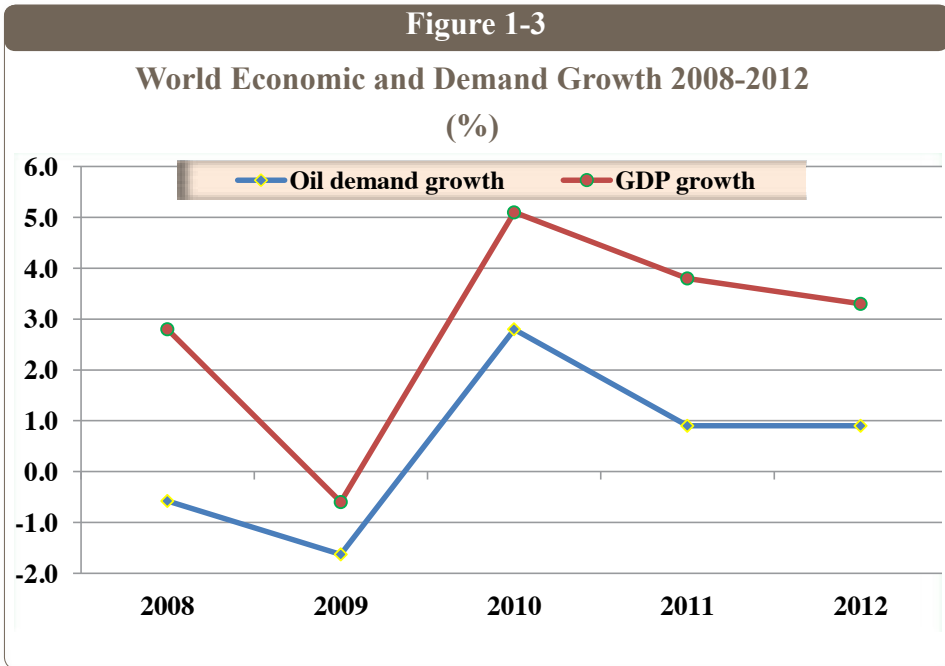


2. World Oil Demand

In 2012, global oil demand increased in absolute terms by 800 thousand b/d, the same level of growth seen in previous year due to slowdown in global economic growth. The state of the global economy, is considered an important criterion to determine the size of the global demand for oil. The relationship between economic growth and the global oil demand growth represented through the impact of the continuing slowdown in economic growth rates on demand growth during the last two years, compared with the year 2010. The change in the direction of global economic growth from 5.1% in 2010 to 3.8% in 2011 and to 3.3% in 2012 accompanied by a decrease in rate of oil demand growth from 2.8% in 2010 to 0.9% in 2011 and 2012.



Figure (1-3) and Table (1-2) show the annual rates of growth in world oil demand compared with world economic growth rates.



Most economies witnessed more than expected significant decreases in their growth rates in 2012 which resulted in the mounting pessimism over the global economic outlook, with downside risks continuing to be presented by the sovereign debt crisis in the Euro-zone; high unemployment in the advanced economies, and inflation risk in the emerging economies.

In light of that the International Monetary Fund and other specialized international institutions have reconsidered the global economic growth in 2012 downwards several times during the year.

In terms of international groupings, the economic growth rate of OECD countries, which account for about 51% of world oil demand, declined from 1.6% in 2011 to 1.3% in 2012.

Among the OECD countries, the annual growth rate of the United States economy increased from 1.8% in 2011 to 2.2% in 2012, while the rate of growth in the Japanese economy went up from -0.8% in 2011 to 2.2% in 2012. In contrast, the growth rate of the euro zone economies decreased from 1.4% to -0.4% in the same period.

The rest of world economies witnessed a decrease in their economic growth rates from 6.2% in the previous year to 5.3% in 2012. The growth rate of common wealth Independent States (CIS) went down from 4.9% in 2011 to 4.0% in 2012.

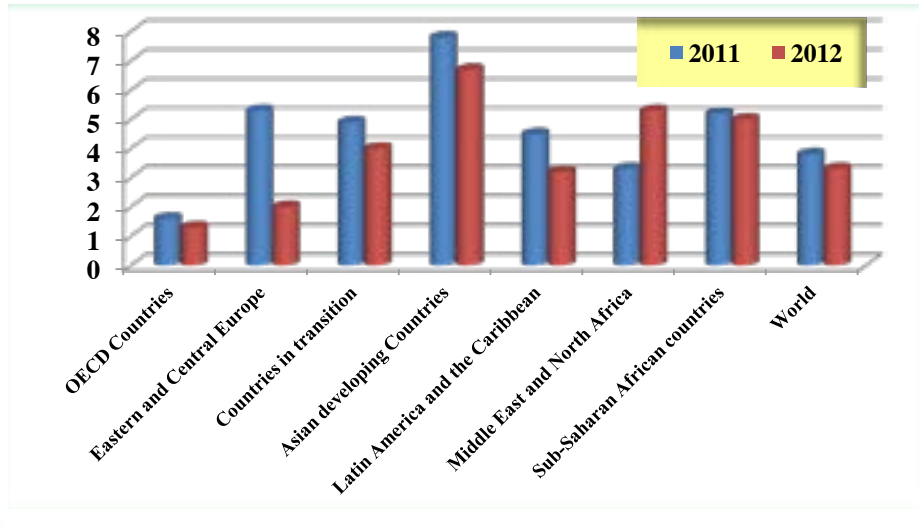
The developing countries in Asia witnessed a decline in their economic growth in 2012 to reach 6.7% compared with 7.8% in 2011, including China, which has experienced a decline in economic growth from 9.2% in 2011 to 7.8% in 2012. The Sub-Saharan African countries, recorded a slight decrease in their economic growth rate from 5.2% in 2011 to 5.0% in 2012. Latin American and the Caribbean countries also witnessed a decrease in their economic growth rate from 4.5% in 2011 to 3.2% in 2012.

The rate of economic growth in the Middle East and North Africa was 5.3% in 2012 compared with 3.3% in 2011, as shown in **Figure (1-4)** and **Table (1-3)**.



Figure 1-4

World Economic Growth 2011-2012
(%)

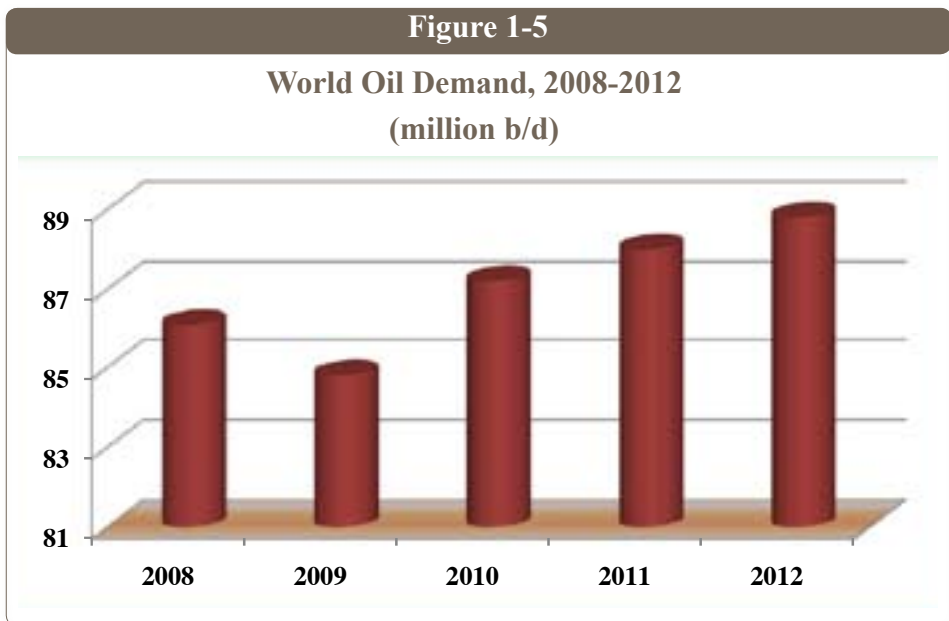


By tracking the growth rates of world oil demand in 2012 on quarterly basis, one can clearly note their decline in response to the slowdown in the global economy as a whole. While the pessimism over the global economic outlook started in the beginning of 2012, the total global demand for oil during the first quarter amounted to 88.0 million b/d, a level that was 800,000 b/d lower than the fourth quarter of 2011.

The second quarter of 2012 has maintained the same level of demand prevailed during the first quarter, but the trend changed in the third quarter of the year when demand increased by more than 1.2 million b/d compared with the second quarter to reach 89.2 million b/d, followed by a slight increase of 900,000 b/d in the fourth quarter compared with the third quarter to reach 90.1 million b/d.

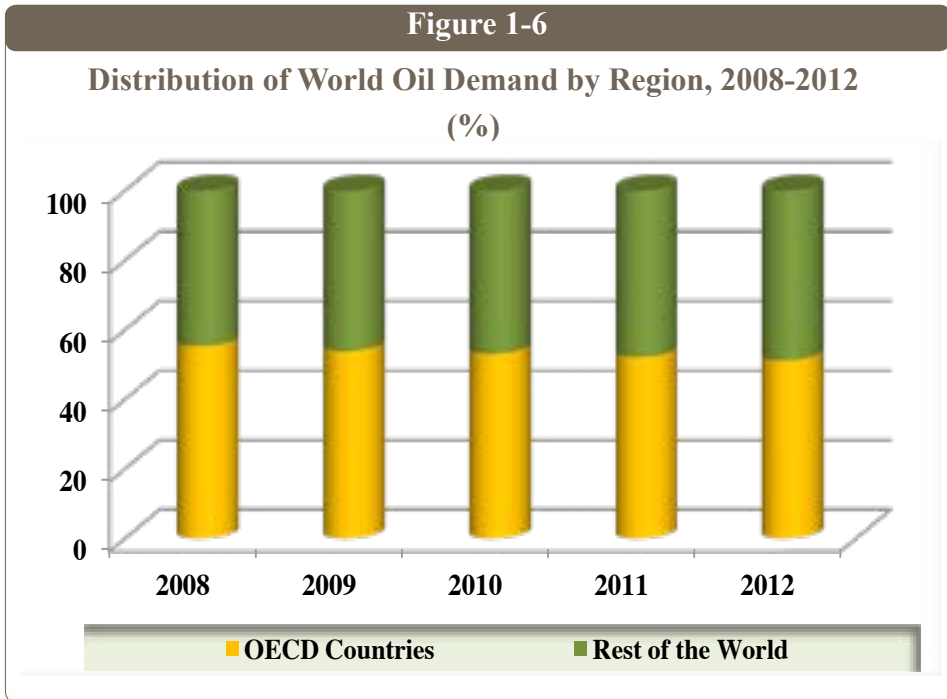
This development was reflected on the global oil demand expectations for 2012 which were issued on a monthly basis by the key international institutions. OPEC’s January 2012 forecast indicates a rise in world oil demand by 1.1 million b/d, but the forecast had been revised downwards to 0.9 million b/d and 0.8 million b/d in February and November 2012 respectively.

In general, low economic growth rates had a negative impact on world oil demand growth, which rose by only 0.8 million b/d, indicating a growth of 0.9%, over 2011 level. World oil demand in 2012 reached around 88.8 million b/d, as shown in **Figure (1-5)** and **Table (1-4)**.



The level of oil demand varied from one international group of countries to another. Whilst it decreased in the OECD countries in 2012 by 400,000 b/d from its 2011 level to 45.5 million b/d, it rose in the rest of world countries by 1.2 million b/d, comparing to previous year level.

The change in demand level of each group altered its share in total world demand in 2012. The share of the OECD countries declined from 52.2% in 2011 to 51.2% in 2012, while that of the rest of world countries rose from 47.8% to 48.8%, as shown in **Figure (1-6)** and **Table (1-5)**.

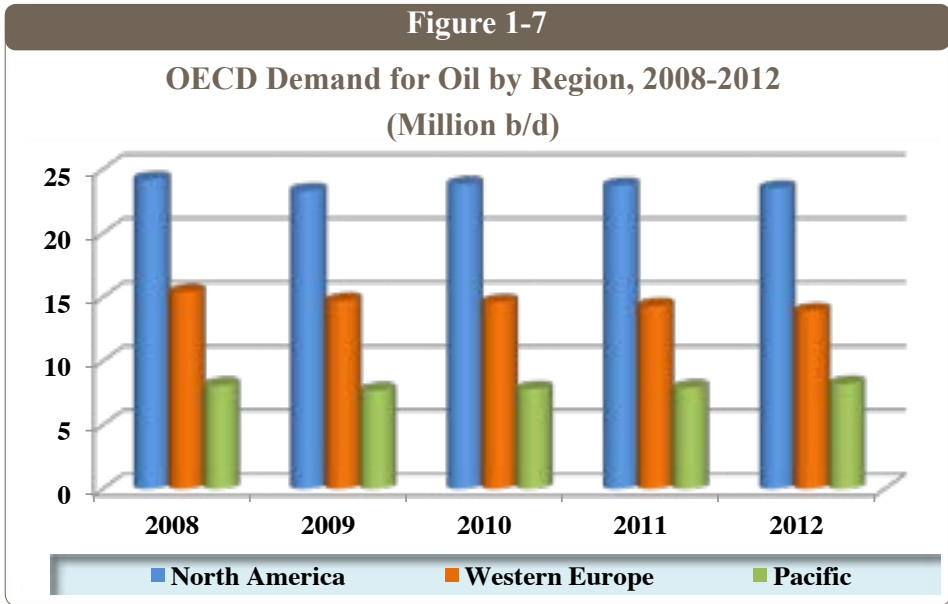


Developments in world oil demand by international grouping are examined below.

2-1 OECD Countries

The OECD countries' demand for oil in 2012 decreased by about 400,000 b/d, or 0.9% from its 2011 level to 45.5 million b/d. In North American countries, demand declined by 200,000 b/d to reach 23.5 million b/d. In West European countries, oil demand

fell by 500,000 b/d to reach 13.8 million b/d, and Asian industrial countries demand reached 8.2 million b/d, representing an increase of 300,000 b/d, as shown in **Figure (1-7)** and **Table (1-6)**.



Developments in the US economy is considered to be very important factor affecting world oil consumption. In the last few years, US oil consumption became unpredictable factor with respect to the global oil demand. After relative marginal decline in US growth in the first and third quarters of the year, signs of stability in American oil consumption exhibited in the fourth quarter due to the rise in retail prices and developments in US economy during the year. As a result, US demand for oil products decreased by 1.6% in 2012 compared with the previous year. US demand for distillates declined by 4% due to decline in industrial production . In contrast, gasoline consumption was in a better position than the previous year in the light of the improvement in the product consumption witnessed in the U.S. market, especially at the end of the year.

With regard to the European industrial countries, the largest four countries (German, France, Italy, and United Kingdom) showed a weak consumption of oil in the last few years. The sovereign debt crisis in the Euro area, which started at the end of 2009 and worsened in early 2011, had a great impact on the economies of industrialized Europe, as it led to reducing economic growth to 1.3% during the year and decline in oil demand growth by 500,000 b/d in 2012, representing a loss of up to 20% in demand since 1998. The most affected sectors in the above mentioned group was the transport and industrial sectors, due to the decline in the consumption of gasoline and distillates.

As for Japan, the catastrophic explosion of the Fukushima nuclear complex continued its great impact on oil demand and on the overall aspects of the Japanese economy. Japan had an almost complete closure of its nuclear plants during the year, forcing the country to increase the use of other types of energy. Oil consumption in the electric power plants rose to account for 19.7% of total energy consumption in Japan during the year, compared with 7.5% in the previous year. As a result, the demand for oil (especially in the form of fuel oil and crude oil) increased by 300 thousand b / d in Japan accounting for about 40% of the total global annual growth of oil demand during the year.

The analysis of OCED oil demand on a quarterly basis in 2012, OPEC estimates indicate a decline by 0.1 million b/d in the group demand during the first quarter of 2012 compared with the fourth quarter of the previous year. Demand of the group in the second quarter declined by 700,000 b/d compared with the first quarter of previous year, followed by an increase of 400,000 b/d in third quarter compared with the second quarter and a further increase in the fourth quarter by about 500,000 b/d compared with the third quarter of the year.

2-2 Developing Countries

Oil demand of the developing countries (including China) increased in 2012 by 1.0 million b/d, or 2.7% compared with last year to reach unprecedented level of 38.2 million b/d. It is worth mentioning that demand of developing countries is the main engine of the global oil demand, as it witnessed an increase of about 4.6 million b/d in 2012 compared with its 2008 level.

Among this grouping, demand in the Middle East and Africa rose by around 300,000 b/d to 11.2 million b/d, of which the Arab countries accounted for 6.6 million b/d, accounting for the entire increase of the region's demand and for about 30% of the increase in the developing countries demand. OPEC member countries were responsible for the entire increase in demand of the Middle East and Africa. The demand of other countries in Middle East and Africa region remained unchanged from the previous year level of 4.6 million, b/d.

The entire increase in the Arab countries demand originated from OPEC member countries, where demand grew by 5.6% compared with last year level to 5.7 million b/d, and other Arab countries oil demand remained unchanged from previous year level of 900,000 b/d.

Demand in the Asian developing countries also rose by 600,000 b/d to 20.5 million b/d in 2012. Despite the slowdown in China's economic growth, Chinese demand, which is the main engine of Asian economic growth and recovery, accounted for more than 47% of total demand in the Asian developing countries, and responsible for 50% of the increase in demand of the Asian developing countries and for 30% of the increase among all developing countries. Chinese demand rose by 300,000 b/d to 9.7 million b/d in 2012. It is worth mentioning that Chinese demand for oil went up in all quarters of 2012 except the third quarter when it decreased by 400,000 b/d



comparing with the second quarter. Chinese demand was influenced by many factors including the slowdown in industrial activity, despite its improvement in the last months of the year, the decline in exports which was affected by the situation of the global economy in particular the European sovereign debt crisis, and also due to higher domestic prices of petroleum products, especially after the adoption of China's new pricing mechanism aimed at reducing the gap between the levels of domestic prices and international prices. In addition to the lifting of incentives for registering new cars.

As for India's economy, the other engine for the growth in the Asian economy, oil demand has increased by around 200,000 b/d to 3.7 million b/d during the year. Indian demand was influenced strongly by the stoppage of the electric power and the summer agricultural season. The shortage in the supply of electricity has resulted in an increase in the consumption of diesel oil by the owners of private generators. The industrial sector, inclusive of the petrochemicals and transport fuels accounted for the biggest share of the increase in Indian demand during the year.

On the other hand, demand in Latin America went up by 100,000 b/d to 6.5 million b/d. Oil demand in Brazil was responsible for the entire increase oil demand in the Latin American countries. As a result, it is unlike the previous year, other Asian countries experienced the highest growth rates, followed by China, the Middle East and Latin America, as shown in [Table \(1-7\)](#).

2-3 Countries in Transition

In 2012, oil demand in the countries in transition increased by 100,000 b/d to 5.1 million b/d, the source of the entire increase was the FSU, as shown in [Table \(1-8\)](#).

3. Price Trends

3-1 Crude Oil Prices

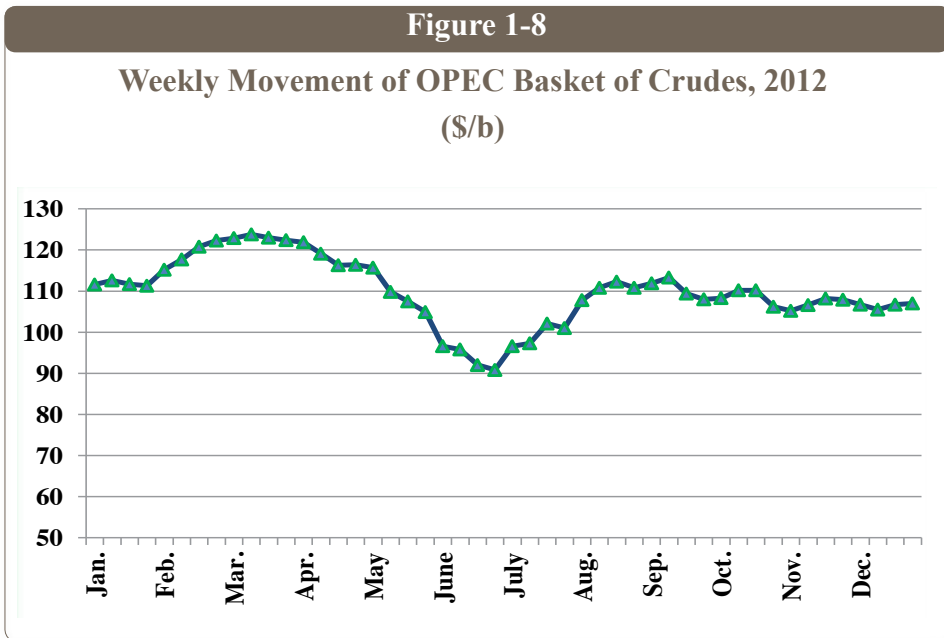
In 2012, global oil market has witnessed a relative stability, as monthly average price of the OPEC basket levels fluctuated within a band between \$108/b and \$118/b for most of the months of 2012. The annual rate of OPEC basket price was up by \$2/b, or 2%, as the spot price averaged \$109.5/b, compared with \$107.5 in 2011.

The first half of the year characterized by relatively high degree of price volatility as monthly price of OPEC basket of crudes was moving within the range of \$94/b to \$123/b compared with the second half were prices witnessed a relative stability as monthly OPEC basket price was fluctuating within the range of \$100/b to \$111/b.

On quarterly basis, the average OPEC basket price reached \$117.4/b, in the first quarter representing an increase of \$9.5/b or 9%, compared with the fourth quarter of previous year, declining noticeably in the second quarter by 9%, compared with the first quarter to \$106.8/b. In the third quarter it remained close to the second quarter level of \$106.6/b and increased by \$0.8/b or 0.8% to \$107.3/b in the fourth quarter. Monthly average price of the OPEC basket remained close to or above the \$100/b in the course of 2012, except in month of June when it reached a level of \$94/b.

It is worth mentioning that the monthly average of OPEC basket price began to rise until they reached the upper limit of \$123/b during the month of March. Then it began to decline until it reached the minimum level of \$94/b during the month of June. After that, prices rose until the month of September where they fell a little bit and settled at the level of \$107/b during the last two months of the year.

As a result of the above developments in oil prices, the difference between the highest level of average of the OPEC basket price in 2012 which recorded in March (\$123/b) and the lowest that reached in June (\$94/b) amounted to \$29/b, compared with a difference of \$25.3/b between the highest and lowest level of monthly average price in 2011, as shown in **Table (1-8)**. **Figure (1-8)** shows the weekly movement of the OPEC basket price.



In view of the nature of international oil prices, the fluctuation in oil prices is, usually, the result of the impact of a number of diverse and overlapping factors acting in varying directions, some of which were pushing prices upward and others were pushing them downward. As it has been the case in previous year, geopolitical developments, especially in the Arab region, representing one of the most important factors that supported prices and pushed their levels up in 2012.

In contrast, the global economic slowdown and the financial crisis in the Euro area can be considered as one of the most important factors that negatively impacted oil prices and reduced their rise during the year. The key factors that influenced the movement of oil prices during the year were as follows:

- OPEC decisions to maintain their production unchanged played a key role in achieving the balance and stability in oil market. Some OPEC member countries were individually and collectively striving to compensate for the reduction in the production in some other producing countries to avoid shortage of supplies in the market. As a result, OPEC countries managed to meet the global demand for oil and keep the global market with abundant supplies during the year, and this was a crucial factor behind the relative stability that characterized the market especially during the second half of the year.
- Geopolitical factors, in particular the political developments in the Arab region, where the first spark began in Tunisia at the end of 2010. The global concern regarding the possibility of spreading of those developments to other oil producing countries in the region and their repercussions on the supply in light of the vital role played by the Arab region in supplying the global oil market with its needs. In addition to the heightened tensions of Iran's nuclear program which led to imposing oil embargo on Iran by the European Union and financial sanctions by the United States. All these developments raised fears of possible supply disruptions due to threats of closure of transportation routes in the Arab Gulf.
- Sovereign debt crisis in the developed countries, particularly in the Euro area, which began in Greece to include other countries that become on the brink of bankruptcy representing a major challenge for the global economy.



- Fluctuations in dollar exchange rates (currency of oil pricing in world markets) against major currencies, especially in the middle of the year (after a significant decline in the exchange rate of the Euro due to fears of the Greek crisis), can be considered as one of the main factors behind the decline in global oil prices during the month of June indicating the traditional inverse relationship between oil prices and the exchange rate of the dollar.
- Despite of the measures taken in some industrialized countries to avoid both the fluctuation in the prices and excessive speculation in the market, speculation activities played a role in the high level of fluctuation in oil prices during the year. In general, the price movement pattern in recent years which is linked to speculation activities and financial factors, continued to push prices up to high levels that cannot be justified by market fundamentals. There is no doubt, that the aggravation of geopolitical events in the Arab region was a fertile ground that has helped in increasing the activity of speculators.
- One of the main motives behind the rise of daily rate of OPEC basket price was the seasonal factors related to weather, especially mild winter conditions in the northern hemisphere which lasted until the end of 2012. Most notably, the hurricane of Sandy which hit the east coast of the United States during the month of October causing great damage to refineries and power plants, in one of the world's largest energy consumption regions.

Year 2012 also saw significant developments in the pattern of price differentials, where the differentials between light sweet crudes and heavy sour crudes narrowed to unusual levels compared with previous year. For example, the differential between Dubai crude (representing the heavy crudes) and Brent (representing light sweet

crudes) reached around \$2.5/b in 2012 compared with \$5.1/b in the previous year. The same applies for the price of OPEC basket, which was \$2.1/b lower than the price of Brent crude in 2012 compared with \$3.8/b in the previous year.

Those developments in price differentials can be attributed to several factors, including the increase in the supplies of light crudes in Libya after the return of production prior conflict levels, and the increase in US light crudes and liquids which resulted in a decrease in US imports of light crudes and products which was one of the reasons behind the slight decrease in the price of U.S. West Texas oil during the year compared with the previous year.

As for the West Texas intermediate (WTI) crude, which is a reference for light and low sulfur crude oils, it has been suffering since 2007 from logistics limitations, especially its isolation from other global markets. Its prices are moving in such a way that is not related to fundamentals of the global market. Traditionally, the differences between the prices of WTI and Brent which are both similar in quality tend to be in favour of WTI, but a differential of \$17.2 /b was in favour of Brent in 2012. Even more the price of high-quality WTI crude was less than the prices of some lower quality crudes. The differential between U.S. light crude and Dubai was at \$14.7/b in favour of Dubai and \$14.8/b compared with the average price of OPEC basket of crudes during the year.

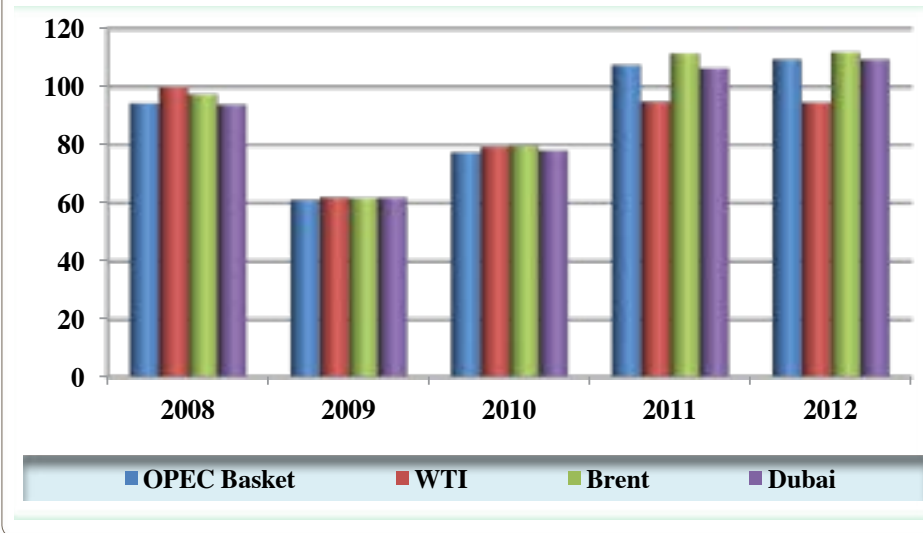
Table (1-9) and **Figure (1-9)** show the developments of differentials among the annual average prices of OPEC basket, U.S. light crude, Brent and Dubai for the period 2008-2012.

Spot prices for various Arab crudes followed the same general trend, since they went up in 2012 compared with their levels in 2011



Figure 1 - 9

Annual Average Prices of OPEC Basket, U.S Crude, Brent, and Dubai for the Period 2008-2012
(\$/barrel)



with various degrees. However, the average price of light sweet crudes fell or increased by a lower rate compared with heavy sour crudes. This led to reducing the differential between different crudes.

Algerian crude decreased by \$1.2/b or 1.1% compared with previous year to \$111.7/b, while Kuwaiti crude went up by \$3.6/b or 3.4% to \$109.2/b. This led to narrowing the differential between the two crudes from \$7.3/b in 2011 to \$2.5/b in 2012.

Saudi Arabian light crude rose by 2.4% to \$110.4/b, the UAE's Murban crude increased also by 2.1% to \$112.1/b, Libyan Sidra increased by 0.2% to \$112.1/b. While Qatar Marine crude and Iraqi Basra increased by 2.9% and 2%, to \$109.6/b and \$108.3/b respectively, as shown in **Table (1-9)**.

The nominal value of the increase in crude oil prices of \$2/b during 2012 was slightly different from its real value increase measured in 2000 prices, after adjustment according to the index representing the GDP deflator of industrial countries. The real price increase amounted to \$0.4/b, or less than 0.5%, to reach an average of \$90/b during 2012, as shown in **Table (1-10)**.

3-2 Spot Prices of Oil Products

There was an increase in the annual average prices of various oil products on all major markets in 2012, although the amounts varied according to the product and the market. However, rates of increase for all products and markets were less compared with the previous year.

3-2-1 Premium Gasoline Prices

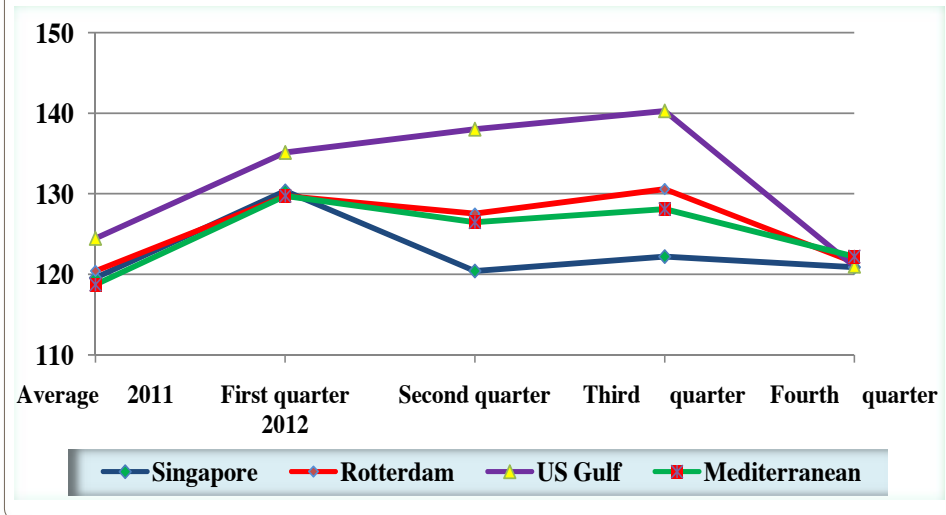
The average price of gasoline in the US Gulf in 2012 was \$133.6/b, indicating an increase of \$9.1/b, or about 7.3%, compared with its level in 2011. In Mediterranean market the average price went up to \$126.6/b, an increase of about \$7.9/b, or 6.7%, above 2011, and in Rotterdam market the average price rose to \$127.3/b, an increase of about \$6.9/b, or 5.7%, above 2011, whilst in Singapore market it reached \$123.5/b, which was \$3.9/b, or about 3.3%, higher than in 2011. Consequently, the US market achieved the highest prices of all four markets in 2012, Rotterdam and Mediterranean came next, while Singapore achieved the lowest as shown in **Table (1-11)** and **Figure (1-10)**.



Figure 1-10

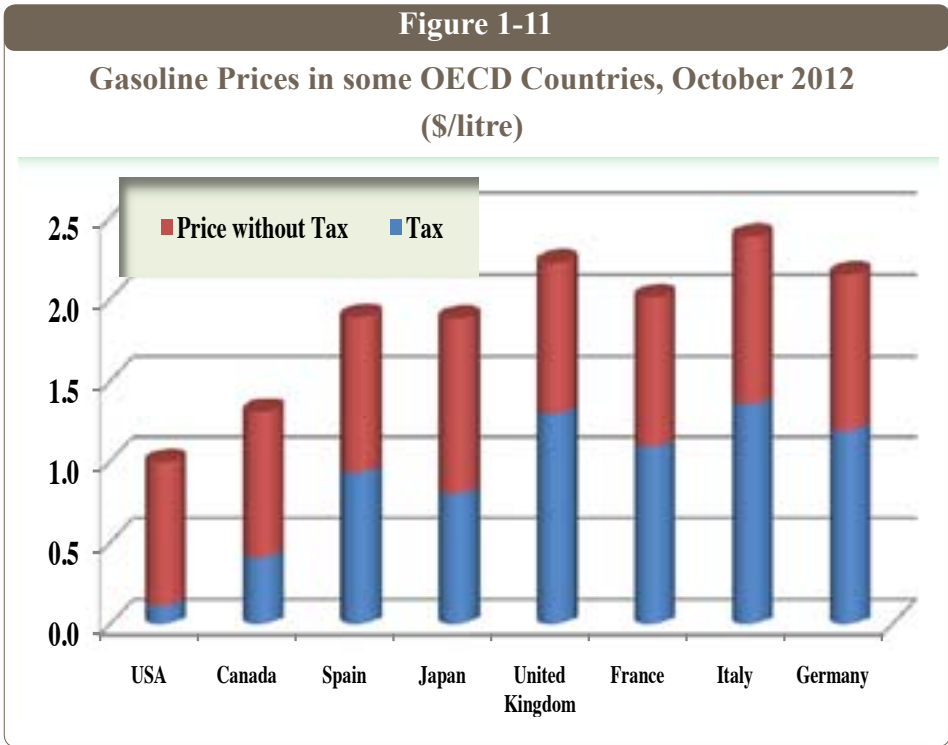
Premium Gasoline Prices, 2011-2012

(\$/b)



A comparison of final price of gasoline in some OECD countries showed that it was the lowest in US market, owing to the low taxes in that market.

In October 2012, taxes amounted to about 11% of the final consumer price of gasoline in United States of America, compared with 31.3% in Canada, 42.6% in Japan, 49.2% in Spain, and over 54% in some other European countries (55.4% in Germany, 58.6% in United Kingdom, 54.2% in France, and 57.1% in Italy), as shown in [Table \(1-12\)](#) and [Figure \(1-11\)](#).



3-2-2 Gasoil/Diesel Prices

Gasoil prices in 2012 were relatively higher in most markets compared with gasoline and fuel oil, because gasoil is in demand throughout the year, especially in the transport sector, the heating sector, cooling and power generation in some countries such as China. The highest increase occurred in Rotterdam market, where gasoil prices were 3.4% higher than in 2011, as the average annual price rose to \$130.6/b. The Singapore market came next with an increase of 2.1%, bringing the average price to \$128.9/b, then in US market the gasoil prices went up by 2.8%, giving an average price of \$126/b, and finally the Mediterranean market achieved the lowest where it increased by 1.5% to \$113.2/b.

3-2-3 Fuel Oil Prices

Fuel oil prices went up in 2012 in all markets. In the Singapore market the average price rose by 2.7% to \$105.4/b, in the US market it increased by about 5.3% to \$105.3/b, in Rotterdam market the average price of fuel oil went up by 4.6% above 2011 to \$105/b, while price in the Mediterranean market averaged \$103.8/b, which was 2.6%, higher than previous year.

3-3 Oil Freight Rates

Crude oil freight rates in all routes witnessed a sharp decline in 2012 compared with their 2011 levels for several reasons, most important of which was the economic slowdown. In addition to that some of non-OPEC countries, especially the United States, experienced an increase in domestic oil production which resulted in lower oil imports and thus a decrease in the demand for tankers. The level of utilizing the global tanker fleet decreased to 80% during the third quarter of the year, which is the lowest since 1999.

The average rate for oil shipments from Arabian Gulf ports to the East on VLCCs (230,000-280,000 dead weight tonne) was 48 points on the World Scale (WS)¹. This was 5 points, or 9%, lower than in 2011.

Freight rates for shipments from Arabian Gulf ports to the West, on crude carriers with a capacity of 270,000-285,000 dead weight tonnes, averaged 33 WS points, which was 6 points, or about 15.4%, lower than in 2011, as shown in **Table (1-13)**.

(1) World Scale is a method for calculating freight prices. One point on the WS means 1% of the standard price for the freight to that direction in the WS book, which is published annually by the world scale association. It contains a list of prices in the form of dollars per tonne, called "World Scale 100" for all the major routes in the world.

In the Mediterranean region there was a similar decrease in freight rates for small and medium-sized tankers (80,000-85,000 dwt). The average freight rate in 2012 was 88 WS points, which was 13 points, or about 13%, lower than in 2011.

It is worth mentioning that year 2012 commenced with freight rates decline compared with the end of 2011, for many reasons, the most important of which was the increase in the world scale reference freight rates effective for the year 2012 as a result of higher prices for tanker fuels . In addition to the oversupply of tankers, improved weather conditions and weak demand for transportation.

In April 2012 crude oil freight rates on the Arabian Gulf ports to East route registered the highest level, to average 65 points, due to high demand for tankers to be used as floating storage, then freight rates started to fluctuate up and down to reach their lowest level in July, August and September, to average 36 points. That was mainly due to the abundance of the global tanker fleet tonnage in conjunction with weak demand for transportation.

In contrast, crude oil freight rates on the Arabian Gulf ports to West route reached their highest level of 43 WS points in April, then they began to decline to reach their lowest level in August and October to average 25 WS points.

A cross the Mediterranean route, freight rates started with bearish direction, then rose to reach their highest level of 106 WS points in March. After that they began to fluctuate up and down till reaching their lowest level of 77 WS points in September and October.

4. World Oil Inventories

The year 2012 witnessed a significant increase in total world oil stocks (commercial and strategic) as they went up at the end of the fourth quarter of 2012 by about 98 million barrels, or 1.4% compared with the similar quarter of previous year to 7092 million barrels. Crude oil stocks at sea, and independent stocks near consumption centres such as the Caribbean, Rotterdam and Singapore at the end of 2012, totalled 937 million barrels, or 27 million barrels lower than previous year.

4-1 OECD Commercial Stocks

After reaching 2605 million barrels in the first quarter, total stocks increased by 34 million barrel in the second quarter of the year to average 2639 million barrel. During the third quarter stocks went up by 12 million barrels, while, there was a significant decrease of 14 million barrels in the last quarter of 2012 compared with the previous quarter, bringing total world stocks to 2637 million barrels at year end.

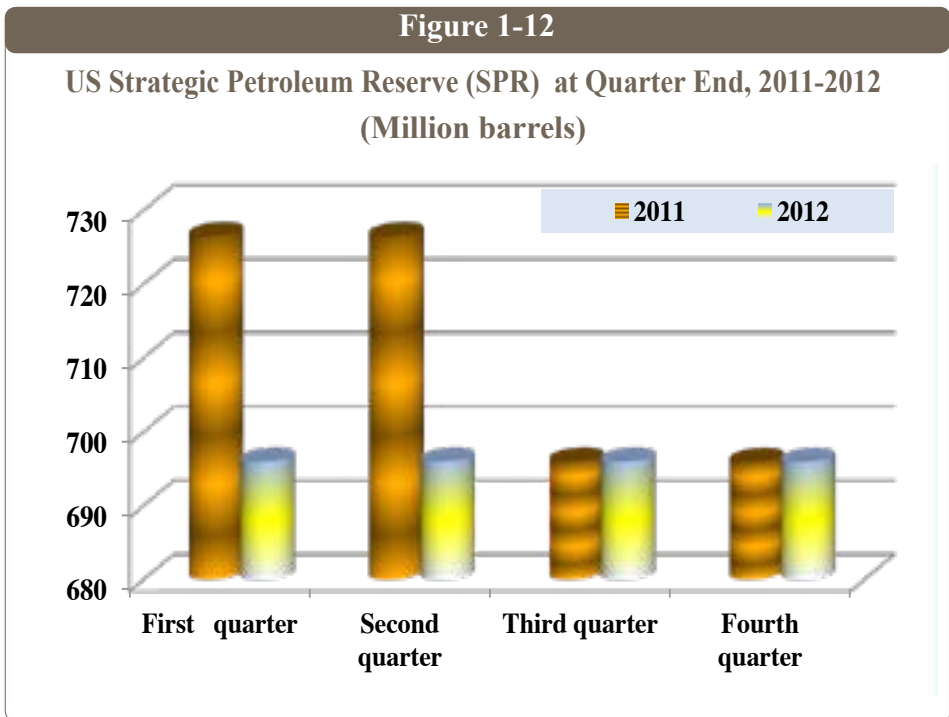
It is worth noting that days of forward consumption of all commercial stocks in the OECD countries went down to reach a level of 57 days, which is lower than previous year level but still higher than usual average.

4-2 US Strategic Petroleum Reserve

The US Strategic Petroleum Reserve (SPR) passed the 700 million barrels level for the first time in 2008. It started to decline below that level since the third quarter 2011 to settle at 696 million barrels since then and up to the fourth quarter of 2012. The decline in the U.S. strategic reserve was due to the decision taken by International Energy Agency in June 2011 to allow its members to withdraw 60 million barrels from their strategic stocks.

Since 2004, the US Administration has adopted a more flexible attitude towards releasing quantities of the SPR to compensate for any shortage of supply. This gives more importance to the commercial aspect of the SPR than the previous policy, which regarded the SPR as a last line of defence to be used only at times of major crisis. See **Figure (1-12)** and **Table (1-14)**.

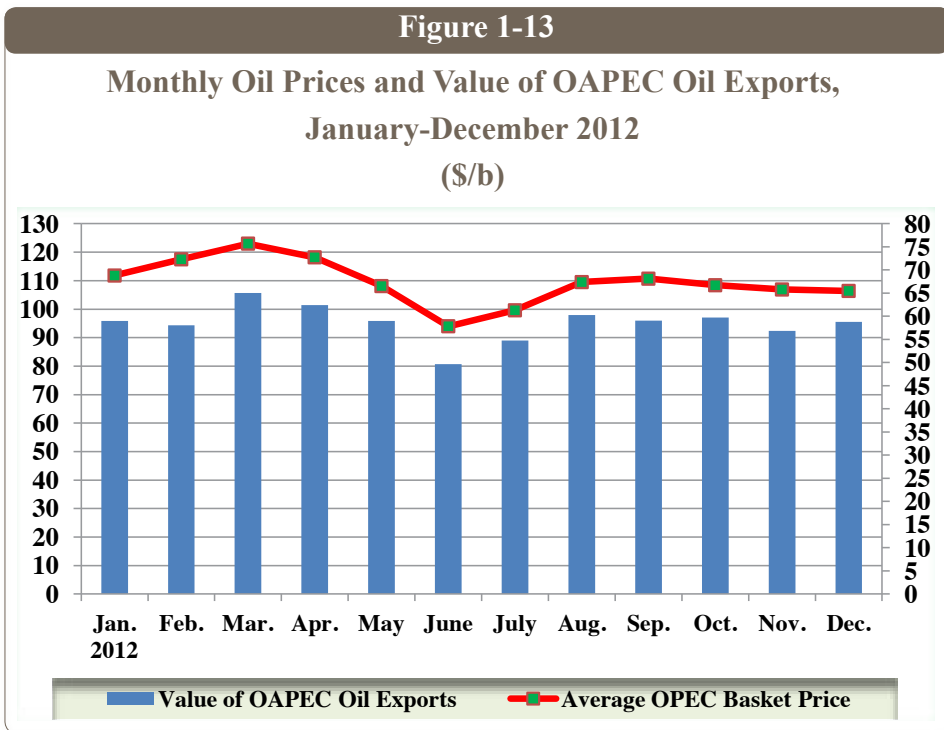
The level of usable commercial stocks increased by about 26 million barrels, or 2%, at the end of 2012 to 1394 million barrels. The usable commercial stocks are the stocks set aside by oil companies as a hedging measure to respond to any sudden interruption of supplies or for speculation purposes when prices go up.



II. VALUE OF OPEC MEMBER COUNTRIES PETROLEUM EXPORTS

The rise of oil price in 2012 was reflected on the value of oil exports, which is considered the main engine for socioeconomic development in the Arab oil producing countries, the mainstay of their central bank reserves of foreign exchange, and the main source of their budget surpluses.

Monthly data on the movement of oil prices and the estimated monthly value of OPEC members' oil exports may give a clear picture of the positive effects of the increase in prices during the year, as shown in **Figure (1-13)**.



A year-on-year comparison shows that the value of members' oil exports went up by 12.5% or by \$77.8 billion from \$624.8 billion in 2011 to \$702.6 billion in 2012. An analysis of individual member countries shows that the increase varied from one country to another while others saw a decline in revenue. Libya achieved the highest level of increase, more than four and a half times compared with the previous year, after the restoration of its production during the year. Kuwait came next with an increase of 25%, Bahrain 15.3%, Iraq 10.6%, the United Arab Emirates 9%, Saudi Arabia 6.1%, Egypt 1.7%, while it declined in Qatar by 23% due to decrease in the oil production, and by 7% in Algeria as a result of the decline in the prices of light quality crudes and decrease in oil production, as shown in **Table (1-15)**.

The value of OAPEC members' oil exports in real 1995 prices, after adjustment according to the index, representing the GDP deflator of industrial countries, rose from \$497.2 billion in 2011 to \$536 billion in 2012, or by 11.9%, as shown in **Table (1-16)**.

III. DEVELOPMENTS IN OIL AND ENERGY CONSUMPTION IN THE ARAB COUNTRIES

This section highlights energy consumption in the Arab countries during the period 2008-2012, and the factors influencing the consumption in 2012. It also reviews the energy consumption by primary energy sources both at the level of the Arab countries as a whole, and at the level of OAPEC member countries.

1. Arab Countries

1-1 Total and per capita Energy Consumption by Source

There are three basic factors that affect positively or negatively the consumption of energy in any country or region in the world. These factors are GDP, population and energy prices on local markets. There is a direct correlation between the change in energy consumption and the change in each of the first two factors (GDP and population). While there is an inverse relationship between the change in energy consumption, and the change in energy prices.

The first factor shows in general the economic activity. In the case of economic prosperity demand for energy will increase, in contrast, demand for energy will decrease in the case of economic downturn due to political unrest or social transformations

The second factor is the growth in population, which represents an important element as it puts a permanent pressure on the demand for energy, especially in Arab countries which experience relatively high rates of population growth.

The third factor is the energy prices in the local markets. It's very well known that demand for energy is inversely proportional

to changes in prices, both in the case of the rise or fall. However, growth of energy consumption in 2012 in Arab countries has been affected by the first two key factors, namely GDP and population.

The third factor(energy prices in the local markets). This did not have any significant impact on energy consumption in the Arab countries in 2012, simply because it did not witness any increases during the year, with the exception of the Kingdom of Jordan. The following paragraphs provide a brief overview of changes in both GDP and population.

1- GDP: The Arab region has been affected by the acute political developments witnessed by many Arab countries since the beginning of 2011 and continued their repercussions in 2012. These developments gave a gloomy shadow over some Arab countries economies.

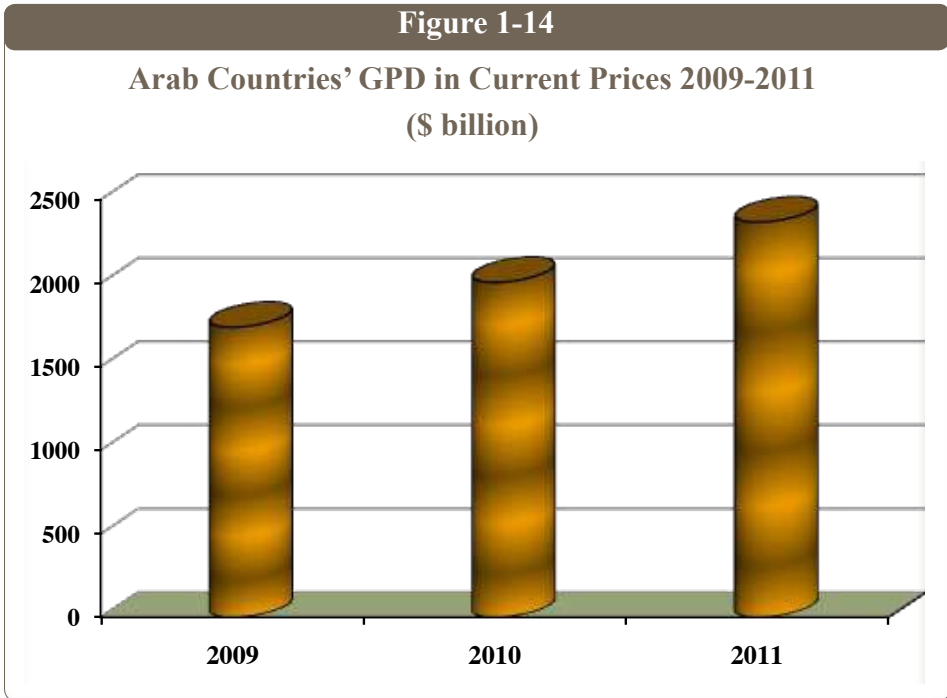
The data published in the Joint Arab Economic Report for 2012 show that the GDP at constant prices in Arab countries has a moderate growth of 2.4% in 2011. The GDP at current prices increased in the Arab countries from \$2000 billion in 2010 to \$2365 billion in 2011, or by 18%, as shown in **Figure (1-14)**.

In 2011, it is noted that the extractive industries sector witnessed an increase in its relative importance in GDP as its value added, at current prices, increased by 35.2%, and accounts for 40.7% of GDP in 2011 compared with 35.5% in 2010. It goes without saying that the main reason for this growth is the rise in crude oil prices in the global oil markets, thus increasing the value of petroleum exports to Arab countries. Crude oil prices in the global markets marked a historic level in 2011 as they surpassed the \$100/b barrier in the first quarter of the year to average \$ 108/b in the fourth quarter.



The Arab countries vary widely when looking at the performance of individual economies, especially between oil producer and non-producer countries. This is evident when comparing GDP growth rates in 2011. Arab countries can be classified into four categories, as follows:

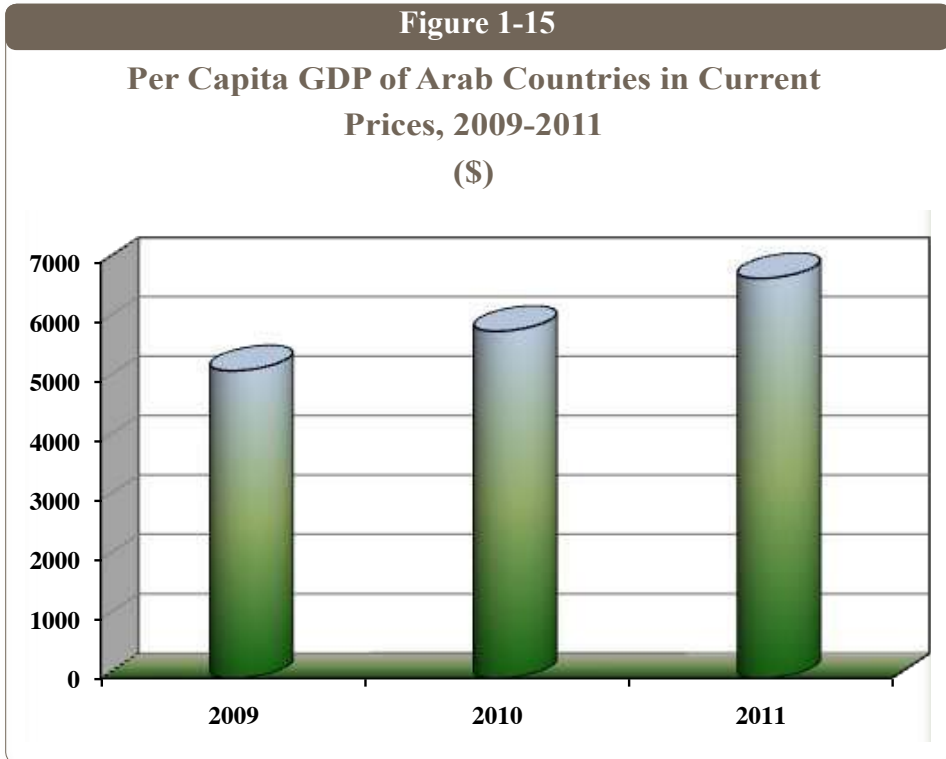
- **The first category are countries that have suffered from the economic downturn:** this category includes four countries that witnessed negative growth rates: Libya (-60%), Yemen (-17.8%), Syria (-3.4%), and Tunisia (-1.5%).
- **The second category are countries that have a rate of growth below 5%:** this category consists of ten Arab countries. The rate of growth in these countries as follows: Lebanon (1.5%), Egypt (1.8%), Bahrain and Comoros (2.2%), Algeria (2.5%), Jordan (2.6%), Sudan (2.7%), Mauritania (3.6%), UAE (4.2%) and Djibouti (4.5%).
- **The third category are countries that have a rate of growth between 5 to 10%:** This category consists of six countries. The rate of growth in these countries as follows: Morocco (5%), Oman (5.5%), Saudi Arabia (7.1%), Kuwait (8.2%), Iraq (8.6%) and Palestine (9.9%).
- **The fourth category are countries that have a rate of growth exceed 10%:** This category consists of one country, Qatar with growth rate of (14.1%). **Figure (1-14)** shows the development of Arab Countries' GDP in Current Prices 2009-2011:



It also noted that per capita GDP in the Arab countries at constant prices has seen a significant setback in 2011, as it shrank by 3.3%. As for the average per capita GDP in the Arab countries at current prices, it jumped up by 15.2% in 2011 to \$6731 compared with \$5842 in 2010, this level go beyond the average recorded by the Arab countries in 2008, \$5883. Seven countries had a higher per capita GDP than the overall average for the Arab countries, namely, Qatar (\$92897), Kuwait (\$43532), the United Arab Emirates (\$40510), Oman (\$25298), Saudi Arabia (\$21046), Bahrain (\$18174) and Lebanon (\$9915).

The Arab countries whose per capita GDP fell below the average of the Arab countries fall into two groups. The first group comprises five countries with a per capita GDP less than \$2000. They were Sudan (\$1625), Djibouti (\$1301), Mauritania (\$1180), Yemen (\$1179) and Comoros (\$801).

The second is those with a per capita GDP in excess of \$3000, but remains below the overall average for the Arab countries. The eight countries in this group are Algeria (\$5381), Libya (\$4669), Jordan (\$4622), Iraq (\$4591), Tunisia (\$4352), Egypt (\$2928), Morocco (\$2909) and Syria (\$2850), as shown in **Figure (1-15)**.



2- Population: The average population growth in the Arab countries during 2009-2012 was 2.34%, when the population of the Arab countries increased from 346 million in 2009 to about 370 million in 2012.

3- Prices: Due to the direct impact on middle classes and low-income, there is no indication that Arab countries in the recent years have resorted to raising the prices of oil products on local markets

in 2012. In terms of other Arab countries, Jordan established a committee consisting of Ministry of Energy and mineral resources, Ministry of Finance, and Jordan Petroleum Refinery Company which conduct monthly meeting in order to review local prices of oil products and modify them in line with international prices trends in global markets.

1-2 Energy Consumption by Source

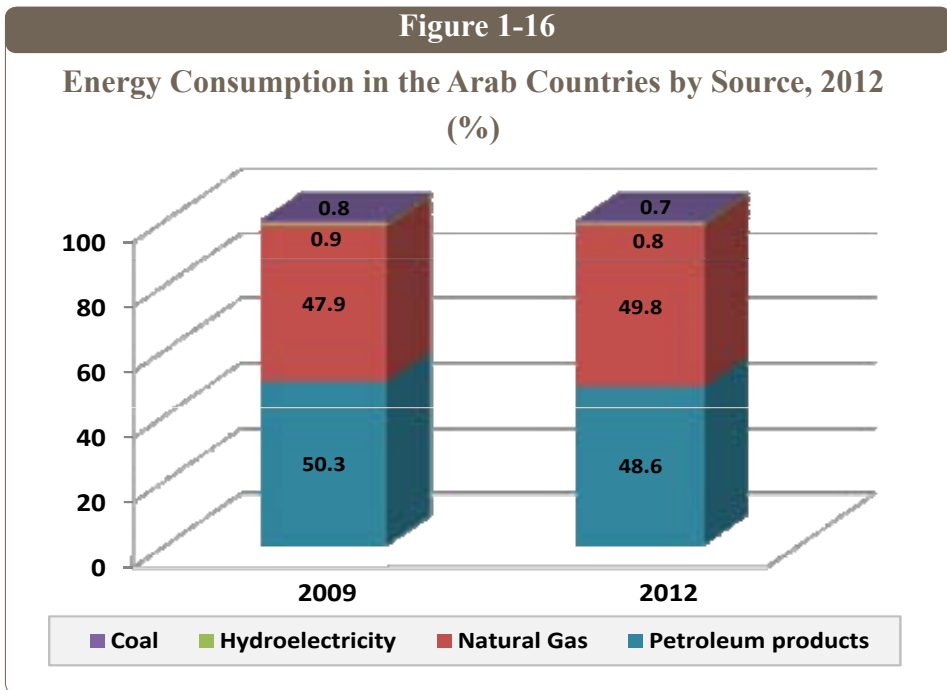
Energy consumption in Arab countries witnessed noticeable fluctuation in the rates of increase during the period 2009 - 2012 as it increased by 8.4% in 2010 to reach 12.6 million barrels of oil equivalent per day (boed) compared with about 11.6 million boed in 2009. The growth rate then declined to 2.2% in 2011, where the consumption level stood at slightly more than 13 million boed. Preliminary estimates indicate the energy consumption in Arab countries in 2012 has resumed growth rate of 5.1% with a total consumption of 13.5 million boed.

Arab countries rely almost entirely on petroleum resources to meet their energy needs as the share of oil and natural gas in total energy consumption in Arab countries rose from 98.2% in 2009 to 98.4% in 2012. At the same time the share of other sources of energy (hydroelectric and coal) decreased from 1.8% to 1.6%. It is noteworthy that for the first time in 2010 the size of natural gas consumption exceed the consumption of oil in Arab countries to reach nearly 6.3 million boed in 2010, compared with more than 6.1 million boed, and this trend continued during 2011 and 2012, as preliminary estimates indicate that natural gas consumption in 2012 amounted to 6.75 million boed versus nearly 6.6 million boed of oil. And thus natural gas occupies first place with a share of 49.8%, and oil fell to second place with a share of 48.6% in 2012.



Arab countries vary significantly with respect to the composition of primary energy sources that contribute to meet its energy needs. The share of natural gas exceeded more than half of the energy requirements in OAPEC member countries as it reached 53.2% of total consumption in 2012, while in other Arab countries the share of natural gas in energy consumption still relatively modest as it did not exceed 16.5%.

At the same time, among non-OAPEC Arab countries oil plays an essential role in the energy mix, accounting for 74.9% of their energy needs. In OAPEC Member countries the share of oil in the energy mix decreased from 47.8% in 2009 to 45.9% in 2012. The decline in oil consumption in OAPEC Member countries was primarily due to the substitution policy of natural gas in the energy use in local markets, as shown in **Figure (1-16)** and **Table (1-17)**.



The disparity in energy consumption may be attributed to the differing availability of hydrocarbon resources in the Arab countries and to what degree these resources are utilized and developed. OAPEC members accounted for 90.8% of total energy consumption in Arab countries in 2012 compared with a share of 9.2% for other Arab countries. The growth rate of energy consumption in OAPEC members was 5.3% during the period 2009-2012, comparing with 3.9% in other Arab countries.

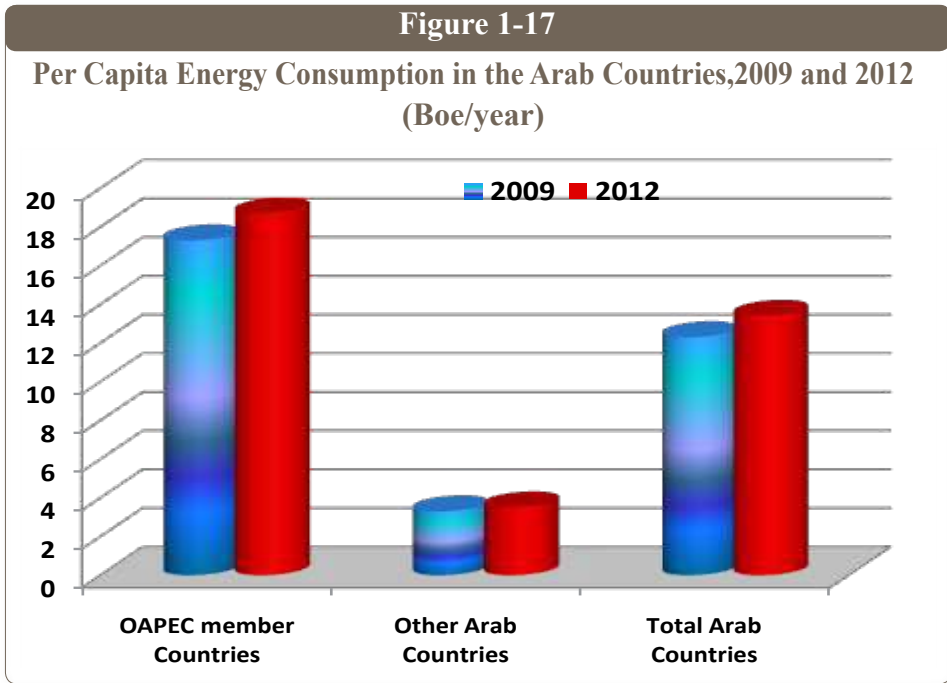
The difference in energy consumption shares within Arab countries is due to a range of factors, including :

- **The size of hydrocarbon resources** in Arab countries is playing a crucial role in both socioeconomic development and on the level of energy consumption. At the end of 2012, OAPEC member countries possessed 97.9% of the Arab countries crude oil reserves and 97.2% of their natural gas reserves.
- The **GDP** of OAPEC member countries accounted for 85.7% of Arab GDP in 2011 compared with 83.1% and 84% in 2009 and 2010 respectively, while the share of the rest of the Arab countries in Arab GDP declined to 14.3% in 2011 compared with 16.9% in 2009 and 16% in 2010.
- **Total population:** Population in OAPEC Member countries grew at annual rate of 2.7% during the period 2009-2012, to 239.7 million in 2012.

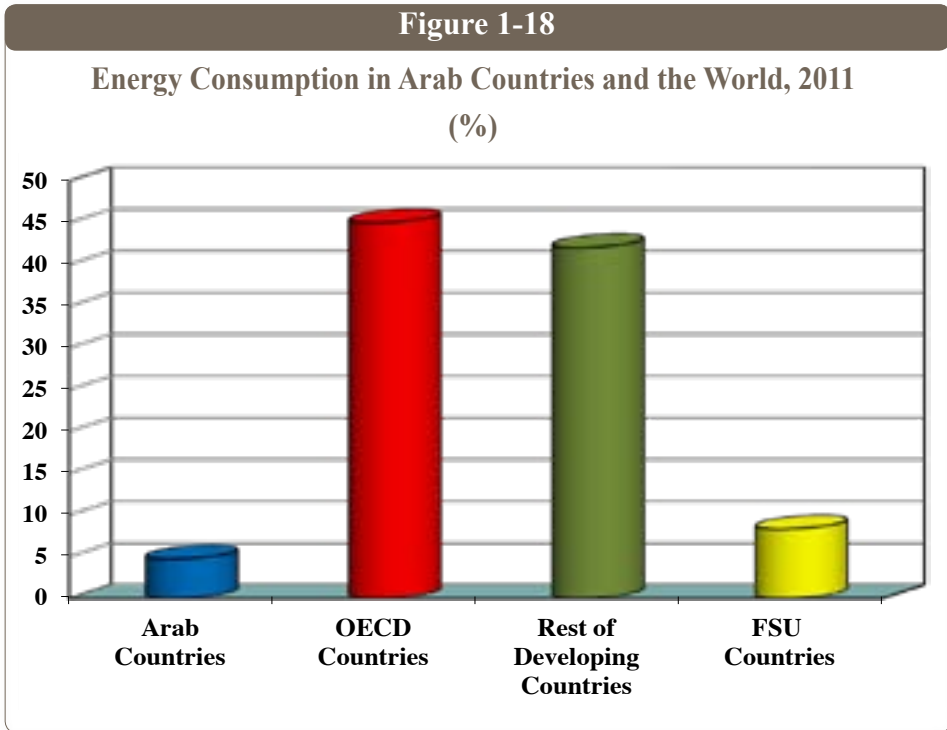
The overall average rate of energy consumption per capita in the Arab countries reached a level of 13.4 barrels of oil equivalent (boe) in 2012.



The average of per capita consumption of energy hides significant disparities among Arab countries, as it reached 18.7 boe in 2012 in OAPEC member countries, compared with a level of 3.5 boe in other Arab countries. There is also variation within the member countries with regard to this rate as Qatar recorded the highest rate of consumption level of 267 boe in 2012. **Figure (1-17)** and **Table (1-18)** show the per capita energy consumption in Arab countries in 2009 and 2012.



In 2011, Arab countries, share of total world energy consumption was 4.7%, while that of OECD countries was 45%, rest of developing countries accounted for 42%, and the FSU countries with 8.3% share, as shown in **Figure (1-18)**.



1-2-1 Natural Gas

The relative importance of natural gas in energy balances in Arab countries has increased in the past two years as natural gas has become the main source of energy in these energy balances as of 2010. This is due to the great efforts made by these countries in expanding exploit of the available sources of natural gas on the one hand, and due to the policy of substituting natural gas for oil in some areas in many Arab countries on the other.

This policy has led to higher growth rate of natural gas consumption which amounted to 6.6% per annum during the period 2009-2012, bringing the total to 6.75 million boe/d in 2012 compared with 5.58 boe/d in 2009.

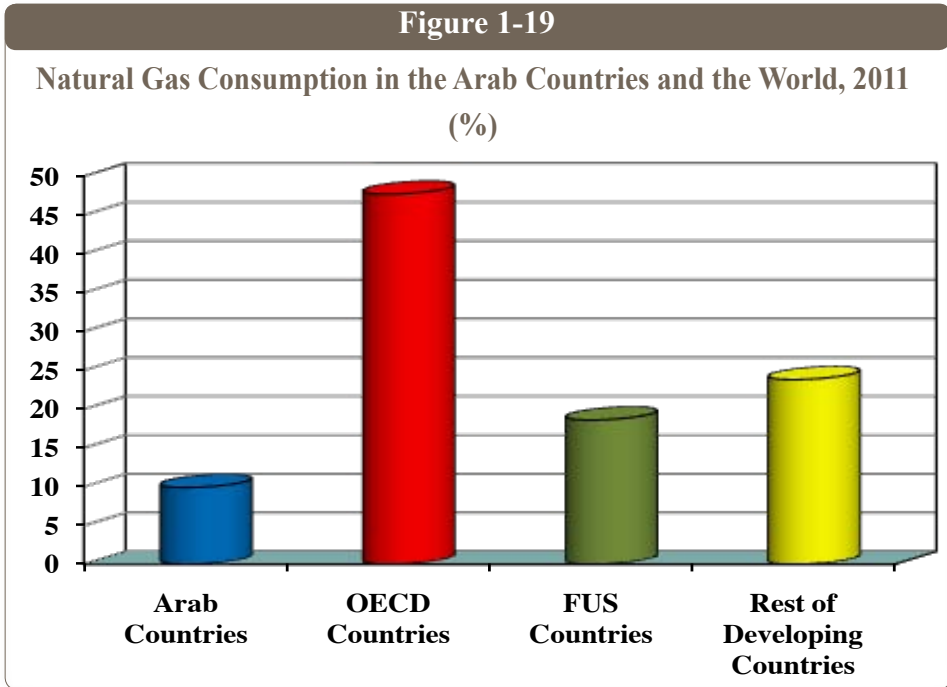


OAPEC member countries accounted for 97% of the Arab countries total consumption of natural gas in 2012. Other Arab countries consumed small amounts of natural gas, this consumption is concentrated mainly in three countries, namely : Oman, Jordan, and Morocco.

There is a noticeable disparity between member countries in terms of their reliance on natural gas. Two groups of countries may be identified:

- **First group** : Countries that depend heavily on natural gas to meet over 50% of their energy requirements. Six countries fall into this category: Bahrain, Qatar, the United Arab Emirates, Algeria, Egypt and Kuwait. The share of natural gas in total energy consumption in 2012 was 88% in Bahrain, 84.6% in Qatar, 78% in the United Arab Emirates, 59.9% in Algeria, 53% in Egypt and 51.6% in Kuwait.
- **Second group** : Countries that depend on natural gas to meet less than 50% of their energy needs. The five member countries in this group are Saudi Arabia, Tunisia, Syria, Libya and Iraq. The share of natural gas in the total energy consumption of these countries in 2012 was, 43.2% in Saudi Arabia, 34.3% in Tunisia, 26.6% in Syria, 20.8% in Libya and 19.8% in Iraq.

The Arab countries accounted for 9.9% of world natural gas consumption in 2011, while the OECD countries took a 47.7% share, the Rest of Developing Countries 23.8%, and the FSU countries 18.8%, as shown in **Figure (1-19)**.



1-2-2 Petroleum Products

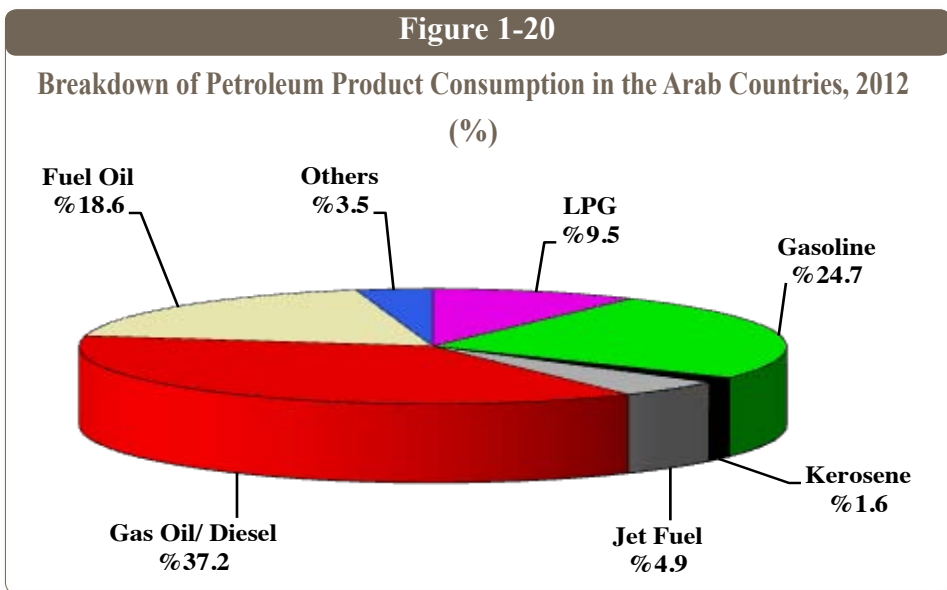
Petroleum products consumption in the Arab countries grew at a volatile pace during the period 2009-2012, as it increased by rate of 4.2% during 2010 to 6.1 million boe/d compared with 5.8 million boe/d in 2009, after increasing once again by rate of 1.9% in 2011 to reach a level of 6.2 million boe/d. It is expected to grow by 6% to reach up to 6.6 million boe/d in 2012.

Thus, the consumption of petroleum products has increased at a rate of 4% per annum during the period 2009-2012. Since the consumption of petroleum products has risen at a rate less than the rate of energy consumption, during the same period, the share of petroleum products in total energy consumption in the Arab countries declined from 50.3% in 2009 to 48.6% in 2012.

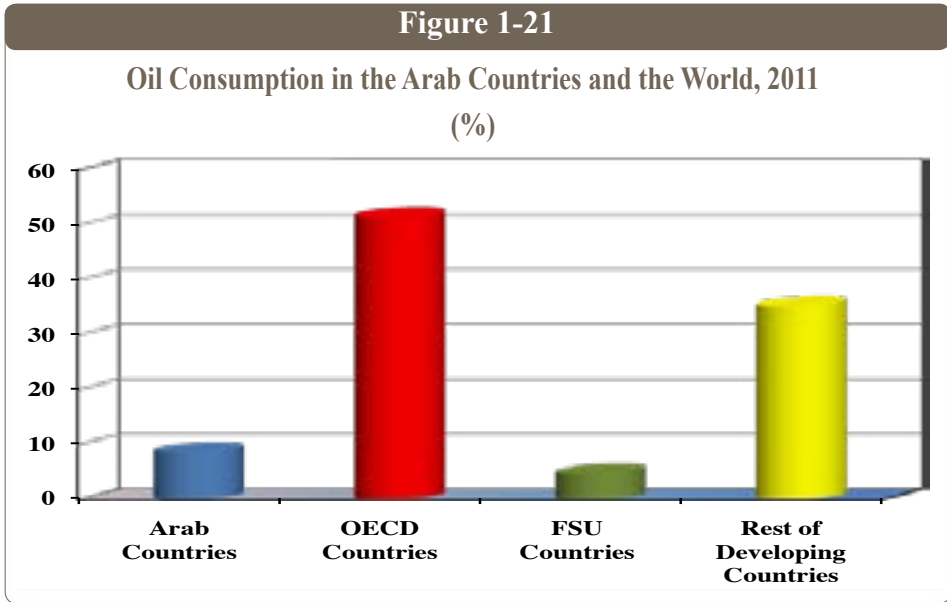
OAPEC members' share of total petroleum products' consumption in Arab countries in 2012 was 85.8% compared with 86% in 2009, while that of other Arab countries rose from 14% to 14.1% during the same period.

The relative breakdown of petroleum product consumption in Arab countries in 2012 puts gasoil/diesel in first place with 37.2%, followed by gasoline with 24.7%, and fuel oil in third place with 18.6%. LPG came next with 9.5% of the total, followed by jet fuel with 4.9%, and lastly kerosene with 1.6%.

Figure (1-20) shows the breakdown of petroleum product consumption in Arab countries.



Arab countries accounted for 8.6% of world oil consumption in 2011, while the OECD countries took a 51.5% share, Rest of Developing Countries 35.2%, and FSU countries 4.7%, as shown in Figure (1-21).



1-2-3 Hydroelectricity

Arab countries have meagre resources of local water needed for building hydroelectricity facilities. This source therefore only makes a limited contribution to Arab countries' energy mix. There are limited capabilities for generating hydroelectricity in a small number of Arab countries, namely, Algeria, Egypt, Iraq, Lebanon, Morocco, Sudan, and Syria. Hydroelectric power is consumed in a limited number of OAPEC member countries which account for 70.2% of the total consumption in Arab countries.

Hydro-electric power is consumed mainly in Egypt, which amounted to about 63 thousand boe/d, Iraq (8 thousand boe/d) and Syria (7 thousand boe/d). Initial estimates show that the hydroelectricity production and consumption in All Arab Countries were at about 114,000 boe/d in 2012. The share of hydroelectricity in total Arab energy consumption reached 0.8% in 2012.



Arab countries accounted for 0.7% of total world hydroelectricity consumption in 2011, while the emerging economies accounted for 52.6%, the OECD countries for 39.8%, and the FSU countries for 6.9%.

1-2-4 Coal

Coal resources are only found in a small number of Arab countries, namely, Algeria, Egypt, Lebanon, and Morocco. Even in these four countries, coal makes a limited contribution to the energy mix in 2012, with an estimated total consumption of about 98,000 boe/d of which 25,000 boe/d in OAPEC member countries. Its share of total Arab energy consumption remained unchanged at the level of 0.7%.

Arab countries accounted for 0.1% of world coal consumption in 2011, while the emerging economies accounted for 65.8%, OECD countries' share was 29.5%, and the FSU countries with 4.6% share.

2. Total Energy Consumption in OAPEC Member Countries

2-1 Total and Per Capita Energy Consumption

It is estimated that energy consumption in OAPEC member countries will rise at a rate of 5.3% in 2012 to reach 12.3 million boe/d. There is a disparity with regard to growth rates in energy consumption, preliminary estimates indicate consumption in Syria shrinking at a rate of 0.25%, dropping slightly from 433 thousand boe/d in 2011 to 432 thousand boe/d in 2012. Energy consumption in Tunisia remained at the same level of 2011, 175 thousand boe/d. In Bahrain, consumption has increased at a modest rate of 0.9% to reach 216 thousand boe/d. These low rates were as a result of developments that have affected the economic situation in these countries and in turn on energy consumption.

In the rest of member countries the rate of increase in energy consumption ranged from 2.7% in the UAE and 53% in Libya whose economy began to restore its momentum and therefore the return of growth in energy consumption after the great contraction witnessed in Libya in the previous year.

The annual rate of growth of energy consumption in OAPEC member countries was 5.3% per annum during the period 2009-2012.

There was a marked difference among OAPEC members in terms of energy consumption. Three groups may be identified:

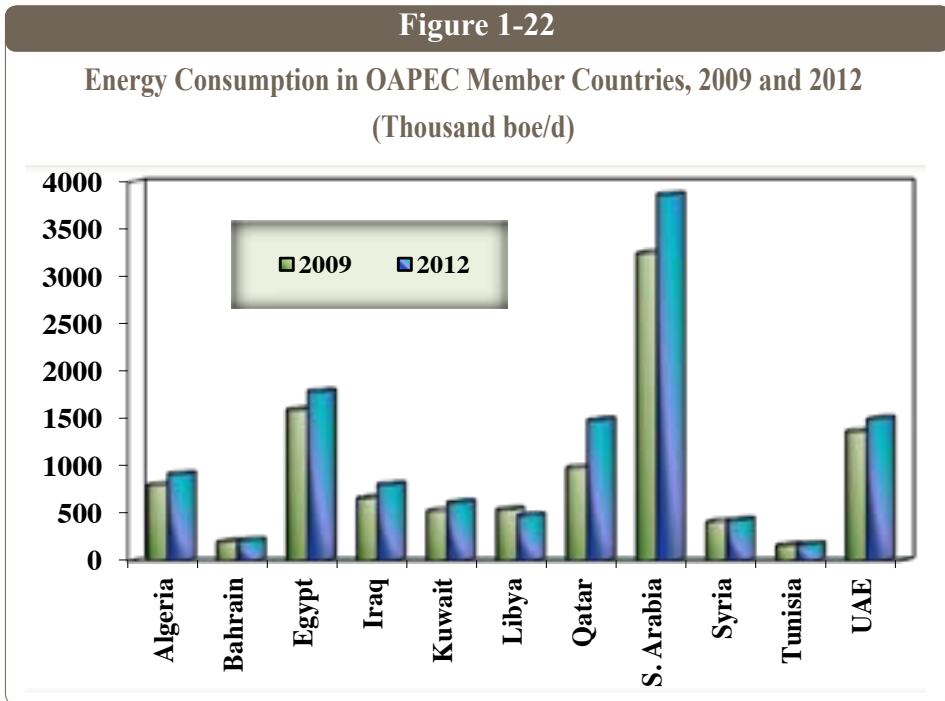
- 1- Three members with a growth rate over 6%, namely, Qatar (14.7%), Iraq (6.7%) and Saudi Arabia (6%).
- 2- Two members with a growth rate between 4% and 6%, , namely, Kuwait (5.6%) and Algeria (4.8%).
- 3- Six members with a growth rate of less than 4%, namely, Egypt (3.8%), United Arab Emirates (3.1%), Bahrain (1.9%) Tunisia and Syria (1.5%), Libya has recorded a decline in the level of energy consumption (- 4.1%) in 2012 when compared with 2009.

The rise in energy consumption in OAPEC member countries in 2012 is estimated at 618,000 boe/d. It is mainly attributable to three countries: Libya (167,000 boe/d), Saudi Arabia (164,000 boe/d) and Egypt (73,000 boe/d). The increase in energy consumption in these three Arab countries account for 65% of the total increase in energy consumption in Arab countries.

The increase in other member countries was as follows: Iraq (55,000 boe/d), Qatar (44,000 boe/d), Kuwait (40,000 boe/d), the

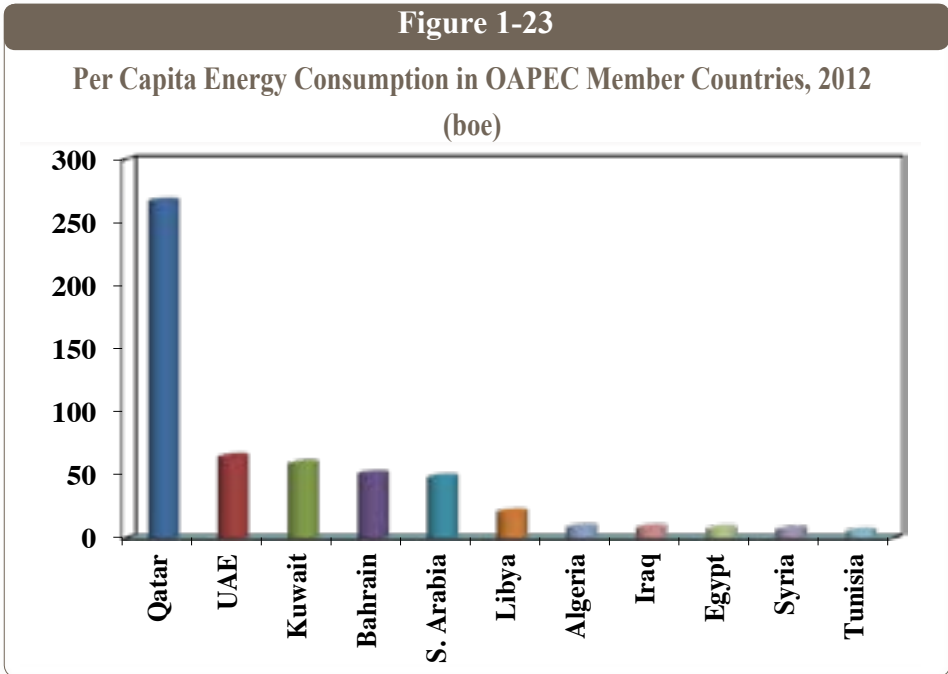


United Arab Emirates (39,000 boe/d) and Algeria (36,000 boe/d). **Figure (1-22)** and **Table (1-19)** compare OAPPEC members' energy consumption in 2009 with 2012.



The per capita rate of energy consumption in OAPPEC member countries rose by 2.6% per annum in the period 2009-2012, from 17.3 boe in 2009 to 18.7 boe in 2012.

The per capita energy consumption rate vary considerably among OAPPEC member countries as follows: Qatar (267.3 boe), the United Arab Emirates (64.7 boe), (Kuwait 59.3 boe), Bahrain (51.3 boe), Saudi Arabia (48.4 boe), Libya (21.1 boe), Algeria (9 boe), Iraq (8.6 boe), Egypt (7.9 boe), Syrai (7.3 boe) and Tunisia (5.9 boe). **Figure (1-23)** shows the per capita energy consumption of OAPPEC member countries.



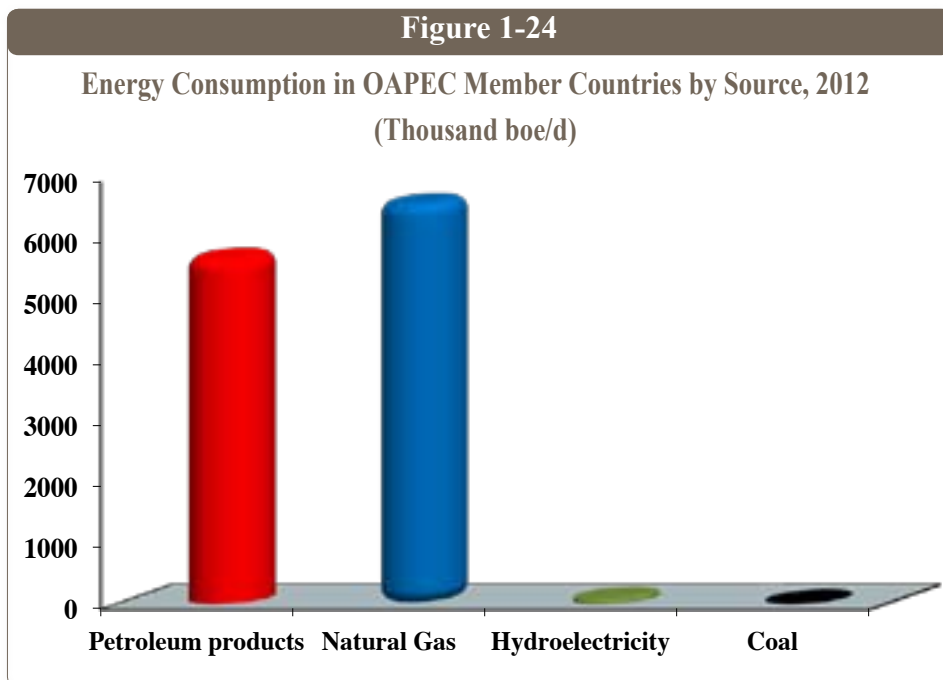
2-2 Energy Consumption by Source

Energy consumption in OAPC member countries increased by a rate of 5.3% per annum during the period 2009-2012 as it rose from 10.5 million boe/d in 2009 to 12.3 million boe/d in 2012. The substitution policy of natural gas for petroleum products pursued by OAPC member countries led natural gas to occupy the first place in meeting the energy requirements in OAPC member countries starting from the year 2009 .

During the period 2009-2012 the relative importance of natural gas in total consumption has increased from 51.3% in 2009 to 53.2% in 2012. At the same time the share of petroleum products fell from 47.8% to 45.9%. There are no reliable non-petroleum sources that member countries can rely on, as all available sources of hydroelectric power and coal representing small fraction in their energy mix.



The share of hydroelectric decreased from 0.7 in 2009 to 0.65% in 2012, while the share of coal declined from 0.25% to 0.2% during the same period. **Figure (1-24)** and **Table (1-20)** show energy consumption in OAPEC member countries in 2012 by source.

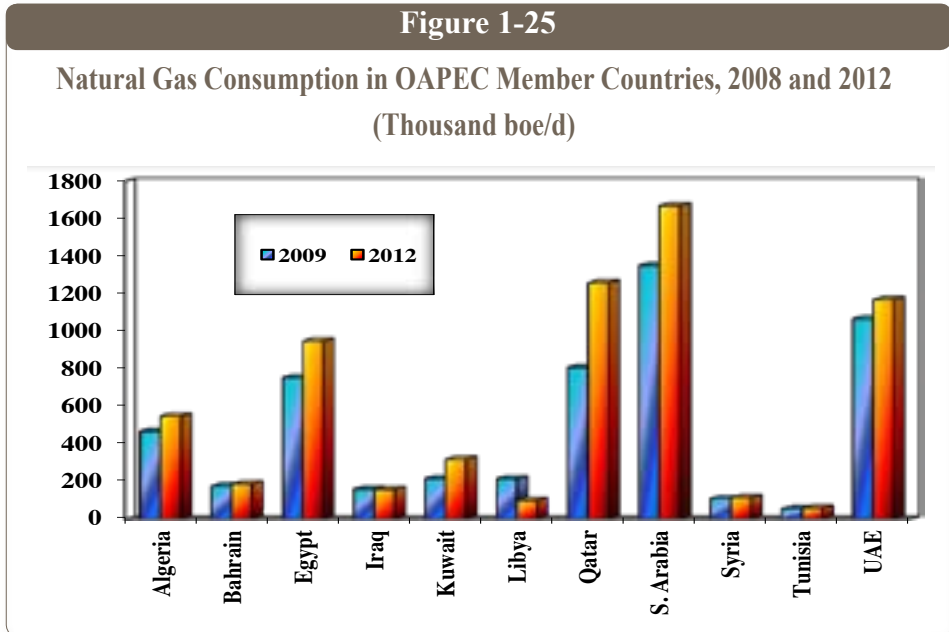


2-2-1 Natural Gas

Natural Gas is playing an increasing role in energy consumption in OAPEC member countries, as OAPEC members' consumption of natural gas increased over the period 2009-2012 at an annual rate of 6.6%. Natural gas consumption rose from 5.4 million boe/d in 2009 to 6.5 million boe/d in 2012.

Natural Gas consumption is concentrated mainly in four Arab countries, namely Saudi Arabia, Qatar, UAE and Egypt which accounted for about 77.2% of the total natural gas consumption in

OAPEC member countries in 2012. Their shares of total OAPEC consumption of natural gas were as follows: 25.5% by Saudi Arabia, followed by Qatar with a share of 19.3%, UAE ranked third with a share of 17.9%, and Egypt with a share of 14.5%, as shown in **Figure (1-25)** and **Table (1-21)**.



There is a noticeable disparity between member countries in terms of their reliance on natural gas. Three groups of countries may be identified:

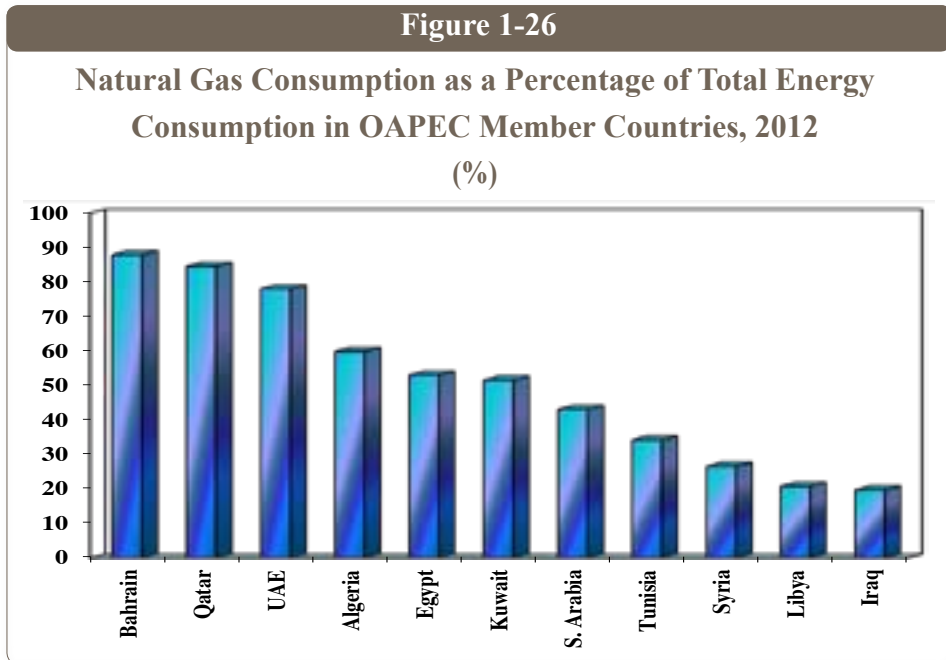
- Countries that depend heavily on natural gas to meet over 50% of their energy requirements. Six countries fall into this category: Bahrain, Qatar, the United Arab Emirates, Algeria, Egypt and Kuwait. The share of natural gas in total energy consumption in 2012 was 88% in Bahrain, 84.6% in Qatar, 78% in the United Arab Emirates, 59.9% in Algeria, 53% in Egypt and 51.6% in Kuwait.
- Countries that depend on natural gas to meet 33% to 50% of their energy needs. The two member countries in this group are Saudi



Arabia and Tunisia. The share of natural gas in the total energy consumption was 43.2% in Saudi Arabia and 34.3% in Tunisia.

- Countries that rely moderately on natural gas, using it for less than 33% of their energy requirements. The three countries in this group are, Syria, Libya and Iraq. They rely on natural gas for 26.6%, 20.8% and 19.8% of their total energy needs respectively.

Figure (1-26) shows the degree to which OAPEC member countries depend on natural gas to meet their energy requirements.



2-2-2 Petroleum Products

Consumption of petroleum products in OAPEC member countries has increased by growth rate of 4% per annum during the period 2009-2012 compared with a rate of 5.2% for total energy consumption. Consumption of petroleum products rose from 5.0 million boe/d in 2009 to 5.65 million boe/d in 2012.

There are four countries where their consumption of petroleum products exceeded the rate of increase in the overall average of OAPEC member countries. These countries are: Iraq and Qatar with a rate of 8.9% each, and Saudi Arabia and Libya with a rate of 5.1% each. The consumption of petroleum products in the member countries has increased by about 337 thousand boed in 2012. It is mainly attributable to four countries: Libya (139,000 boe/d), Saudi Arabia (84,000 boe/d), Iraq (49,000 boe/d) and Qatar (27,000 boe/d). The increase in the consumption of petroleum products in these four countries, accounted for 88% of total increase in consumption of OAPEC member countries in 2012. **Table (1-22).**

The relative importance of petroleum products in total energy consumption varies from one member country to another. Petroleum products met over 50% of energy requirements in five OAPEC members, in Saudi Arabia petroleum products accounted for 56.8% of total energy consumption, in Tunisia 65.1%, in Syria 71.8%, in Iraq and Libya 79.2% each. In the remaining OAPEC members the share of petroleum products was as follows : 12% in Bahrain, 15.4% in Qatar, 22% in United Arab Emirates, 39.2% in Algeria, 42.4% in Egypt and 48.4% in Libya.

2-2-3 Hydroelectricity and Coal

In general, Arab countries suffer from scarcity of water resources, so hydroelectric power consumption is limited to five member countries, these countries are: Egypt, Iraq, Syria, Algeria, and Tunisia. Even in these five countries the consumption of hydroelectric power was very small as it does not exceed 80 thousand boe/d in 2012, of which 63 thousand boe/d in Egypt. The share of hydroelectricity consumption in total OAPEC energy consumption did not exceed 0.65% in 2012. **Table (1-23).**

Coal plays a very marginal role in meeting energy requirements in OAPEC member countries, Consumption of coal in OAPEC



members was limited to two countries with total of 25,000 boe/d: Egypt consumed about 18,000 boe/d, while Algeria consumed 7,000 boe/d. The share of coal in total OAPEC energy consumption did not exceed 0.2% in 2012, as shown in **Table (1-24)**.

3- Local Prices

Arab countries did not resort to raising local prices of petroleum products in the domestic market in 2012, with the exception of Jordan, which follows the policy of adjustment of products prices periodically depending on changes in crude oil prices in global markets on the one hand, and on the policy of phasing out subsidies pursued by Jordan on the other. Prices prevailed in the month of November 2012 as stated in MEES were as follows:

Product Prices Effective November 2012 Fils /Liter, Unless Otherwise Stated

product	Price
Regular Gasoline	800
Premium Gasoline	1015
Diesel	685
Kerosene	685
Fuel Oil Industry (JD/Ton)	498.23
Fuel Oil – Bunkers (JD/Ton)	500.49
Jet Fuel –Local Companies	643
Jet Fuel – Foreign Companies	648
Jet Fuel – Non-Recurring Flights	663
Diesel – Bunkers	680
Asphalt (JD/Ton)	533.49
LPG – 12.5 kg (JD/Cylinder)	10
LPG – Bulk (JD/Ton)	988.98

Tables (1-25) show domestic prices in OAPEC member countries in local currencies in 2012.

TABLES

OF CHAPTER ONE





Table 1-1
Total & Annual Changes in World Oil and NGLs Supply,
2008 - 2012
(Million b/d)

	2008	2009	2010	2011	2012*
Total Supply					
OPEC	35.3	33.0	34.2	35.2	37.0
Rest of the World	50.4	51.1	52.3	52.4	53.0
World total	85.7	84.1	86.5	87.6	90.0
Annual Change					
OPEC	1.2	(2.3)	1.2	1.0	1.8
Rest of the World	(0.1)	0.7	1.2	0.1	0.6
World total	1.1	(1.6)	2.4	1.1	2.4
Percentage Change (%)					
OPEC	3.5	(6.5)	3.6	2.9	5.1
Rest of the World	(0.2)	1.4	2.3	0.2	1.1
World total	1.3	(1.9)	2.8	1.3	2.7

* Estimated data.

Notes:

- Parentheses denote negative figures.
- OPEC's supply includes data from both Angola and Ecuador, which were admitted to OPEC as a full member at the beginning and the end of year 2007 respectively.

Sources:

- IEA, Oil Market Report (various issues).
- OEAPEC - Economics Department.
- OPEC, Monthly Oil Market Report (various issues).

Table 1-2
Growth in the World Economy and Oil Demand by Region,
2008-2012
 (%)

	2008	2009	2010	2011	2012*
OECD countries **					
GDP	0.1	(3.5)	3.0	1.6	1.3
Oil demand	(3.6)	(4.4)	1.5	(1.1)	(0.8)
Rest of the World					
GDP	6.1	2.7	7.5	6.2	5.3
Oil demand	3.7	1.7	4.4	3.2	2.6
World total					
GDP	2.8	(0.6)	5.1	3.8	3.3
Oil demand	(0.6)	(1.6)	2.8	0.9	0.9

* Estimated data.

** Include the newly industrialized Asian countries are Hong Kong, South Korea, Singapore, and Taiwan in terms of GDP.

Note:

Parentheses denote negative figures.

Sources:

- IEA, Oil Market Report (various issues).
- IMF, World Economic Outlook (various issues) .
- OAPEC - Economics Department.
- OPEC, Monthly Oil Market Report (various issues).



Table 1-3
World Economic Growth,
2008-2012
(%)

	2008	2009	2010	2011	2012*
OECD	0.1	(3.5)	3.0	1.6	1.3
Of which: Euro Area	0.4	(4.4)	2.0	1.4	(0.4)
Japan	(1.0)	(5.5)	4.5	(0.8)	2.2
Newly industrialized Asian countries	1.8	(0.7)	8.5	4.0	2.1
USA	(0.3)	(3.1)	2.4	1.8	2.2
Eastern and Central Europe	3.2	(3.6)	4.6	5.3	2.0
Countries in transition (CIS)	5.4	(6.4)	4.8	4.9	4.0
Of which: Russia	5.3	(7.8)	4.0	4.3	3.7
Asian developing countries	7.9	7.0	9.5	7.8	6.7
Of which: China	9.6	9.2	10.5	9.2	7.8
India	6.9	5.9	10.1	6.8	4.9
Latin America and the Caribbean	4.3	(1.6)	6.2	4.5	3.2
Of which: Argentina	6.8	0.9	9.2	8.9	2.6
Brazil	5.2	(0.3)	7.5	2.7	1.5
Mexico	1.2	(6.5)	5.6	3.9	3.8
Venezuela	5.3	(3.3)	(1.5)	4.2	5.8
Middle East and North Africa	4.5	2.6	5.0	3.3	5.3
Sub-Saharan African countries	5.6	2.8	5.3	5.2	5.0
Rest of the World:	6.1	2.7	7.5	6.2	5.3
World	2.8	(0.6)	5.1	3.8	3.3

* Estimated data.

** Includes all of Hong Kong, South Korea, Singapore and Taiwan.

Note:

Parentheses denote negative figures.

Source:

- IMF, World Economic Outlook, October 2012.

Table 1-4
Total & Annual Change in World Oil Demand,
2008-2012
(Million b/d)

	2008	2009	2010	2011	2012*
World total demand	86.1	84.8	87.2	88.0	88.8
Annual Change in World Oil Demand (Million b/d)	(0.5)	(1.3)	2.4	0.8	0.8
Change (%)	(0.6)	(1.5)	2.8	0.9	0.8

* Preliminary data.

Note:

Parentheses denote negative figures.

Sources:

- IEA, Oil Market Report (various issues).
- OAPEC - Economics Department.
- OPEC, Monthly Oil Market Report (various issues).



Table 1-5
World Oil Demand by Region,
2008-2012
(Million b/d)

	2008	2009	2010	2011	2012*
OECD countries	47.6	45.7	46.3	45.9	45.5
Rest of the World**	38.5	39.1	40.9	42.1	43.3
World total	86.1	84.8	87.2	88.0	88.8

* Estimated data.

** Includes all of the developing countries and transition countries.

Sources:

- IEA, Oil Market Report (various issues).
- OPAEC - Economics Department.
- OPEC, Monthly Oil Market Report (various issues).

Table 1-6
Total & Annual Change in Oil Demand in
OECD Countries, 2008-2012
(Million b/d)

	2008	2009	2010	2011	2012*
North America	24.2	23.3	23.8	23.7	23.5
Western Europe	15.4	14.7	14.6	14.3	13.8
Pacific	8.1	7.7	7.8	7.9	8.2
Total OECD	47.7	45.7	46.2	45.9	45.5
Annual Change in demand	(1.8)	(1.9)	0.6	(0.4)	(0.4)
Change (%)	(3.6)	(4.4)	1.3	(0.9)	(0.9)

* Estimated data.

Note:

Parentheses denote negative figures.

Sources:

- IEA, Oil Market Report (various issues).
- OIAPEC - Economics Department.
- OPEC, Monthly Oil Market Report (various issues).



Table 1-7
Total & Annual Change in Rest of the World Oil Demand
(Excluding Countries that joined the OECD), 2008-2012
(Million b/d)

	2008	2009	2010	2011	2012*
Developing countries	33.6	34.4	36.1	37.2	38.2
Arab countries	5.4	6.2	6.5	6.3	6.6
Of which: Member countries	4.7	5.4	5.6	5.4	5.7
Other Arab countries	0.7	0.8	0.9	0.9	0.9
Other countries in the Middle East and Africa	4.7	4.1	4.2	4.6	4.6
Total Middle East and Africa	10.1	10.3	10.7	10.9	11.2
Asian developing countries	17.6	18.2	19.1	19.9	20.5
Of which: China	8.0	8.3	9.0	9.4	9.7
India	3.1	3.2	3.4	3.5	3.7
Other countries	6.5	6.7	6.7	7.0	7.1
Latin America	5.8	5.7	6.2	6.4	6.5
Of which: Brazil	2.5	2.5	2.8	2.9	3.0
Other countries	3.3	3.2	3.4	3.5	3.5
Countries in transition (CIS)	4.9	4.7	4.9	5.0	5.1
Of which: Russia	4.1	4.0	4.2	4.3	4.4
Total Rest of the World	38.5	39.1	40.9	42.1	43.3
Annual Change in demand of Rest of the World	1.3	0.6	1.8	1.2	1.2
Change (%)	3.5	1.6	4.6	2.9	2.9

* Estimated data.

Sources:

- IEA, Oil Market Report (various issues).
- OAPEC - Economics Department.
- OPEC, Monthly Oil Market Report (various issues).

Table 1-8
Spot Price of OPEC Basket of Crudes,
2008-2012
(\$/barrel)

	2008	2009	2010	2011	2012
January	88.4	41.5	76.0	92.8	111.8
February	90.6	41.4	73.0	100.3	117.5
March	99.0	45.8	77.2	109.8	123.0
April	105.2	50.2	82.3	118.1	118.2
May	119.4	57.0	74.5	109.9	108.1
June	128.3	68.4	73.0	109.0	94.0
July	131.2	64.6	72.5	111.6	99.6
August	112.4	71.4	74.2	106.3	109.5
September	96.9	67.2	74.6	107.6	110.7
October	69.2	72.7	79.9	106.3	108.4
November	49.8	76.3	82.8	110.1	106.9
December	38.6	74.0	88.6	107.4	106.6
First quarter	92.7	42.9	75.4	101.0	117.4
Second quarter	117.6	58.5	76.6	112.3	106.8
Third quarter	113.5	67.7	73.8	108.5	106.6
Fourth quarter	52.5	74.3	83.8	107.9	107.3
Annual average	94.4	61.0	77.4	107.5	109.5

Sources:

- OAPEC - Economics Department.
- OPEC, Monthly Oil Market Report (various issues).



Table 1-9
Average Spot Prices of the OPEC Basket, Brent, WTI and
Selected Arab Crudes, 2008-2012
(\$/barrel)

Crudes	2008	2009	2010	2011	2012	The increase in 2012
OPEC Basket Of which:	94.4	61.0	77.4	107.5	109.5	2.0
Algeria - Saharan Blend	98.9	62.4	80.4	112.9	111.7	(1.2)
Arabian Light	95.2	61.4	77.8	107.8	110.4	2.6
UAE - Murban	99.0	63.8	79.9	109.8	112.1	2.3
Kuwait - Export	91.2	60.7	76.3	105.6	109.2	3.6
Libya - Es Sider	96.7	61.5	79.1	111.9	112.1	0.2
Qatar-Marine	94.9	62.4	78.2	106.5	109.6	3.1
Iraq-Basrah	92.1	60.5	76.8	106.2	108.3	2.1
Other crudes						
Brent	97.4	61.7	79.6	111.3	111.9	0.6
UAE - Dubai	93.8	61.8	78.1	106.2	109.4	3.2
WTI	100.0	61.9	79.4	94.9	94.7	(0.2)

Note: Parentheses denote negative figures.

Sources:

- OAPEC - Economics Department.
- OPEC, Monthly Oil Market Report (various issues).

Table 1-10
Nominal and Real Prices of Crude Oil,
2000-2012
(\$/barrel)

	Nominal Price	Index* 2000=100	Real 2000 Prices
2000	27.6	100.0	27.6
2001	23.1	101.8	22.7
2002	24.3	103.4	23.5
2003	28.2	105.1	26.8
2004	36.0	107.3	33.6
2005	50.6	109.5	46.2
2006	61.0	111.8	54.6
2007	69.1	114.3	60.5
2008	94.4	116.5	81.0
2009	61.0	117.4	52.0
2010	77.4	118.6	65.3
2011	107.5	120.3	89.4
2012**	109.5	121.9	89.8

* The index represents the GDP Deflator of industrial countries as published by the IMF.

** Estimated data.

Sources:

-IMF, International Financial Statistics Yearbook , October 2012.

- OAPEC - Economics Department.

- OPEC, Monthly Oil Market Report (various issues).



Table 1-11
Average Monthly Market Spot Prices of Petroleum Products,
2011-2012
(\$/barrel)

	Market	Unleaded Gasoline	Gasoil* (50 ppm Sulfur)	Fuel Oil** (1 % Sulfur)
Average 2011	Singapore	119.6	126.3	102.6
	Rotterdam	120.4	126.3	100.4
	Mediterranean	118.7	111.5	101.2
	US Gulf	124.5	122.6	100.0
Average 2012	Singapore	123.5	128.9	105.4
	Rotterdam	127.3	130.6	105.0
	Mediterranean	126.6	113.2	103.8
	US Gulf	133.6	126.0	105.3
First quarter 2012	Singapore	130.4	134.5	116.0
	Rotterdam	129.7	138.9	112.2
	Mediterranean	129.7	119.8	113.4
	US Gulf	135.1	131.4	111.7
Second quarter	Singapore	120.4	124.7	104.1
	Rotterdam	127.5	124.4	105.1
	Mediterranean	126.5	111.7	104.7
	US Gulf	138.0	121.5	104.1
Third quarter	Singapore	122.2	128.3	102.6
	Rotterdam	130.6	129.1	105.5
	Mediterranean	128.1	109.6	101.5
	US Gulf	140.3	125.3	104.0
Fourth quarter	Singapore	120.9	127.9	98.8
	Rotterdam	121.5	129.9	97.0
	Mediterranean	122.2	111.6	95.4
	US Gulf	121.0	125.9	101.1

* Singapore gasoil contains 0.5 % sulfur.

** Rotterdam fuel oil contains 3.5 % sulfur.

Source:

OPEC, Monthly Oil Market Report (various issues).

Table 1-12
Share of Tax in Gasoline Prices in some OECD countries,
2011-2012
(\$/liter)

	October 2011				October 2012			
	Price without Tax	Tax	End-User Price	Tax (%)	Price without Tax	Tax	End-User Price	Tax (%)
Canada	0.85	0.36	1.22	29.95	0.90	0.41	1.31	31.30
France	0.88	1.17	2.05	57.26	0.92	1.09	2.01	54.23
Germany	0.86	1.23	2.10	58.84	0.96	1.19	2.15	55.35
Italy	0.96	1.22	2.18	55.88	1.02	1.36	2.38	57.14
Japan	1.05	0.82	1.87	43.79	1.08	0.80	1.88	42.55
Spain	0.93	0.88	1.81	48.82	0.96	0.93	1.89	49.21
United Kingdom	0.86	1.27	2.12	59.72	0.92	1.30	2.22	58.56
USA	0.80	0.11	0.91	11.86	0.88	0.11	0.99	11.11

Source:

- IEA, Oil Market Report (various issues).

Table 1-13
Spot Tanker Freight Rates, 2011 - 2012
(World scale)

	Arabian Gulf - East *	Arabian Gulf -West **	Mediterranean - Mediterranean ***
Average 2011	53	39	101
January 2011	47	32	74
February	66	42	98
March	63	44	128
April	51	39	96
May	50	39	99
June	57	41	93
July	49	39	87
August	47	38	89
September	44	36	87
October	46	35	134
November	59	41	86
December	59	39	141
Average 2012	48	33	88
January 2012	56	37	96
February	51	35	84
March	60	38	106
April	65	43	93
May	57	41	87
June	44	33	101
July	36	26	92
August	36	25	80
September	39	28	77
October	36	25	77
November	47	30	78
December	48	30	85

* Vessels of 230-280 dwt.

** Vessels of 270-285 dwt.

*** Vessels of 80-85 dwt.

Source:

- OPEC, Monthly Oil Market Report (various issues).

Table 1-14
OECD Oil Inventories at Quarter End,
2011 & 2012
(Million barrel)

	First quarter		Second quarter		Third quarter		Fourth quarter	
	2011	2012	2011	2012	2011	2012	2011	2012*
North America	1304	1313	1309	1318	1337	1314	1275	1310
Of which: USA	1056	1082	1070	1112	1097	1074	1022	1074
Europe	973	908	939.3	920.7	924.3	931.3	919	932.7
Pacific	388.7	384.3	410.3	400	412.3	406.7	389	394.7
Total OECD	2666	2605	2659	2639	2673	2651	2583	2637
Rest of the World	1641	1662	1648	1692	1676	1694	1673	1638
Other Inventories**	1053	959.7	1032	974	994.3	960.3	964	937
Total Commercial	5361	5226	5338	5305	5343	5306	5219	5246
Strategic :	1769	1782	1787	1799	1773	1826	1775	1846
US Strategic Petroleum Reserves	726.5	696.0	726.5	696	696	696	696	696
Usable Commercial***	1509	1374	1486	1454	1492	1455	1368	1394
OECD Commercial (days supply)	59.0	58.0	58.0	58.0	58.0	60.0	57.9	57.1
Total Commercial (days supply)	70.6	69.0	70.0	71.3	69.0	69.2	68.6	69.1
OECD Strategic (days supply)	35.0	34.0	34.0	33.0	33.0	33.0	33.0	33.0
Usable Commercial (days supply)	18.1	14.0	15.0	15.1	15.0	14.1	17.9	13.9

* Estimated data.

** Oil At Sea and Independent storage.

*** Stock holding over the above minimum operating needs (55 days).

Sources:

- OAPEC - Economics Department

- EIG Inc., Oil Market Intelligence (various issues).



Table 1-15
Value of Oil Exports in OAPEC Member Countries,
2008-2012
(\$ Million)

	2008	2009*	2010*	2011*	2012*
Algeria	38543	21497	28089	37289	34662
Bahrain	5895	3275	4664	6305	7269
Egypt***	4911	2166	2593	4689	4770
Iraq	63000	43895	54248	83768	92685
Kuwait	57690	41858	53029	79646	99735
Libya	52084	29446	38764	7391	41705
Qatar	27428	16172	20553	27328	21014
Saudi Arabia	247097	144249	184421	289518	307119
Syria	7989	5414	6689	2994	**
Tunisia	**	**	**	**	**
UAE	80635	44785	57900	85900	93613
Total	585272	352757	450950	624828	702572

* Estimated data.

** Preliminary data indicate that oil consumption exceeds oil production.

*** Official sources for 2008.

Sources:

- OAPEC - Economics Department.

- OPEC, Monthly Oil Market Report (various issues).

Table 1-16
Value of OAPEC Oil Exports in Current and
Real Prices, 1995-2012
(\$ Billion)

Year	At Current Prices	Expressed in Real 1995 Prices
1995	93.7	93.7
1996	108.7	106.9
1997	110.0	106.2
1998	76.8	73.1
1999	109.7	103.6
2000	177.2	164.8
2001	148.6	135.7
2002	142.0	127.6
2003	159.5	140.8
2004	219.0	189.4
2005	305.8	259.2
2006	375.1	311.0
2007	410.2	332.4
2008	585.3	465.0
2009	352.8	278.3
2010*	450.9	352.0
2011*	624.8	479.2
2012*	702.6	536.0

* Estimated data.

Note: Real revenues are obtained by deflating current prices by the GDP Deflator of industrial countries as published by the IMF.

Source:

- OAPEC - Economics Department.



Table 1-17
Energy Consumption in the Arab Countries,
2009-2012
(Thousand boe/d)

	2009	2010	2011 ⁽¹⁾	2012 ⁽¹⁾
Petroleum products				
Member countries	528	5241	5313	5650
Other Arab countries	819	853	896	930
Total Arab countries	5847	6094	6209	6580
Natural gas				
Member countries	5396	6113	6253	6545
Other Arab countries	181	198	198	205
Total Arab countries	5577	6311	6463	6750
Hydroelectricity				
Member countries	74	75	79	80
Other Arab countries	34	34	34	34
Total Arab countries	108	109	113	114
Coal				
Member countries	26	24	25	25
Other Arab countries	71	73	73	73
Total Arab countries	97	97	98	98
Total Energy				
Member countries	10524	11453	11682	12300
Other Arab countries	1107	1158	1201	1242
Total Arab countries	11361	12611	12883	13542

- (1) Estimated data.

Note : The total may not add up due to rounding.

Sources:

- OAPEC - Databank.

Table 1-18
Per Capita Energy Consumption in the Arab Countries,
2009 and 2012
(Boe/year)

	2009	2012*
Algeria	8.3	9.0
Bahrain	61.3	51.3
Egypt	7.6	7.9
Iraq	7.7	8.6
Kuwait	55.2	59.3
Libya	26.4	21.1
Qatar	219.8	267.3
Saudi Arabia	44.5	48.4
Syria	7.5	7.3
Tunisia	5.8	5.9
UAE	61.0	64.7
OAPEC member countries	17.3	18.7
Other Arab countries	3.3	3.5
Total Arab countries	12.3	13.4

* Estimated data.

Sources:

- OAPEC - Economics Department.

Table 1-19
Energy Consumption in OAPEC Member Countries,
2009-2012
(Thousand boe/d)

	2009	2010	2011 ⁽¹⁾	2012 ⁽¹⁾
Algeria	798	789	882	918
Bahrain	204	201	214	216
Egypt	1600	1631	1718	1791
Iraq	665	696	753	808
Kuwait *	527	569	580	620
Libya	544	585	313	480
Qatar	987	1426	1446	1490
Saudi Arabia *	3249	3530	3706	3870
Syria	413	428	433	432
Tunisia	167	172	175	175
UAE	1370	1414	1461	1500
Total	10524	11453	11682	12300

* Including energy consumption in the oil industry .

- (1) Estimated data.

Note : The total may not add up due to rounding.

Sources:

- OAPEC - Databank.

Table 1-20
Energy Consumption in OAPEC Member Countries by Source,
2009-2012
(Thousand boe/d)

	2009	2010	2011 ⁽¹⁾	2012 ⁽¹⁾
Petroleum products	5028	5241	5313	5650
Natural gas	5396	6113	6265	6545
Hydroelectricity	74	75	79	80
Coal	26	24	25	25
Total energy	10524	11453	11682	12300

- (1) Estimated data.

Note : The total may not add up due to rounding.

Sources:

- OAPEC - Databank.



Table 1-21
Natural Gas Consumption in OAPEC Member Countries,
2009-2012
(Thousand boe/d)

	2009	2010	2011 ⁽¹⁾	2012 ⁽¹⁾
Algeria	469	455	530	550
Bahrain	178	184	188	190
Egypt	755	798	883	950
Iraq	162	149	154	160
Kuwait	218	262	292	320
Libya	217	231	72	100
Qatar	809	1250	1243	1260
Saudi Arabia	1352	1511	1590	1670
Syria	111	115	115	115
Tunisia	57	59	60	60
UAE	1068	1099	1138	1170
Total	5396	6113	6265	6545

- (1) Estimated data.

Note : The total may not add up due to rounding.

Sources:

- OAPEC - Databank.

Table 1-22
Petroleum Products Consumption in OAPEC Member Countries,
2008-2012
(Thousand boe/d)

	2009	2010	2011 ⁽¹⁾	2012 ⁽¹⁾
Algeria	326	328	345	360
Bahrain	26	28	26	26
Egypt	763	757	755	760
Iraq	495	539	591	640
Kuwait	309	307	288	300
Libya	327	354	241	380
Qatar	178	176	203	230
Saudi Arabia	1897	2019	2116	2200
Syria	295	306	311	310
Tunisia	110	112	114	114
UAE	302	315	323	330
Total	5028	5241	5313	5650

- (1) Estimated data.

Note : The total may not add up due to rounding.

Sources:

- OAPEC - Databank.

Table 1-23
Hydroelectricity Consumption in OAPEC Member Countries,
2009-2012
(Thousand boe/d)

	2009	2010	2011	2012*
Algeria	0.3	0.1	0.3	1.0
Egypt	58.5	58.7	62.1	63.0
Iraq	8.0	8.0	8.0	8.0
Syria	7.1	7.1	7.1	7.0
Tunisia	0.2	1.2	1.0	1.0
Total	74.1	75.1	78.5	80.0

* Estimated data.

Sources:

- OAPEC - Databank.

Table 1-24
Coal Consumption in OAPEC Member Countries,
2009-2012
(Thousand boe/d)

	2009	2010	2011	2012*
Algeria	2.6	6.0	7.0	7.0
Egypt	23.2	17.7	18.0	18.0
Total	25.8	23.7	25.0	25.0

* Estimated data.

Sources:

- OAPEC - Databank.



Table 1-25
Domestic Prices of Petroleum Products in OAPEC
Member Countries, 2012
(Local currency/liter)

	Currency	Gasoline		Household	Gas	LPG
		Premium	Regular	Kerosene	oil/ Diesel	
Algeria	Dinar	22.6	21.2	-	13.7	200.0
Bahrain	Fils	100	80	25	100	1200*
Egypt	Piaster	130	90	75	75	250**
Iraq	Dinar	450	-	150	400	4000**
Kuwait	Fils	65	60	55	55	750**
Libya	Dirham	180	-	80	170	54
Qatar	Riyal	0.80	0.70	0.6	0.70	15*
Saudi Arabia	Halala	60.0	45.0	44.0	25.0	45.0
Syria	Lira	55.0	50.0	40.0	20.0	250**
Tunisia	Millime	998	998	180	357	158
UAE	Dirham	1.78	1.52	2.51	2.11	2.15*

* Per kilogram.

** Per cylinder.

Sources:

- OAPEC - Annual Statistical Report 2012.

CHAPTER TWO



**ARAB AND WORLD DEVELOPMENTS IN
THE EXPLORATION, RESERVES AND
PRODUCTION OF ENERGY RESOURCES**

CHAPTER TWO

ARAB AND WORLD DEVELOPMENTS IN THE EXPLORATION, RESERVES AND PRODUCTION OF ENERGY RESOURCES

I. OIL AND GAS

1. Exploration and Production: An Overview

The political and security crises that stormed the Middle East and North Africa in 2011 have prevailed in 2012, but their tangible effects on the petroleum industry were marginal thanks to the gradual recovery of Libyan oil productionⁱ which averaged 1.434 million barrels per day in the first three quarters of 2012.

No serious damage was inflicted on Libyan oil and gas production facilities as most of which are located far from where the main battles took place, however, the facilities near the coast, such as pipelines and marine terminals, suffered some dents. The main reason for the collapse in oil and gas production in 2011 was the decision of all foreign operators to evacuate their expatriate employees at the outset of the conflictⁱⁱ. British Petroleum -for example - has lifted Force Majeure in respect of its Libyan Exploration and Production Sharing Agreement (EPSA) with the National Oil Corporation (NOC) effective 15th May 2012. Force Majeure has been in place since 21st February 2011. Discussions between NOC and BP have concluded

i Crude oil production based on direct communication, Monthly Oil Market Report, OPEC, December, 2012.

ii Arab Oil & Gas Directory, Libya, 2012.

how the impact of Force Majeure will be mitigated in BP's existing contract termsⁱ.

Some reports imply that the partially affected infrastructures could form an opportunity for international oil companies to participate in the reconstruction of damaged facilities, a step that would boost Libya's position as an important supplier of light crudeⁱⁱ.

On the other hand, Syrian Arab Republic was severely affected by the international sanctions on Syrian oil sector, which have cost the country about \$3 billion in losses until May 2012. Syrian output was cut by more than 35 million barrels since the sanctions were imposed on the country in April 2011. Oil production before the sanctions averaged 350 thousand barrels per day, of which 150 thousand barrels per day were exported. Many companies have suspended its operations in Syria, like Shell, Total, INA and Petro Canadaⁱⁱⁱ.

In general, regional and international exploration and production activities were at reasonable levels driven by both confidence in oil markets (supply and demand), and by the importance of pumping more investments to maintain the stability of the markets. This actually corresponds to the result of a survey run by EIU^{iv} and GL Noble Delton in early 2012 about the expected investment trends, nearly 200 leaders and policy makers were surveyed, they forecasted higher levels of capital expenditure with clear focus on exploration sector.

In this regard, Bahraini Energy Minister said "although being one of the small countries in the Middle East, Bahrain will attract about

iOil Voice, 31/5/2012

iiLibya Oil and Gas Report, Business Monitor International, Q4, 2012.

iiiSyrian Oil and Gas, 13/5/2012.

ivEconomist Intelligence Unit.

\$20 billion over the next 15 years”. HE stated that demand for oil in the Middle East has been on a steady rise, causing concern over supply levels, especially when 2012 consumption rates in the Middle East represented 9% of world consumption, compared to 6.6% in 2000. HE said “the Middle East, in addition to its role of being the leading producer of oil and gas in the world, is becoming one of the fastest growing areas of demand”. To meet the growing demand, Bahrain’s government is investing \$8 billion to \$10 billion in a Refinery Master Plan Project, additionally, Bahrain plans to spend more than \$25 million per year as part of Bahrain Economic Vision 2030 to adequately train staff for careers in the energy sectorⁱ.

Saudi Aramco has announced its intention to pump \$35 billion into its oil exploration and development program over the next five years. The Chief Executive of Aramco said the company is continuing to strengthen its oil business to meet the rising call on Saudi oil production. He stated that the firm is planning to increase conventional and unconventional gas supplies by almost 250% over the coming two decadesⁱⁱ.

In Egypt, Shell’s Executive Vice President for Middle East and North Africa, has affirmed the company’s final investment decision on the Alam El Shawish West gas development, signaling the start of further development of the “Assil” and “Karam” gas fields. The company has earmarked \$600 million for exploration, development and production operationsⁱⁱⁱ in Egypt in the fiscal year 2012/2013.

On the international level, many reports issued in early 2012 have stated that petroleum companies were expected to invest a record

ⁱOil Voice, 23/5/2012

ⁱⁱOil Review Middle East, 19/10/2012

ⁱⁱⁱEgyptian Petroleum Ministry, Official Website, 22/2/2012.



\$31 billion in Norwayⁱ.

A report by Wood Mackenzie Ltd. said oil and gas companies will spend \$28 billion in the South Texas Eagle Ford play during 2013. The growth will concentrate on Gonzalez, DeWitt, and Karnes counties that have established themselves as the sweet spots of the play, they account for over 50% of daily liquids production. The Eagle Ford is the second largest US tight oil play and ranks fifth in terms of US shale gas production, the report showed that Eagle Ford liquids production, including natural gas liquids, has increased from 100 thousand barrels per day in early 2011 to 700 thousand barrels per day in late 2012, the Bakken Formation is the top US unconventional oil producerⁱⁱ.

Exploration, development and production activities were remarkable, following are some examples:

A- At Arab Countries Level:

In UAE, the Abu Dhabi National Oil Company (ADNOC), OMV Abu Dhabi E&P GmbH and Wintershall Middle East GmbH- Abu Dhabi, signed a Technical Evaluation Agreement to appraise the sour gas and condensate field in Shuwaihat, which is located some 25 km to the West of Ruwais city in the Western Region of Abu Dhabi. The two companies will conduct the appraisal phase by drilling up- to three appraisal wells and acquiring 3D seismic over the field. In the case of a successful appraisal campaign, ADNOC will participate in the development and production phase of the fieldⁱⁱⁱ.

ⁱOil and Gas Journal, 9/1/2012

ⁱⁱOil and Gas Journal, 6/12/2012

ⁱⁱⁱWintershall, Official website, 21/6/2012

In Q3 2012, Zakum Development Co. (Zadco) has let a lump- sum engineering, procurement, fabrication, installation, commissioning, and start- up contract to a consortium of Technip and National Petroleum Construction Co. (NPCC), as a part of its project to expand production capacity of Upper Zakum Oil Field which is 84 km offshore Abu Dhabi. Zadco started building artificial islands in 5- 15 m of water to support drilling and other facilities in a project that will boost Upper Zakum production from about 550 thousand barrels per day to 750 thousand barrels per day by 2015. The contract covers 240 km of subsea pipelines, 128 km of subsea composite and fiber-optic cables, almost 30 thousand tons of offshore structures such as jackets, riser platforms, flare towers, bridges, and initial production facilities for temporary well hook- ups for early production distributed among three of the artificial islands, along with other facilities like flaring torchesⁱ.

In **Bahrain**, Aker Solutions was awarded a \$17 million contract by Enerserv W.L.L to deliver 600 sets of surface wellheads and trees to the Awali Oil Fieldⁱⁱ.

In **Tunisia**, the Tunisian unit of DualEx Energy International Inc. has let a contract to CGGVeritas, to run a 55 sq km of 3D seismic survey over the Bouhajla North prospect on the Bouhajla permit onshore Tunisia. The block extends to the west of Sidi el Kilani Oil Field in north- central Tunisia. Depth to the primary Cretaceous chalk reservoir is 2,200 m.

Canadian Candax Energy Inc. announced its intentions to acquire interests in Ezzaouia and El Bibane oil producing fields from PA Resources AB, Stockholm, for \$4 million, subject to government

ⁱDrilling time, 5/8/2012

ⁱⁱAker Solutions, official website, 1/4/2012.





approval. A Candax subsidiary operates the fields, which produce a combined 100 barrels per day from net proved and probable reserves of 500 thousand barrels of oil equivalent. PA Resources working interests are 13.6% in Ezzaouia and 23.9% in El Bibaneⁱ.

Tunisia's Ministry of Industry & Energy has later approved the application of DualEx to expand the Bouhajla permit by 120 sq km of the original area (about 4,000 sq km) in return for a commitment to record at least 20 sq km of 3D seismic. The expansion area is located to the south of the company's Bouhajla North prospectⁱⁱ. ADX Energy has also signed a Letter of Intent with DIETSWELL SA, for the provision of a drilling rig to test the Sidi Dhaher-1 discovery, in which the mean contingent oil in place resource were estimated at 51 million barrels. The discovery is located in the 2,428 sq km large Chorbane exploration permit near the port city of Sfax. It is surrounded by several producing oil fields and extensive oil and gas infrastructureⁱⁱⁱ.

In Q2 2012, Circle Oil PLC. received a written confirmation of six- month extension for the 4th validity period of the Grombalia Permit to 18 December 2012. The confirmation was received from the Direction Générale de l'Energie.^{iv}

Canada-based CYGAM Energy has also received an approval from the Direction Generale de l'Energie for extensions to the company's two exploration permits in onshore Tunisia with no additional commitments. The Bazma and Sud Tozeur interests are 100% owned by the company.

iArab and International Energy Resources Monitor, year 32, 2012, No. 1.

iiOil and Gas Journal, 13/4/2012

iiiOil Voice, 9/1/2012

ivOil Voice, 29/6/2012

Bazma permit has entered the second exploration phase with the fresh permit's expiry being on 26/7/2015. Previous commitments include drilling a shallow well to the Triassic. The Sud Tozeur permit has been granted a special extension of one year and the permit expiry was extended to 12/5/2014. The existing commitments are one- deep well to the Cambrian/ Ordovician or 4,500 m and 200 sq km of 3D seismic data. The existing 2D seismic in both permits has been reprocessed and a full re-interpretation was expected to commence in early 2013ⁱ.

In **Algeria**, an authorization worth of \$3 billion was granted to a consortium composed of Repsol with a share of 29.23%, Sonatrach 40%, RWE Dea 19.5% and Edison 11.25%, to develop the north gas fields in Reggan Basin. The project covers the Reggane, Azrafil Southeast, Kahlouche, South Kahlouche, Tiouliline and Sali Fields. The project includes the construction of a gas treatment plant, a gas accumulation system, a pipeline for export and a runway and electric systems.

Repsol expects start production in mid- 2016. Production will span 25 years, and the consortium anticipates achieving a stable production rate of 8 million cubic meters per day of gas during the first 12 yearsⁱⁱ.

In Q3 2012, Petroceltic International PLC announced that its plan to develop Ain Tsila Gas Field situated in the Illizi Basin of Algeria has been approved by Sonatrach. In January 2012 Petroceltic submitted the draft plan to Sonatrach for its consideration. The partners agreed to a three- month extension until 24 July 2012. The extension was to finalize the Declaration of Commerciality of Ain Tsilaⁱⁱⁱ.

ⁱEnergy Business Review, 6/11/2012

ⁱⁱOil Voice, 16/2/2012

ⁱⁱⁱArab and International Energy Resources Monitor, year 32, 2012, No. 3.



In **Iraq**, the Iraqi government approved a \$998 million oil field service deal awarded to Samsung Group by Lukoil to develop the West Qurna Phase-two oil fieldⁱ. The deal states that Samsung would build a central processing facility for oil production in the field, the central processing facility will be able to produce 500 thousand barrels of oil per day, work is expected to finish within 29 months. The deal is part of the initial development plan set by Lukoil and Statoil and approved by Iraq's oil ministry in 2010 to start production from the untapped oilfield. The firms pledged to boost output from the southern field to reach 1.8 million barrels per day, with the first oil planned for early 2013.

An international consortium led by Gazprom Neft has awarded Petrofac a \$329.7 million deal to develop the untapped Badra Oil Field. The field is located in Wasit governorate, 160 km southeast of Baghdad, and extends across eastern Iraq's border with Iran. Petrofac would build a central processing facility for oil production in the field. The consortium, which also includes Korea Gas Corp., Turkish Petroleum Corp. and Petronas is planning to start first production from the field by mid- 2013. Gazprom, which holds 40% stake in the consortium, has started drilling in the field in 2011 targeting an estimated proven reserve of 3 billion barrels. It plans to drill 11 wells in the fields in three years. The consortium would receive a payment of \$5.50 for each barrel extracted from the field as soon as the field reaches an output of 15 thousand barrels per day. The total development cost of the project is estimated at \$2 billion, it is planned to reach 170 thousand barrels per day by 2017ⁱⁱ.

ⁱWorld Oil, 24/3/2012

ⁱⁱOil Review Middle East, 23/2/2012

In Q2 2012, Lukoil Holdings said it has received the rights to explore the Block 10 which is located 120 km to the west of Basra.

The deal includes a remuneration fee of \$ 5.99 per barrel of oil equivalent, a signature bonus of \$ 25 million, and a mandatory minimum exploration program which includes a 1,375 km of 2D seismic acquisition and the drilling of three exploration wells. Minimum exploration expenditure should be \$ 100 million at least. Lukoil has a 60% share of the field, and Japan's INPEX has 40% of the sharesⁱ.

Among other activities, Gulf Keystone announced that the Bakrman-1 exploration well was spudded on the Akri-Bijeel block in the Kurdistan Region of Iraq on 7 May 2012. Bakrman-1, the third exploration well to be drilled on the block, is located 32 km to the north-west of the Bijell-1 discovery well and 25 km to the north-west of the Aqra-1 appraisal well, which is currently being drilled to appraise the Bijell discovery. The well is part of the operator's extensive exploration and appraisal program, which also includes the drilling of the Gulak-1 exploration well and three additional appraisal wells (Bijell-2, Qalati-1 and Qandagul-1). Bakrman-1 will target prospective intervals in the Jurassic, with a planned total depth of approximately 3,600 m in the Lower Jurassic.

The Iraqi Ministry of Oil and a consortium comprised of Bashneft (70%) and Premier Oil (30%), initialed a contract for geological exploration, development, and production at Block 12. The obligatory five- year geological exploration program -which can be extended twice, for a two- year period each time-, includes 2D seismic survey totaling 2,000 linear kilometers and drilling 1 exploration well. If

ⁱWorld Oil, 4/6/2012



commercial oil reserves are proved, the contract will be concluded for 20 years. The fees for the produced oil will amount to \$ 5 per barrel. The payments will start after achieving 25% of the expected oil production plateau level, which will be determined after the end of the geological exploration and evaluation of reserves. Block 12 is located in the Najaf and Muthanna provinces, approximately 80 km to the southwest of Samawah city, and 130 km to the west of of Nasriya. It is considered as a part of the Iraqi Western Desert, which is an unexplored region .The block area is about 8,000 sq kmⁱ.

In June 2012, WesternZagros Resources Ltd. announced an update of the company's ongoing exploration and appraisal program, and a substantially revised prospective resource assessment of the Eocene reservoir for Kurdamir. The Eocene reservoir is the second of the three targeted reservoirs in the Kurdamir-2 well. The revised assessment was based upon the Kurdamir-2 well encountering an interpreted oil bearing, fractured Eocene reservoir section with a gross thickness of 275 m. The revised resource estimate was confirmed in an independent audit carried out by Sproule International Ltd. The revised mean prospective resource was 278 million barrels of oil as of June 1, 2012 compared to 124 million barrels reported previouslyⁱⁱ. Iraq has also signed a five- year gas exploration contract with Pakistan Petroleum that gives the company the right to explore for gas in block 8, which covers an area of 6,000 sq km in eastern Iraq. Under the contract, the firm must invest at least \$100 million to explore the block, which extends over the provinces of Wasit and Diyalaⁱⁱⁱ.

iIraqi Ministry of Oil, Official website, 5/8/2012

iiOil Voice, 7/6/2012

iiiOil Review Middle East, 6/11/2012

In **Qatar**, and pursuant to its efforts to tap the country's natural resources and enhance the hydrocarbon reserves, Qatar Petroleum and Total, have extended their EPSA by 25 years to further develop the offshore Al Khalij Oil Field. The two companies signed an exploration and production sharing agreement in 1989 to develop the oil field which is located 130 km to the east of Qatari coast, the agreement will expire in early 2014. The field was discovered by Total in 1991 and started oil production in 1997. As per the terms of the extended agreement, Qatar Petroleum will own 60% interest in the Al Khalij Oil Field, whereas Total will hold the 40% interest, until the expiry of the EPSAⁱ.

In **Kuwait**, Technip was awarded a contract by Kuwait Gulf Oil Company (KGOC), for the engineering, procurement, construction and commissioning assistance of KGOC gas and condensate export system projectⁱⁱ. The project extends over onshore and offshore locations in Saudi Arabia and Kuwait. The objective of the project is to deliver a combination of lean gas, condensate and sour gas through a single 12 inch export pipeline from Al Khafji Joint Operations (KJO) facilities in Saudi Arabia to Kuwait Oil Company (KOC) tie- in facility, namely the Intermediate Slug Catcher being constructed near Al-Ahmadi. The facilities will also assist KPC/ KJO in achieving one of their primary targets of 1% flaring by reducing the gas flared and additionally monetize valuable hydrocarbon resources. Total export pipeline length is 110 km, with 4 km onshore in Saudi Arabia, followed by 47 km offshore and 59 km onshore in Kuwait. That project will be completed in the second half of 2014.

ⁱOil Review Middle East, 14/11/2012

ⁱⁱOil Voice, 14/2/2012



In the second half of 2012, chairman of Kuwait Gulf Oil Company said that investment and technical decisions will be concluded on July 2013 for what would be the world's largest steamflood in old Wafra heavy Oil Field in the Divided Zone between Kuwait and Saudi Arabia. Wafra has produced crude heavier than 22° API since the 1950s. Primary production has achieved a recovery factor of about 10%. KGOCC and Chevron which manages Saudi Divided Zone interests, conducted a cyclic- steam test in 1990, a 5- spot thermal-recovery pilot in 2005, and a 49- well pilot in 2009, one of the project complications is high salt content of the crudeⁱ.

In **Libya**, Eni has started drilling the A1-108/4 well in Sirte Basin marking the restart of its onshore exploration activities in the country.

The well, which is located 300 km to the south of Benghazi, is planned to reach a total depth of 4,419 m. The company will test a new geological play in the EPSA 2008 contract area, as part of an onshore drilling program in Libya that Eni will look to continue into 2013.

In **Egypt**, the Egyptian Natural Gas Holding Company (EGAS) launched an international bid round for exploration blocks in the Mediterranean Sea and Nile Delta Basinsⁱⁱ. A total of 57,300 sq km was on offer, comprising 15 blocks: 2 onshore and 13 offshore. Some available data about the blocks are shown in **Table (A)**:

ⁱOil and Gas Journal, 4/6/2012

ⁱⁱEgyptian Natural Gas Holding Company, Official website, 2/7/2012

Table A
The exploration blocks on bid in Nile delta and Mediterranean

Block Name	Area Offered (sq km)	2D Seismic Lines (km)	No. of Drilled Wells
Idku South Onshore	1,575	966	5
Disouq South Onshore	1,275	285	1
El Burullus North Offshore	1,775	816	2
Marakia North Offshore	2,600	3,114	-
El Maamura North Offshore	1,890	2,052	2
El Arish North Offshore	2,980	1,696	1
Thekah North Offshore	3,750	1,580	-
Port Fouas North Offshore	3,440	1,163	-
Shorouk Offshore	3,765	1,862	1
Tennin North Offshore	5,195	3,184	1
Leil North Offshore	5,105	4,510	1
El Dikheila North Offshore	7,150	4,949	3
El Maz North Offshore	4,680	4,205	2
Matruh East Offshore	8,940	3,844	-
Burg El Arab North Offshore	3,180	2,755	5

On other hand, Egypt and Algeria signed five agreements to boost cooperation in the oil and gas domains. The first agreement aims at increasing Algerian butane gas exports to Egypt from 800 thousand tons to one million tons, hoping it will reach 1.5 million tons in 2014. The second agreement provides for establishing a joint company comprising the Egyptian General Petroleum Corporation and Sonatrach company to work in the petroleum exploration and production domains, adding that the new company might work outside the two countries' borders.

The third deal calls for setting up another joint company in the engineering studies and economic feasibility studies in the oil, gas and petrochemical domains. The fourth agreement provides for



supplying the Egyptian side with Algerian liquefied gas, and the fifth agreement provides for sending samples of Algerian crude petroleum to Egyptian laboratories for refinery testsⁱ.

In October 2012, Dana Gas started preparing a development plan for a discovery of 4- 6 billion cubic feet of gas in place, its second discovery in 2012 and its 23rd since 2006 in Egypt's onshore Nile Delta. West Sama-1 was discovered near the Sama-1 and Sama-2 dry gas discoveries in the slightly deeper Mio- liocene Abu Madi Formation. The latest new field discovery came right after the announcement of commencement of Dana Gas' joint- venture, the Egyptian Bahrain Gas Derivatives Company, an NGL extraction plant at Ras Shukheir. Dana Gas produces gas as operator at 11 Nile Delta fields, in 2011 the company produced 77.67 billion cubic feet and 2.6 million barrels of liquids. It is considered as Egypt's 6th largest gas producerⁱⁱ.

In the same time, RWE Dea has won a new offshore concession in East Ras Budran Offshore. The concession offered by the Egyptian General Petroleum Corporation (EGPC) in the 2011 international bid round, lies adjacent to the company's operated production license Ras Burdan in the Gulf of Suez, and covers an area of about 46 sq km. RWE Dea owns 80% working interest, while Dove Energy holds the remaining 20% shareⁱⁱⁱ.

As for the non- OAPEC Arab countries, some petroleum industry development examples are outlined as follows:

Jordan has signed a memorandum of understanding with Korea Global Petroleum Corporation to explore for oil and gas in the Dead Sea and Wadi Araba area. The deal follows the culmination of efforts

iGulfmedia, 27/11/2012

iiOil and Gas Journal, 22/10/2012

iiiEnergy Business Review, 14/11/2012

of the Natural Resources Authority to promote open petroleum exploration areas in Jordan to the international oil companies. The terms state that following- negotiations will be held to conclude a production sharing agreement to participate in oil exploration within the areaⁱ.

Sudan has signed oil exploration and production sharing deals with foreign companies on nine blocks, sealing investments of \$1 billion. Sudan is struggling to deal with a big loss in oil revenues. State Oil Minister said Canadian firm Statesman Resources as well as Chinese, Nigerian, Australian, Brazilian and French companies signed the agreements, state- owned oil and gas firm Sudapet was also included in the deals.

Seven blocks were awarded for the first time, while some companies joined previously- awarded contracts for two other blocks, the Minister said. Some of the blocks are near the northern border with Egypt, some are offshore and others are near Kassala in eastern Sudan and in Khartoum state. The Minister noted that the initial investments needed for these blocks are \$1 billion. It will not be cash- given to Sudan, but as money that will be invested by those companies. HE said there would be no production at the new blocks for several years while companies carries out magnetic surveys, seismic data acquisition and drilling of exploratory wells. HE mentioned that production startup- date can't be decided as there would be several activities that need to be done towards production that would take several years. The Minister said the government's share of oil would depend on data from each block, and the government priority will be to meet domestic demand and export the surplus. He added that until

ⁱEnergy Business Review, 23/2/2012

Q3 2012, Sudan oil production averaged 115 thousand barrels per day, and by the end of 2012 another 65 thousand would be added.

Later on, Emperor Oil Ltd announces that it has entered into a Memorandum of Understanding with State Petroleum Overseas Inc. to acquire 85% of their 50 % working interest in a late stage oil development project located in Block 7 in Sudan, to develop the three discovered oil fields, Sudapet owns the remaining 50% interest in the project.

Somalia in turn has pulled intentions to its hydrocarbon potentialⁱ, as Prime Resources affiliate Petrosoma has entered a 50:50 joint venture deal with Jacka Resources company to facilitate oil exploration in onshore Block 26.

In Q2 2012, **Oman**'s average oil output was set to increase to 915 thousand barrels per day from 855 thousand barrels per day in 2011. The plan would boost oil output from the Harweel Field and a number of wells in Qarn Alam filed starting from April, which would add a further 30 thousand barrels of oil per day. Many companies will contribute to this aim such as OC Energy, BP and Occidental Mukhaizna.

Omani Oil and Gas Ministryⁱⁱ has implemented a number of new projects such as the gas pipeline to Al Duqm Economic Zone. The ministry mentioned the new gas development project at Khazzan and Makarem Fields, each field is estimated to hold 70 to 130 trillion cubic feet of gas in place, the first phase of the project will target reserves of up to 8 trillion cubic feet with the first gas scheduled to be delivered in 2016.

In **Lebanon**, an agreement was signed with British Spectrum Company to conduct onshore and 3,000 sq km of offshore seismic

ⁱEnergy Business Review, 6/4/2012

ⁱⁱOil Review Middle East, 5/4/2012

surveys. This comes in line with Beicip- Franlab primary studiesⁱ that showed large and promising amount of gas in Lebanese waters.

In **Mauritania**, the government has signed two exploration licenses with Total, one for an onshore block and one for an ultra deepwater block. Total will hold 90% interest in offshore Block C 9 and Block Ta 29 in the Taoudeni Basin. Block C 9 lies 140 km off Mauritania in 2,500- 3,000 m of water and covers more than 10 thousand sq km. Ta 29 is in the Sahara 1,000 km east of the capital Nouakchott, it is located to the north of Total's block Ta 7, on which the company said the latest exploratory results show good prospectivityⁱⁱ.

In **Yemen**, the Ministry of Oil and Minerals launched the 2012 Yemen Bid Round for exploration in the Sabatayn, Masila and Mukalla-Sayhut Basins. A total of 20,132 sq km is on offer, comprising five blocks, four onshore and one offshore. **Table (B)** outlines some details about the offered blocksⁱⁱⁱ.

Table (B): Blocks offered in 2012 Yemen Bid Round

Block	Onshore/ Offshore	Acreage (sq km)	Basin	Previous Drilled Wells
Block 6	Onshore	3,911	Sabatayn	2
Block 15	Offshore	12,570	Mukalla-Sayhut	9
Block 84	Onshore	731	Masila	3
Block 85	Onshore	597	Sabatayn	2
Block 102	Onshore	2,323	Sabatayn	6

ⁱReuters, 30/3/2012

ⁱⁱOil and Gas Journal, 6/1/2012

ⁱⁱⁱ Yemen Ministry of Oil and Minerals, Official website, 16/9/2012

B- At International Level:

Available data indicate accelerated exploration and production from deep waters, especially in the Gulf of Mexico and offshore Brazil, and show Angola and Nigeria in West Africa as a prominent exploration and production hub, thanks to a spate of discoveries in Congo Basin within the last few years.

Many oil and gas fields were put on production in different areas of the world. Following are some examplesⁱ:

Deepwater activities in West Africa extended from Mauritania to Angola, with Nigeria and Angola accounting for about 78% of total offshore oil and gas production in West Africa from 2001 to 2011.

During 2009 -2012, Angola accounted for 17 of a total 47 deep offshore oil and gas discoveries made in West Africa, within the same period Ghana came second with 11 discoveries, the country is poised to significantly increase its production in the futureⁱⁱ.

In **Australia**, Buru Energy Ltd. has started oil production from the Canning Basin onshore Western Australia. The company put its Ungani-1 sidetrack wildcat on extended production test beginning with test rates in excess of 2,000 barrels of oil per dayⁱⁱⁱ.

In **Scotland**, Total has started production from Islay natural Gas Field straddling the UK- Norwegian sector line in the North Sea 440 km northeast of Aberdeen. Production from a single well, completed subsea in 120 m of water and tied back to the Alwyn North platform, has reached 15 thousand barrels of oil equivalent per day. Total estimates reserves at 17 million barrels of oil equivalent. Discovered

ⁱ These data do not represent all the new fields that were brought to production in the world in 2012, but only a part that OPAEC could follow up through published information.

ⁱⁱ Global Oil & Gas Capital Expenditure Breaks \$1 Trillion Barrier, Global Data, 23/8/2012.

ⁱⁱⁱ Oil and Gas Journal, 1/6/2012.

in 2008, the field lies mostly on Block 3/15 of the UK sector and partly on Blocks 29/6a and 29/6c of the Norwegian sectorⁱ.

In **Afghanistan**, China National Petroleum Corp. (CNPC) has started oil production from Angot Field in northern Afghanistan. The field is a part of three production- sharing blocks it received in the country's licensing round in 2011. The oil is being trucked to Turkmenistanⁱⁱ.

In **Angola**, Exxon Mobil announced that its subsidiary, Esso Exploration Angola has started production from the Kizomba Satellites Phase 1 project (Block 15) offshore Angola. The initial phase is expected to ultimately produce 100 thousand barrels of oil per day, and recover a total of approximately 250 million barrels from the Mavacola and Clochas Fields, located 152 km off the coast of Angola in water depths of approximately 1,370 m. Phase 1 of the project will develop 18 wells with subsea tiebacks to two existing floating, production, storage and offloading vesselsⁱⁱⁱ, the phase aims also to optimize the capabilities of on- block facilities to increase current production levels without requiring an additional FPSO vessel.

Iran has started preliminary production in the Yadavaran Oil Field in the southwest that is shared with Iraq. Production would reach 20 thousand barrels of oil per day within one month. Iran plans to increase the total production of the field to 180 thousand barrels per day within the coming three years. Sinopec, which has been involved since 2007 in exploiting the field, estimated the Yadavaran to hold 3.2 billion barrels of recoverable crude^{iv}.

i Oil and Gas Journal, 24/4/2012

ii Oil and Gas Journal, 24/10/2012

iii Oil Voice, 9/7/2012

iv Oil Review Middle East, 14/2/2012



In **UK**, a group led by BP Exploration Operating Co. Ltd. has started gas production from Devenick Field in the UK Central North Sea. Initial rate reached 100 million standard cubic feet per dayⁱ. The field is estimated to hold 430 billion cubic feet of recoverable gas and to remain on production until 2025. Moreover, RWE Dea UK has started production from Clipper South natural Gas Field in the UK North Sea. Production has begun from a horizontal well drilled into a tight Lower Permian Rotliengendes sandstone encountered in 24 m of water depth. Initial gross production from well 48/19a-C1 was 43 million standard cubic feet per day. Peak field production will be 100 million standard cubic feet per day, and the field has an estimated 500 billion cubic feet of natural gas in placeⁱⁱ.

In **Thailand**, PTT Exploration & Production PCL and its Bongkot joint venture partners have reported the start of production from Greater Bongkot South natural gas and condensate field in the Gulf of Thailand. GBS Field lies on Blocks B16 and B17 about 200 km to the east of the southern Thai city of Songkhla. The stand- alone development consists of a central processing platform, a living quarter platform, and 13 wellhead platforms. The processing platform has the capacity to process 350 million cubic feet per day of gas and 15 thousand barrels per day of condensateⁱⁱⁱ.

In **Russia**, SeverEnergia, a Russian joint venture, has started production of natural gas and condensate from Samburskoye Field in the Yamal- Nenets autonomous district of western Siberia. The initial production rate is 43 thousand barrels of oil equivalent per day is to peak in 2015 at 145 thousand barrels of oil equivalent per day. The

i Oil and Gas Journal, 5/10/2012

ii Oil and Gas Journal, 15/8/2012

iii Oil and Gas Journal, 23/4/2012

joint venture is developing the field with two integrated production systems incorporating three trains for gas and condensate and two trains for rim oil. Gas and condensate development involves 98 production wells, including 68 new horizontal wells, 15 slanted wells, 11 workovers of existing wells, and four sidetracks. Most drilling of the wells, to be located in 12 clusters, is to be finished by 2017. Facilities include a treatment plant with 18.75 million standard cubic feet per day of total capacity, a 48-km 40-in. gas export pipeline, and a 22-km, 12-in. condensate export line. Oil development will include 55 new horizontal producing wells, three workovers, and 35 water-injection wells, 25 new and 10 converted from oil wells. Most of the oil wells are to be drilled and completed by 2018. Oil treatment capacity will total 1.3 million tons per year, 200 thousand tons per year in a first train and 1 million tons per year in a second. There will be a 110-km export oil pipeline. The joint ventureⁱ comprises Eni SPA, Novatek, Gazpromneft, and Enel.

In **China**, China National Offshore Oil Corporation announced that Yacheng 13-4 Gas Field has recently commenced production successfully. The fieldⁱⁱ is located about 72 km southwest of Sanya, Hainan Province, in the north part of the South China Sea with an average water depth of about 85 m. Yacheng 13-4 is expected to hit its peak production of 12.6 billion cubic feet per year in 2013. In December 2012, CNOOCⁱⁱⁱ has commenced production at two locations in the Pearl River Mouth Basin of the South China Sea, the Panyu 4-2/5-1 Oil Field adjustment project and the Liuhua 4-1 oilfield project. Panyu 4-2/5-1 has an average water depth of about

i Oil and Gas Journal, 23/4/2012

ii Oil Voice, 3/8/2012

iii Oil and Gas Financial Journal, 28/12/2012

100 m, while the Lihua 4-1 Oil Field has an average water depth of about 268 m.

In **Norway**, Statoil has started production from Visund South oil and gas field in 290 m of water in the North Sea offshore Norwayⁱ. The start-up is the first in operator Statoil's fast-track scheme for developing offshore fields. Visund South encompasses the Pan and Pandora discoveries 10 km from the Gullfaks C and Visund A platforms. Development involves a four-slot subsea template through which three have been drilled and tied back to Gullfaks C. Statoil estimates reserves at 67 million barrels of oil equivalent, one-fourth oil and the rest natural gas. The company didn't report flow rates. Interests are shared by Statoil with 53.2%, Total 7.75%, Petoro 30%, and ConocoPhillips 9.1%.

A group led by DONG E&P Norge has started production at Oselvar Field in the southern North Sea offshore Norway. Oil and gas produced from two horizontal wells was flowing from the Oselvar subsea template transit a 23-km flow line to BP-operated Ula Field. Gas is reinjected, and oil is shipped via Ekofisk to Teesside. Peak production is estimated at 16,500-20,000 barrels per day of oil equivalent at capacity from 53 million barrels of oil equivalent of reserves, with 50% oil. Production is expected to continue for about 20 yearsⁱⁱ.

BG Norge AS has started oil production from Gaupe Field in the southern North Sea offshore Norway. Gaupe, in PL 292 on the UK-Norway median line 225 km off Norway, is expected to peak at 6,000 barrels per day of oil equivalent from 31 million barrels of oil equivalent gross recoverableⁱⁱⁱ. Moreover, Total has started production

i Oil and Gas Journal, 27/11/2012

ii Oil and Gas Journal, 16/4/2012

iii Oil and Gas Journal, 2/4/2012

from Alta gas- condensate field offshore Norwayⁱ, expecting average flow to reach 14 thousand barrels of oil equivalent per day, including 2,500 barrels per day of condensate in 2013.

In **Nigeria**, Afren PLC. and Amni International Petroleum Development Co. Ltd. have started production from an extension of Okoro Oil Field offshore southeastern Nigeria at a stabilized rate of 5,000 barrels per day of 38° API oilⁱⁱ.

In **Colombia**, PetroMagdalena Energy Corp., Toronto, has started production from its Azor Field discovery well while continuing to explore the Arrendajo block in Colombia's Llanos Basin. Azor-1X, placed on production on January 31 from the C5 sand, flowed 1,181 barrels per day of 35.5° gravity oil with 3% water cut.

In **Netherlands**, A group led by Wintershall has started production from K18- Golf Field, the company's first tight gas field in the Netherlands North Sea. Wintershall initially plans to produce 35.3 million standard cubic feet of gas from the Permian Rotliegend Formation via one subsea well. A second production well next summer is set to maintain plateau between 35 and 50 million standard cubic feet. Located in a restricted military zone, K18- Golf had to be developed subsea and within a short time window. Gas is produced via subsea pipeline to the K15-FA platform 10 km north. The K18-G1 well was drilled 3,750 m vertically and then 1,400 m horizontallyⁱⁱⁱ. Dana Petroleum PLC. has also started production from the Van Ghent well in Phase 1 of its Medway development project in the Netherlands North Sea. The production is expected to average 4,000 barrels of oil equivalent per day^{iv}.

i Oil and Gas Journal, 8/10/2012

ii Oil and Gas Journal, 31/10/2012

iii Oil and Gas Journal, 6/3/2012

iv Oil and Gas Journal, 18/1/2012





In **India**, Production of crude oil has begun from Bhagyam Field, the second to start up in a complex developed by Cairn India and state- owned Oil & Natural Gas Corp. in Rajasthan. The first field in the complex, Mangala, has reached its approved ceiling production rate of 125 thousand barrels per day and is on polymer flood. In a joint statement, Cairn, with 70% interest in project, and ONGC, 30%, said Bhagyam production will reach a plateau rate of 40 thousand barrels per day. When the third field in the development, Aishwariya, starts up, production from the complex is expected to reach an approved rate of 175 thousand barrels per day. The companies estimate recoverable resources at 1 billion barrels. Production from the complex flows through a 589 km heated and insulated pipelineⁱ.

In **USA**, Petrobras reported that production has started at Chinook Field in the Gulf of Mexico. Production is connected to the BW Pioneer floating production, storage, and offloading vessel, the first FPSO to produce oil and gas in the US portion of the gulfⁱⁱ. The Chinook No. 4 production well was drilled and completed in lower tertiary reservoirs, a promising offshore exploration frontier in the gulf, at a depth of 8,000 m.

Oil production began from Cascade deepwater field into the Gulf of Mexico's first floating production, storage, and offloading vessel, said operator Petrobras America Inc.ⁱⁱⁱ The BW Pioneer FPSO, on the Walker Ridge Block 425 about 226 km offshore Louisiana, began receiving oil from the Cascade-4 well. The FPSO, owned by BW Offshore has a capacity to process 80 thousand barrels per day of oil and 500 thousand cu m per day (17.7 million standard cubic feet of gas).

i Oil and Gas Journal, 19/1/2012

ii Oil and Gas Journal, 3/2/2012

iii Oil and Gas Journal, 14/9/2012

Additionally, Buccaneer Energy Ltd., started gas production from its Kenai Loop-1 well onshore Alaska's Cook Inlet. Buccaneer anticipates producing the well at as much as 5 million standard cubic feet for 2- 3 months while monitoring reservoir performanceⁱ.

Table (C) summarizes available data about some fields that were put on production in 2012.

Table C: Some fields that were brought to production in 2012

Country	Month	Basin/ Field	Type	Quantity	Reserves
Afghanistan	February	Wortel + Oyong	G	90 million scfpd	N/A
Australia	May	Canning	O	2,000 bpd	N/A
Colombia	February	Azor	O	6,000 bpd	N/A
India	January	Bhagyam	O	N/A	N/A
Indonesia	October	Angot	O	N/A	N/A
Netherlands	January	Medway	G	4,000 boe/d	N/A
	March	K18-Golf	G	35.5 million scfpd	N/A
Nigeria	October	Okoro	O	5,000 bpd	N/A
Norway	April	Oselvar	O/ G	16.5- 20 thousand boe/d	53 million boe
		Gaupe	O/ G	6,000 boe/d	31 million boe
	October	Atlas	O/ C	14 thousand boe/d	N/A
	November	Visund South	O/ G	N/A	67 million boe
Russia	April	Samburskoye	G/ C	43 thousand boe/d	
Scotland	April	Islay	G/ C	15 thousand boe/d	17 million boe
Thailand	April	Greater Bongkot South	G/ C	N/A	N/A
UK	August	Devenick	G	100 million scfpd	430 billion cf
	October	Clipper South	G	43 million scfpd	500 billion cf
USA	January	Kenai Loop-1	G	5 million scfpd	N/A
	March	Cascade	O/ G	N/A	N/A
	September	Chinook	O/ G	N/A	N/A

ⁱOil and Gas Journal, 16/1/2012

A quick look at the table reveals that over 188 thousand barrels of oil equivalent were introduced to the market in 2012, this figure doesn't include the fields which no data about them was availed.

C- Unconventional Hydrocarbons Resources

Interest in unconventional hydrocarbon resources continued to increase in 2012, but in contrary to earlier expectation, the global gas market has not seen a revolution outside the United States. Shale gas reserves were seen to be lower than previous estimates in many countries of the worldⁱ. Nevertheless, an International Energy Agency (IEA) report has in mid- 2012 forecasted that a boom in unconventional natural gas over the next 20 years could see the US and others benefit from cheaper energy, while the Middle East's importance to gas production will decline.

IEA chief economist stated that the majority of production increases would occur after 2020 as producers need time to develop a commercial unconventional gas sector. Expanding unconventional production will require a total of 1 million unconventional wells to be produced globally by 2035 in comparison to the 500 thousand of such wells drilled over the past 20 yearsⁱⁱ. Practically, it is premature to simply consider such a large number of wells, as stated in a study of the Chinese Strategic Research Center of Oil & Gas Resources, China aims to pinpoint 50- 80 prospects in its depositional basins until 2020, and expects to have 20- 30 exploratory and productive areas out of themⁱⁱⁱ.

i Survey of Energy Resources: Shale Gas – What's New, World Energy Council, 2012

ii IEA World Energy Outlook special report on unconventional gas, "Golden Rules for a Golden Age of Gas", Summary of Selected Key Outcomes, 15 June 2012

iii Prof.Li Yuxi, Shale Gas Resource Potential, Survey and Exploration in China, Strategic Research Center of Oil & Gas Resources, MLR, China, April 2011

Unconventional hydrocarbon resources received less focus in Arab countries. In **Morocco** for example, San Leon has commissioned Enefit Outotec Technology(EOT) to conduct a study of an oil shale retorting project in a newly awarded onshore shallow oil shale mining area in Moroccoⁱ, in addition to San Leon's Tarfaya In Situ oil shale acreage of 6,000 sq km which will be pursued in parallel. A study by Shell in 1985 of an open pit mining project located on a site adjacent to the newly awarded blocks established that mineable reserves from this location were more than sufficient for a 50 thousand barrels per day production over 30 years.

Saudi Arabia -as previously mentioned- has plans to boost its natural and unconventional gas production by 250% within the coming 20 years.

Internationally, many countries are showing increasing interest in the unconventional hydrocarbon resources.

In **Argentina**, Repsol YPF SA's Argentina unit said its shale oil resources at the Vaca Muerta Formation in the south of the country probably hold about 23 billion barrels. The estimates came after drilling operations in the Neuquen province and reviews of the area by independent consultation body. The company said \$25 billion a year will be needed over a decade to develop the discovered shale oil resourcesⁱⁱ. Later on, YPF which is Argentina's largest oil producer, announced that it will invest \$1.2 billion in shale oil in 2013, as it seeks to boost crude output after the government nationalized the company and opposed dividend payments. YPF will invest a total of \$7 billion in 2013 as it plans to double exploration in five years and boost refining, the company will drill 1,019 wells in 2013, up from

i Oil Voice, 29/8/2012

ii Bloomberg Business, 9/2/2012

746 in 2012, including 132 shale oil wells and 14 shale gas wellsⁱ.

Within the same timeframe, Americas Petrogas announced that drilling has commenced on ALL.x-1 shale oil exploration well on the Los Toldos I block (398 sq km) located in the Neuquen Basinⁱⁱ. Efforts paid off soon as YPF discovered unconventional oil and gas in five wells in Chubut and Neuquen regions. This is expected to ease the company's production decline rate, and rise it again in 2013. According to the company, three wells are located in Vaca Muerta Basin, which means that source rocks in Chubut can be -in turn- considered as an oil region. The other two well discovered shale gasⁱⁱⁱ.

In the **United Kingdom**, IGas Energy PLC. said it has logged a number of potentially gas- productive zones in about 305 m of shale encountered at its Ince Marshes onshore well in PEDL 190 south of Liverpool. The well was cored and suspended waiting for the samples to be interpreted. Predrill independent analysis suggested initial gas in place in the shale of as much as 4.6 trillion cubic feet in the area^{iv}.

Due to the insatiable appetite for energy, the government of the UK said that it will permit the resumption of shale gas exploration, including horizontal drilling and hydraulic fracturing, which are essential to the economics of shale development. The UK's energy and climate change secretary, said that the government will allow shale development to resume, but that any fracturing activity would be subject to new controls aimed at mitigating the risk of seismic

i Bloomberg Business, 6/6/2012

ii Oil Voice, 19/7/2012

iii South Atlantic News Agency, 31/8/2012

iv Oil and Gas Journal, 28/1/2012

activity (i.e. earthquakes) in the surrounding area. Exploratory fracturing has been suspended in the UK since May 2011 after a small seismic tremor was detected near the country's only fracturing operation in the Bowland Basin, northern England. The British Geological Society recently reported that the area around Blackpool may hold as much as 300 trillion cubic feet of gas, at least 50% more than was previously thought. The secretary announced that shale gas represents a promising new potential energy resource for the UK and could contribute significantly to the nation's energy security and reducing its reliance on imported gasⁱ.

Poland assured it will begin commercial production of natural gas from shale rock deposits in late 2014 or early 2015, days after a local institute said Poland had less shale gas than previously thought. Poland's National Geological Institute earlier said it estimated the country's recoverable reserves of shale gas at between 12.8 and 27 trillion cubic feet. A number that is much lower than earlier estimates by the U.S. Energy Information Administration, which said the reserves could reach 205 trillion cubic feet. Poland's Treasury minister commented that it had been based on archival samples extracted between 1950 and 1990, and that Poland's shale gas sector needed to drill more test wells in order to determine with more precision the country's actual shale gas and oil reserves.

Previously, PKN Orlen SA, announced that it will increase its planned investments in shale gas exploration and production by several- folds.

The company had planned to spend about \$222 million over five years on unconventional gas exploration in Poland. Poland's shale gas

ⁱ Oil and Gas Financial Journal, 13/12/2012



and conventional reserves combined could cover 35- 65 years of the country's demand for natural gas, according to a Polish Geological Institute. This is lower than a projection in an earlier U.S. government study, though the institute did indicate Poland has enough of the fuel to become a gas exporterⁱ.

In **India**, the US Geological Survey has estimated India's technically recoverable shale gas resource at 6.1 trillion cubic feet in three of the country's 26 basins and said oil potential in shale also existsⁱⁱ.

In **China**, China Petroleum & Chemical Corp. said analysis at a test well in Sichuan province, showed evidence of a large amount of shale gas. The Yuanba 21 well is capable of producing 507 thousand cubic meters per day (about 18 million cubic feet per day) of gasⁱⁱⁱ. China has an estimated 25.08 trillion cubic meters of potentially recoverable shale gas reserves (886 trillion cubic feet).

In **Canada**, Suncor Energy says bitumen production from the first three phases of its Firebag in situ project in Alberta reached design capacity of 120 thousand barrels per day at the end of 3Q, 2012. Third- quarter average production was 113 thousand barrels per day at the Firebag complex, more than double the output during the comparable quarter of 2011. Firebag, in the northern Athabasca oil sands region, produces via steam-assisted gravity drainage. Suncor expects the fourth phase of production to reach 180 thousand barrels per day when the fourth phase reaches capacity^{iv}.

In the **USA** who leads the unconventional oil and gas resources developments in the world, the U.S. Geological Survey has for the first time estimated the potential of undiscovered, technically recoverable onshore shale oil and gas resources in Alaska's North

i Dow Jones Newswires, 04/03/2012

ii Oil and Gas Journal, 1/8/212

iii World Oil, 8/3/2012

iv Oil and Gas Journal, 23/10/2012

Slope. The estimates range from 0 up to 2 billion barrels of oil and from 0 up to 80 trillion cubic feet of gas representing technically recoverable oil and gas resources, which are those quantities of oil and gas producible using currently available technology and industry practices, regardless of economic or accessibility considerationsⁱ.

In its new comparison between two oil shale regions, IHS Inc. reported that the Eagle Ford shale play in South Texas is a contender for the best tight oil play in the USA, based upon strong drilling results, large prospective area, and magnitude of resource potential. The IHS assessment said typical well performance as well as peak-month production of the Eagle Ford's best wells exceeds wells drilled in the Bakken Formation, often considered the tight oil standard. The most frequent Eagle Ford well result is 300- 6,000 barrels per day for a peak month production average, compared with 150- 300 barrels per day for the Bakken. The best wells in the Bakken have an average peak- month production rate of 1,000 barrels per day or moreⁱⁱ.

Within the same context, BP North America has signed an agreement to lease 400 sq km acres in Trumbull County, Ohio, 50 km east of Cleveland, for future oil and gas production in the Utica/ Point Pleasant shale Formation. BP said it will sign confidential agreements with individual landowners who are part of a group known as Associated Landowners of the Ohio Valley. Terms were not disclosed. BP described the Utica/ Point Pleasant as shale at a depth of about 1,800 m, which is of similar thickness to the Marcellus Shale and has the potential to deliver higher liquids rates. The Ohio Department of Natural Resources estimated a recoverable Utica shale potential between 1.3 billion and 5.5 billion barrels of oil and 3.8 to 15.7 trillion cubic feet of natural gas. BP is the second largest oil and gas producer in the US with a workforce of about 23 thousand people, making BP the country's second largest oil and gas

i Word Oil, 24/2/2012

ii Oil and Gas Journal, 26/7/2012

employer. The company has been the largest US oil and gas investor the past five yearsⁱ.

According to the EIA, the US oil and condensate production hit its highest level for the last fifteen years in September 2012 recording 6.5 million barrels per day. The last time the US produced 6.5 million barrels per day or more of crude oil was in January 1998. Since September 2011, US production has increased by more than 900 thousand barrels per day. Most of that increase is due to production from oil-bearing rocks with very low permeability through the use of horizontal drilling technology combined with hydraulic fracturing. The states with the largest increases are Texas and North Dakota.

From September 2011 to September 2012, Texas production increased by more than 500 thousand barrels per day, and North Dakota production increased by more than 250 thousand barrels per day. Texas's increase in production is largely from the Eagle Ford shale formation in South Texas and the Permian Basin in West Texas. North Dakota's increase in oil production comes from the Bakken shale formation in the Williston Basin.

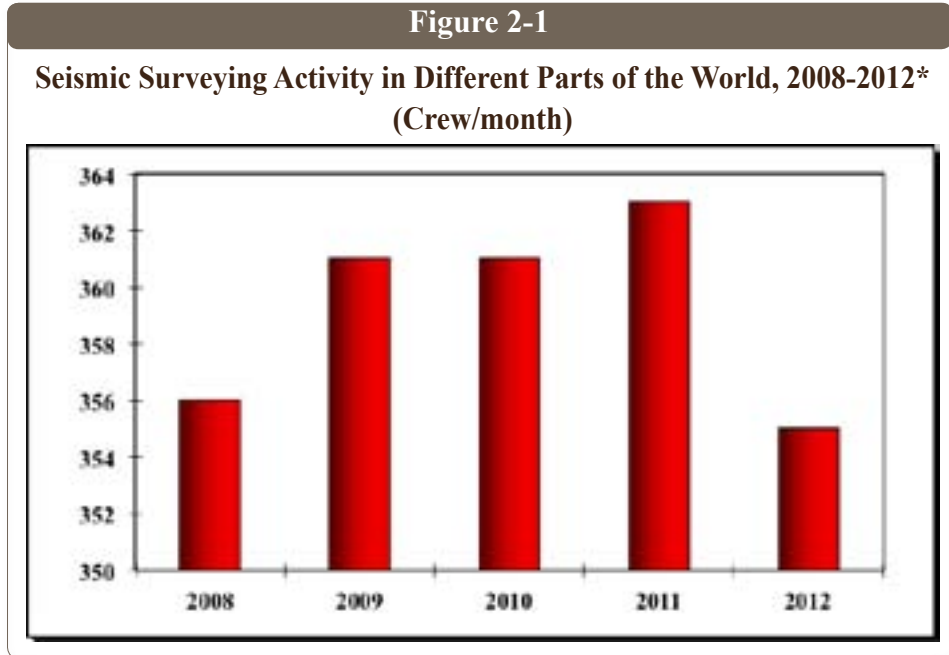
Major oil exploration and production developments in the Arab countries and the world are summarized below.

1- 1 Seismic Surveys:

Unfortunately, IHS is no longer producing the monthly reports about the worldwide seismic crew numbers, the last available set of figures dates back to January 2012. Obviously, comparing one-month- count with an annual average is not among the best practices, however, it could be generally said that the number of crews working on seismic surveys worldwide decreased from 363 crew/ month in 2011, to 355 crew/ month in Jan. 2012. The gap becomes wider when

ⁱOil and Gas Journal, 27/3/2012

comparing the figures with Jan. 2011 where the number was 378-crew/ month. **Figure (2-1)** and **Table (2-1)**.

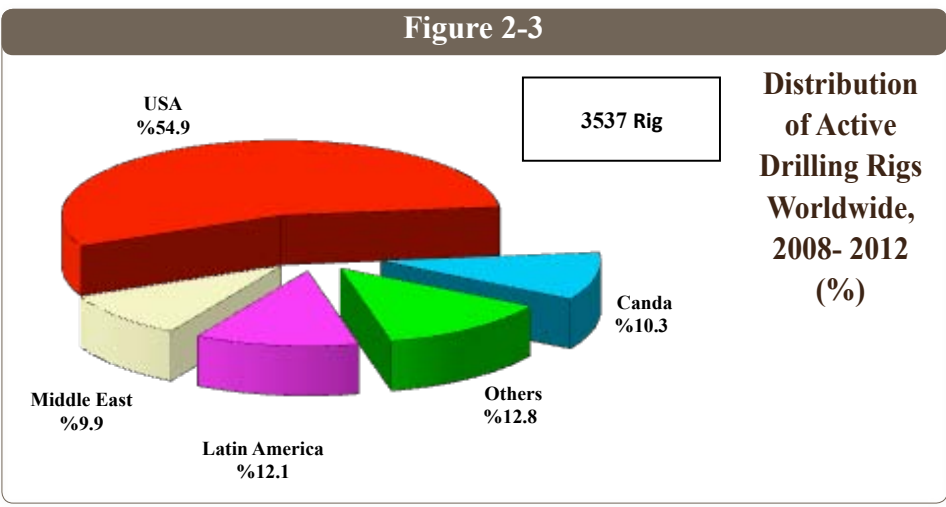
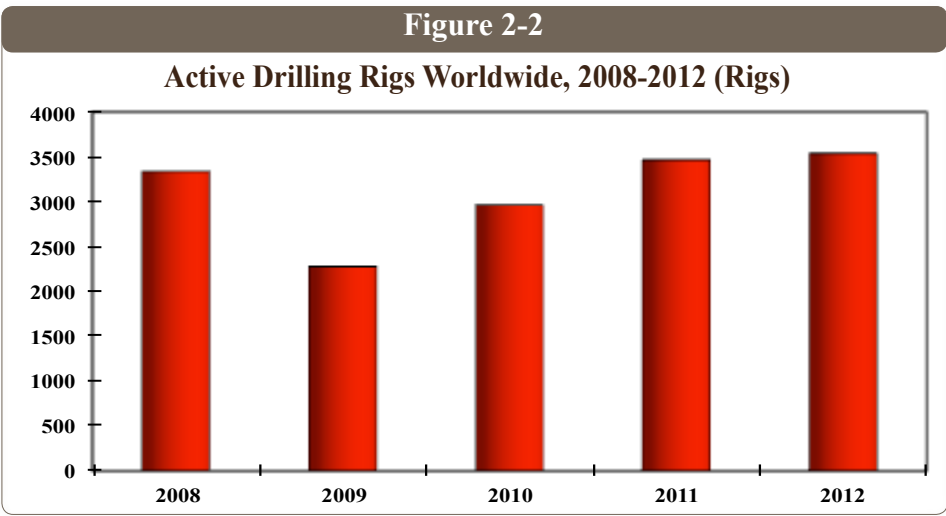


* 2012 figures are for January only.

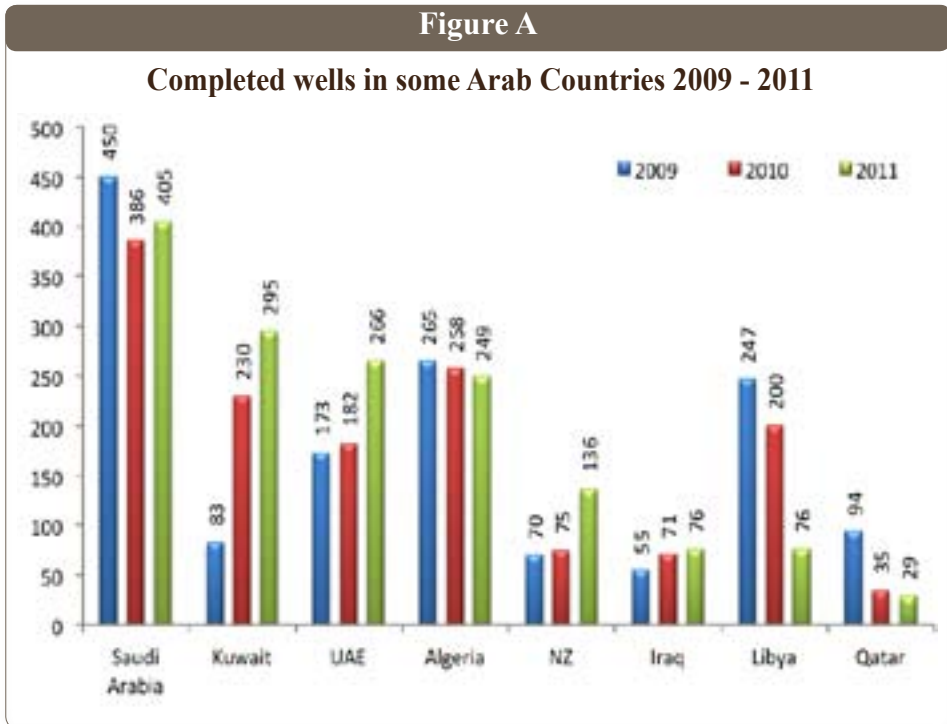
1- 2 Exploration and Development Drilling:

Exploration drilling activities have considerably increase in some area of the world in 2012. The number of rigs operating in the Middle East increased by 22.3% from 292 rigs in 2011 to 351 rigs in 2012. The number increased in Africa too by 20.5% from 78 rigs in 2011 to 95 rigs in 2012. Various regions of the world increased by more than 16% comparing to 2010, to reach 3466 rigs. Europe recorded the highest increase from 94 rigs in 2010 to 118 rigs in 2011. The number of rigs operating in the US increased by 4.4% from 1875 in 2011 to 1943 in 2012, this could possibly be attributed to the increased gas prices which encouraged drilling activities particularly in shale gas regions.

On the other hand, the number of rigs operating in Europe decreased slightly from 118 rigs in 2011 to 116 rigs in 2012, the number decreased in Asia/ Pacific region from 256 rigs in 2011 to 241 rigs in 2012. The highest decline was recorded in Canada by 16.8% from 423 rigs in 2011 to 364 rigs in 2012. Generally speaking, the number of rigs operating worldwide increased by 2.4% from 3466 rigs in 2011 to 3537 rigs in 2012. **Figures (2-2), (2-3) and Table (2-2).**



According to OPEC reportsⁱ, the number of wells completed in 2011 was 266 wells in UAE, 249 wells in Algeria, 405 wells in Saudi Arabia, 76 wells in Iraq, 29 wells in Qatar, 295 wells in Kuwait, and 76 wells in Libya, **Figure (A)**.



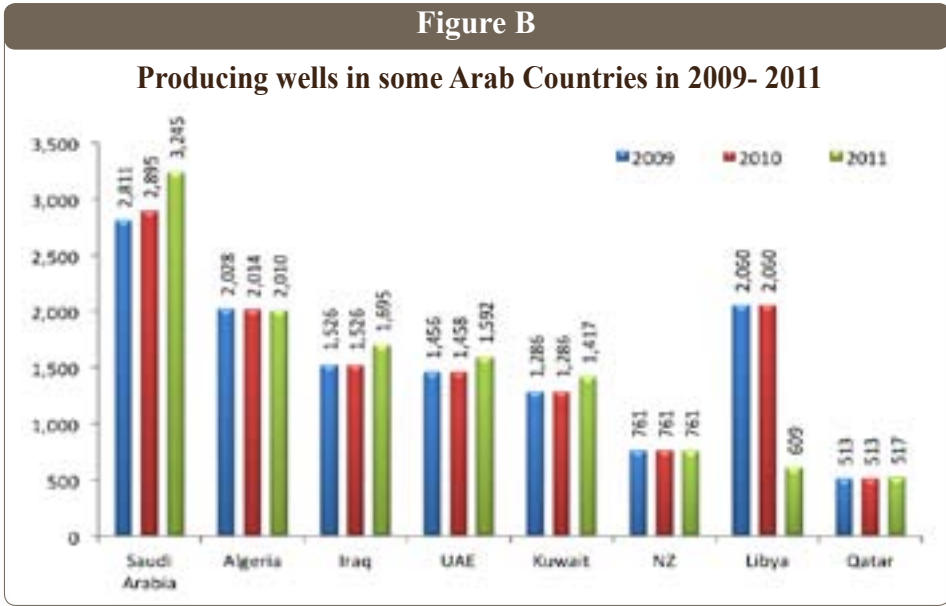
Comparing 2010 and 2011 figures, it could be noted that the number of completed wells declined in: Algeria by 3.5%, in Libya 62%, and in Qatar by 17%. While the number of completed wells increased in Saudi Arabia by 5%, in Kuwait by 28.3%, in UAE by 46%, in the Neutral Zone by 81.3%, and in Iraq by 7%. The number of wells completed worldwide increased by 10.4% from 94,596 wells in 2010, to 104,442 wells in 2011.

On the other hand, the number of producing well increased in

ⁱ OPEC annual statistical bulletin, 2012.



Figure B



Saudi Arabia, Iraq, UAE, Kuwait and Qatar. It has slightly declined in Algeria, but it has sharply declined in Libya from 2060 wells in 2010 to 609 wells in 2011. No change in the number was recorded in the Neutral Zone, as shown in **Figure (B)**.

Exploration activities and related drillings have resulted in many new finds in the Arab countries in 2012. Available data show that OAPEC members have found 26 new discoveries of which 18 were oil and 8 were gas discoveries. **Figure (2- 4), (2- 5), and Table (2-3)**.

In **Tunisia**, ADX Energy has signed a Letter of Intent with DIETSWELL SA, for the provision of a drilling rig to test the “Sidi Dhaher-1” discovery, in which the mean contingent oil in place resource was estimated at 51 million barrels. The Sidi Dhaher discovery is located in the 2,428 sq km large “Chorbane” Exploration Permit onshore central Tunisia near the port city of Sfax. It is surrounded by several producing oil fields and extensive oil and gas infrastructureⁱ.

ⁱ Oil Voice, 9/1/2012

Figure 2-4

Oil Discoveries in OAPEC Members and Other Arab Countries 2008- 2012

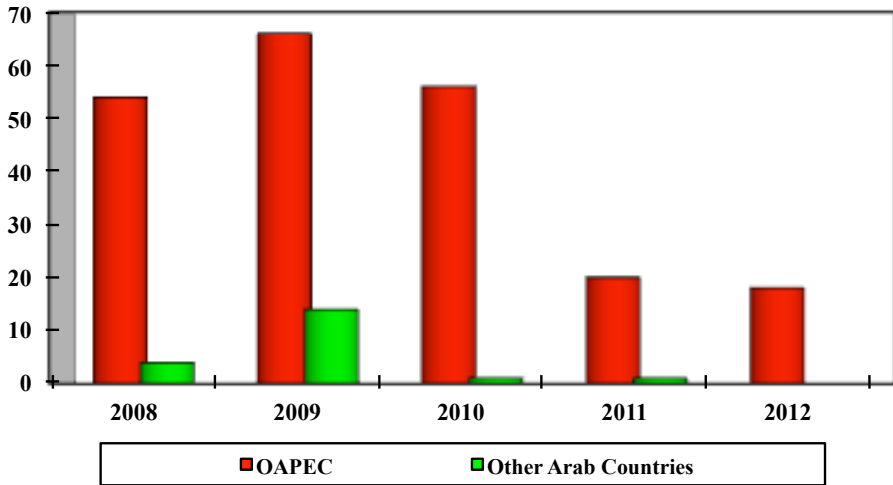
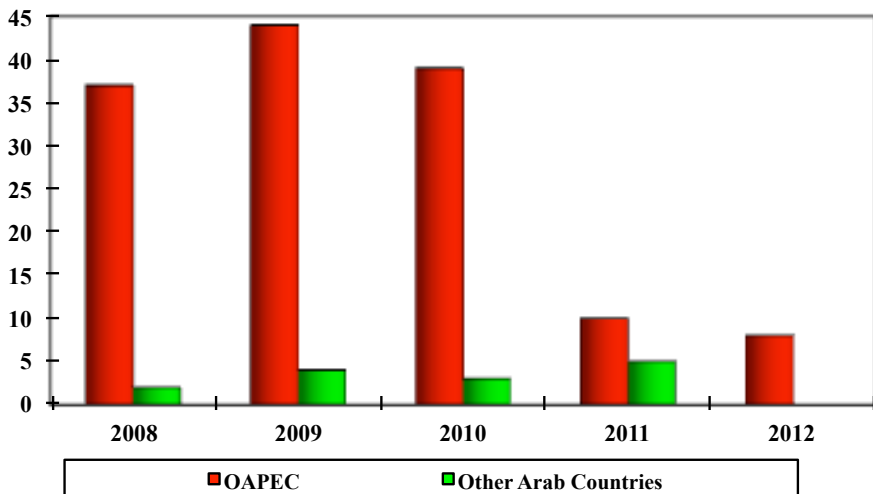


Figure 2-5

Gas Discoveries in OAPEC Members and Other Arab Countries 2008- 2012





CYGAM Energy Inc. provided initial flow rates on the TT-16 horizontal well in the TT Field in the “Bir Ben Tartar” (BBT) concession in Tunisia. Through a wholly- owned subsidiary, CYGAM holds a 14% working interest in the concession. The initial test over the first six days was interrupted by attempts to circulate sand and clean the wellbore, and included periods where wellbore energy was assisted by nitrogen injection. Later on, the well has flowed under its natural reservoir energy and produced at an average oil rate of 897 barrels of oil per day, an average water rate of 331 barrels of water per day (27% water cut) and an average gas- oil- ratio (GOR) of 1,110 standard cubic feet of gas per barrel of oil, at a bottom- hole flowing pressure of 925 psi. The 832 m horizontal section of TT-16 well was fracture and stimulated with the placement of approximately 175 tons of sand over eight stagesⁱ.

In **Algeria**, PTTEP disclosed that it has successfully discovered crude oil in the 4th and the 5th exploration wells in Hassi Bir Rekaiz project, in cooperation with with its Partner Sonatrach. The 4th exploration well (OGB-1) was drilled and yielded petroleum discovery in formation of Ordovician reservoir. When tested, the well produced at an average rate of 485 barrels per day. The 5th exploration well (BOG-1) was drilled and yielded petroleum discovery in the same bearing reservoir, the well flow at approximately 553 and 1,870 barrels per day, respectively. Hassi Bir Rekaiz project is located onshore in the eastern part of Algeria. It covers an area of 5,378 sq km. PTTEP is the operator with 24.5% interest. Its joint venture partners of this project are Sonatrach with 51% interest and CNOOC with 24.5% interestⁱⁱ.

i Oil Voice, 7/8/2012

ii Oil Voice, 21/9/2012

E.ON E&P has also made an oil and gas discovery in the “Rhourde Yacoub” license area in Algeria. E.ON has successfully completed the drilling and testing of the 7th exploration well in block 405a and found oil and gas in the NEY-1 well. The Rhourde Yacoub license is located in the eastern Algerian Sahara, around 250 km south- east of Hassi Messaoudⁱ. The Rhourde Yacoub license is operated by E.ON E&P with an equity share of 49%. Sonatrach holds the majority of 51%.

In **Saudi Arabia**, Saudi Aramco has discovered a new feasible gas field in the Red Sea, a test of the “Al-Shoor” well, 26 km northwest of Dhuba port, flowed 10 million cubic feet per day of gas from a depth of 5,395 m, and 5.2 million cubic feet per day from another test at a depth of 5,265 m. The new discovery will be developed for power generation in the northwestern part of the kingdom.

Saudi Aramco plans to produce the gas in 2013 from Midyan Field which was discovered in 1980s near Tabuk city, the gas would be supplied to the port city of Duba where a power generation plant is planned. Saudi Aramco has let a contract to Saudi Ports Authority to construct facilities in Duba as a supply base for the drilling operations, the contract covers a pier and storage yardⁱⁱ.

In **Syria**, Gulfsands has made a new discovery through “Khurbet East 102” appraisal well drilled in the northern flank on Khurbet Field. The well encountered the Butmah Formation at a depth of 2,442 m, and the Kurrachine Dolomite Formation at a depth of 2,741 m. The Company’s initial estimates of total recoverable hydrocarbon volumes from the Butmah Formation were 19.2 million barrels of oil equivalent. The well produced 10.7 million cubic feet of gas per day and 524 barrels per day of condensate from the Butma Formation,

i Oil Voice, 18/7/2012

ii Oil and Gas Journal, 16/11/2012



while the Kurrachine Dolomite failed to flow oil during an open-hole testⁱ.

In **Iraq**, WesternZagros Resources Ltd. has made a new oil discovery at the Mil Qasim-1 exploration well in the Kurdistan Region of Iraq. Mil Qasim-1 was drilled to a total depth of 2,425 m. The well encountered a gross oil bearing column in the Upper Fars Formation. The company has previously announced -by late 2011- that Mil Qasim-1 well was cased to a depth of 2,129 meters and successfully drilled and wirelined logged to a final total depth of 2,425 m. The planned testing program of the Upper Fars sandstone reservoir was ongoing. An initial open hole drillstem test conducted in the lowermost part of the wellbore successfully flowed oil to surface with no associated waterⁱⁱ. In Q1 2012, the Iraqi ministry of oil has announced a discovery of light oil at a depth of 2,363 m in Dima Field in Maysan governorate. Oil was encountered in at an unexpected structure, according to the ministryⁱⁱⁱ.

Moreover, Talisman Energy Inc. has confirmed the presence of light oil at the Kurdamir-2 well in the Kurdistan Region of Iraq. The well flowed at un-stimulated rates of 7.3 million cubic feet per day of natural gas and 950 barrels of oil and condensate per day, with no indications of water and no observed decline. This open-hole drill stem test was conducted only over the upper 55 m of the Oligocene reservoir. A total of 140 m of gross reservoir (88 m net) was identified through wireline logging. The Kurdamir-2 well is a re-drill of the Kurdamir-1 discovery well, 2 km away, which was drilled in 2009 but not completed. Talisman is operator of the Kurdamir

i Gulfsands, official website 31/1/2012

ii Nasdaq, 16/2/2012

iii The Iraqi Ministry of Oil, Official Website, 18/1/2013

block, with a 40% working interest. Joint venture participants include WesternZagros, with a 40% working interest, and the Kurdistan Regional Government (KRG), with a 20% carried interestⁱ.

Afren PLC. has also announced that the high impact Simrit-2 exploration well, located on the Ain Sifni PSC in the Kurdistan region of Iraq, has discovered a significant oil accumulation based on the results of drilling, wireline logs and sidewall core sampling. The objective of the Simrit-2 exploration well was to test the western extent of the Ain Sifni anticline. The well has reached a depth of 3,700 m. Preliminary analysis of data collected during and following drilling indicated that the well has encountered an estimated 409 m of net oil pay in Cretaceous, Jurassic and Triassic age reservoirs. No oil water contact has been established in the target reservoirsⁱⁱ.

Heritage Oil has also announced the discovery of gas at its Miran West-3 well in the Kurdistan region of Iraq. The company revealed that a new high pressure gas bearing interval was encountered above the main Jurassic reservoir, which flowed dry gas at rates as high as 17.5 million cubic feet per day. The interval is a separate reservoir from those identified to date within the Miran structure. Heritage Oil is working to further understand its distribution using existing well data and recently mapped 2D and 3D seismic programs. The Miran West-3 well is currently at a depth of 3,600 m and testing operations of the interval have been completed. The company said following the test, drilling would continue to the main Jurassic targetsⁱⁱⁱ.

By late 2012, Gulf Keystone, has confirmed oil discovery in the Sheikh Adi Block in the Kurdistan region of Iraq. The “Sheikh

i Oil Voice, 26/3/2012

ii Oil Voice, 17/4/2012

iii Oil Review Middle East, 8/4/2012

Adi-2” exploration well, which is situated 1.45 km north of “Sheikh Adi-1” exploration well, was drilled to a total depth of 2,754 m and tested four reservoir zones . The four reservoir zones were tested at measured depth between 1,420 m and 1,700 m with an aggregate flow rate of 4,235 barrels of oil per day across the Upper Butmah, Adaiyah, Mus and Sargelu Formations in the Jurassic. Gulf Keystone is the operator of the block with 80% interestⁱ.

In **Libya**, Arabian Gulf Oil Co. made an oil and natural gas discovery in the Ghadames Basin about 150 km southwest of the capital Tripoli. The company made the find after drilling a 3,140 m deep exploration well. The initial production testing from Memouniat, Lower Acacus & Middle Acacua established an oil & gas flow as follows in **Table (D)**.

Table (D): Production Test Results

Well Name	Formation	Tested Interval (feet)	Net Pay (feet)	Choke Size (Inch)	Oil Rate bpd	Gas rate MMCF/D	Oil Gravity API
F1-NC4	Memouniat	10,000-10,020	20	½	38 Condensate	6.840	62
	Lower Acacus	8,972-8,983	11	½	1,248	0.999	37
		8,298-8,306	8	½	888	0.440	38
		8,111-8,119	8	½	1,050	1.012	39
	Middle Acacus	7,748-7,759	11	½	1,247	1.620	39
		7,701-7,713	12	½	937	3.786	39

In **Egypt**, Apache Corporation reported in Q1 2012, that approval of seven new development leases in the Faghur Basin has enabled the

company to add 5,200 barrels per day of new production in Egypt's Western Desert. The company is pushing Jurassic, Cretaceous and Paleozoic plays farther south and westward in the Faghur Basin. "Neilos-2", Apache's latest Faghur Basin well, test-flowed 6301 barrels of oil, and 4.2 million cubic feet of gas per day. The well, 800 m north from the "Neilos-1X" discovery, was drilled to appraise the north flank of the Neilos Field and logged about 10 m of net pay in the Jurassic Safa reservoirⁱ.

Kuwait Energy PLC and its partner, the Egyptian General Petroleum Corporation (EGPC), announced a new oil discovery, the "El Salmiya-1" well, in the Abu Sennan concession located in the Western Desert in Egypt. The company said that this is the fourth exploration success in the Abu Sennan concession. The "El Salmiya-1" well initial testing showed commercial flow rates of 400 barrels of oil per day at the level of the Abu Roash "E" member, while the Abu Roash "C" member level showed rates of 2500 barrels of oil per day and 17 million standard cubic feet of gas per day. The total tested flow rate was approximately 5,600 barrels of oil equivalent per day. This discovery brings the total number of oil, gas, and condensate discoveries made by Kuwait Energy in Egypt, since 2008, to 16 discoveries, four of which were made in Area A.

Kuwait Energy has previously announced in early 2012, a new oil discovery in Egypt's "Ahmad-1X" well, located in the Gulf of Suez's area, A concession. The company said that the newly discovered well was drilled to 2,110 m depth. The initial test recorded a flow rate of 890 barrels of oil equivalent per day from the Kareem Formation level. Kuwait Energy is the operator of Area A and holds a 70%

ⁱ Oil Voice, 26/3/2012



working interest. Omani Petrogas E&P holds the remaining 30% interestⁱ.

In Q2 2012, Eni has made a significant oil discovery at the Emry deep exploration prospect, located in the Meleiha concession, in the Western Desert of Egypt, 290 km south west of Alexandria. The “Emry Deep 1X” well led to the discovery of oil and was drilled to a total depth of 3,628 m. The well encountered over 76 m of net pay in multiple good- quality sandstones of the Lower Cretaceous “Alam El Bueib” Formation. During production tests the well flowed 3,500 barrels per day of high quality oil (41° API) and 1 million standard cubic feet per day of associated gas. The discovery was estimated to range between 150 and 250 million barrels of oil in place and will require further appraisal drilling to accurately evaluate the reservesⁱⁱ.

Dana Petroleum PLC. announced it has completed two successful exploration wells in North Zeit Bay: “East Matr-1X” and “North Matr-1X”.

“East Matr-1X”, which was spudded on 25 February 2012, reached the upper interval of Rahmi sand in the Kareem Formation, the well tested oil and gas, with a maximum stabilized flow rate of 6,153 barrels of oil and 6.29 million standard cubic feet of gas per day.

“North Matr-1X” exploration well, was spudded on April 3rd, and penetrated the Kareem Formation. The well-tested oil and gas at a rate of 3,630 barrels of oil and 4.35 million standard cubic feet per day constrained by surface testing facilitiesⁱⁱⁱ.

i Kuwait Energy PLC., Official Website 3/3/2012

ii Oil Voice, 28/5/2012

iii Oil Voice, 15/4/2012

In Q3 2012, BP Egypt announced the “Taurt North” and “Seth South” gas discoveries in the North El Burg offshore concession, in Nile Deltaⁱ. These were the fourth and fifth discoveries made by BP in the concession following “Satis-1” and “Satis-3”. The two wells were drilled in water depths of 110 and 78 m respectively. The wireline logs, fluid samples and pressure data confirmed the presence of gas in one Pleistocene interval in “Taurt North” and two “Plio-Pleistocene” intervals in “Seth South”.

British Gas (BG) has made a new gas discovery offshore at the block (8B) of Al Burj offshore concession in the Mediterranean, the Egyptian Ministry of Petroleum said. The discovery is about 5.2 km northeast of Ras Al-Bar in water depth of 11 m. The well was drilled to a depth of 2,775 m into the Miocene stratum following a detailed 3D seismic study. The gas discovery at “Harmatan Deep-1” was expected to flow at 39 million standard cubic feet per day, with 1,039 barrels per day of associated condensate. Reserves were estimated at 123 billion cubic feet of gas and 6.1 million barrels of condensateⁱⁱ. The discovery is the first for BG, which operates the concession and controls 70% of it. Petronas holds the remaining 30%.

By late 2012, Dana Gas said it was preparing a development plan for a discovery of 4- 6 billion cubic feet of gas in place, its second 2012 and its 23rd since 2006 in Egypt’s onshore Nile Delta. “West Sama-1” discovery is near the “Sama-1” and “Sama-2” dry gas discoveries in the Mio- Pliocene Abu Madi Formation. The latest new field discovery came after the announcement of commencement of Dana Gas’ joint- venture, the Egyptian Bahrain Gas Derivatives Co. NGL extraction plant at Ras Shukheir. Dana Gas produces gas as

i Oil Voice, 28/8/2012

ii Egyptian Ministry of Petroleum, official website, 20/7/2012



operator at 11 Nile Delta fields, the company produced 77.67 billion cubic feet of gas and 2.6 million barrels of liquids in 2011, bringing the company to be Egypt's sixth largest gas producerⁱ.

In **Oman**, Tethys Oil said "Maha-1" exploration well which was drilled in an area not covered by 3D seismic, went down to a total depth of 1465 m, minor oil shows were encountered, but the oil saturation was too low to be produced and a subsequent sidetrack encountered even less saturation. The well has been suspended to enable further studies in the futureⁱⁱ. **Table (E)** summarizes the available information about some of OAPEC members' discoveries.

Table (E): Available information about some OAPEC members' discoveries in 2012

Country	Block/ Field/ Well	Type of Discovery	Well Depth m	Test Results	Reserves
Tunisia	Sidi Dhaher-1	Oil		897 bpd	
Algeria	OGB-1	Oil		485 bpd	
	BOG-1	Oil		553- 1870 bpd	
	NEY-1	Oil- Gas			
Saudi Arabia	Al-Shoor	Gas		5.2- 10 MM scfpd	
Syria	Khurbet East 102	Oil- Gas		524 bpd Condensate 10.7 million scfpd Gas	19.2 million barrels in Butma Formation
Iraq	Mil Qasim-1	Oil	2425		
	Dima Field	Oil			
	Kurdamir-2	Light Oil		950 bpd Oil 7.3 million scfpd	
	Simrit-2	Oil	3700		
	Miran West-3	Gas		17.5 million scfpd	
	Sheikh Adi-2	Oil	2754	4235 bpd	
Libya	F1-NC4	Oil- Gas	3140		

ⁱOil and Gas Journal, 22/10/2012

ⁱⁱOil Voice, 16/1/2012

Country	Block/ Field/ Well	Type of Discovery	Well Depth m	Test Results	Reserves
Egypt	Neilos-2	Oil- Gas		6301 bpd Oil 4.2 million scfpd Gas	
	El Salmiya-1	Oil- Gas		2900 bpd Oil 17 million scfpd Gas	
	Ahmad-1X	Oil	2110	890 boe/d	
	Emry Deep 1X	Oil- Gas	3628	3500 bpd 1 million scfpd Gas	150- 250 million barrels (STOIP)
	East Matr-1X	Oil- Gas		6153 bpd Oil 6.29 million scfpd Gas	
	North Matr-1X	Oil- Gas		3630 bpd Oil 4.35 million scfpd Gas	
	Taurt North	Gas			
	Seth South	Gas			
	Block (8 B)	Gas	2755		123 Billion cubic feet Gas 6.1 million barrels Condensate
	West Sama-1	Gas			4- 6 billion cubic feet (in place)

On the global scale, more than 77 new discoveries were found, 45 of oil and 32 of gas. The size of the discoveries ranged between small, medium, large and giant. Some of the large discoveries are highlighted herein below:

In **Tanzania**, BG and Ophir Energy have declared their fourth gas discovery offshore southern Tanzania for a total mean gross recoverable resource of nearly 7 trillion cubic feet of gas in the four wells. Preliminary evaluation of results from the fourth discovery well, “Jodari-1”, indicated a gross recoverable resource of 2.5 to 4.4 trillion cubic feet of gas. The well was drilled in 1,150 m of water 39 km off the coast.



The partners made three more discoveries in early 2012, namely: Chaza-1 on block 1 and Chewa-1 and Pweza-1 on block 4. BG Group is operator with 60% interest, and Ophir Energy has 40%. The next target for drilling is Mzia-1 on block 1, about 23 km north of the new discoveryⁱ.

ExxonMobil and Statoil ASA have in turn made a gas discovery in “Mafia Deep” sub-basin through the “Zafarani-1” wildcat located in block 2 which covers an area of 5500 sq km, the well was drilled in 2582 m of water to a total depth of 5150 m. wireline logs suggested 5 trillion cubic feet of gas in placeⁱⁱ.

In USA, Chesapeake Energy announced a significant new discovery in the Anadarko Basin to the west of Oklahoma. Chesapeake owns approximately 121 sq km exploration play. The company has completed 2 horizontal wells in the Hogshooter Formation. The “Thurman Horn 406H” exploration well was drilled to a vertical depth of approximately 3,000 m with a lateral section of approximately 1,500 m. During its first eight days of stabilized production, the well averaged daily production of 5,400 barrels of oil, 1,200 barrels of natural gas liquids and 4.6 million standard cubic feet of gas, totaling about 7,350 barrels of oil equivalent per day. The 2nd well “Meek 41 9H”, was drilled to a vertical depth of 3,100 m with a lateral section of 1,450 m. During its first 27 days of stabilized production, the well averaged daily production of 1,300 barrels of oil, 365 barrels of NGL and 1.4 million standard cubic feet of gas, which in total equals some 1,900 barrels of oil equivalent per dayⁱⁱⁱ.

In India, Oil & Natural Gas Corp. Ltd (ONGC) has discovered the third largest reservoir in Mumbai High at a development well

i Oil and Gas Journal, 26/3/2012

ii Oil and Gas Journal, 17 & 24/2/2012

iii World Oil, 4/6/2012

that found a new pool in “D1” Field offshore western India. ONGC estimated initial oil in place at D1 at 600 million barrels, but after the new pool discovery the company has hiked the estimate to 1 billion barrels. D1, in 85- 90 m of water 200 km west of Mumbai, consists of four blocks: D1-4, D1-12, D1-14, and D1-2/5. The first well in the D1-4 block was drilled in 1976. The low gas- oil ratio and the then- understanding of the reservoir led to a slow pace of exploration and appraisal, and 12 wells were drilled in two phases. After completion of phase 2, the field peaked at 17,500 barrels per day of oil in 2009. While its 2012 output declined to 12,500 barrels per day. The company has set an integrated development plan for the D1- 4 and D1- 14 blocks that is expected to raise production to 36 thousand barrels per day in 2013.

The first development well on the D1-14 block, was spudded in May 2012, the total depth of the well, reached 2,830 m and 142 m of oil-bearing zone was encountered. On full development of D1 Field, production is expected to rise to 60 thousand barrels per day. The additional development program will start yielding results from January 2014. Meanwhile, ONGC reported 3 other discoveries in Q3 2012, namely:

The “Madnam-3” well on NELP CY-ONN-2002/2 block in the Cauvery Basin in Tamil Nadu, produced 725 barrels per day of 35.7° API oil and 406 million standard cubic feet of gas.

The “Mukkamala-1” exploratory well on “PEL 1B” block in the Krishna-Godavari Basin, flowed 1.36 million standard cubic feet of gas.

The “BH-86” well on PEL WOFF 123 block offshore Mumbai, produced 280 barrels per day of oil and 4 million standard cubic feet of gasⁱ.

ⁱ Oil and Gas Journal, 14/8/2012



In **Malaysia**, Petronas has reported two major gas discoveries offshore Sarawak. The “Kuang North- 2” exploration well in block “SK316” penetrated a 636 m gas column. The well was drilled to a total depth of 3,223 m. Preliminary assessments indicated gas- in-place for the field at about 2.3 trillion cubic feet.

The 2nd discovery “Tukau Timur Deep-1” well was drilled to a depth of 4,830 m and discovered 12 gas- bearing reservoirs with total net gas sand of 183 m. Preliminary assessments indicated the total gas- in-place for field at about 2.1 trillion cubic feet. This is the first completed high- pressure/ high- temperature well in Sarawak and is also the deepest vertical well to be drilled by Petronasⁱ.

Lundin Petroleum has also made a significant offshore gas discovery at the “Tembakau-1” well in the PM307 block. Located 30 km to the west of the nearest oil and gas infrastructure, the well was drilled to a total depth of 1,565 m in 67 m of water. The company did not provide any reserves estimatesⁱⁱ.

In **Mexico**, and during the inauguration of a gas-processing complex, Mexican President announced the discovery of a major onshore oil field in Pozo Navegante in Tabasco state. He confirmed the discovery of a 315 m column of light crude oil. The hydrocarbon formation is located at a depth of 6,500 m and is estimated to contain between 50 and 500 million barrels of reserves, a major oil field and one of the largest discoveries on the mainland in the past decade. It is Pemex’s 3rd major find in 2012, following 2 deepwater discoveries in the Gulf of Mexico. The Mexican President announced on August 2012 that Pemex has made a major oil discovery through the well “Trion 1” which is located 39 km south of the border territory with the USA,

i Offshore Magazine, 27/11/2012

ii Offshore Technology, 22/11/2012

and was drilled in deep water to at a total depth of 4,500 m. The preliminary evaluation of the discovered reserves (P3) was given as 400 million barrels of light oil. On October 2012, Pemex confirmed a deep-water discovery of light oil at its “Supremus-1” well, in Gulf of Mexicoⁱ. The discovery, located in the Perdido Fold Belt was estimated to hold between 75 and 125 million barrels of oil.

In **Norway**, a group led by Statoil has made a second giant oil and gas discovery in the Barents Sea off Norway at Havis, close to the group’s early 2011 Skrugard discovery on the same licenseⁱⁱ. Statoil estimated 400- 600 million barrels of oil equivalent recoverable from the two discoveries, including 200- 300 million barrels of oil equivalent from the new one. The “7220/7-1” well penetrated a 48 m gas column and a 128 m oil column. Havis was drilled to 2,200 m vertical depth in 365 m of water. President and chief executive officer of Statoil, said “the discovery’s volume and reservoir properties make it Skrugard’s twin”, the Skrugard and Havis open up a new petroleum province in the north Sea”, he added. Oil and natural- gas companies are expected to invest a record \$31 billion in Norway 2012.

In **Mozambique**, in Q3 2012, Eni said a giant discovery at its Mamba North East-2 prospect well added 10 trillion cubic feet of gas to the potential of Mozambique’s offshore “Area 4”. The well went to 5,365 m in 1,994 m of water 60 km off the Capo Delgado coast. The well encountered 200 m of gas pay in stacked multiple high-quality Oligocene, Eocene, and Paleocene sandsⁱⁱⁱ.

In Q4 2012, Eni has made two more giant gas discoveries in the Mamba complex in Area 4. The “Mamba South 2” and “Coral 2” delineation wells

i World Oil, 27/11/2012

ii Oil and Gas Journal, 9/1/2012

iii Oil and Gas Journal, 1/8/2012

have added 6 trillion cubic feet to the Area 4 reserves base, bringing them to estimated 23 trillion cubic feet in place, with potential of 75 trillion cubic feet throughout the Mamba complex. “Mamba South 2” was drilled in ,1918 m of water to a total depth of 4,300 m, and intersected 60 m of gas pay in good quality Oligocene reservoirs. While “Coral 2” was drilled in 1,950 m of water to a total depth of 4,725 m and encountered 140 m of gas pay in good quality Eocene reservoirsⁱ.

In general, including OAPPEC members discoveries, available data suggested 103 discoveries in 2012, 63 of which were oil and 40 were gas discoveries. It is notable that 16 discoveries were covered by 1,000 m of water, as shown in **Table (F)**. This clearly indicates the increasing importance of deep waters as an exploration target, supported by technology development in different aspects of petroleum industry.

Table F: Some discoveries in deep water in 2012

Country	Discovery	Water Depth (m)
Australia	Satyr-3	1,120
Angola	Azul-1	923
Brazil	1-BRSA-1080-CES	2,129
	Carcara	2,027
	1-BRSA-925A RJS	1,747
	4-GLF-31-ESS	1,520
Tanzania	Zafarani-1	2,582
	Joradi-1	1,150
Côte d’Ivoire	Paon-1X	2,193
Ghana	Pecan-1	2,513
	Sankofa East-1X	825
Occupied Palestine	Tanin	1,554
Mozambique	Mamba North East-2	1,994
	Coral-2	1,950
	Mamba South-2	1,918
USA	Big Bend	2,195

i Offshore Magazine, 6/12/2012

2. Oil and Natural Gas Reserves

Estimates indicate a rise in oil reserves in 2012, nevertheless, such estimates declined in some countries.

2- 1 Oil Reserves:

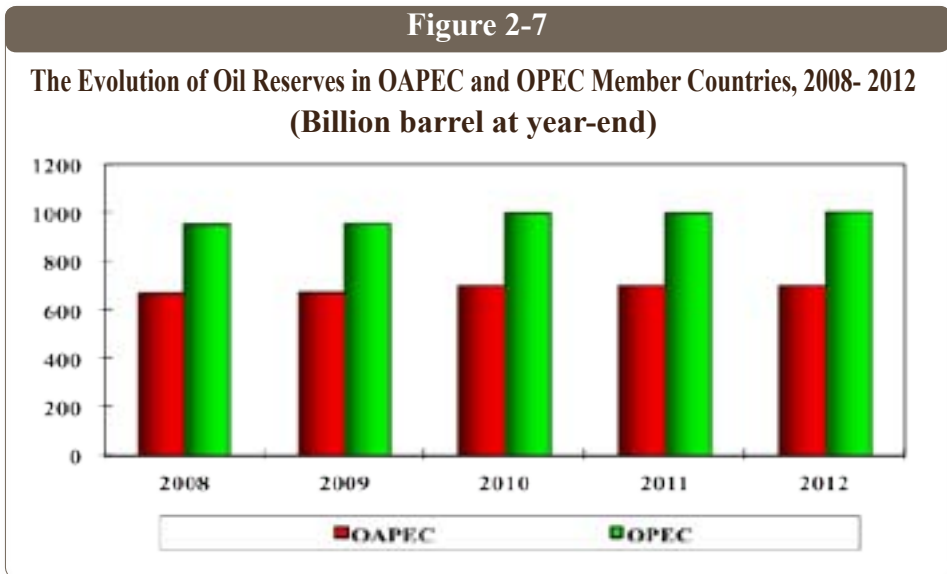
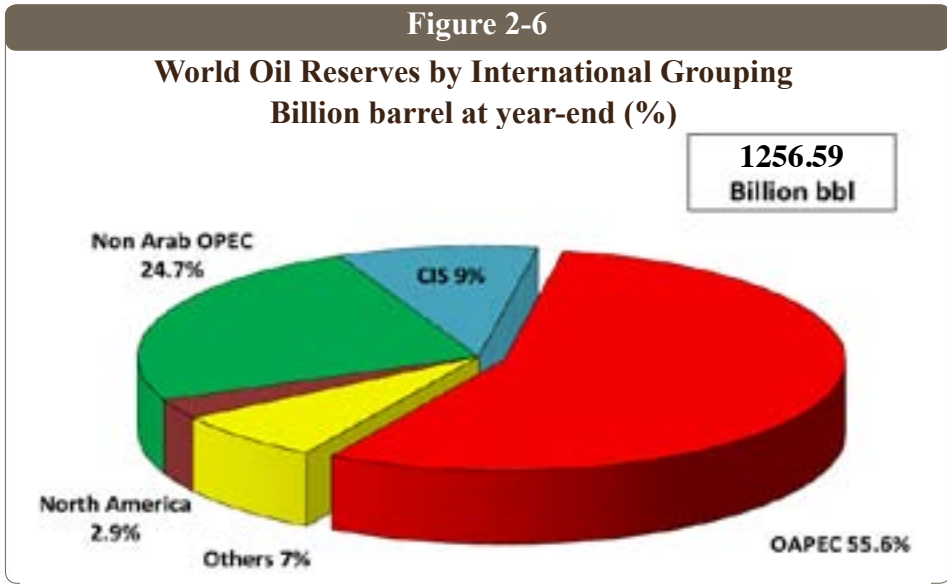
World oil reserves were estimated at 1256.6 billion barrels in 2012, with a slight increase of 1% from 2011 estimates of 1244.7 billion barrels, that is an increase of about 11.9 billion barrels. These figures exclude non-conventional resources such as tar sand and shale oil in Canada. They also exclude the bitumen and very heavy oils in Venezuela.

2-1-1 OAPEC Members and Other Arab Countries

Oil reserves of OAPEC or non- OAPEC Arab countries remained with no significant change in 2012 comparing to 2011. Oil reserves of OAPEC members was estimated at about 700 billion barrels, while total Arab oil reserves reached 714 billion barrels. It is notable that Iraqi oil reserves declined from 2010 estimates of 142.3 billion barrels to 141.4 billion barrels in 2011, and 141.35 billion barrels in 2012. On the contrary, Libyan oil reserves increased from 47.1 billion barrels in 2009, to 48 billion barrels in 2011, and to 48.01 billion barrels in 2012.

It is important to emphasize that Arab countries oil reserves estimates include the previous estimates of the Sudan reserves, no official figures indicate the accurate reserves after the official separation of South Sudan. Many sources affirm that nearly 75% of Sudan reserves are within the South Sudan territories, which leads initially to consider Sudan oil reserves at 1.68 billion barrels, thus, Arab countries combined reserves could be about 712.5 billion barrels.

Figure (2-6), shows the contribution rate of OAPEC members and other international groups in global oil reserves by 2012 end, while Figure (2-7) shows OAPEC members' proven oil reserves evolution between 2008 and 2012.



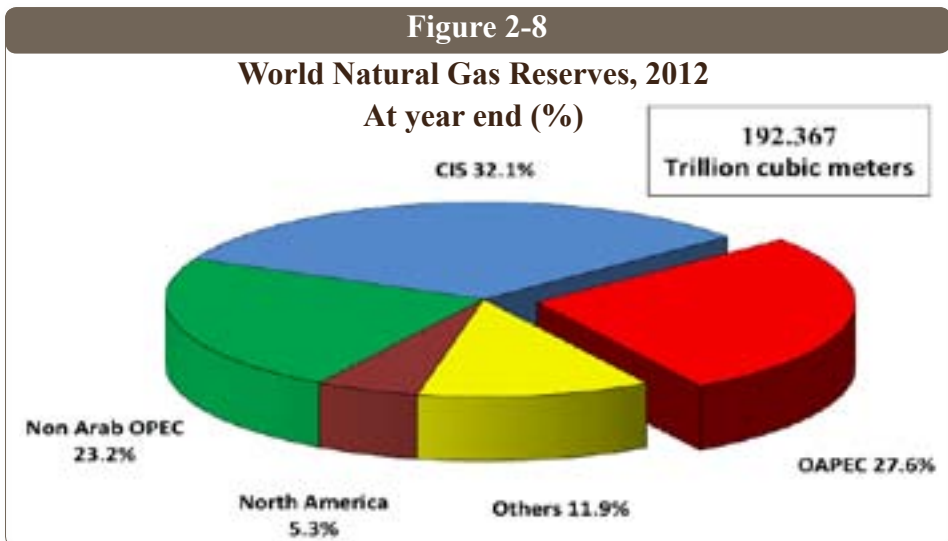
2-1-2 International Groups and other Countries:

Oil estimates increased in many countries in 2012, like the UK, where reserves were estimated at more than 3 billion barrels comparing to 2.8 billion barrels in 2011. Norway reserves were increased marginally by 0.9% to 5.37 billion barrels. Considerable increasing in proved reserves estimates was recorded in CIS where Russian Federation reserves increased by 33.3% from 60 billion barrels in 2011 to 80 billion barrels in 2012. Reserves in China increased by 5.2% from 20.35 billion barrels in 2011, to 25.6 billion barrels in 2012.

On the other hand, estimates have shown a decline in many countries reserves like Brazil, Mexico, Peru, Hungary, Albania, Netherlands, Italy, Germany, France, Denmark, Austria, Pakistan, New Zealand and others. [Table \(2-4\)](#).

2-2 Natural Gas Reserves:

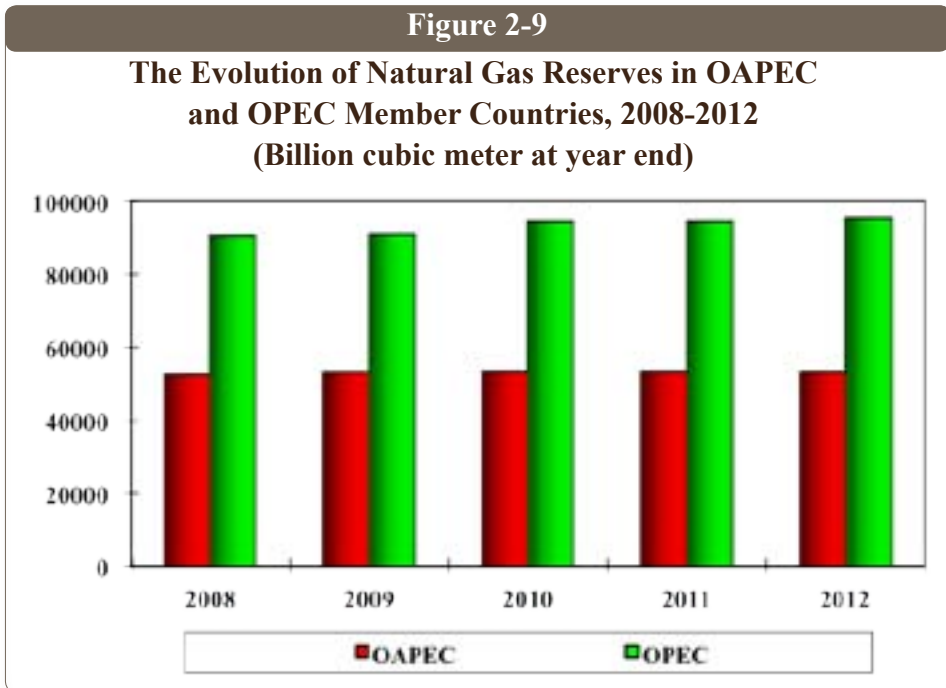
World natural gas reserves were estimated at more than 192.36 trillion cubic meters in 2012, representing a slight increase from 2011 estimations of 191 trillion cubic meters. [Figure \(2-8\)](#) and [Table \(2-5\)](#).





2-2-1 OAPEC Members and other Arab Countries

Estimates show that OAPEC members' gas reserves increased from 52.75 trillion cubic meters in 2011, to more than 53 trillion cubic meters in 2012. OAPEC members' natural gas reserves represented 27.6% of total world reserves in 2012, while the Arab countries together accounted for about 28.4% of world reserves at the end of 2012. **Figure (2-9)** shows mainly the real evolution of natural gas reserves at member countries and OPEC ones as well in the period 2008- 2012.



2-2-2 International Groups and other States:

Natural gas estimates increased in many countries around the world, available data shows that Iran gas reserves increased from 33 trillion cubic meters in 2011, to 33.6 trillion cubic meters in 2012. Gas reserves increased also in Norway by 63 billion cubic meters

and in Canada by 203 billion cubic meters. The reserves remarkably increased in the CIS and particularly in Russia and Azerbaijan, where reserves increased by 232 and 121 billion cubic meters respectively. Chinese gas reserves increased by 16.1% from 3.04 trillion cubic meters, to 3.5 trillion cubic meters. On the other hand, gas reserves estimates declined in the UK from 253 billion cubic meters in 2011, to 246 billion cubic meters in 2012. Such a decline could have been one of the reasons why the UK permitted the hydraulic fracturing in the unconventional gas reserves as early mentioned. No changes were recorded in the USA gas reserves estimates.

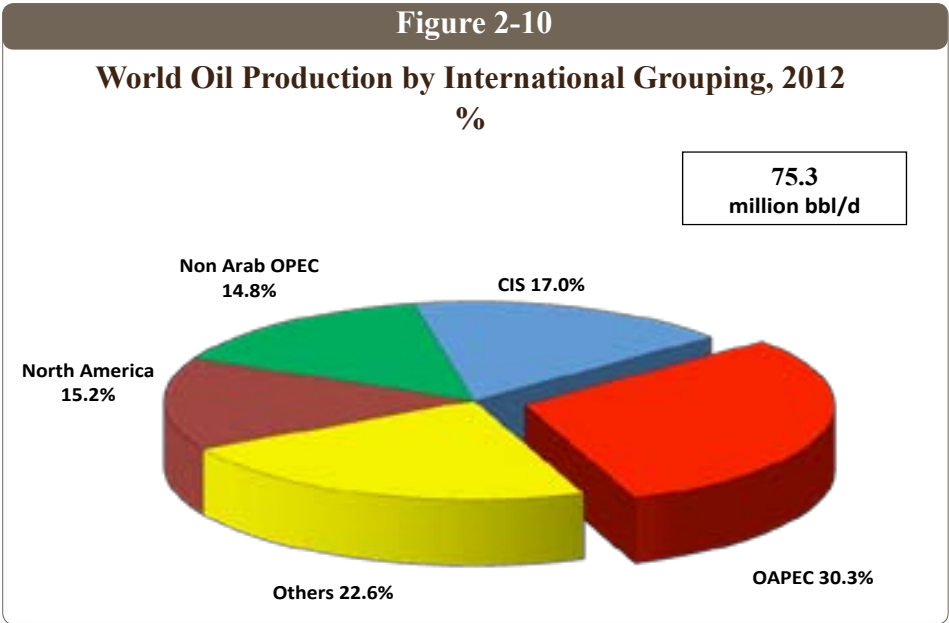
3. Hydrocarbon Liquids & Natural Gas Production

3-1 Hydrocarbon Liquid Production

Oil production covers both crude oil and condensates production, while hydrocarbon liquids production covers crude oil, condensates and natural gas liquids (NGLs) as well.

3-1-1 Oil Production

Estimates show that world oil production increased by 4.3% from 72.2 million barrels per day in 2011 to 75.3 million barrels per day in 2012. Natural gas liquids production was estimated at about 7.5 million barrels per day in 2011, which is 9.9% less than 2010 volumes. The total estimated production of hydrocarbon liquids in 2012 was about 82.8 million barrels per day, which is about 3 million barrels per day more than 2011 estimates. **Figure (2-10)** and **Table (2-6)**.

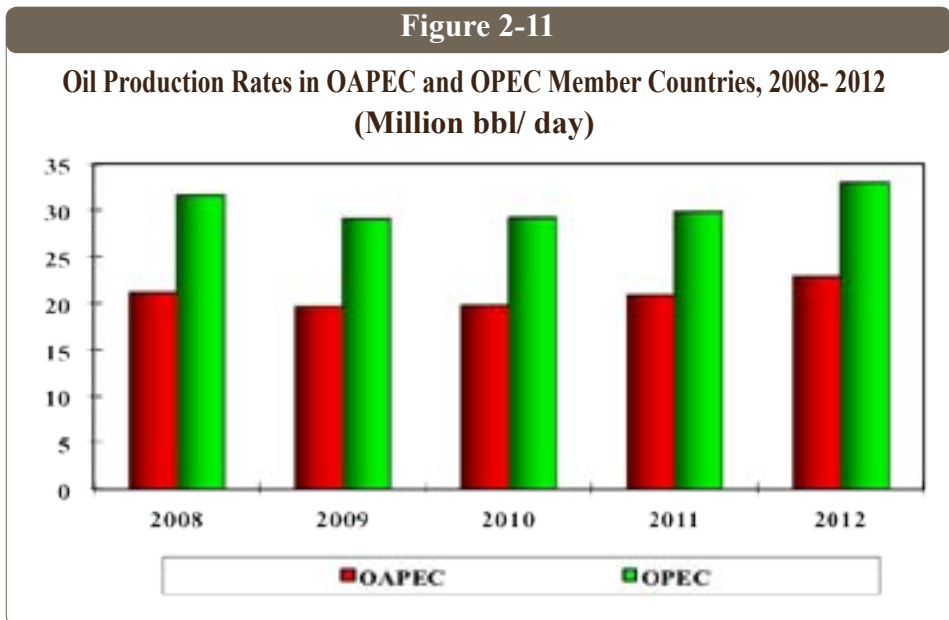


3-1-1-1 OAPEC Members and Other Arab Countries

Available figures show that oil production in member countries increased by 8.7% from 21 million barrels per day in 2011, to 22.8 million barrels per day in 2012. Oil production estimates of UAE suggested an increased from 2.5 million barrels per day in 2011, to 2.65 million barrels per day in 2012. Oil production in Bahrain reached 190 thousand barrels per day in 2012 comparing to a previous estimate of 187.7 thousand barrels per day in 2011. Saudi oil production increased from 9.24 million barrels per day in 2011, to 9.86 million barrels per day in 2012. Iraqi oil production increased by 9.7% to about 3 million barrels per day, Kuwaiti oil production increased by 9.11% comparing with 2011 to reach about 3 million barrels per day in 2012. Libyan oil production increased from 589.5 thousand barrels per day in 2011 to about 1.4 million barrels per day in 2012.

On the other hand, estimates show that Tunisian oil production decreased from 70 thousand barrels per day in 2011 to 66.8 thousand barrels per day in 2012. Algerian oil production declined from 1.26 million barrels per day in 2011 to 1.22 million barrels per day in 2012. Syria affected by its geopolitical situation, has witnessed a dramatic decline by 48.5% as its oil output was estimated at 170 thousand barrels per day in 2012 comparing to 330 thousand barrels per day in 2011. A decline of about 3.5% was recorded in Egypt where oil flow was about 671 thousand barrels per day in 2012 comparing to about 700 thousand barrels per day in 2012.

As for the non- OAPEC countries, Oman's oil production increased for the 5th consecutive year to reach 813 thousand barrels per day in 2012 comparing to 790 thousand barrels per day in 2011, while Yemeni oil output declined by more than 9% to 172 thousand barrels per day in 2012. **Figures (2-10), (2-11) and Table (2-6).**



3-1-2 NGL Production in OAPEC Members and the World

Estimates show that world natural gas liquids production slumped by 7.5% from 8.9 million barrels per day in 2010, to 7.5 million barrels per day in 2010. Data indicate that NGL production in UAE declined from 214 thousand barrels per day 2010, to 94 thousand barrels per day in 2011. In Algeria, NGL production declined by 5.4% from 514 thousand barrels per day in 2010, to 486 thousand barrels per day in 2011. Libyan NGL output declined by 72.7% from 70 thousand barrels per day in 2010 to 19 thousand barrels per day in 2011, Kuwaiti NGL declined by 25% from 40 thousand barrels per day in 2010 to 30 thousand barrels per day in 2011. Egypt NGL production declined in turn by 31% from 158 thousand barrels per day in 2010 to 109 thousand barrels per day in 2011.

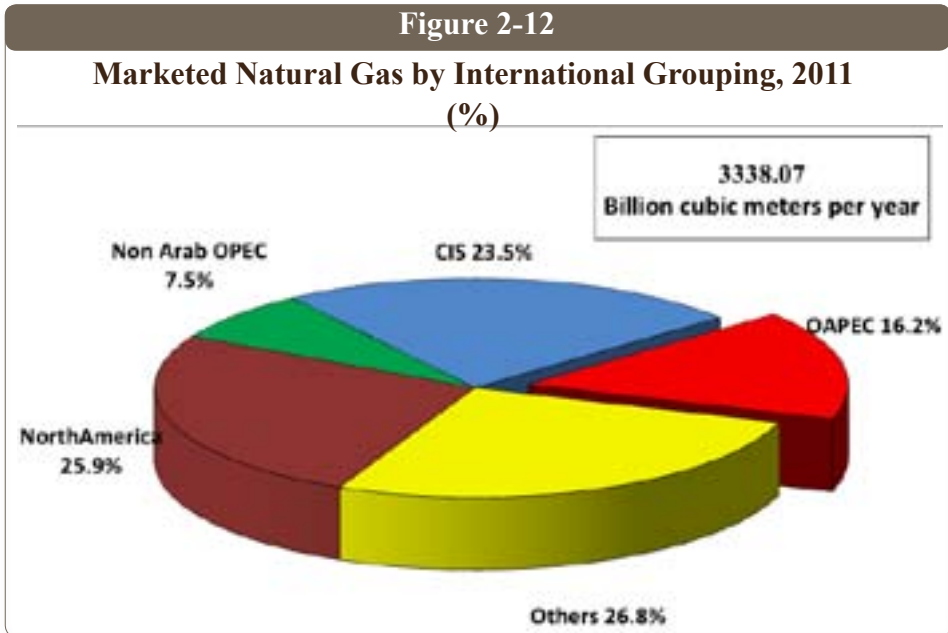
Production of NGL increased in Saudi Arabia by 4.9% from 962 thousand barrels per day in 2010, to more than 1 million barrels per day in 2011. The production increased in Iraq from 44 thousand barrels per day in 2010 to 45 thousand barrels per day in 2011.

On the other hand, Omani and Yemeni NGL outputs remained unchanged between 2010 and 2011.

Generally speaking, OAPEC members' production of NGL declined by 1.5% between 2010 and 2011, while Arab countries NGL production declined by 1.4%. The share of OAPEC members' NGL production comparing to world NGL production increased from 35% in 2010 to 37.6% in 2011. **Table (2-7).**

3-2 Marketed Natural Gas

The quantities of natural gas marketed worldwide increased by 1.2% in 2011, from 3,280 billion cubic meters in 2010, to 3338 billion cubic meters in 2011. **Figure (2-12)** and **Table (2-8)**.

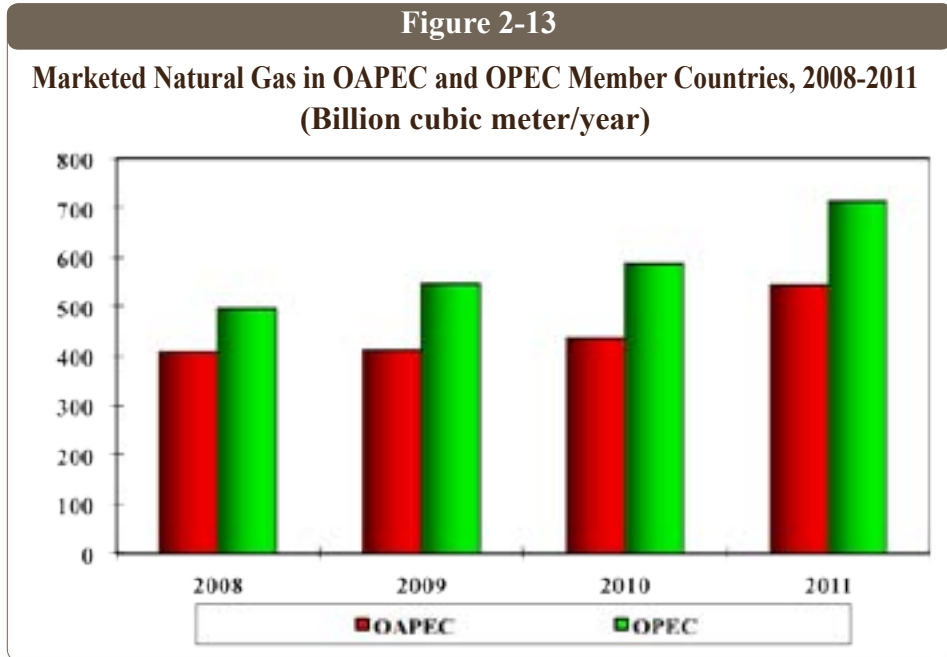


3-2-1 OAPEC Members and other Arab countries:

Marketed natural gas of OAPEC members increased by 2% rose from 532.4 billion cubic meters in 2010 up to 542.4 billion cubic meters in 2011, indicating rises in UAE by 2%, in Bahrain by 2%, in Saudi Arabia by 5.3%, in Iraq by 4.7%, in Qatar by 11%, and in Kuwait by 15.4%. On the other hand, marketed natural gas declined in Tunisia by 13.8%, in Algeria by 1.3%, in Syria by 9%, in Libya by 66.2%, and in Egypt by 0.5%. OAPEC members' total share of world marketed natural gas was 16.2% in 2011, which is almost the same of 2010 share of 16.1%.



As for non-OAPEC Arab countries, marketed natural gas increased in Oman by 11.3% from 25.77 billion cubic meters in 2010, to about 28.7 billion cubic meters in 2011. Arab countries collective share of world-marketed natural gas increased from 16.9% in 2010 to 17.1% in 2011. **Figures (2-13)** and **Table (8-2)**.

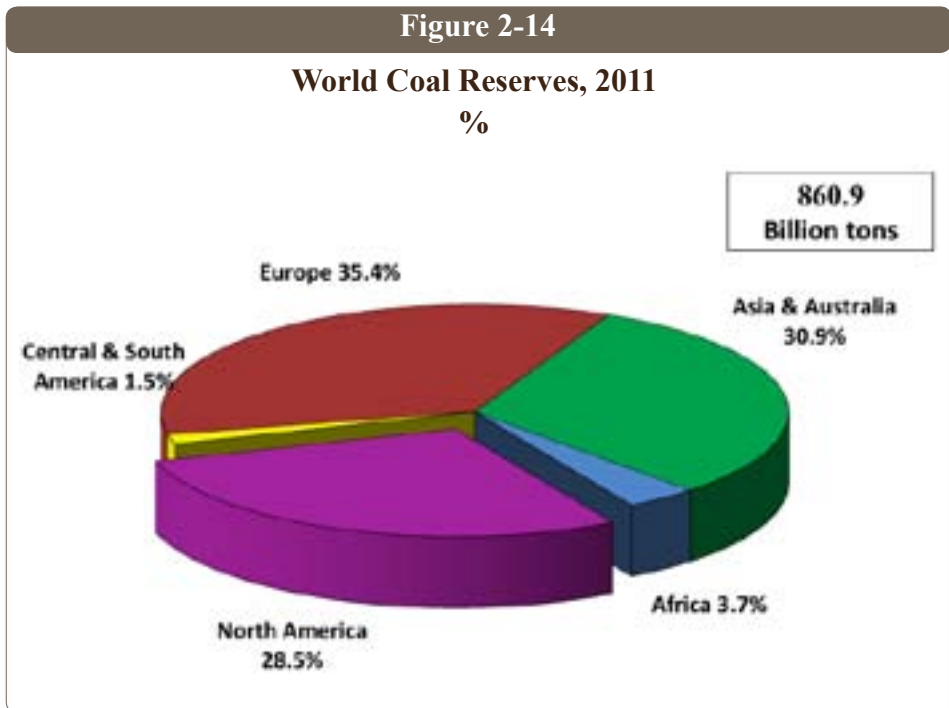


II. COAL

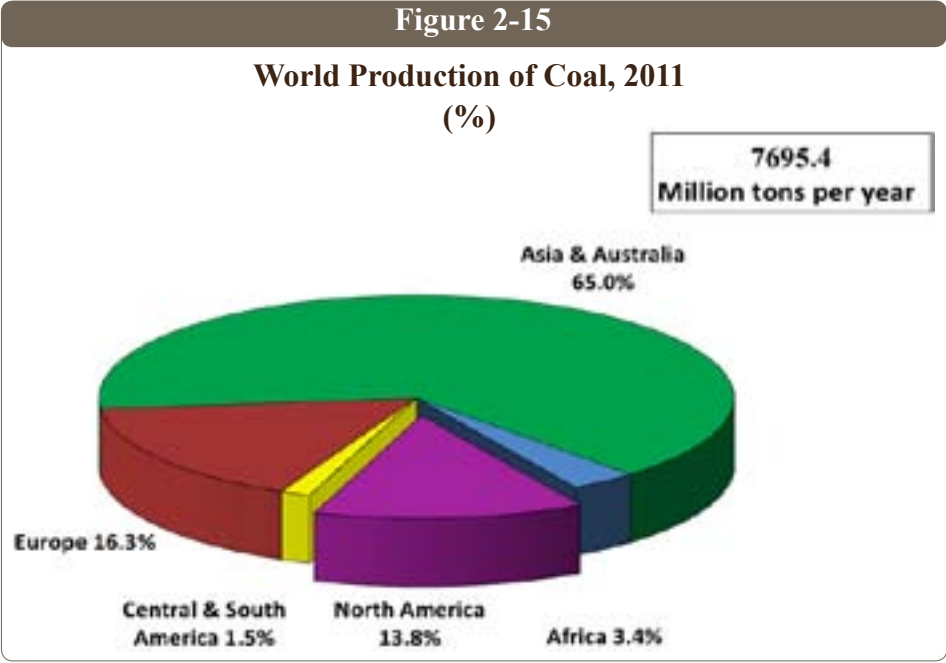
No significant change was recorded concerning world coal reserves in 2011 comparing to 2010, estimates hovered at about 860.9 billion tons **Table (2-9)**.

The world's largest coal reserves are concentrated in the USA which accounted for about 27.6% of world reserves at the end of 2011, followed by FSU countries with 26.5%, China with 13.3%, Australia with 8.9%, and India with 7%.

As for world grouping **Figure (2-14)**, the largest coal reserves are located in Europe with a share of 35.4% of which FSU countries hold 26.5%, followed by Asia and Australia with 28.47%. the rest of the reserves (5.27%) are divided among South America, Africa and Middle East.



World coal production increased by 6.1% between 2010 and 2011 to reach 7695 million tons, of which 3520 million tons produced by China, followed by the USA with about 993 million tons, which represented about 13% of world coal production. **Table (2-10)** and **Figure (2-15)**.



The UAE has taken a unique step in this regard, as a coal- fired power plant worth \$408 million will be constructed by Utico Middle East and coal power company Shanghai Electric in the emirate of Ras Al Khaimah (RAK) in the UAE.

An agreement was signed in RAK between the two companies, for the construction of the power plant, which will generate 270 MW of power, and has been slated for completion in 2015. One of the prime focuses of the project would be on aiding the development and economic growth of the region, while creating jobs and opportunities for the people. The project, which will utilize clean coal fired technology, is also expected to lower power tariffs in the emirate. The project will be a milestone development in Ras Al Khaimah as clean coal- fired energy is acknowledged to be even cleaner and greener than gas- reliant energy. By deploying Shanghai Electric’s superior

energy- efficient, and tried and proven technology for the plant, flue gas desulphurisation and carbondioxide emissions will be reduced almost to zero. As per the terms of the agreement, Shanghai Electric will be equity partner in the project as well as provide the knowhow and technology, while Utico Middle East will be joint equity partner along with several investorsⁱ.

III. NUCLEAR ENERGY

The number of nuclear power reactors in operation worldwide reached 435 reactors in 2011, with a total design capacity of 368,791 MWe, along with 65 reactors that were under construction with a total capacity of 619,62 MWe. **Table (2-11)**.

The UAE is pushing forward to utilize nuclear energy, Korea Electric Power Corp (KEPCO) has announced that construction work on four- UAE nuclear power plants will commence on July 2012, a date that was four months earlier than had originally been planned, with completion scheduled for 2017- 2020. KEPCO would begin talks with the UAE in 2013 to build another 4 nuclear plantsⁱⁱ, that could be completed by 2021.

The Emirates Nuclear Energy Corporation (ENEC) officially commenced the construction of the UAE's first nuclear energy plant in July 19 2012, by pouring the first nuclear safety concrete for Barakah Unit to the west of Abu Dhabi.

ENEC has also awarded contracts worth \$3 billion to 6 global companies to supply nuclear fuel services for the UAE's first nuclear power plant in Barakahⁱⁱⁱ.

i Technical Review Middle East, 7/10/2012

ii Technical Review Middle East, 3/4/2012

iii Technical Review, Middle East, 15/8/2012



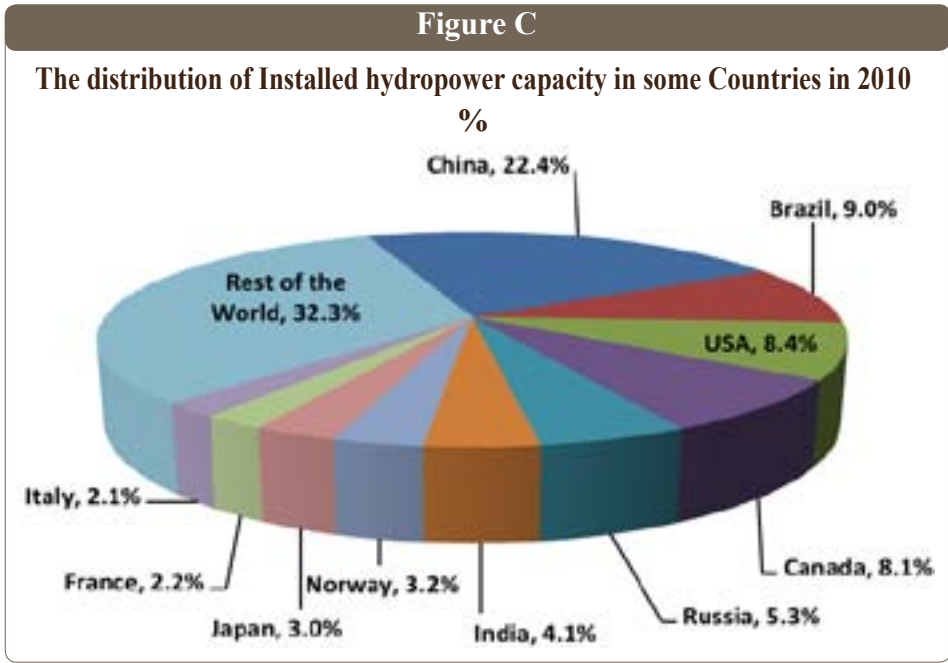
The contracted fuel will enable the plant to generate up to 450 million MW over the first 15 years of its operations from 2017. Fuel supply programmed to begin in 2014-2015. ENEC is aiming to build four 1,400 MW nuclear power plants with the first plant set to operate in 2017 and the remaining 3 units scheduled to come online in 2018, 2019 and 2020.

IV. RENEWABLE ENERGY SOURCES

1. Hydropower

1-1 Hydropower in the World

China came first among the countries that utilise hydropower resources, its total installed hydropower capacity amounted to 210 GW at the end of 2010, followed by Brazil with total installed hydropower capacity of 84 GW, while the USA came in third place with total installed hydropower capacity of 79 GW in 2010 compared with 75 GW in 2009. In Japan, total installed hydropower capacity declined to 28 GW in 2010 compared with 47.2 GW in 2009. France total installed hydropower capacity reached 25.3 GW in 2009, and declined to 21 GW in 2010. World total installed hydropower capacity reached 936 GW in 2010 **Table (2- 12)**. **Figure (C)** shows Installed hydropower capacity in some Countries in 2010.



1-2 Hydropower in the Arab Countries

Many Arab countries are using hydropower for electricity generation, like Egypt, Iraq, Morocco, Sudan, Syria, and others.

Statisticsⁱ show that consumption of hydroelectricity was 0.2 terra watt hour (TWh) in Algeria in 2010, it increased to 0.4 TWh in 2011. Hydroelectricity consumption increased by 5.8% in Egypt from 12.9 TWh in 2010, to 13.7 TWh in 2011. Morocco said hydroelectricity fulfilled 33% of the country's electricity consumption in 2010, which is about 8,691 GWhⁱⁱ.

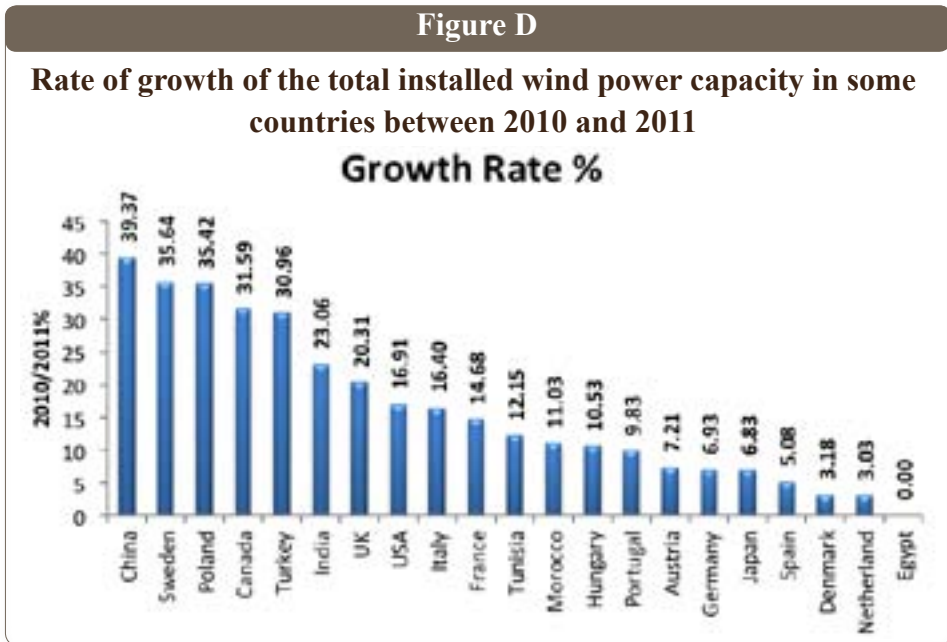
ⁱ BP, Statistical Review of World Energy, 2012.

ⁱⁱ Morocco strategy in the field of renewable energy, Office National de l'Electricité et de l'Eau Potable, 4th conference of Arab Union of Electricity, Doha, Qatar, January 2013.

2. Wind Energy

2-1 Wind Energy in the World

The total installed wind power capacity in the world increased by an average rate of 20% from about 200 GW in 2010 to 237.7 GW in 2011, indicating a recovery of the world wind energy market. The average growth of installed wind power capacity in China was 39.4% between 2010 and 2011, with a total installed wind power capacity of 62.4 GW. Sweden followed with an average growth rate of 35.6%, and then came Canada, Turkey, India, and the other countries as illustrated in **Figure (D)**.



2-2 Wind Energy in the Arab Countries

Total installed wind power capacity in Egypt reached 552 MW in 2011 with no change from 2010, while installed wind power capacity in Tunisia increased by 12% to reach 277 MW in 2011 comparing to

247 MW in 2010. Total installed wind power capacity in Morocco amounted to 292 MW, an increase by 11% from 263 MW in 2010.

Morocco has shown an increasing interest in wind power, Siemens Energy has won its first wind turbine orders with a total capacity of 100 MW for two wind power plants in Morocco. Siemens signed a contract for the delivery of a total of 44 wind turbines for the Haouma and Fom El Oued wind power plants. The scope of supply includes the delivery, installation and commissioning of the wind turbines, as well as a five-year service contract for each project. Both wind power plants are expected to commence commercial operation by summer 2013. The Moroccanⁱ government has set the target of raising the contribution of renewable energy to 20%- 40% of national electricity consumption by 2020.

In April 2012, the government granted another tenderⁱⁱ for wind project to a consortium led by EDF Energies. The new wind project will be equipped with 50 Alstom wind turbines of 3 MW each and will have a capacity of 150 MW.

By late 2012, the African Development Bank approved loans worth \$ 800 million with the objective of spurring further private investment in Morocco's wind and solar sectorsⁱⁱⁱ.

In December 2012, it was announced that the European Investment Bank offered €50 million (about \$66 million) to Lebanon to support the financing of renewable energy and energy efficiency investments in the country by private players^{iv}.

i Technical Review Middle East, 28/1/ 2012.

ii Technical Review Middle East, 18/4/2012.

iii Clean Technology Business Review, 5/9/2012.

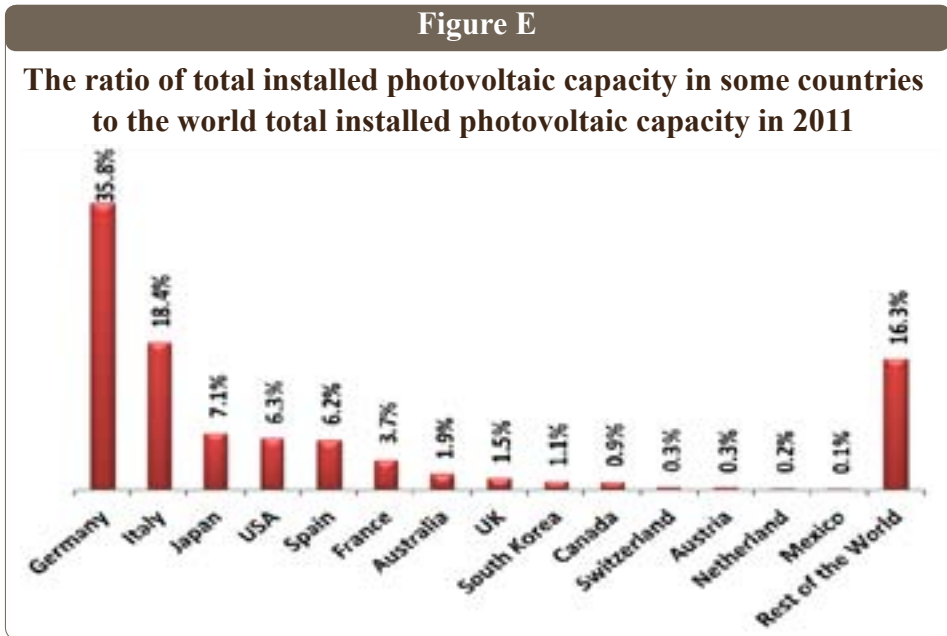
iv Clean Technology Business Review, 28/12/2012.

3. Solar Energy

A- Solar Energy in the World

World total installed photovoltaic capacity increased by 75.5% in 2011 from 39.5 GW in 2010 to 69.4 GW in 2011. Germany came first with total installed photovoltaic capacity of 24.8 GW, which represents an increase of 43% between 2010- 2011. Italy followed by a remarkable increase of 265%, from 35.02 GW in 2010. Japan total installed photovoltaic capacity reached 49.14 GW, then came the USA with a total installed photovoltaic capacity of 43.89 GW, while Spain came in the fifth place with a total installed photovoltaic capacity of 42.7 GW. **Table (2-14).**

Figure (E) shows the rank of some countries according to the percentage of total cumulative installed photovoltaic capacity in 2011.



B- Solar Energy in the Arab Countries

Solar energy is available in the Arab countries at more rates that exceed other countries of the world. Some Arab countries are taking serious steps in this field.

In UAE, Dubai Electricity and Water Authority (DEWA) has awarded a German consultant group an engineering contract for the overall development of the Mohammed bin Rashid Al Maktoum Solar Park. The group together with its branch office in Abu Dhabi will build a 1,000 MW capacity solar park at estimated cost of \$3.2 billion. The Solar Park is located in Seih Al Dahal on the Dubai to Al Ain Roadⁱ.

Masdar Institute of Science and Technology and Siemens Energy have signed an agreement for cooperation in solar energy technology research and development to enhance the use of photovoltaic panels in the region. The joint testing and research activities will focus on investigating the properties of solar panel coatings. The surfaces of solar panels at photovoltaic panels plants are regularly exposed to sand, dust and other forms of soiling. Under the agreement, Siemens and Masdar Institute will focus on developing coatings and soiling models for these modules that require less water for cleaning than current high performance modules. Another target of these joint efforts is to identify commercial applications for solar technology in the Middle East regionⁱⁱ.

In Bahrain, Petra Solar, Bahrain Petroleum Company (BAPCO) and Bahrain's National Oil & Gas Authority (NOGA) have come together to collaborate on a 5 MW solar energy project. The project will utilize smart grid technology developed by Petra Solar in order

i Technical Review Middle East, January, 2012.

ii Siemens Energy, official website, 18/1/2012.



to provide solar energy at several locations around Bahrain, including the Awali Town and the University of Bahrain. The project is expected to provide a strong Research and Development opportunity for Bahraini universities. The project marks the first step in a plan to build a powerful ecosystem based and will be the cornerstone for similar future applicationsⁱ.

In **Qatar**, Qatar Solar Technologies and Gasal QSC have signed a long- term hydrogen and nitrogen supply agreement. The agreement states that Gasal will invest into multiple high- purity hydrogen production units and extend and connect Qatar Solar Technologies to its industrial gas pipeline system in Ras Laffan Industrial City for nitrogen. Air Liquid Engineering will design and built the units, which will be commissioned and operated by Gasal through an extension of its pipeline system in Ras Laffanⁱⁱ that has been scheduled for completion in 2013.

In **Kuwait**, Kuwait Petroleum Corporation (KPC) and Kuwait Institute for Scientific Research (KISR) signed a contract to execute the second stage of a solar energy project costing KD 1.5 millionⁱⁱⁱ. The project aims to promote solar energy applications in electricity generating, the first stage of the project, concerned with studies and research, showed that solar energy bears a great promise as the best source of energy in Kuwait. The project is planned within the three coming years^{iv}.

In **Jordan**, Chinese solar energy firm Trina Solar has unveiled plans to build a \$200 million solar power project in the country. The

i Technical Review, Middle East, 8/8/2012.

ii Technical Review, Middle East, 13/8/2012.

iii About \$5.3 million, as per exchange rates of 20/1/2013.

iv Kuwait Times, 6/5/2012.

firm, which specializes in photovoltaic technology, said it is in the negotiations phase with the Jordanian Ministry of Energy over the project, which would be one of the first commercial solar energy initiatives in Jordan. Energy officials have entered negotiations with 20 of the firms to establish a series of small- to medium- scale solar and wind powerⁱ.

In **Oman**, Terra Nex Financial Engineering AG Switzerland and Middle East Best Select Group of Funds have announced plans for a major \$2 billion project to develop solar power resources within Oman to generate 400 MW of electricity. Industrial plants to manufacture the solar panels and aluminium frames to be used by the power station will also be established for local consumption and exportⁱⁱ.

4. Geothermal Energy

A- Geothermal Energy in the World

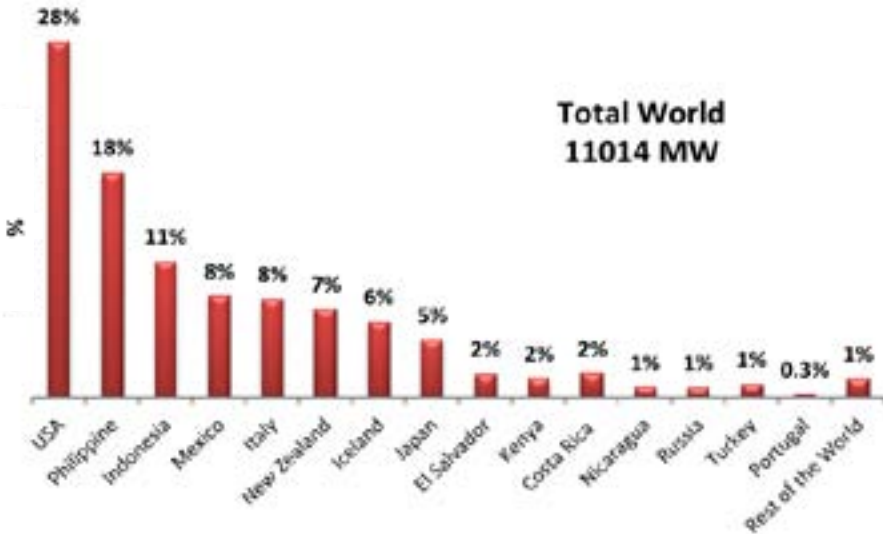
The installed geothermal capacity in the world amounted from 10,906.2 MW in 2010, to 11,014 MW in 2011 at an annual growth rate of 1%. **Table (2-15)**. USA ranked first in utilizing this type of power, its installed geothermal capacity increased by 0.3% from 2010 capacity to reach 3,122 MW in 2011. Total installed geothermal capacity increased in many countries like Iceland with 15.6%, Costa Rica with 25.3%, and Turkey with 21.3%. While total installed geothermal capacity declined in Mexico by 7.4%. **Figure (F)** shows the shares of installed geothermal capacity in some countries in 2011.

ⁱTechnical Review, Middle East, 18/7/2012.

ⁱⁱSolar Server, 15/1/2012

Figure F

Ratio of installed geothermal capacity in some countries to the world total installed geothermal capacity in 2011



B- Geothermal Energy in the Arab Countries

Geothermal Energy resources discovered in Arab countries are still limited, and geological surveys operations are not yet completed. Nevertheless, limited unexploited potentials have been found in Egypt, Jordan, Yemen, Syria, Saudi Arabia, Morocco, Tunisia, and Algeria.

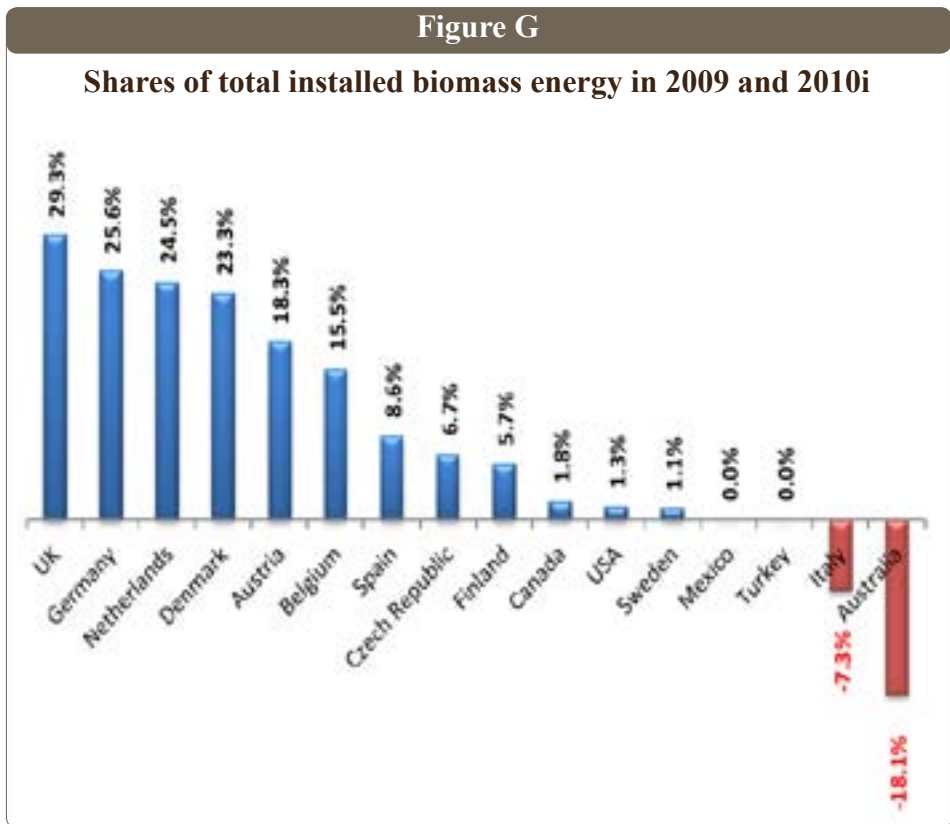
5. Solid Biomass Energy

A- Solid Biomass Energy in the World

USA ranked first in terms of installed solid biomass capacity, with about 7,361 MW in 2010 with an increase of 1.3% comparing to 2009. As for growth rate of total installed biomass capacity between 2009 and 2010, South Korea came first with a growth rate of 360%,

followed by UK with a growth rate of 20.3%. **Figure (G)** illustrates these shares among some members of IEA, where it is noted that installed capacities in some of these countries have not changed between 2009 and 2010, namely Mexico and Turkey, while the installed capacity decreased in Italy and Czech Republic.

Table (2-16) shows total installed biomass energy in some countries in 2009 and 2010.



ⁱ South Korea growth rate of 360% was hidden to keep a clear figure.

B- Solid Biomass Energy in the Arab Countries

Solid biomass energy is used in the Arab countries for cooking and heating, especially in remote areas. However, these resources are relatively limited due to the semi- arid nature of most lands. Agricultural, animal and timber waste are the main source of biomass.

6. Ocean and Tidal Power

According to the IEA statistics, the total installed ocean and tidal power energy in its member countries in 2010 remained unchanged from previous years where France accounted for 240 MW, Canada for 20 MW, and the UK for 1 MW.

TABLES
OF CHAPTER TWO



Table 2-1
Seismic Surveys Worldwide,
2008-2012
(Crew /Month)

	2008	2009	2010	2011	2012*
Canada	17	10	9	14	13
USA	72	63	63	67	69
Latin America	32	35	40	37	34
Europe	34	32	30	35	39
CIS	48	45	47	47	46
Middle East	29	34	33	35	33
Africa	63	72	71	60	54
Far East	61	70	68	68	67
World total	356	361	361	363	355

Sources:

* World Oil, Jan. 2012.

World Geophysical News is no longer being produced by IHS.

Table 2-2
Average Number of Active Rigs Worldwide, 2008-2012
(Rig)

	2008	2009	2010	2011	2012*
Canada	379	206	351	423	364
USA	1878	1075	1541	1875	1943
Latin America	384	356	383	424	427
Europe	98	84	94	118	116
Middle East	280	252	265	292	351
Africa	65	62	83	78	95
Asia/Pacific	252	243	269	256	241
World total	3336	2278	2986	3466	3537

Sources:

- *Baker Hughes, Jan. - Oct. 2012.



Table 2-3
Petroleum Discoveries in OAPEC Members and
other Arab Countries, 2008 - 2012

	2008		2009		2010		2011		2012*	
	Oil	Gas	Oil	Gas	Oil	Gas	Oil	Gas	Oil	Gas
Algeria	2	9	4	12	3	10	-	2	3	-
Bahrain	-	-	-	-	-	-	-	-	-	-
Egypt	37	24	40	24	41	22	8	4	5	6
Iraq	-	-	3	1	1	1	2	1	6	1
Kuwait	3	2	1	1	1	-	2	1	-	-
Libya	8	-	6	-	6	1	1	-	1	-
Qatar	-	-	-	-	-	-	-	-	-	-
Saudi Arabia	-	-	5	5	-	1	-	-	-	1
Syria	2	-	5	1	2	-	3	1	1	-
Tunisia	2	2	1	-	1	4	4	1	2	-
UAE	-	-	1	-	1	-	-	-	-	-
Total OAPEC	54	37	66	44	56	39	20	10	18	8
Oman	3	1	5	-	1	2	1	-	-	-
Sudan	-	-	-	-	-	-	-	-	-	-
Morocco	-	1	-	3	-	1	-	3	-	-
Yemen	1	-	9	1	-	-	-	2	-	-
Total Arab countries	58	39	80	48	57	42	21	15	18	8

* Preliminary estimates.

Sources:

- Energy Resources Monitor, OAPEC, Several issues, 2012

Table 2-4
Arab and World Oil Reserves, 2008-2012
(Billion barrels at year end)

	2008	2009	2010	2011	2012*	(%) Change 2012/2011
Algeria	12.20	12.20	12.20	12.20	12.20	0.0
Bahrain	0.12	0.12	0.12	0.12	0.12	0.0
Egypt	4.40	4.50	4.30	4.30	4.40	2.3
Iraq	115.00	115.00	142.30	141.40	141.35	(0.0)
Kuwait	101.50	101.50	101.50	101.50	101.50	0.0
Libya	44.27	46.42	47.10	48.00	48.01	0.0
Qatar	25.41	26.70	25.50	25.30	25.30	0.0
Saudi Arabia	264.06	264.59	264.59	265.40	265.41	0.0
Syria	2.50	2.50	2.50	2.50	2.50	0.0
Tunisia	0.43	0.43	0.43	0.43	0.43	(1.2)
UAE	97.80	97.80	97.80	97.80	97.80	0.0
Total OAPEC	667.69	671.76	698.34	698.95	699.01	0.01
Oman	5.50	5.50	5.50	5.50	5.50	0.0
Sudan	6.70	6.70	6.70	6.70	6.70	0.0
Yemen	2.67	2.67	2.67	2.67	3.00	12.4
Total Arab countries	682.56	686.63	713.21	713.82	714.22	0.06
Angola	9.50	9.50	13.05	10.47	10.47	0.0
Ecuador	6.51	6.51	7.21	8.24	8.24	0.1
Iran	137.62	137.62	151.17	154.58	154.58	0.0
Nigeria	37.20	37.20	37.20	37.20	37.20	0.0
Venezuela	99.40	99.40	99.40	99.40	99.40	0.0
Total non-Arab OPEC	290.23	290.23	308.03	309.89	309.89	0.0
Total OPEC	950.47	954.44	999.02	1001.49	1001.46	(0.0)

Cont./



Table 2-4 Cont.

	2008	2009	2010	2011	2012*	(%) Change 2012/2011
Brazil	12.62	12.80	12.86	13.99	13.15	(5.9)
Canada	4.94	6.10	6.10	5.60	6.00	7.1
China	16.30	20.35	20.35	20.35	25.58	25.7
CIS	98.80	98.90	98.90	98.90	119.06	20.4
Of which: Azerbaijan	7.00	7.00	7.00	7.00	7.00	0.0
Kazakhstan	30.00	30.00	30.00	30.00	30.00	0.0
Russian Federation	60.00	60.00	60.00	60.00	80.00	33.3
Turkmenistan	0.60	0.60	0.60	0.60	0.60	0.0
Uzbekistan	0.59	0.59	0.59	0.59	0.59	0.0
Mexico	10.50	10.40	10.40	10.16	10.24	0.7
Norway	6.68	6.68	5.67	5.32	5.37	0.9
UK	3.41	3.08	2.86	2.83	3.10	9.7
USA	21.32	19.12	19.12	20.68	20.68	(0.0)
Rest of the world	23.55	33.83	39.19	43.17	29.31	(32.1)
World total	1170.91	1188.12	1236.69	1244.70	1256.59	1.0
OAPEC/ world (%)	57.0	56.5	56.5	56.2	55.6	
Arab countries/ world (%)	58.3	57.8	57.7	57.3	56.8	
OPEC/ world (%)	81.2	80.3	80.8	80.5	79.7	

* Preliminary estimates.

Notes: Parentheses denote negative figures.

- Total world reserves excluding :

A - Bitumen and extra heavy oil in Venezuela (111.8 billion barrels).

B - Unconventional reserves of Canada such as the oil sands estimated by BP at about (27 billion barrels).

- 50% of the Divided Zone's oil reserves is added to each of Saudi Arabia and Kuwait oil reserves.

Sources:

- BP Statistical Review of World Energy, June 2012 .

- Oil & Gas Journal, 1 Jan. 2013.

- OPEC Annual Statistical Bulletin, 2012.

Table 2-5
Arab and World Natural Gas Reserves, 2008-2012
(Billion cubic meters at year end)

	2008	2009	2010	2011	2012*	(%) Change 2012/2011
Algeria	4504	4504	4504	4504	4504	0.0
Bahrain	92	92	92	92	92	0.0
Egypt	2152	2186	2466	2045	2186	6.9
Iraq	3170	3170	3158	3158	3158	0.0
Kuwait	1784	1784	1784	1784	1784	0.0
Libya	1540	1549	1495	1547	1547	(0.0)
Qatar	25466	25366	25201	25030	25202	0.7
Saudi Arabia	7570	7920	8016	8150	8151	0.0
Syria	285	285	285	285	285	0.0
Tunisia	65	65	65	65	65	0.0
UAE	6091	6091	6091	6091	6091	0.0
Total OAPEC	52719	53012	53157	52751	53065	0.6
Oman	950	950	950	950	950.0	0.0
Sudan	85	85	85	85	85.0	0.0
Yemen	479	479	479	479	479.0	0.0
Total Arab countries	54233	54526	54671	54265	54579	0.6
Angola	272	310	310	310	366	18.1
Ecuador	8	8	8	8	7	(12.5)
Iran	29610	29610	33090	33090	33612	1.6
Nigeria	5292	5292	5110	5110	5154	0.9
Venezuela	4983	5065	5525	5525	5525	0.0
Total non-Arab OPEC	40165	40285	44043	44043	44664	1.4
Total OPEC	90290	90669	94292	94307	95101	0.8

Cont./



Table 2-5 Cont.

	2008	2009	2010	2011	2012*	(%) Change 2012/2011
Brazil	365	364	366	417	396	(5.2)
Canada	1640	1754	1754	1727	1930	11.7
China	2265	3036	3036	3036	3524	16.1
CIS	56458	61301	61301	61301	61675	0.6
Of which: Azerbaijan	850	850	850	850	991	16.6
Kazakhstan	2407	2407	2407	2407	2407	(0.0)
Russian Federation	47573	47573	47573	47573	47805	0.5
Turkmenistan	2662	7504	7504	7504	7504	0.0
Uzbekistan	1841	1841	1841	1841	1841	(0.0)
Mexico	373	360	339	490	488	(0.5)
Norway	2313	2313	2039	2007	2070	3.1
UK	343	292	256	253	246	(2.8)
USA	6732	6928	6928	7717	7717	0.0
Rest of the world	11475	17095	17160	15786	15079	(4.5)
World total	176362	188254	191893	191042	192367	0.7
OAPEC/world (%)	29.9	28.2	27.7	27.6	27.6	
Arab countries/ world (%)	30.8	29.0	28.5	28.4	28.4	
OPEC/world (%)	51.2	48.2	49.1	49.4	49.4	

* Preliminary estimates.

Notes: Parentheses denote negative figures.

- Indonesia's oil reserves are not included in OPEC figures.

Sources:

- Oil & Gas Journal, 1 Jan. 2013.

- OPEC Annual Statistical Bulletin, 2012.

Table 2-6
Arab and World Hydrocarbon Liquids Production, 2008-2012
(Thousand b/d)
First : Crude Oil Production

	2008	2009	2010	2011	2012*	(%) Change 2012/2011
Algeria	1356.0	1216.0	1189.8	1257.0	1220.6	(2.9)
Bahrain	182.2	182.4	181.1	190.0	190.0	0.0
Egypt	528.2	564.3	554.3	695.0	671.0	(3.5)
Iraq	2280.5	2336.2	2358.1	2668.0	2927.5	9.7
Kuwait**	2676.0	2261.6	2312.1	2659.0	2976.0	11.9
Libya	1721.5	1473.9	1486.6	589.5	1375.0	133.2
Qatar	842.8	733.0	733.4	810.0	734.8	(9.3)
Saudi Arabia	8532.0	8184.0	8165.6	9241.0	9866.1	6.8
Syria	390.0	375.1	387.0	330.0	170.0	(48.5)
Tunisia	85.0	82.0	78.8	70.0	66.8	(4.6)
UAE	2572.2	2241.6	2323.8	2517.0	2653.9	5.4
Total OAPEC	21166.4	19650.1	19770.6	21026.5	22851.7	8.7
Oman**	672.0	712.0	755.0	790.0	813.0	2.9
Sudan	457.0	475.2	480.0	470.0	470.0	0.0
Yemen	293.5	284.1	275.0	190.0	172.5	(9.2)
Total Arab countries	22588.9	21121.4	21280.6	22476.5	24307.2	8.1
Angola	1896.3	1896.3	1691.2	1660.0	1674.0	0.8
Ecuador	501.4	464.7	473.3	489.0	503.0	2.9
Iran^	4055.7	3557.1	3544.5	3623.0	3749.0	3.5
Nigeria	2017.4	1842.0	2048.3	2119.0	2463.0	16.2
Venezuela	3118.5	2878.1	2853.6	2383.0	2779.0	16.6
Total non-Arab OPEC	11589.3	10638.2	10610.9	10274.0	11168.0	8.7
Total OPEC	31570.3	29084.5	29180.3	30015.5	32921.9	9.7
Cont./						



Table 2-6 Cont.

	2008	2009	2010	2011	2012*	(%) Change 2012/2011
Brazil	1810.1	1957.0	2049.7	2094.0	2017.5	(3.7)
Canada	2164.0	2034.0	2016.8	2082.8	2272.1	9.1
China	3802.8	3802.0	4049.0	4090.2	4228.1	3.4
CIS	12429.5	12661.0	13220.5	13264.5	12792.0	(3.6)
Of which: Azerbaijan	914.1	1014.0	1027.4	931.0	861.3	(7.5)
Kazakhstan	1385.0	1285.8	1600.0	1600.0	1559.5	(2.5)
Russian Federation	9768.4	9919.3	10147.6	10325.0	9935.0	(3.8)
Turkmenistan	220.0	220.0	220.0	220.0	215.4	(2.1)
Uzbekistan	105.0	85.0	87.0	86.0	70.0	(18.6)
Mexico	2807.7	2620.7	2594.3	2561.3	2549.0	(0.5)
Norway	2020.0	2017.0	1875.0	1739.4	1491.2	(14.3)
UK	1343.6	1292.7	1196.2	993.6	695.3	(30.0)
USA	4940.2	5309.0	5486.0	5642.5	6633.8	17.6
Rest of the world	18553.1	7613.0	7431.4	6986.0	7148.7	2.3
World Oil Production	84049.2	71066.0	71810.4	72204.8	75302.9	4.3
OAPEC/world (%)	25.2	27.7	27.5	29.1	30.3	
Arab countries/world (%)	26.9	29.7	29.6	31.1	32.3	
OPEC/world (%)	37.6	40.9	40.6	41.6	43.7	
Second : Natural Gas Liquids Production						
OAPEC Members	3314.2	2698.4	2857.0	2814.1	2814.1	
Arab countries	3412.2	2818.4	2982.0	2939.1		
World	9223.0	8980.0	8093.0	7489.0	7489.0	
Third : Total Hydrocarbon Liquids Production						
World Total	93272.2	80046.0	79903.4	79693.8	82791.9	
OAPEC/world (%)	26.2	27.9	28.3	29.9		
Arab Countries/ world (%)	27.9	29.9	30.4	31.9		

* Preliminary estimates.

** Official sources.

^ Five month average, Jan. - May 2012

Notes:

- Parentheses denote negative figures.

- 50% of the Divided Zone's oil production is added to each of Saudi Arabia and Kuwait oil production.

- Indonesia's production is not included in OPEC figures.

Sources:

- Oil & Gas Journal, 1 Jan. 2013.

- OPEC Annual Statistical Bulletin 2012

- JODI Data Initiative

Table 2-7
NGL Production in OAPEC Members and other Arab Countries,
2008 - 2011
(Thousand b/d)

	2008	2009	2010	2011	(%) Change 2011/2010
Algeria	1100	572	514	486.0	(5.4)
Bahrain	10	10	10	11.0	10.0
Egypt	164	158	158	109.0	(31.0)
Iraq	30	41	44	45.0	2.3
Kuwait	30	40	40	30.0	(25.0)
Libya	86	84	70	19.1	(72.7)
Qatar	200	636	835	1001.0	19.9
Saudi Arabia	1434	897	962	1009.0	4.9
Syria	10	10	10	10.0	0.0
UAE	250	250	214	94.0	(56.1)
Total OAPEC	3314	2698	2857	2814	(1.5)
Oman	88	100	105	105.0	0.0
Yemen	10	20	20	20.0	0.0
Total Arab countries	3412	2818	2982	2939	(1.4)
World total	9223	8980	8093	7489	(7.5)
OAPEC/world (%)	35.9	30.1	35.3	37.6	

Note:

* 2011 data are of official sources except for Syria and Yemen

Sources:

- Oil & Energy Trends, Annual Statistical Review, 2012.





Table 2-8
Arab and World Marketed Natural Gas,
2008 - 2011
(Million cubic meters/year)

	2008	2009	2010	2011*	(%) Change 2011/2010
Algeria**	86500	81426	83900	82800	(1.3)
Bahrain**	12600	9800	10200	10400	2.0
Egypt**	60994	62070	61600	61300	(0.5)
Iraq**	1880	9400	8600	9000	4.7
Kuwait**	12700	11489	11700	13500	15.4
Libya**	15900	22500	23400	7900	(66.2)
Qatar**	76981	119400	182400	202500	11.0
Saudi Arabia**	80440	78450	87660	92300	5.3
Syria	6000	6500	7800	7100	(9.0)
Tunisia	3300	3540	3830	3300	(13.8)
UAE	50240	48840	51282	52300	2.0
Total OAPEC	407535	453415	532372	542400	1.9
Oman**	25200	24496	25768	28692	11.3
Total Arab countries	432735	477911	558140	571092	2.3
Angola	680	690	733	752.0	2.6
Ecuador	260	296	330	241.0	(27.0)
Iran	116300	175742	187357	188753.0	0.7
Nigeria	32825	23206	28099	41323.0	47.1
Venezuela	20750	18430	19728	20769.0	5.3
Total non-Arab OPEC	170815	218364	236247	251838	6.6
Total OPEC	495456	589869	685189	712138	3.9
					Cont./

Table 2-8 Cont.

	2008	2009	2010	2011*	(%) Change 2011/2010
Canada	173400	161400	159800	160500	0.4
China	80300	85200	94800	102500	8.1
CIS	827300	719100	784780	785500	0.1
Of which: Azerbaijan	11000	14900	15100	14800	(2.0)
Kazakhstan	18700	17800	17600	19300	9.7
Russian Federation	601700	527500	588900	607000	3.1
Turkmenistan	66100	36400	42400	59500	40.3
Uzbekistan	62200	64400	59100	57000	(3.6)
Mexico	54000	58200	55278	52500	(5.0)
Norway	99200	103500	106350	101400	(4.7)
UK	69600	59600	57100	45200	(20.8)
USA	574400	593400	604100	651300	7.8
Rest of the world	578950	552826	641321	616241	(3.9)
World total	3060700	3029501	3297916	3338071	1.2
OAPEC/world (%)	13.3	15.0	16.1	16.2	
Arab countries/world (%)	14.1	15.8	16.9	17.1	
OPEC/world (%)	16.2	19.5	20.8	21.3	

* Preliminary estimates.

** Official sources.

Notes:

- Parentheses denote negative figures.
- Indonesia's production is not included in OPEC figures.

Sources:

- OPEC Annual Statistical Bulletin 2012.
- BP Statistical review of world energy full report 2012.





Table 2-9
World Coal Reserves, 2008 - 2011
(Billion tons at year end)

	2008	2009	2010	2011
North America	244.9	244.9	243.9	245.1
Canada	6.6	6.6	6.6	6.6
USA	238.3	238.3	237.3	237.3
Central & South America	16.2	16.2	13.7	12.5
Of which: Brazil	7.1	7.1	4.6	4.6
Colombia	6.8	6.8	6.7	6.7
Europe	272.2	272.2	304.6	304.6
Of which FSU	222.2	222.2	224.5	228
Asia/Oceania	259.3	259.3	265.8	265.8
Of which: Australia	76.2	76.2	76.4	76.4
China	114.5	114.5	114.5	114.5
India	58.6	58.6	60.6	60.6
Indonesia	4.3	4.3	5.5	5.5
Africa	32.0	32.0	31.7	31.7
Of which: South Africa	30.4	30.4	30.2	30.2
Middle East	1.4	1.4	1.2	1.2
World total	826.0	826.0	860.9	860.9

Source:

- BP Statistical Review of World Energy, June 2009 , June 2010 , June 2011 and June 2012 .

Table 2-10
World Coal Production, 2008 - 2011
(Million tons/year)

	2008	2009	2010	2011
North America	1131.4	1038.5	1052.5	1060.9
Canada	68.4	63.3	67.9	68.2
USA	1063.0	975.2	984.6	992.8
Central & South America	98.4	92.9	96.5	117
Of which: Brazil	6.6	5.1	5.5	6.2
Colombia	73.5	72.8	74.4	85.8
Mexico	11.5	10.5	9.3	15.7
Europe	1250.9	1163.2	1194.3	1256.8
Of which: FSU	519.2	476.1	501.0	536.2
Asia/Oceania	4076.6	4331.1	4683.5	5000.1
Of which: Australia	399.2	413.2	423.9	415.5
China	2802.0	2973.0	3240.0	3520
India	515.9	556.0	569.9	588.5
Africa	255.7	253.6	256.9	259.5
Of which: South Africa	252.6	250.6	253.8	255.1
Middle East	1.6	1.2	1.2	1.2
World total	6822.1	6904.6	7254.6	7695.4

Source:

- BP Statistical Review of World Energy, June 2009 , June 2010 , June 2011 and June 2012.



Table 2-11
Nuclear Power Reactors in Operation and Under
Construction Worldwide
(End of 2011)

Country	Reactors in Operation		Reactors Under Construction		Electricity Supplied by Nuclear Reactors 2011	
	No. of	Capacity	No. of	Capacity	TWh*	(%) of Total
	Units	(MWe)	Units	(MWe)		Electricity
Argentina	2	935	1	692	5.9	5.0
Armenia*	1	375	-	-	2.4	33.2
Belgium	7	5927	-	-	45.9	54.0
Brazil	2	1884	1	1245	14.8	3.2
Bulgaria	2	1906	2	1906	15.3	32.6
Canada	18	12624	-	-	88.3	15.3
China	16	11816	26	26620	82.6	1.9
Czech Republic	6	3678	-	-	26.7	33.0
Finland	4	2716	1	1600	22.3	31.6
France	58	63130	1	1600	423.5	77.7
Germany	9	12068	-	-	102	17.8
Hungary	4	1889	-	-	14.7	43.3
India	20	4391	7	4824	29.0	3.7
Iran	1	915	-	-	0.1	-
Japan	50	44215	2	2650	156.2	18.1
Mexico	2	1300	-	-	9.3	3.6
The Netherlands	1	482	-	-	3.9	3.6
Pakistan	3	725	2	630	3.8	3.8

Cont./

Table 2-11 Cont.

Country	Reactors in Operation		Reactors Under Construction		Electricity Supplied by Nuclear Reactors 2008	
	No. of	Capacity	No. of	Capacity	TWh	(%) of Total
	Units	(MWe)	Units	(MWe)		Electricity
Romania	2	1300	-	-	10.8	19.0
Russia	33	23643	10	8188	162.0	17.6
Slovak Republic	4	1816	2	782	5.9	41.7
Slovenia	1	688	-	-	5.9	41.7
South Africa	2	1800	-	-	12.9	5.2
South Korea	21	18698	5	5560	147.8	34.6
Spain	8	7567	-	-	55.1	19.5
Sweden	10	9298	-	-	58.1	39.6
Switzerland	5	3263	-	-	25.7	40.9
Taiwan	6	4982	2	2600	40.4	19.0
Ukraine	15	13107	2	1900	84.9	47.2
UK	18	9920	-	-	62.7	17.8
USA	104	101240	1	1165	790.4	19.3
World total	435	368791	65	61962	2518.0	

* According to IAEA 2008, Armenia's reactors was mothballed, however, it is still listed in its statistics.

Source:

- IAEA, Nuclear Power Reactors in the World, 2012

Table 2-12
Installed Hydro Power Capacities in Some Countries
2010

	Installed Capacity (Megawatt-MWe)
Brazil	84000
Canada	76000
China	210000
France	21000
India	38000
Italy	20000
Japan	28000
Norway	30000
Russia	50000
USA	79000
Rest of the World	302000
World Total	936000

Source:
International Renewable Energy Agency, Hydropower, June 2012

Table 2-13
Installed Wind Power Capacities in Some Countries,
2010 and 2011

	Installed Capacity (Megawatt-MWe)		Annual Growth Rate 2011/2010 (%)
	2010	2011	
Austria	1013	1086	7.2
Canada	4011	5278	31.6
China	44781	62412	39.4
Denmark	3805	3926	3.2
Egypt	552	552	0.0
France	5961	6836	14.7
Germany	27191	29075	6.9
Hungary	323	357	10.5
India	13065	16078	23.1
Italy	5793	6743	16.4
Japan	2429	2595	6.8
Morocco	263	292	11.0
Netherlands	2241	2309	3.0
Poland	1231	1667	35.4
Portugal	3837	4214	9.8
Spain	20676	21726	5.1
Sweden	2141	2904	35.6
Tunisia	247	277	12.1
Turkey	1320	1729	31.0
United Kingdom	5378	6470	20.3
USA	40274	47084	16.9

Source:

- BP Statistical Review of World Energy, June 2012 .

Table 2-14
Cumulative Installed Photovoltaic Power Capacities
in Some Countries, 2010 and 2011

	Cumulative Installed Capacity (Megawatt-MWe)		Annual Growth Rate 2011/2010 (%)
	2010	2011	
Australia	571	1345	135.6
Austria	96	174	81.2
Canada	291	654	124.7
France	1054	2576	144.4
Germany	17370	24820	42.9
Italy	3502	12782	265.0
Japan	3618	4914	35.8
Mexico	31	41	31.0
Netherlands	88	118	34.1
South Korea	656	748	14.0
Spain	3915	4270	9.1
Switzerland	111	211	90.2
United Kingdom	70	1014	1348.6
USA	2534	4389	73.2
Rest of the world	1740.9	2981.0	71.2
World total	39529.0	69371.1	75.5

Source:

- BP Statistical Review of World Energy, June 2012 .

Table 2-15
Installed Geothermal Capacities in Some Countries,
2010 and 2011

	Installed Capacity (Megawatt-MWe)		Annual Growth Rate 2011/2010 (%)
	2010	2011	
Costa Rica	166.0	208	25.3
Iceland	575.1	665	15.6
Indonesia	1189.0	1189	0.0
Italy	863.0	863	0.0
Japan	502.0	502	0.0
Kenya	167.0	170	1.8
Mexico	958.0	887	(7.4)
New Zealand	769.0	769	0.0
Philippines	1966.0	1967	0.1
Portugal	29.0	29	0.0
Republic of Nicaragua	87.5	88	0.6
Russia	82.0	82	0.0
Salvador	204.4	204.4	0.0
Turkey	94.0	114	21.3
USA	3101.6	3112	0.3
Rest of the world	152.6	164.6	7.9
World total	10906.2	11014.0	1.0

Sources:

- BP Statistical Review of World Energy, June 2012 .

Table 2-16
Installed Solid Biomass Capacities in some Countries,
2009 and 2010

	Installed Capacity (Megawatt-MWe)		Annual Growth Rate 2010/2009 (%)
	2009	2010	
Australia	537	440	(18.1)
Austria	2024	2394	18.3
Belgium	554	640	15.5
Canada	1526	1553	1.8
Czech Republic	254	271	6.7
Denmark	704	868	23.3
Finland	1807	1910	5.7
Germany	2169	2725	25.6
Italy	438	406	(7.3)
Mexico	473	473	0.0
Netherlands	551	686	24.5
South Korea	10	46	360.0
Spain	502	545	8.6
Sweden	3142	3178	1.1
Turkey	47	47	0.0
United Kingdom	631	816	29.3
USA	7264	7361	1.3

Note:

- Parentheses denote negative figures.

Source:

- IEA Renewables Information, 2012 .

CHAPTER THREE



**ARAB AND WORLD DEVELOPMENTS IN
PETROLEUM DOWNSTREAM INDUSTRIES**

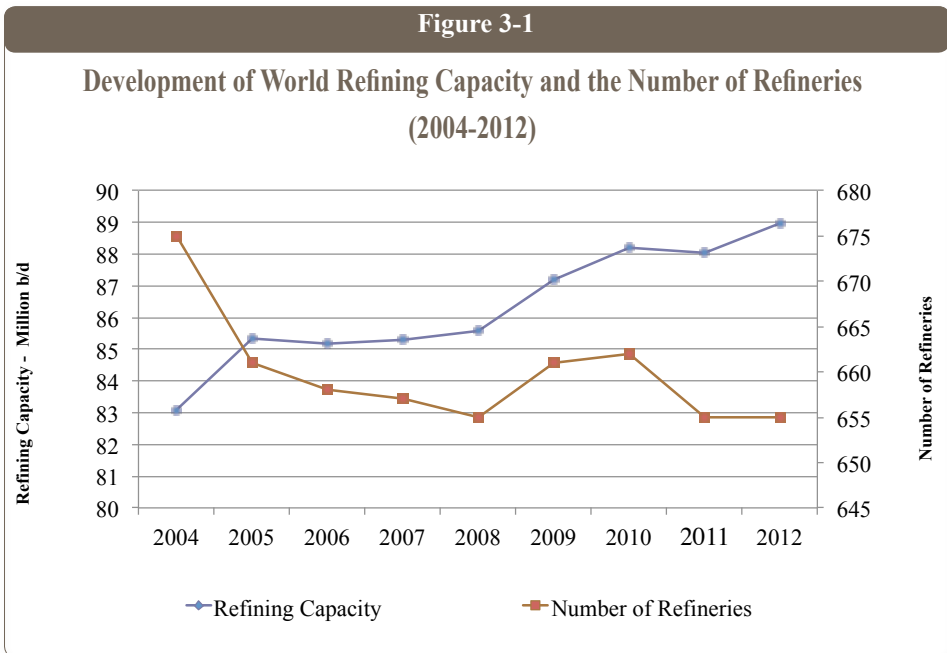
CHAPTER THREE

ARAB AND WORLD DEVELOPMENTS IN PETROLEUM DOWNSTREAM INDUSTRIES

I. REFINING INDUSTRY

1. World Developments

Total world primary distillation capacity of crude oil recorded a slight increase in 2012. Capacity has increased by 91,000 b/d from its level in 2011. It totalled about 88.96 million b/d at the end of 2012 compared with 88.05 million b/d at the end of 2011. The number of operational refineries remained at its level in 2011. It totalled 655 refineries. **Figure (3-1)**.



Although the number of refineries remained unchanged in North American region, total refining capacity has increased by 340,000 b/d due to starting up the expansion project at Motiva refinery, south east of Texas, raising the capacity from 325,000 b/d to 600,000 b/d, in addition to raising the refining capacity in some other existing refineries.

Closing and rationalizing refining capacity dominated in North America and Western Europe, as in 2010 and 2011. The two regions continued to witness sales of refineries and mergers of refining companies.

Capacity decline continued in the countries of the Organization for Economic Cooperation and Development (OECD), as they work to recover from the 2008 global recession as well as the measures taken by the European countries for managing debt crises, which affected some of them.

Western Europe closed one more refinery in 2012 after two closed in 2011. Total capacity has fallen by more than 400,000 b/d.

Refining industry in China and India is witnessing a significant development aimed at raising the refining capacity to meet the strong local demand growth and improve the flexibility of the refineries to process a wider range of crude oils.

Under the order from the country's National Development and Reform Commission, China is seeking to modernize many smaller refineries, with capacities that range 40,000-120,000 b/d. In 2011, the National Development and Reform Commission issued guidelines to eliminate refineries smaller than 40,000 by 2013 to encourage the economies of scale and improve the energy efficiency in the refining industry. In response, several local refineries are expanding or merging with larger refineries to avoid closing.

A study conducted by FACTS Global Energy (FGE) showed that China would be adding 5 million b/d of capacity by 2020. The addition will raise the refining capacity countrywide to more than 16 million b/d.

Earlier 2013, trial production is expected to start at a new refinery, which is being built by PetroChina in China's southwest province of Sichuan in the city of Pengzhou.

China National Offshore Oil Co. (CNOOC) started building a 60,000 b/d refinery in Taizhou City in Jiangsu province on the central eastern coast of the country. The refinery is costing \$1.6 billion. CNOOC has another main refinery in Guangdong province with a capacity of 240,000 b/d and plans to add 200,000 to its capacity by 2014.

Earlier 2012, China National Petroleum Corporation (CNPC) agreed with Petroleos de Venezuela SA (PDVSA) to build a joint venture 400,000 b/d refinery to be completed in 2015 at a cost of \$8.3 billion.

Sinopec, Total and Kuwait Petroleum Corp. (KPC) signed a preliminary agreement on a refining and petrochemical joint venture in Zhanjiang, southern Guangdong province, China. The project consists of a 300,000 b/d refinery integrated with petrochemicals production units.

Also in March 2012, Sinopec announced its plan to double the refining capacity of Luoyang refinery in central Henan province, which has a nameplate capacity of 200,000 b/d.

Like what is going on in China, India has several refinery expansion plans under way or envisioned. In 2011, India Oil Co. announced plans to raise its refining capacity to 2.46 million b/d by 2020 via



building two new refineries and expanding the capacity of existing refineries as follows:

- Construction of a 300,000 b/d refinery in the western part of the country, as well as expansions in two stages at the Gujarat refinery at Koyali to raise the capacity from 274,000 b/d to 360,000 b/d by 2017 then to 460,000 b/d in the second stage by 2020.
- In March 2012, HMEL commissioned its 180,000 b/d Guru Gobind Singh refinery near Bathinda in Punjab. HMEL also announced that it will consider doubling the capacity of this new refinery.
- Reliance Industries Ltd., Mumbai, announced that it would expand petrochemicals production units at its 1.2 million b/d Jamnagar refinery. The expected cost of the project is about \$10-12 billion and will take up 4 years for execution.

Although China and India are the most active countries in the region in adding refining capacity, they are by no means the only ones. Indonesian's OSO Group announced a plan to build a \$4.8 billion refinery in joint venture with State Oil Co, of the Azerbaijan Republic (SOCAR) near Batam Island. Planned capacity of the refinery is 600,000 b/d upon opening in 2017.

In Vietnam, it was announced that construction of the Nghi Son refinery will start at the beginning of 2013. The cost of the project will be \$8 billion. Petro Vietnam, Kuwait Petroleum International (KPI) and Japan's Idemitsu Kosan Co will own the joint venture.

While several Asian developing countries were expanding their refining capacities, other countries are reducing their refining footprints. The following are some examples:

In Japan, JX Nippon Oil & Energy Corp. announced that it had shut down some units at its 240,000 b/d Mizushima refinery and will permanently close the 140,000 b/d Sakaide refinery in Western Japan.

Showa Shell Sekiya has announced that it had permanently closed its 120,000 b/d Ogimatchi refinery near Tokyo. Also Idemitsu Kosan Co. announced that it will close permanently 120,000 crude distillation units at its Tokuyama refinery, west of Japan in March 2014.

In October, JX Nippon also announced that it will close permanently one of the crude distillation units at its Hokkaido refinery in March 2014.

The wave of closing the refineries follows government regulations that encourage refining capacity cuts amid falling local demand for the petroleum products.

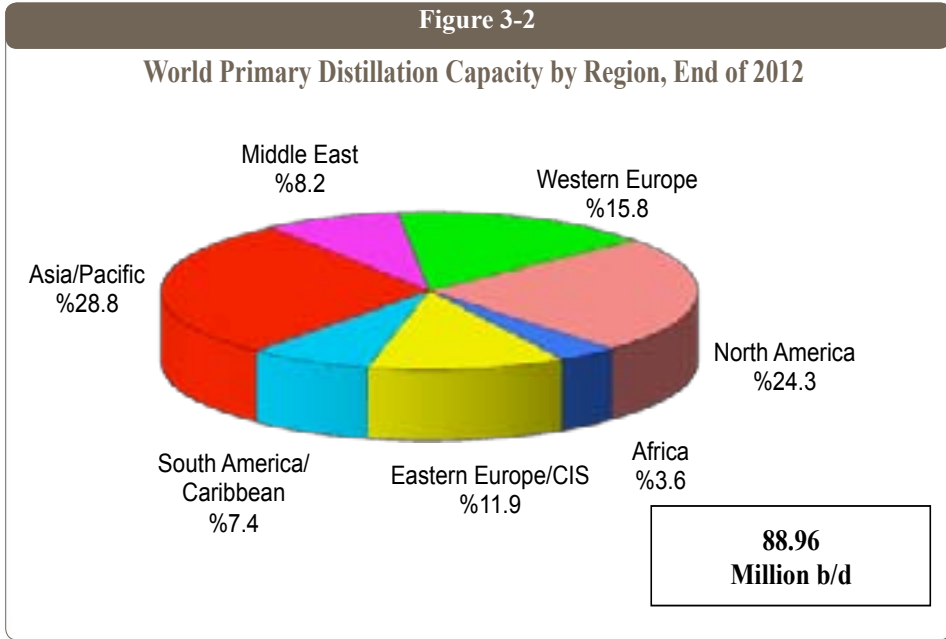
In Australia, Caltex Australasia Ltd. has announced that it will close its 125,000 b/d Kurnell refinery on Botany Bay, south of Sydney in March 2014. The company will convert the location into a fuel import terminal at a cost of \$705 million.

Also Shell Australia announced that it has a plan to close its Klyde refinery in 2013. By this closure Australia refining industry will lose 27% of its capacity.

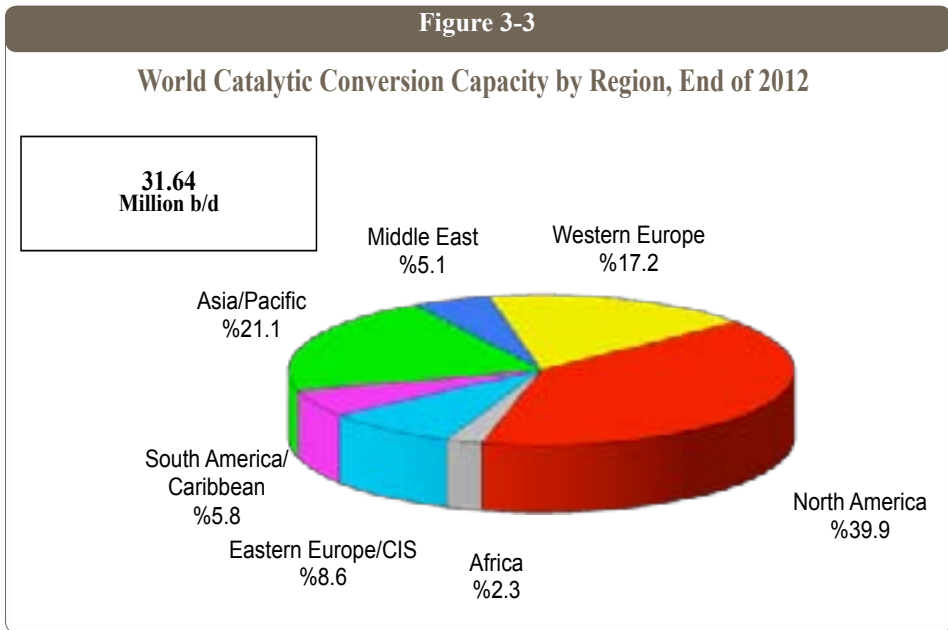
In May 2012, the biggest refining story in North America centred on the massive expansion at Motiva refinery in Texas. The expansion project, the largest at USA in nearly 40 years, is aimed at raising the capacity from 325,000 b/d to 600,000 b/d and improving the flexibility of the refinery to process several types of crude oils. The refinery is a joint venture owned by Saudi Aramco and Royal Dutch Shell.



Asia region has added 720,000 b/d to its refining capacity compared to the previous year, while the Middle East region remained without any new addition. **Figure (3-2), Table (3-1).**



Despite of the increase recorded in North America and Asia Pacific, the total capacity for catalytic conversion processes, which include fluid catalytic cracking (FCC), catalytic hydrocracking, and catalytic reforming, remained constant without change from its level in 2011. It totalled to 31.64 million b/d at the end of 2012. This is due to the decline in the unit's capacity in Western Europe with about 100,000 b/d or 1.8% from its 2011 level and the increase in both North America with about 40,000 b/d or 0.29% and in Eastern Europe with about 60,000 b/d or 1.49%. **Figure (3-3) and Table (3-2).**



The decline in fluid catalytic cracking processes capacity was the biggest compared to other catalytic conversion processes with about 100,000 b/d or 0.69%. It totalled to 14.60 million b/d at the end of 2012 compared with 14.70 million b/d at the end of 2011.

The increase that compensate the decrease in the capacity of catalytic cracking processes came from the increase in catalytic reforming processes capacity with about 30,000 or 0.24%. It totalled to 11.49 million b/d in 2012 compared with 11.46 million in 2011 in addition to the increase came from hydrocracking capacity with about 70.000 b/d or 1.28%. It totalled to about 5.56 million b/d compared to 5.49 million b/d in 2011. **Table (3-3), Figures (3-4), (3-5) and (3-6).**



Figure 3-4

World Catalytic Reforming Capacity by Region, End of 2011 and 2012
(%)

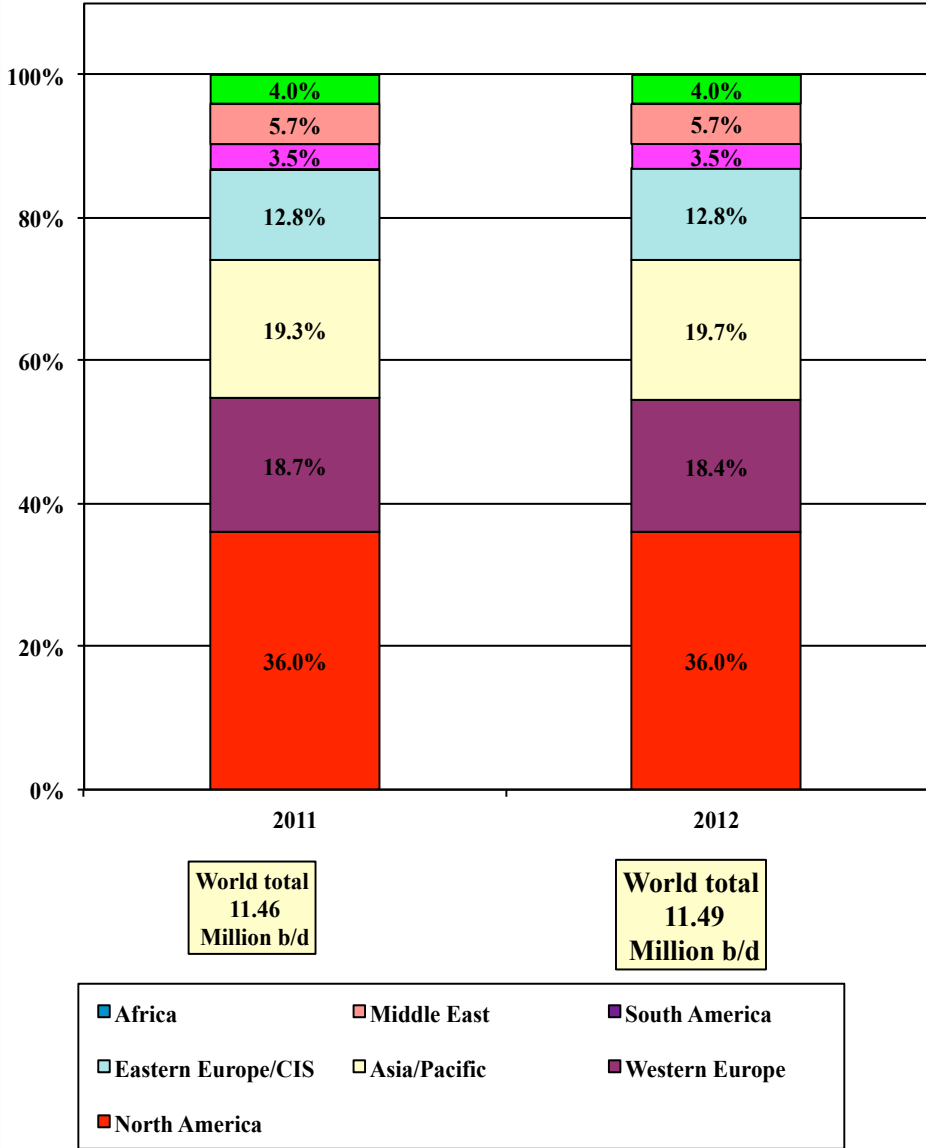


Figure 3-5

World Catalytic Cracking Capacity by Region, End of 2011 and 2012
(%)

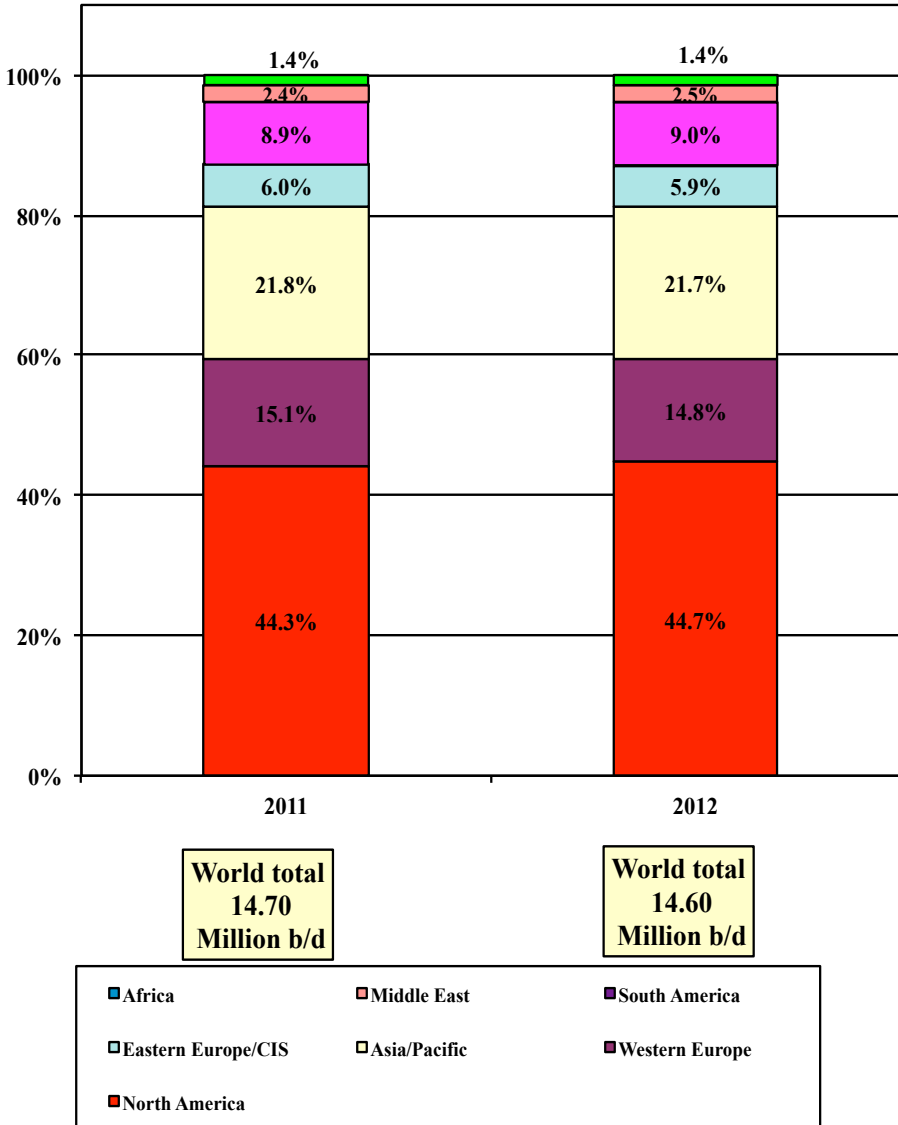
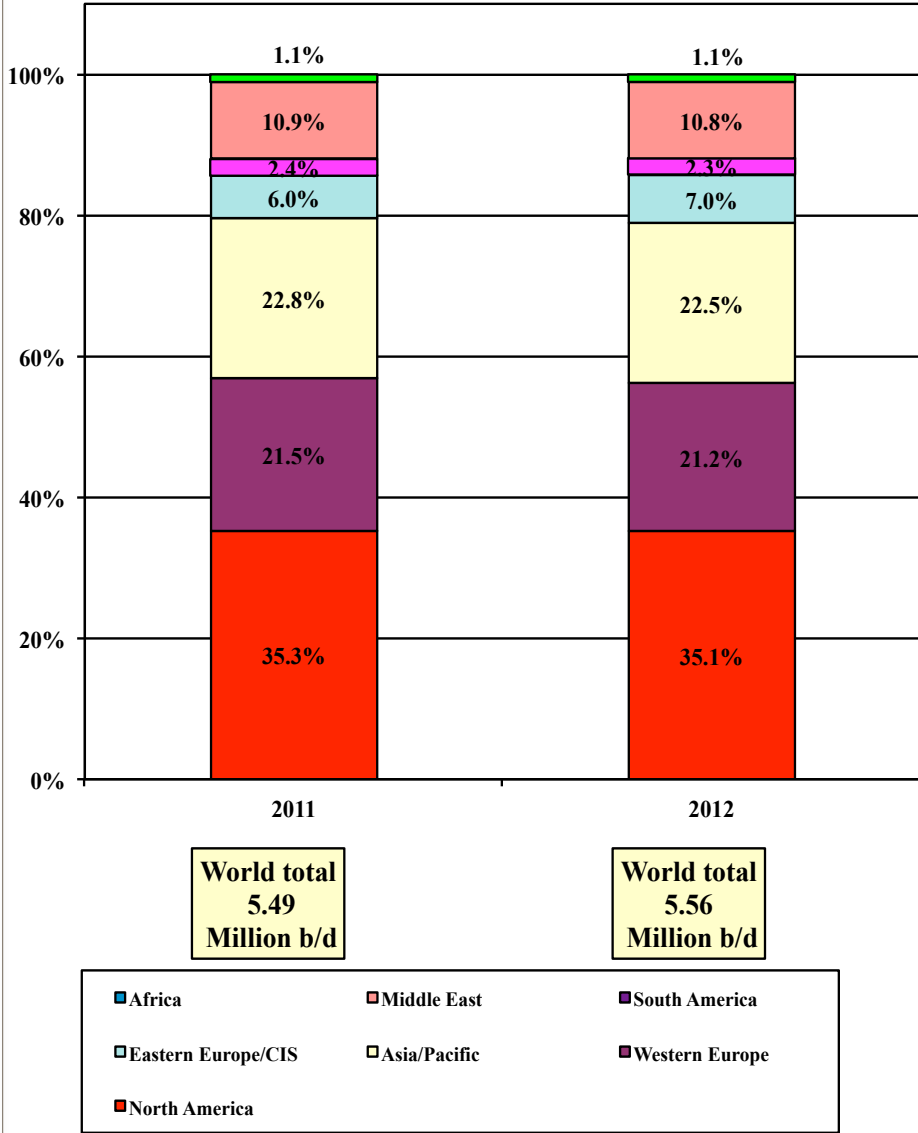
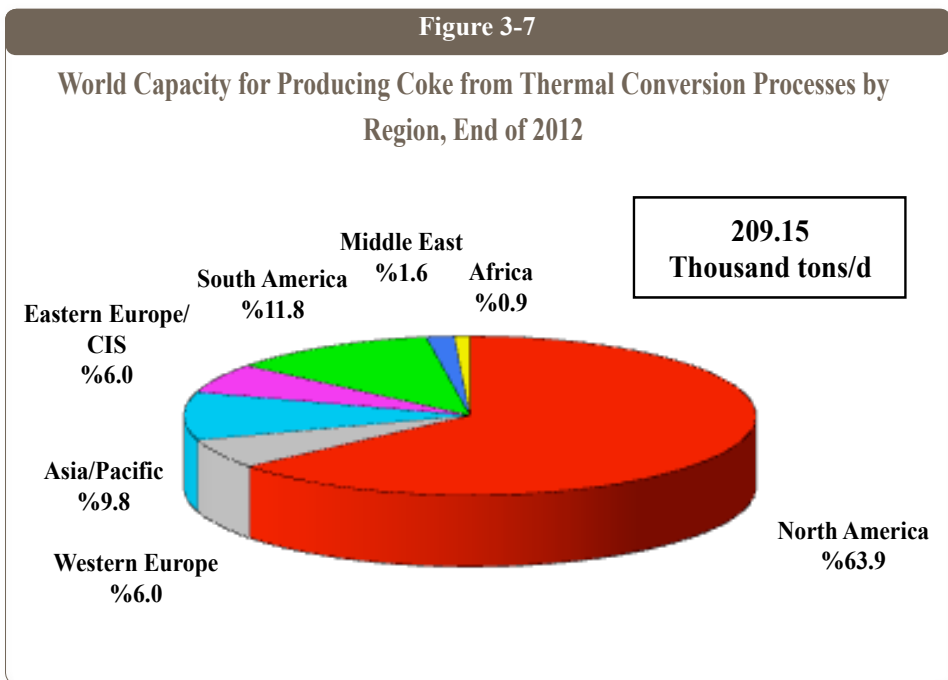


Figure 3-6

**World Hydrocracking Capacity by Region,
End of 2011 and 2012
(%)**



As for thermal conversion processes, which include both coking and thermal cracking processes, their total coke production capacity in 2012 recorded an increase of 20 tons/day, or 0.01% above its level in 2011. At the end of 2012 it totalled to about 209,150 tons/day, compared with 209,130 tons/day at the end of 2011. This increase centred in North America with around 20 tons/day, or 0.01%. **Table (3-4), Figure (3-7).**



On the other hand, total hydrotreating capacity recorded an increase of 120,000 b/d, or 0.26 % in 2012 compared with its level in 2011. It totalled to 45.85 million b/d compared with 45.73 million b/d at the end of 2011.

North America recorded the biggest increase of 210,000 b/d, or 1.28% in 2012, while it declined in Western Europe with 60,000 b/d,



or 0.64% and in Eastern Europe with 30,000 b/d, or 0.63% compared with its level in 2011. **Table (3-5), Figure (3-8).**

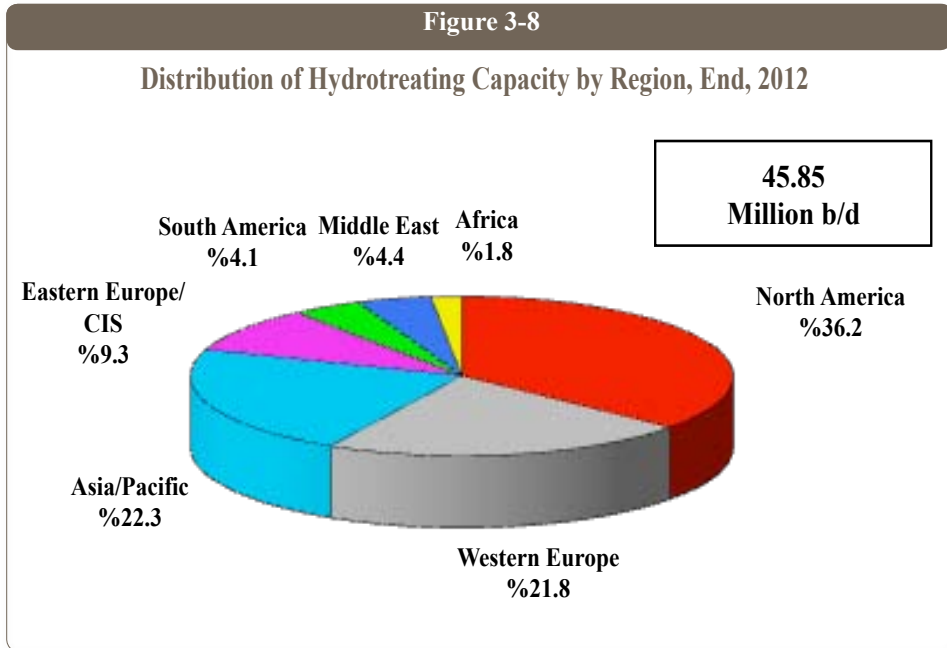


Table (3-6) lists the top 25 refining companies that own most of the refinery capacity in the world. The table includes also partial interest in refineries that the company do not wholly own.

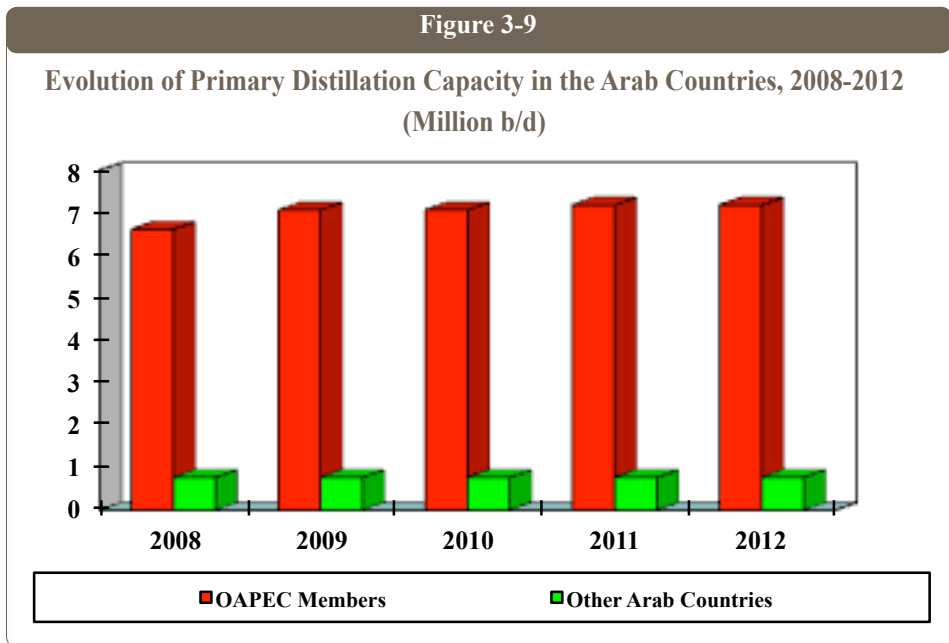
Major changes in positions are few: Chevron and Phillips swapped ranks as well as Marathon and OAO Lukoil.

Table (3-7) lists the world's largest refineries with a minimum capacity of 400,000 b/d at the end of 2012. S-Oil Corp.'s refinery moved up to the 4th class as a result of raising its refining capacity from 564,000 b/d to 669,000 b/d. Also Marathon Petroleum Co. moved up from the 13th class to 11th after raising its refining capacity from 490,000 b/d to 522,000 b/d.

2. Developments in Arab Countries

Total primary distillation capacity of refineries in the Arab states in 2012 remained unchanged from its level in 2011.

Total primary distillation capacities of the 51 oil refineries in OAPEC member countries accounted for 7.176 million b/d, or 90.3% of the total primary distillation capacity of the Arab countries amounting to 7.948 million b/d. Total primary distillation capacity at the 11 oil refineries in other non-OAPEC Arab countries accounted for the remaining 772,000 b/d, or 9.7%, of the Arab total. **Figure (3-9), Table (3-8).**



A long list of projects, totalling almost 4.9 million b/d of distillation capacity announced by the Arab countries is still facing many difficulties in implementation due to several reasons. It is expected that only about 2.3 million b/d of additional capacity will

come into operation during 2011-2015. Major additional capacity is expected from new grassroots projects in Jubail, Yanbu and Jizan in Saudi Arabia, as well as Ruwais refinery in United Arab Emirates and Tiaret refinery in Algeria. **Tables (3-9) and (3-10)** summarize the projects status of new refineries in OAPEC and Non-OAPEC Arab countries in 2012.

Moreover, many projects in the Arab countries are oriented toward adding conversion and hydro-treating capacity to meet the rising demand for middle and light distillates that meet the requirements of the environmental legislation related to clean fuel production.

The following are the most important developments recorded in the Arab countries in 2012.

2-1 Algeria

In September 2012, Algeria started construction of a new 100,000 b/d refinery near the city of Biskra 300km south of Algeria at a cost of \$3 billion. This refinery is the first of four new similar configuration plants totalling 400,000 b/d set to come on stream by 2017. These new refineries will be in Ghardaia, Tiaret and Hassi Messaoud. The Biskra refinery will produce 11,600 b/d of gasoline, 7,000 b/d of LPG and 3,600 b/d of Kerosene.

Algeria is still undertaking a major upgrade and expansion project at its existing refineries. The work to expand the country's largest refinery at Skikda to 335,000 b/d from 300,000 b/d for boosting diesel and gasoline production is underway and set for completion early 2013. Work is being carried out by South Korea's Samsung Engineering, which won a \$2.6 billion contract in 2009.

2-2 Bahrain

Bahrain Petroleum Company's (Bapco) board of directors approved the company's plan to raise the capacity of Sitra refinery to 450,000 b/d from the current 267,000 b/d at a cost of about \$6-8 billion. The refinery expansion is one of Bahrain's most significant projects, as the company will replace inefficient facilities with updated and environmentally friendly technologies. The project will enhance the production of middle distillate such as kerosene and diesel. This necessitates installing a new cocker unit to convert the heavy residue into valuable products, such as gasoline ultra low sulfur diesel which could be sold to European and Asian markets.

The expansion of the refinery will also open up new opportunities for vertical integration that a few years from now Bahrain will be able to develop a petrochemical complex.

2-3 Egypt

Qatar Petroleum International (QPI), the overseas investment unit of state firm Qatar Petroleum (QP) has announced will join a \$3.7 billion project to build sophisticated new processing units alongside the Cairo Oil Refining Company's (CORC) 160,000 b/d refinery at Musturud.

The Egyptian Refining Company (ERC) has been formed to build the new units at Musturud. These will convert around 93,000 b/d of low quality products purchased at international prices from the existing Musturud refinery into high quality refined products.

Output of the project will include almost 50,000 b/d of ultra low sulphur diesel (ULSD) with the aim of slashing Egypt's diesel imports by 50% and improving Cairo's air quality.



The new ERC units will also produce around 13,000 b/d of aviation fuel for supply to Cairo airport via pipeline. Output of reformat 12,000 b/d and naphtha around 7,000 b/d will be used as high-octane gasoline blending components.

The new project will include diesel hydrotreating, vacuum distillation and hydrocracking units. In addition, as part of the expansion, the entire complex, including the existing units, will be converted to using gas as fuel rather than fuel oil with the aim of reducing emissions and maximising output of high value products.

2-4 Iraq

The implementation of the ambitious plan of the Iraqi government to increase the refining capacity from 846,000 b/d to almost 1.5 million b/d is still in progress. The plan includes building four new refineries and expansion of the existing refineries, which would require an investment of \$30 billion.

To date, there has been little interest from any of the major oil companies in any of the projects, with the exception of the planned 300,000 b/d Nassiriya refinery.

A consortium bringing together Japanese, Korean and European groups, but spearheaded by Iraqi firm al-Andalus, has been given the Iraqi oil ministry approval to increase the proposed capacity on the planned Misan refinery to 330,000 b/d in order to gain economies of scale.

Refinery is also going to be upgraded with a new 55,000 b/d fluid catalytic cracking (FCC) unit, six new boilers and 54 storage tanks in addition to a new 400 tons/day LPG facility are due for installation by end of 2013.

2-5 Kuwait

The idea of building Al-Zour refinery is still under consideration after being suspended in 2009. Moreover, there is a consensus to push the clean fuel project that involves revamping of the existing other three refineries at a cost of \$15-17 billion. The revamping project aims to boost the capability of the existing refineries to produce high quality fuel, according to the international standards. The project includes the following works:

- Capacity expansion at Mina Abdulla Refinery from 270,000 b/d to 420,000 b/d, to cover the shortfall of the refining capacity of Mina Al- Ahmadi refinery, which will result from shutting down one of its 86,000 b/d distillation units.
- Installing 156,000 b/d heavy atmospheric residue conversion unit at Mina Al-Ahmadi refinery.
- Installing a new 45,000 b/d hydrotreating unit at Mina Al-Ahmadi refinery.

On the other hand, the state of Kuwait continues its efforts to create investment opportunities in Asia in the field of downstream industry, through Kuwait Petroleum International (KPI) owned by Kuwait Petroleum Corporation (KPC).

Construction work started on the \$9.3 billion joint venture refining and petrochemicals complex by Kuwait Petroleum Corporation (KPC) and Chinese firm Sinopec. The complex will be built on Donghai Island in the city of Zhanjiang in Guangdong province, China. The project includes a 300,000 b/d oil refinery and a 1-million tons/year ethylene cracker. The project will make Kuwait the second Arab oil producer to have a notable refining presence in China, after Saudi Arabia. The project is set to clear the way for Kuwait to achieve



its China - bound crude oil exports target of 500,000 b/d. Kuwait's supplies to China stood at 198,000 b/d in 2010, up 39% from the year before. The project is part of Kuwait's policy to expand both its refining and marketing outlets in high growth strategic markets such as India, China and Vietnam.

The project of building a new refinery in Balongan, in west Java of Indonesia, in cooperation with Pertamina company, is still under planning phase. The expected capacity of the refinery is 200,000 – 300,000 b/d. Kuwait Petroleum International (KPI) is looking for international partner and the project is expected to be completed in 2015.

Construction works is still underway on the 200,000 b/d Nghi Son refinery integrated with a petrochemical complex in the northern province of Thanh Hoa, 180 km south of Hanoi, with a total cost of \$6 billion. The refinery, which will be the biggest in Vietnam, is expected to operate in 2014 and will meet about 60% of the local market demand for the petroleum products. The project is a joint venture owned by Kuwait Petroleum International (KPI) and Japan's Idemitsu Company contributes 35.1% each; in addition to the state-owned company PetroVietnam and Japan's Mitsui Chemicals Inc., contributing 25.1% and 4.7% respectively.

2-6 Qatar

Qatar's Laffan Refinery Company (joint venture owned by State-owned Qatar Petroleum 51%, ExxonMobil 10%, Total 10%, Idemitsu 10%, Cosmo Oil 10%, Mitsui 4.5% and Marubeni 4.5%) is prequalifying contractors to build a \$1 billion, 146,000 b/d condensate splitter at Ras Laffan. Start-up of the lump sum turnkey project is scheduled for 2016. Technip is doing the front-end engineering and

design. The configuration will be the same as the current same-size splitter. Qatar Petroleum is also tendering for an aromatics plant at the site to produce benzene, toluene, and xylene.

Laffan Refinery Company signed also an engineering, procurement and construction (EPC) contract with Samsung Engineering Co. for a diesel hydrotreater unit capable of processing 54,000 b/d of diesel produced at its existing and new refinery. This project forms part of Qatar's national vision for securing petroleum products supplies for the country that meeting the most stringent environmental specifications – Euro 5. The planned start-up of the project would be in the first quarter of 2014 at a cost of around \$96 million.

2-7 Saudi Arabia

Saudi Aramco made remarkable progress in many key projects aiming to expand its downstream industry sector at a total cost of \$ 50-60 billion.

The Al-Jubail new refinery project, undertaken by Saudi Aramco and Total Refining & Petrochemical Company (SATORP), a joint venture owned by Saudi Aramco (62.5%) and Total (37.5%) at a cost of \$12 billion, is expected to start up operation in 2013.

Al-Jubail refinery was designed to refine heavy crude from Safania and Manifa field of Saudi Arabia. The refinery, which has a capacity of 400,000 b/d, is characterized by high complexity, as the middle distillate production ratio will reach 55% and 22% of gasoline at the expense of heavy products, in addition to huge quantities of petrochemical products.

Saudi Aramco and Chinese state firm Sinopec held the official signing ceremony for their 400,000 b/d joint venture export refinery



at Yanbu. The Yanbu Aramco Sinopec Refinery Company (YASREF) marks the first major Chinese petroleum refining industry investment in the kingdom. YASREF is scheduled to come on stream in 2014. It will produce 90,000 b/d of gasoline, 263,000 b/d of ultra low sulphur diesel, along with 6,300 tons/day of petroleum coke and 1,200 tons/day of sulphur.

Saudi Aramco is also studying bids from international engineering firms to build the 400,000 b/d Jazan refinery, which is intended as a foundation for the Jazan Economic City in the underdeveloped southwest of the kingdom. Jazan refinery is different than the other two new refineries, Yanbu and Jubail. It will be a semi-conversion refinery and will largely process Arab light and Arab medium rather than more difficult heavy crudes.

Negotiation between Saudi Aramco and China National Petroleum Company (CNPC) is still underway to build a new refinery in China's south western province of Yunnan. Saudi Aramco will supply the refinery with the crude oil via a long term contract, while PetroChina will distribute its refined products in the targeted market. If realized, this will be Saudi Aramco's second downstream project in China, after its joint venture with Sinopec and ExxonMobil in the 240,000 b/d Fujian refinery and petrochemicals project. The project will make Saudi Aramco the biggest foreign investor in China's refining sector in addition to its status as the biggest foreign supplier of crude.

Saudi Aramco and Indonesia's state-owned Pertamina Co. announced signing a memorandum of understanding (MOU) for a 300,000 b/d refinery and petrochemical complex at Tuban in East Java.

Tuban refinery, which will be configured partly to run on Saudi crude, if given the permission, will sell the petroleum products not

just to the Indonesian market, but also elsewhere in southeast Asia.

On the other hand, Saudi Aramco/Shell Motiva joint venture is in process of completing the expansion of its Port Arthur refinery from 325,000 b/d to 600,000 b/d, which will become the biggest refinery in USA.

Saudi Aramco Lubricating Oil Refining Company (Luberef) recently awarded South Korea's Samsung Engineering the engineering, procurement and construction (EPC) contract for the expansion of its \$1billion lubricants refinery at Yanbu.

Saudi Aramco owns Luberef at 70% and Saudi Jadwa Industrial Investment at 30%. The company currently has capacity to produce a total of around 550,000 tons/year of lubricants from two Saudi plants, at Jiddah and at Yanbu. The expansion at Yanbu will take Luberef's total output capacity to 1.2 million ton/year.

The expansion will include the addition of a hydrocracker with a capacity of 23,000 b/d, an isodewaxing unit, and a sulfur recovery unit. Additional work will include a revamp of the refinery's propane deasphalting unit for doubling the capacity to 12,500 b/d, and raising the capacity of vacuum distillation unit from 26,000 b/d to 39,000 b/d. The project is scheduled to be completed in March 2014.

Saudi Aramco has extended the bidding deadline for the Clean Fuel Project at its 120,000 b/d Riyadh refinery.

The Riyadh refinery upgrade is part of a Saudi Aramco plan to reduce the sulphur content of its refineries' gasoline and diesel output to a maximum of 10 parts per million. The project will include installing new isomerization, naphtha splitting and hydrotreating units, as well as addition of new equipment.



2-8 Syria

The Syrian government has decided to cancel the 100,000 b/d joint venture refinery project with China National Petroleum Corporation (CNPC) at Abu Khashab, near Dair al-Zour, but it is going ahead with the 140,000 b/d refinery project at Furqlus, at an approximate cost of \$5 billion. This project was launched in 2006 as a joint venture between the government of Syria (15%), Iran (25%), Venezuela (35%) and the Al-Bukhari Group of Malaysia (25%). However, there has been no significant progress in the project.

2-9 Tunisia

Tunisia has revealed a plan for building a refinery at La Skhira, 60km south of Sfax on Tunisia's coast, with Libya targeted as a source of crude. The plan was first announced in 2007. Costs are expected to reach \$1.9 billion according to an economic feasibility study. The initial capacity is 120,000 b/d and it is expected to enter service in 2015, and would be expanded to 250,000 b/d in the second phase.

The country's only existing 35,000 b/d refinery was built in 1963 at Bizerte city. This covers less than half of the country's demand for refined products.

2-10 United Arab Emirates

Abu Dhabi Oil Refining Company (Takreer) signed an engineering, procurement and construction (EPC) contract agreement with South Korea's Samsung Engineering for a carbon black production unit with a capacity of 40,000 tons/year and delayed cocker unit with a capacity of 30,000 b/d project in the refining complex at Ruwais. The contract was valued at \$2.48 billion. Completion is scheduled for end

of 2015. The project aims at transferring the overall heavy oil output from Takreer's existing refineries and a refinery expansion currently under construction at Ruwais into light petroleum derivatives as well as carbon black. The latter is used by Abu Dhabi Polymers Company (Borouge) in manufacturing of pipelines and cables, as well as anode quality coke for use by local aluminium smelters.

Takreer awarded EPC contracts worth a combined \$9.6 billion to Korean companies for the Ruwais expansion in March 2010. The Ruwais expansion plant will comprise 21 new process units and 20 supporting offsite and utilities units. The RFCC unit, which is considered as the heart of the refinery will be one of the largest in the world, with capacity of 127,000 b/d. The expansion is primarily intended to help meet rising domestic demand for cleaner gasoline and jet fuel, while offering the opportunity of exporting products to Asia.

The International Petroleum Investment Company (IPIC) has revealed that it will go ahead with its existing plan to build a 200,000 b/d refinery in the emirate of Fujairah in the north east of the UAE at an estimated cost of \$3 billion. The project is currently in the front end engineering design (FEED) stage and is expected to be completed by mid 2016.

As for the non-OAPEC Arab countries, investment projects are limited to Oman, as follows.

2-11 Oman

Oman plans to expand its current refining capacity to 305,000 b/d. Sohar Refinery Company has announced a plan for expanding its 116,000 b/d nameplate capacity refinery at Sohar to 175,000 b/d as well as building a 30,000 b/d bitumen unit. Sohar refinery's upgrading



and expansion project will reduce the production of heavy products, and increase the production of high quality light products.

The project includes adding a new 82,000 b/d crude distillation unit, 95,000 b/d vacuum distillation unit, 34,000 b/d hydrocracker, 34,000 b/d hydrotreater and 36,000 b/d delayed coker unit.

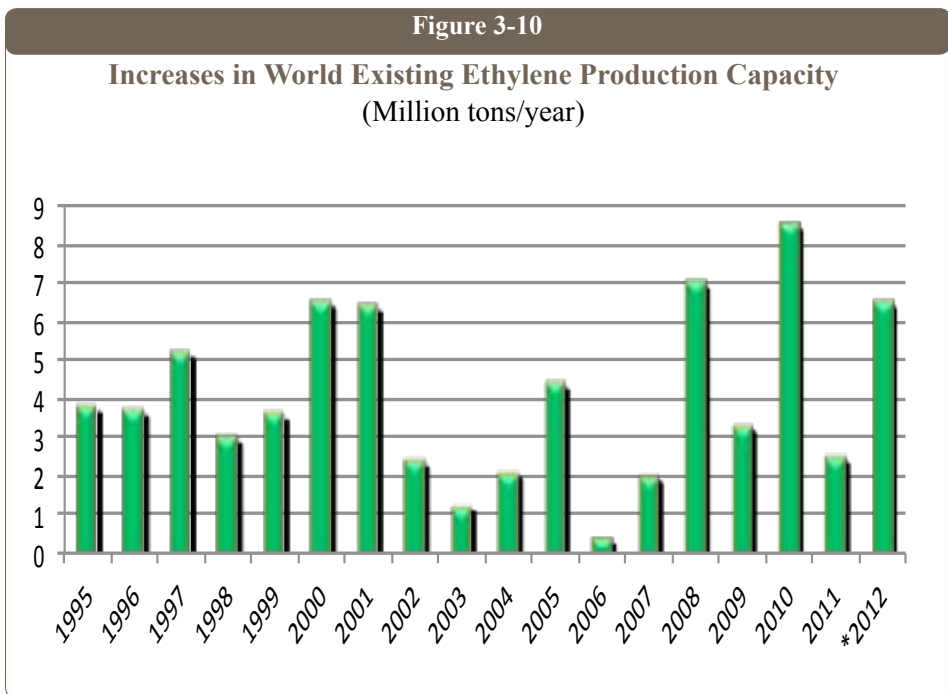
Duqm Refinery and Petrochemical Industries Company (DRPIC) has selected Shaw Energy and Chemicals as the project management consultant for the \$6 billion, 230,000 b/d refinery and petrochemicals complex. The project is a joint venture owned by state-owned Oman Oil Company (OOC) and Abu Dhabi's state-owned International Petroleum Investment Company (IPIC). The refinery, which is considered the phase-1 of the project, is scheduled for start up in 2017, and will be followed by phase-2, a petrochemicals plant, which is still under studying.

II. PETROCHEMICAL INDUSTRIES

1. World Developments

World ethylene production capacity in 2011 had rose by 2.5 million tons/year. This increase, which is lower than one-year addition recorded for 2010, brought world ethylene production to 141 million tons/year, or 1.81% higher than the 2010 total of 138.5 million tons/year. It was due to the addition of 1.2 million tons/year in Saudi Arabia and 1.3 million tons/year in Venezuela.

Figure (3-10) shows the increases in world existing ethylene production capacities recorded during the period (1995- 2011).



* Expected

Table (3-11) shows the world's ten largest ethylene production complexes in 2011. The order remains unchanged from 2010.

Table (3-12) compares the existing ethylene production capacity worldwide by regions in 2010 and 2011.

Figure (3-11) shows distribution of total existing ethylene capacities at the end of 2011.

South America recorded the biggest increase with a share of 1.3 million tons/year. Middle East came second, bringing on stream 1.2 million tons/year ethylene capacity, while Eastern Europe, North America, Western Europe, Asia and Africa remained unchanged.

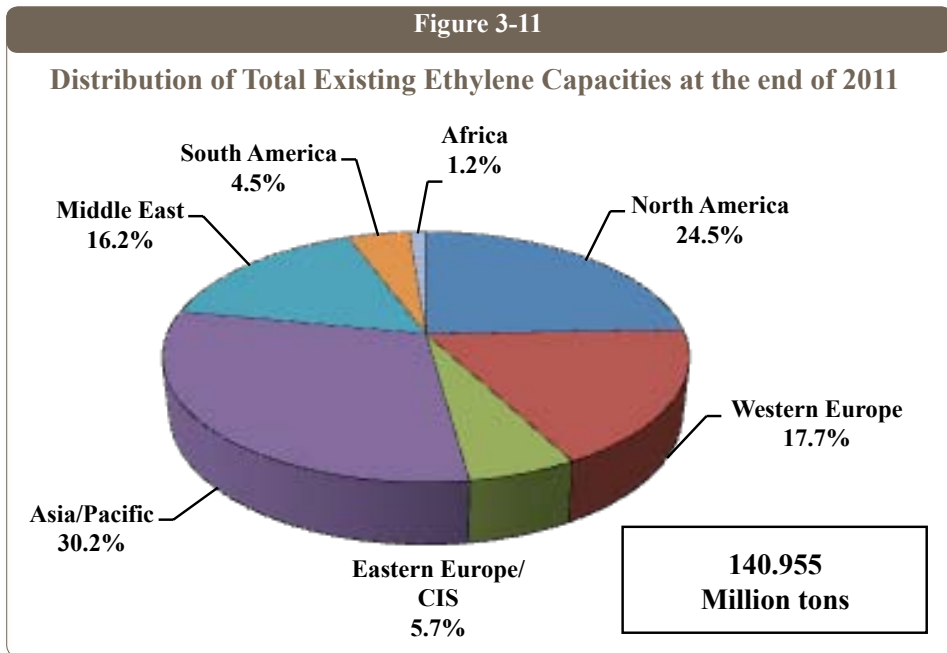


Table (3-13) shows distribution of ethylene production capacity worldwide by countries in 2010 and 2011. It is noted that Venezuela achieved the largest increase followed by Saudi Arabia.

Table (3-14) lists the world's ten largest ethylene producers at the beginning of 2012. The table also shows the number of sites and the total of actual percentages for companies in joint ownership.

If all projects under construction remain on announced schedule, 2012 will see production capacity added at near-record pace: nearly 6.5 million tons/year. That pace will fall considerably in 2013, to a bit less than 2 million tons/year, then it will begin to accelerate in 2014. The following are the most important projects planned and under construction in the world regions.

1-1 Asia and Africa

China Petroleum & Chemical Corp. (SINOPEC) and South Korea's SK Group signed a memorandum of understanding includes a joint venture on the 800,000 tons/year ethylene project in Wuhan city, central of China at a total cost of \$3 billion.

In May 2012, Sinopec and Japan's Mitsui Chemicals Inc. announced the establishment of 50/50% joint venture called Shanghai Sinopec Mitsui Elastomers Co. Ltd., with plan to build an ethylene-propylene-diene terpolymer (EPT) production plant in Shanghai Chemical Industry Park with production capacity of 75,000 tons/year. Total investment of the project was estimated at about \$314 million. It will begin production in first quarter of 2014.

One of the important projects under way in Singapore is ExxonMobil Chemical Co.'s second petrochemical complex on Jurong Island. It is expected to start production in 2013.

The project includes a 1-million tons/year steam cracker, two 650,000 tons/year polyethylene units, a 450,000 tons/year

polypropylene unit, a 300,000 tons/year elastomers unit, an aromatics extraction unit to produce 340,000 tons/year of benzene, as well as an oxo-alcohol unit's expansion by 125,000 tons/year, and construction of a 220 Mega Watt new power generation unit.

1-2 North America

The united states is witnessing considerable activity, almost all of which is based on the frenetic pace of shale gas exploration and production and the prospects for cheap, large volumes of shale gas as potential feedstock, the following are examples of some most important projects:

Westlake Chemical Co. announced a plan for increasing ethane-based ethylene capacity at its plant in Lake Charles, La., in response to new low-cost ethane and other light NGLs becoming available as a result of shale gas production.

The project includes expansion of the first ethylene cracker from 567,000 tons/year to 671,000 tons/year, and expansion of the second unit from 522,000 tons/year to 631,000 tons/year. The project will be completed at the 2014's end.

Sasol Ltd. has announced that it might spend as much as \$4.5 billion to build an ethylene plant in Louisiana with a capacity of 1-1.4 million tons/year. The company expects to complete the study by mid 2013.

Chevron Phillips Chemical Company has awarded Shaw Group Inc. a contract to provide process design for an ethylene plant at its Cedar Bayou plant in Texas.

Lyondell Basell announced a plan for expanding its two plants, La Porte and Channelview at Texas, and even building a new one. The

project will add 227,000 tons/year to its current ethane-based ethylene capacity. Furthermore, the company announced it will expand the La Porte steam cracker by 855,000 tons/year with projected completion in 2014.

Chevron Phillips Company has announced that it is studying whether to build an \$5 billion ethylene plant on the US Gulf Coast, near Houston that would begin operations in 2017.

INEOS Olefins & Polymers has announced that it will expand ethylene production capacity of its Chocolate Bayou complex east of Houston to add an extra 115,000 tons/year of its existing capacity of 1.792 million tons/year. The company also plans to build a 500,000 tons/year ethylene oxide and derivatives plant and it would select a location later on.

In another development, Shell has announced a plan for building a petrochemical complex northwest of Pittsburgh, Pennsylvania. The project includes an ethylene cracker, polyethylene and mono ethylene glycol units.

Williams Olefins has awarded CB&I, Houston, a \$300 million contract for a petrochemical plant expansion project in Geismar, La. The expansion will increase plant capacity to 885,000 tons/year from 613,000 tons/year and it will be completed by third quarter 2013.

Dow Chemical Company announced a plan for investing \$1.7 billion to build a 1.5 million-tons/year ethylene cracker at its existing Freeport petrochemical complex, Tex. The project is scheduled to start production in 2017.

ExxonMobil Corporation has also announced a plan for a major expansion at its Baytown, Tex., east of Houston. The project, which



is expected to start production in 2016, includes a 1.5 million tons/year ethane cracker as well as two 650,000 tons/year polyethylene production units.

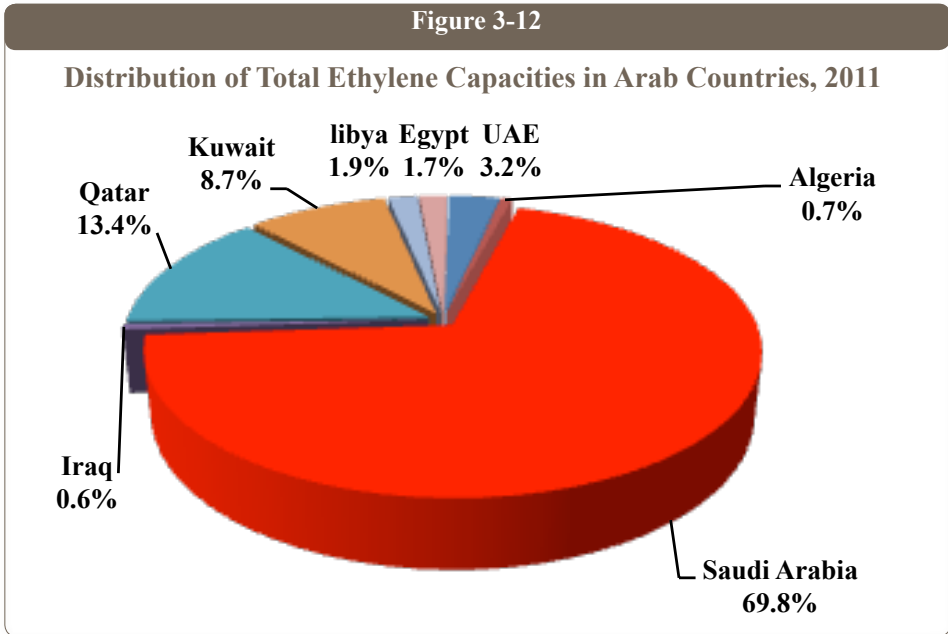
On the other hand, Brazilian company Braskem SA, with its joint venture partner the Mexican group Idesa, announced a plan for building an ethylene unit. Braskem and Idesa hold 65% and 35% interest, respectively.

Pemex Gas and Petrochemicals Company will supply natural gas for the project to produce 1.05 million tons/year of ethylene, integrated with three polymerization units to produce 750,000 tons/year high density polyethylene (HDPE) and 300,000 tons/year low density polyethylene (LDPE). The project is expected to start production in 2015.

2. Arab Developments

Total ethylene production capacity in Arab countries has increased in 2011 by 6.8% from its level in 2010. It totalled about 18.58 million tons/year in 2011 compared with 17.66 million tons/year in 2010. This increase came from start up 1.2 million tons/year petrochemical complex of Saudi Kayan petrochemical Company. [Table \(3-15\)](#), [\(Figure \(3-12\)\)](#).

Percentage share of total ethylene production capacity in Arab countries reached 13.52% of total world ethylene production capacity in 2011 compared with 12.66% in 2010.



2-1 Egypt

Egypt is planning to build a major petrochemical complex in the industrial zone alongside the Gulf of Suez, with an estimated cost of \$3.7 billion.

Egypt's Tahrir Petrochemicals Company, in association with the local Carbon Holdings Company, will set up the project. It will have an output of 3.5 million tons/year of petrochemicals for local consumption and export, including 1.3 million tons/year of polyethylene, 662,000 tons/year of propylene, 414,000 tons/year of benzene and 214,000 tons/year of butadiene. It is expected that the construction of the project to start by end of 2013, after securing the necessary funding for it. Its construction will take about three years to complete. The project is expected to create some 20,000 direct job

opportunities, plus more than 100,000 indirect ones.

2-2 Qatar

Earlier 2012, Qatar announced a plan for investing \$25 billion to develop its domestic petrochemical industry. The expansion will more than double its current petrochemical production, to 23 million tons/year from 9.2 million tons/year by 2020.

One Qatari project listed in the plan encompasses a partnership with Royal Dutch Shell to establish a petrochemicals complex in Ras Laffan Industrial City. The \$6.4 billion project includes a steam cracker fed by Qatar's natural gas projects and a mono ethylene glycol plant capable of producing 1.5 million tons/year and 300,000 tons/year of linear alpha olefins and another olefin derivatives. The project, which expected to start production in 2018, includes also 1.4-million tons/year ethylene cracker and 300,000-tons/year high-density polyethylene production unit.

Qatar Petrochemical Company (QAPCO) has inaugurated its third low-density polyethylene (LDPE-3) plant in Mesaieed Industrial City. The LDPE-3 plant has capacity to produce 300,000 tons/year, which will be sold on the international market. The total cost of the new LDPE-3 is a round \$604 million.

QAPCO has two existing LDPE plants at the site, have combined production capacity of 400,000 tons/year.

2-3 Saudi Arabia

Saudi Kayan Petrochemicals Co. has announced that it started operations of a 1.2 million-tons/year ethylene production plant at its complex in Al-Jubail industrial city. The plant will be able to produce

more than 6 million tons/year of ethylene, propylene and ethylene glycol through 16 production units.

Saudi Arabia has announced plans for several petrochemical projects. SaudiAramco and US Dow Chemical announced establishing their giant \$20 billion joint venture petrochemical complex at Al-Jubail-II industrial city instead of Ras Tanoura. The joint venture, named the Sadara Chemical Company, is being touted as the largest integrated petrochemical facility ever built in one single phase and it is expected to start production in mid 2016.

The complex will use ethane and naphtha derived from oil and natural gas liquids as feedstock. The feedstock will be supplied also from the Saudi Aramco Total Refining and Petrochemical Company's (SATORP) refinery, which is currently under construction in Al-Jubail.

Earlier this year, Saudi Arabia's Royal Commission for Al-Jubail and Yanbu approved investment of \$5.6 billion for several projects at Al-Jubail Industrial City.

Al-Jubail Petrochemical Co., is a 50/50% joint venture of Saudi Basic Industries Corp. (SABIC) and Exxon Mobil Corp.

Saudi International Petrochemical Co. (Sipchem) was approved to develop a \$7.5 billion venture to produce 200,000 tons/year of ethylene vinyl acetate and low density polyethylene (LDPE).

Arabian Petrochemical Company (Petrokemya), a SABIC wholly-owned affiliate, announced that it has signed a letter of intent with Tecnicas Reunidas of Spain for the engineering, procurement and construction of a new acrylonitrile butadiene styrene (ABS) plant with a capacity of 140,000 tons/year at the Petrokemya complex in the Al-Jubail industrial city.

The total investment in the project is estimated at \$561million and Petrokemya is planning to finance it from its own resources. The



ABS project is expected to be mechanically completed during the fourth quarter of 2014.

Saudi Basic Industries Corporation (SABIC) and ExxonMobil are to proceed with a specialty elastomers (synthetic rubber) project at their existing Kemya site in Al-Jubail industrial city. The project is scheduled for completion in 2015 with a total capacity of 400,000 tons/year of synthetic rubber, styrene butadiene, polybutadiene, ethylene propylenediene monomer (EPDM), carbon black and thermoplastic specialty polymers, at a total cost of \$ 3.1 billion.

In another development, the Saudi Polymers Company (SPC) project in Al-Jubail, which includes the construction of an olefins cracker, has started operations. SPC is owned 65% by Petrochem, which is traded on the Saudi stock market (Tadawul), with the remaining 35% held by Arabian Chevron Phillips Petrochemical Company.

The \$5 billion SPC project includes units to produce 1.15 million tons/year ethylene, 1.1 million tons/year high and low density polyethylene, 400,000 tons/year polypropylene, 430,000 tons/year propylene, 200,000 tons/year polystyrene, and 100,000 tons/year hexene-1.

In November 2012, SABIC also announced that it was progressing plans with partner Shell to expand their Saudi Petrochemical Company (Sadaf) joint venture. The proposed plants would be the first of their kind in the Middle East. The 50:50 Sadaf joint venture has the capacity to produce 4.7 million tons/year of ethylene, ethanol, styrene monomer, ethylene dichloride, caustic soda, and methyl tertiary butyl ether (MTBE).

Saudi Arabia and Sumitomo Chemical announced that, based on

the outcome of the feasibility study, it has confirmed the feasibility of the Rabigh-II project and decided to move ahead by finalizing various project elements, such as contracts for engineering, procurement and construction (EPC), as well as project financing.

The Rabigh-II Project's main products will be ethylene propylene rubber (EPDM), thermoplastic polyolefin (TPO), methyl methacrylate monomer, polymethyl methacrylate (PMMA), low density polyethylene, (LDPE), ethylene vinyl acetate (EVA), para-xylene, benzene, cumene, and phenol/acetone.

The project also includes expanding the ethane cracker and building a new aromatics complex and will use additional 30 million standard cubic feet per day of ethane and approximately 3 million tons per year of naphtha as feedstock to produce a variety of high value-added petrochemical products.

The total investment is currently projected to reach approximately \$7 billion and will be brought on stream as it becomes available for operation, beginning the second half of 2016.

Rabigh Refining and Petrochemical Company (Petro Rabigh), jointly founded by Sumitomo Chemical Company (Sumitomo Chemical) and the Saudi Arabian Oil Company (Saudi Aramco), is operating an integrated refinery and petrochemicals complex (Rabigh-I) in Rabigh City, Saudi Arabia.

Regarding the Saudi Arabia's international Petrochemical investments, SINOPEC/SABIC/ Tianjin Joint venture laid the foundation stone for \$1.7 billion polycarbonate plant at Tianjin City, China, with a production capacity of 260,000 tons/year. The project is expected to start production in 2015. This plant is the second phase of a joint venture project owned by Sinopec and SABIC with 50/50%





share in Tianjin city. The first phase included 1 million tons/year ethylene production unit and started production in January 2010.

Saudi Arabia's Advanced Petrochemical Company (APC) and Turkey's Bayegan Group signed a memorandum of understanding (MOU) to set up a \$1 billion polypropylene plant, with a capacity of 500,000 tons/year in the Adana-Iskenderun area of southern Turkey.

The joint venture plant will be 70% owned by Saudi Arabia's Advanced Petrochemical Company (APC) and 30% by Bayegan. Construction of the plant is to begin in the second quarter of 2013, with start up in 2015.

2-4 United Arab Emirate

Construction works are still in progress in Borouge expansion project at Ruwais (Borouge-3) and expected to be completed in 2014 . The expansion is aimed at raising the company's production capacity to 4.5 million tons/year, which will be exported to Middle East and Asia. The project includes construction of two polyethylene units with a combined capacity of 1.08 million tons/year and two polypropylene units with a combined capacity of 960,000 tons/year and 350,000 tons/year low density polyethylene (LDPE) units, at a total cost of \$1.255 billion.

The company completed the (Borouge-2) expansion in 2010, which added a capacity of 2 million tons/year of polyethylene and polypropylene. Construction work of Borouge-2 began in 2007 and included an ethane cracker of 1.5 million tons/year, an olefins conversion unit of 752,000 tons/year, two polypropylene units with a combined capacity of 800,000 tons/year, and a polyethylene unit with a capacity of 540,000 tons/year.

III. NATURAL GAS CONSUMPTION, TRADE AND PROCESSING

1. World Developments

1-1 Natural Gas Consumption

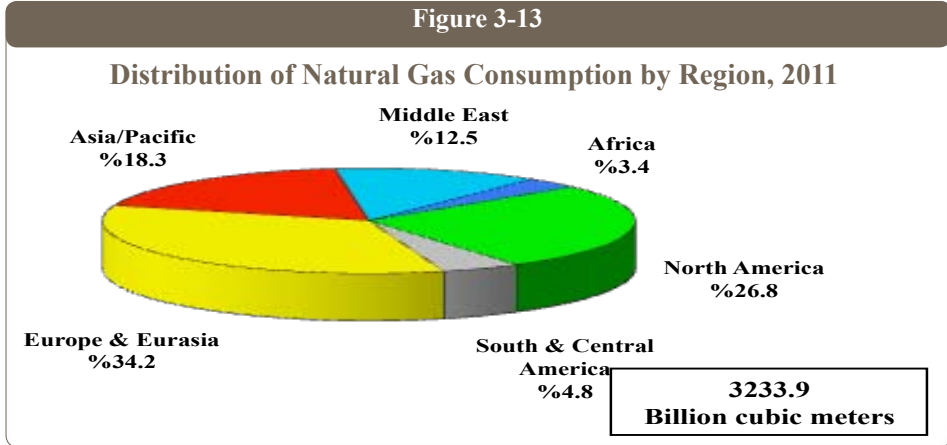
World consumption growth of natural gas in 2011 increased by 2.2% compared with its level in 2010. It totalled about 3222.9 billion cubic meters in 2011 against about 3153.1 billion cubic meters in 2010. The share of natural gas in the world's total commercial energy consumption in 2011 remained at its level in 2010, 27.7%.

Most regions of the world have seen increase in gas consumption at various rates in 2011 except in Europe & Eurasia region. The maximum increase rate of 6.8% was recorded in Middle East, where the total consumption increased from 377.3 billion cubic meters in 2010 to 403.1 billion cubic meters in 2011. Asia Pacific came next 5.9%, where the total consumption increased from 557.9 billion cubic meters in 2010 to 590.6 billion cubic meters in 2011. Then North America came next with a share of 3.3%, where the total consumption increased from 836.2 billion cubic meter in 2010 to 863.8 cubic meters in 2011. The minimum increase rate of 2.9% was recorded in Middle and South America, where the total consumption increased from 150.2 billion cubic meters in 2010 to 154.5 billion cubic meters in 2011. Natural gas consumption in Africa increased by 2.7%, where it increased from 106.9 billion cubic meters in 2010 to 109.8 billion cubic meters in 2011.

Total natural gas consumption in Europe and Eurasia (including Europe, the CIS and Turkey) decreased by 2.1%, where it decreased from 1124.6 billion cubic meters in 2010 to 1101.1 billion cubic meters in 2011.

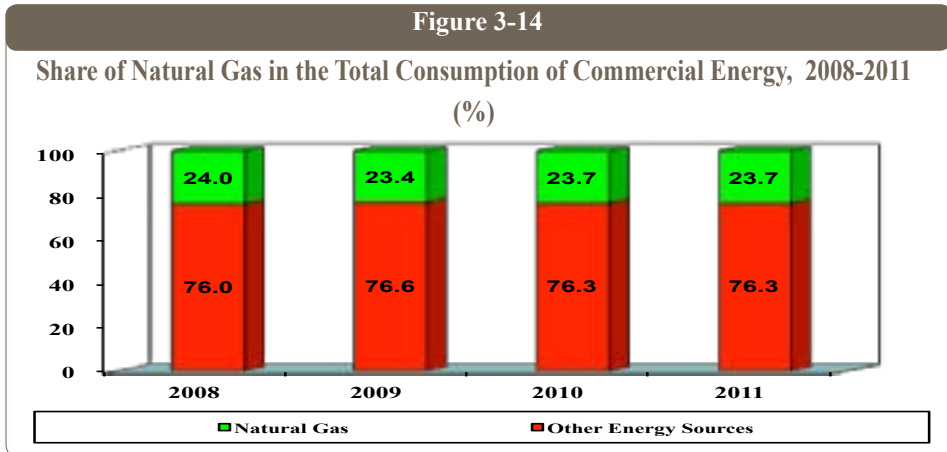


Table (3-16) and Figure (3-13) show the distribution of world natural gas consumption by region in 2010 and 2011.



In 2011, most regions of the world maintained its share of natural gas in world commercial energy balance. The Middle East region maintained the highest share with 48.5% against 47.4% in 2010. The share ranged between 11.1% in Asia/Pacific and 33.9% in Europe and Eurasia region.

Table (3-17) and Figure (3-14) show the evolution of the share of natural gas in total commercial energy consumption by region in 2008-2011.



1-2 Natural Gas Trade

The volume of natural gas exports worldwide increased moderately by 4% in 2011, reaching to 1025.6 billion cubic meters against about 986.2 billion cubic meters in 2010. These figures cover gas exports via both pipelines and as a liquefied natural gas (LNG).

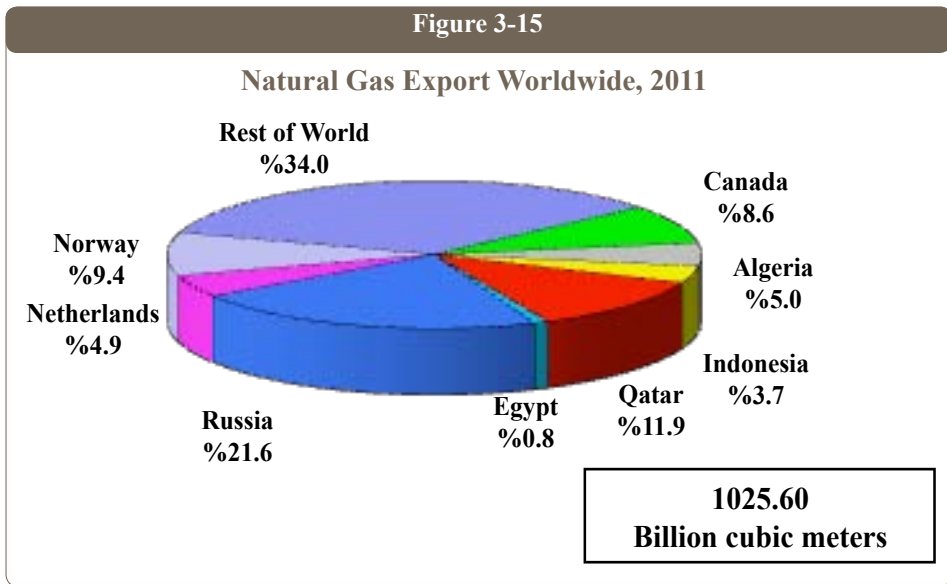
Middle East recorded the largest increase of natural gas exports in 2011 reaching to 158.7 billion cubic meters, equivalent to 23%, compared with about 129 billion cubic meters in 2010. The increase in Middle East is due to increase in Qatar: exports by 27.8%. Former Soviet Union region came second with an increase of 11.6%, followed by South America in third place with an increase of 8.5%. Meanwhile, North America increased its gas export by 4.5% while in Africa it decreased by 12.5%. Trinidad & Tobago in South, America in decreased by 7.4%. Finally, in Asia Pacific, it decreased by 0.7%.

US net imports of natural gas via pipelines in 2011 totalled about 88.1 billion cubic meters, which represented 14.07% of its total natural gas consumption. Canada remained the largest supplier of natural gas to USA. In 2011, US imported LNG from Trinidad and Tobago, Peru, Egypt, Norway, Nigeria, Qatar and Yemen, representing about 10.2% of total US natural gas imports (10 billion cubic meters) and about 1.6% of the US consumption of natural gas. US total exports of natural gas in 2011 increased to 42.7 billion cubic meters. Its exports to Canada reached 26.6 billion cubic meters and 14.1 billion cubic meters to Mexico. Its exports of LNG to Brazil, Belgium, China, India, Spain, United Kingdom, Japan and South Korea totalled about 2 billion cubic meters.

Russia topped the world's natural gas exporters, with a share of about 21.6% of world exports in 2011. Its natural gas exports to most

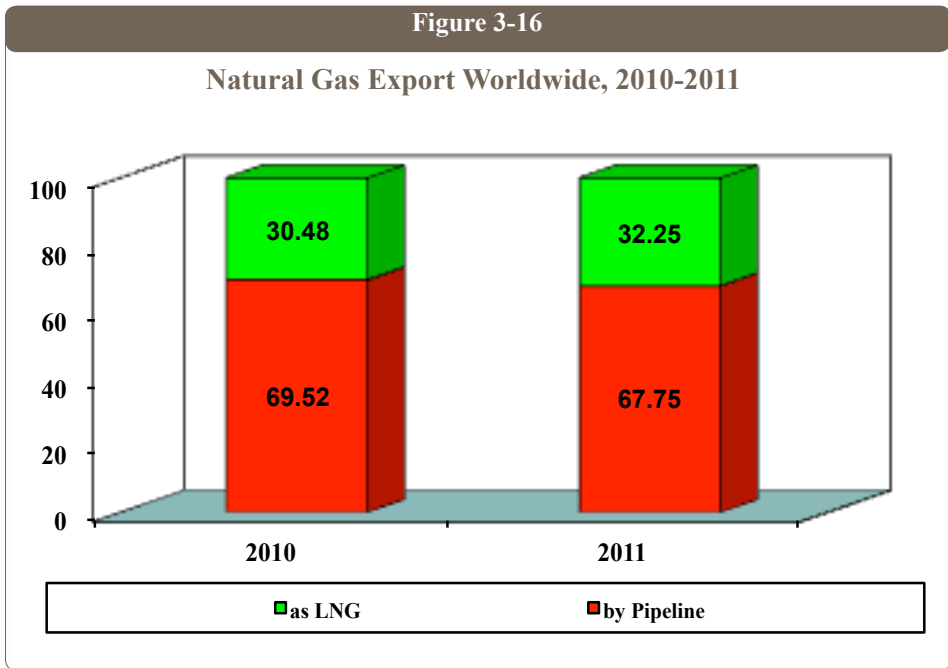


European countries totalled 221.4 billion cubic meters, which was 18.5 billion cubic meters less than in 2010. Qatar came second with 11.9%, followed by Norway with 9.4%, Canada 8.6%, Algeria 5%, the Netherlands 4.9%, United States 4.2% and Indonesia 3.7%. The exports of the aforementioned countries collectively constitute about 69.3% of total world exports of natural gas, as shown in [Table \(3-18\)](#) and [Figure \(3-15\)](#).

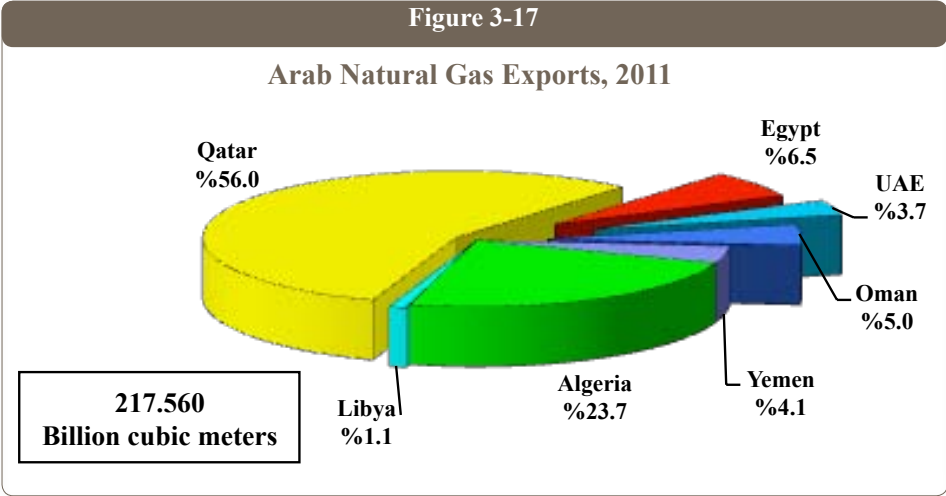


The volume of natural gas exports by pipelines rose from about 685.6 billion cubic meters in 2010 to about 694.8 billion in 2011, or by 1.3%, while LNG exports by tanker rose by 10% from 300.61 billion cubic meters to 330.8 billion cubic meters. Pipelines exports accounted for 67.75% of total natural gas exports in 2011, with a slight increase over the level 69.52% recorded in 2010.

LNG accounted for 32.25% of the total world natural gas exports in 2011, against 30.48% recorded in 2010, as shown in [Table \(3-19\)](#) and [Figure \(3-16\)](#).

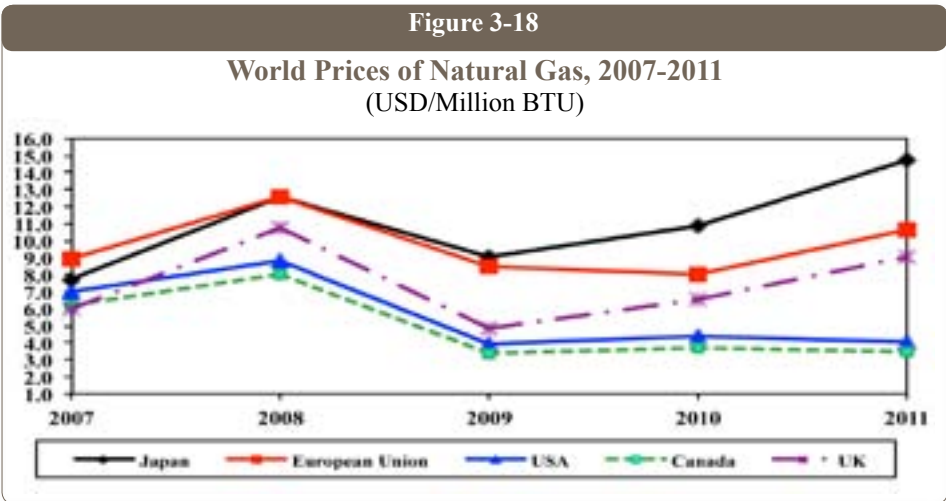


LNG and pipeline gas exports from Arab countries to the international markets continued to rise in 2011 for seventeenth consecutive year, reaching 217.56 billion cubic meters compared with 201.09 billion cubic meters in 2010, with an increase of 8.1%. Qatar ranked first place of Arab countries with gas exports of 121.8 billion cubic meters, representing 55.98% of total Arab exports in 2011. Algeria came second with total exports of 51.5 billion cubic meters, or 23.67% of total Arab exports, followed by Egypt 6.46%, Oman 5.01%, Yemen 4.09% and finally United Arab Emirates 3.67%, as shown in [Table \(3-20\)](#) and [Figure \(3-17\)](#).



1-3 World Natural Gas Prices

Natural gas prices, for both pipeline and LNG sales rose in major markets in 2011, compared with its rate in 2010. The price of natural gas in UK markets rose by 37.7% and in EU countries by 32.5%. Prices of natural gas transported to Japan (in the form of LNG) rose by about 35%, while it dropped in United States by 8.7% and in Canada by 6%, as shown in [Table \(3-21\)](#) and [Figure \(3-18\)](#).



1-4 World's Most Important Gas Activities

Enterprise Products Partners (EPP) started up a second 300 million cubic feet/day train at the partnership's Yoakum cryogenic natural gas processing plant in Lavaca County, Texas. The additional train increases nameplate capacity to 600 million cubic feet/day, and the plant can extract about 74,000 b/d of natural gas liquids. EPP also said it is on schedule to bring the third train at Yoakum into service in first-quarter 2013, raising natural gas liquids production from the project to 111,000 b/d.

Sasol Petroleum International, the upstream subsidiary of Sasol Ltd., has started up its 158 million cubic feet/day gas processing plant expansion project at the Temane, Mozambique. Capacity now is 458 million cubic feet/day. The gas plant began full-scale production of 300 million cubic feet/day in 2004 and is connected to the South African market via a 865 km cross border pipeline.

Korea Gas Corp (KOGAS) has announced that it will invest \$1.3 billion to develop the Gladstone LNG project in which it holds a stake of 15%. KOGAS bought a stake in GLNG in 2011 with \$610 million. The project has an estimated capacity of 7.8 million tons/year and expected to start production in 2015.

German company Linde has won a contract, to be worth around \$300 million, to build a midscale liquefied natural gas plant for Petronas subsidiary Malaysia LNG at its facility in Bintulu, East Malaysia. The plant will have a maximum capacity of 1840 tons/year and will re-liquefy boil-off gases from ship-loading and LNG storage. The new plant is expected to come into operation at the end of 2014. This new plant will allow to minimize flaring at the Petronas LNG Complex.

Ministry of Energy and Mineral Resources and Oil and Gas Executive Agency in Indonesia approved recently in principle the plan of further development for the expansion of the Tangguh liquefied natural gas project, operated by Bp Co., in Papua Barat province in eastern Indonesia. The planned expansion will be built on the established operation of the two existing liquefaction trains at the Tangguh LNG site. Train 3 is expected to add 3.8 million tons per year liquefaction capacity to Tangguh, bringing total project capacity to 11.4 million tons/year.

Chevron Corp. reported recently that a fourth train will be constructed as part of the Gorgon LNG project on Barrow Island, Western Australia. Geryon field, discovered in 2001, and Chandon field, discovered in 2006, will supply the new 5.2 million tons/year capacity LNG train. This will bring the Gorgon project output capacity to 20.8 million tons/year.

Jincheng Anthracite Mining Group (JAMG) announced in July that it started up a 300,000 cubic meters/day liquefied natural gas plant at Jincheng in Shanxi province. A second phase with a capacity of 600,000 cubic meters/day was also planned. However, the actual construction schedule has not yet been determined. The plant uses coal bed methane produced by its block in Qinshui basin, also in Shanxi province, as feedstock.

Royal Dutch Shell along with Asian partners Mitsubishi Corporation, China National Petroleum Corporation and Korea Gas Corporation officially launched the liquefied natural gas terminal project in Western Canada, near Kitimat. The project, which is expected to come online by the end of 2020, involves the design, construction and operation of a gas liquefaction unit as well as LNG facilities for storage, export and marine off-loading facilities and

shipping purposes. The initial phase of the venture will have two LNG processing units or trains. Each unit will have an annual production capacity of six million tons of LNG per year, with the possibility of expansion in the future. Shell controls 40% interest of the venture, while the other three companies have an equal share of 20%.

2-Arab Developments

2-1 Algeria

Algeria is implementing a plan to develop and increase its production of LNG by 2015. It endeavours to export 85 billion cubic meters of natural gas per year by 2013.

2-2 Egypt

Egypt implemented 9 projects to develop and produce natural gas in 2011/2012. Its total initial production reached 669 million cubic feet/day, and 1528 barrels/day of condensate.

The supply of natural gas to residential area reached 579 thousand units, with an increase of 3.8% from the last year.

The number of vehicles converted to run on natural gas increased by 17 thousand in 2011/12, with an increase of 11% from last year, bringing the total to 173,000 vehicles, after adding 17 new gas refueling stations, bringing the total to 159 refueling stations.

2-3 Iraq

Iraqi government has initiated talks for an integrated development covering associated gas from all of Misan province's major oil projects. China National Offshore Oil Company CNOOC, which operates the 450,000 b/d Misan fields development project, is a potential partner, while UK-listed independent Gulfsands Petroleum, is also keen to get involved.



Eventual gas volumes will depend on crude production levels, which are currently targeting crude output of over 1.1 million b/d by 2020, up from around 120,000 b/d. If this achieved, sales gas levels could be around 600 million cubic feet/day, with raw gas production of around 300-350 million cubic feet/day from CNPC's 535,000 b/d Halfaya project, in which Total is a partner, and a similar amount from the Misan fields project. Additionally there will be gas produced in association with oil from state owned Misan Oil Company's (MOC's) Nur and Amara fields. MOC has boosted Nur output from 5,000 b/d last year to over 20,000 b/d and is eyeing eventual production of 100,000 b/d, in addition to 60,000 b/d at the Amara field.

Iraq and Iran signed a preliminary agreement for building a 48-inch gas pipeline to Iraq. The pipeline, which is expected to cost \$450 million, will have a transmission capacity of 25 million cubic meter/day. The pipeline is intended to provide gas for Iraq's two largest thermal power plants, Sadr and al-Quds. These are in the eastern suburbs of Baghdad and have a combined generating capacity of 2.5 Gigawatt.

Iraq seeks to utilise its vast natural gas resources. In this context, projects were implemented to develop three gas fields and contracts were initialled for Al-saybah field in south of the country, Almansouriah in the north east, and Akkass field in the western region. These projects aim to exploit the free natural gas and its derivatives to meet the demand of the local market and to export surplus to foreign markets.

2-4 Kuwait

Kuwait's Jurassic gas development project is still facing several challenges as the production rate of first phase has been standing at 140 million cubic feet/day since several years and has not reached the target of 175 million feet/day of gas and 50,000 b/d of condensate.

The main difficulties facing the project development are resulted from the following reasons:

- The fields are deep and seated below a thick salt deposit (about 16000 feet), which limits seismic imaging and affects well positioning and drilling.
- The reservoirs are mainly carbonates, which are among the most complex, showing large variability, impacting ultimate recovery and requiring more wells than in any conventional fields. Furthermore, they are fractured, making production behaviour difficult to forecast.
- The reservoirs contain 2-6% sulphur, with some wells testing at significantly higher levels, which also contain corrosive fluids, such as, H₂S, CO₂ and extremely high salinity water.

The plan of Kuwait Oil Company for developing the Jurassic gas fields discovered in northern Kuwait includes three stages. The company is moving forward on its implementation despite many challenges faced to reach a production capacity of one billion cubic feet of gas per day, as well as about 350,000 b/d of light oil and condensates by 2015, to meet the demands of the country for electric power generation.

2-5 Qatar

In 2012, Qatar gas signed three long-term LNG supply contracts with Japan. The company announced in June, it will supply Japan's largest LNG buyer, Tokyo Electric Power Company (Tepco), with 1 million tons/year starting in 2013. It will also supply Chubu Electric and another Japanese company Shizuoka Gas, for a minimum of 0.2 million tons/year from Qatar gas-1, starting in 2016, while in September it agreed to supply Kansai Electric with 0.5 million tons/year for a period of 15 years, starting in 2013.



Qatar in 2010 sold LNG equivalent to 10.15 billion cubic feet to Japan, and rose 56% to around 15.8 billion cubic feet in 2011. Qatar gas also had boosted short-term LNG supplies to Japan to more than 20 million tons/year.

2-6 Saudi Arabia

In April, Saudi Aramco announced the start-up of operations of a new gas train and sulfur recovery unit at the Khursaniyah gas plant, which has a processing capacity of 1 billion cubic feet/day, with two further trains to be operated soon.

Saudi Arabia started an ambitious plan for developing the production of gas, especially in the gulf region, in addition to utilities and its infrastructure needed for gas processing, through two projects with a total capacity of 4.3 billion cubic feet/day by 2014. The first one, which was announced by Saudi Aramco in July 2011, is Karan project, the Kingdom's first offshore non-associated three gas project, discovered in 2006, with a capacity of 1.8 billion cubic feet/day. Karan gas will flow into the Khursaniya gas plant where it will boost capacity from 1 billion cubic feet/day to 2.8 billion cubic feet/day and increase sales gas production from 560 million cubic feet/day to 1.8 billion cubic feet/day. Ethane output will also rise from 20,000 b/d to 280,000 b/d. The second project is Wasit gas plant which will be fed by the 1.2 billion cubic feet/day, Arabiyah and the 1.3 billion cubic feet/day Hasbah field and will produce around 1.8 billion cubic feet/day of much needed gas for the Saudi master gas system.

TABLES

OF CHAPTER THREE





Table 3-1
World Existing Topping Distillation Capacity by Region,
2011 and 2012
(Million b/d)

	2011	2012	Difference	(%) Change 2011/2012
Asia/Pacific	24.92	25.64	0.72	2.89
North America	21.25	21.59	0.34	1.60
Western Europe	14.43	14.03	(0.40)	(2.77)
Eastern Europe/CIS	10.37	10.60	0.23	2.22
Middle East	7.28	7.28	0.00	0.00
South America/ Caribbean	6.58	6.60	0.02	0.30
Africa	3.22	3.22	0.00	0.00
Total	88.05	88.96	0.91	1.03

Note: Parentheses denote negative figures.

Source:

- Oil & Gas Journal, 6 Dec. 2011 & 3 Dec. 2012.



Table 3-2
World Catalytic Conversion Capacity by Region*,
2011 and 2012
(Million b/d)

	2011	2012	(%) Change 2012/2011
North America	12.58	12.62	0.32
Asia/Pacific	6.66	6.68	0.30
Western Europe	5.54	5.44	(1.80)
Eastern Europe/CIS	2.68	2.72	1.49
South America/Caribbean	1.84	1.84	0.00
Middle East	1.61	1.61	0.00
Africa	0.73	0.73	0.00
Total	31.64	31.64	(0.00)

* Includes catalytic cracking, hydrocracking and catalytic reforming.

Note: Parentheses denote negative figures.

Source:

- Oil & Gas Journal, 6 Dec. 2011 & 3 Dec. 2012.

Table 3-3
Regional Catalytic Conversion Capacity by Process,
2011 and 2012
(Million b/d)

	Catalytic Reforming			Catalytic Cracking			Catalytic Hydrocracking					
	2011	2012	Dif-ferent	(%) Change 2012/2011	2011	2012	Dif-ferent	(%) Change 2012/2011	2011	2012	Dif-ferent	(%) Change 2012/2011
North America	4.13	4.14	0.01	0.24	6.51	6.53	0.02	0.31	1.94	1.95	0.01	0.52
Western Europe	2.14	2.11	(0.03)	(1.40)	2.22	2.16	(0.06)	(2.70)	1.18	1.18	0.00	0.00
Asia/Pacific	2.21	2.26	0.05	2.26	3.21	3.17	(0.04)	(1.25)	1.25	1.25	0.00	0.00
Eastern Europe/CIS	1.47	1.47	0.00	0.00	0.88	0.86	(0.02)	(2.27)	0.33	0.39	0.06	18.18
Middle East	0.65	0.65	0.00	0.00	0.36	0.36	0.00	0.00	0.60	0.60	0.00	0.00
Africa	0.46	0.46	0.00	0.00	0.21	0.21	0.00	0.00	0.06	0.06	0.00	0.00
South America	0.40	0.40	0.00	0.00	1.31	1.31	0.00	0.00	0.13	0.13	0.00	0.00
Total	11.46	11.49	0.03	0.26	14.70	14.60	(0.10)	(0.68)	5.49	5.56	0.07	1.28

* Includes catalytic cracking, hydrocracking and catalytic reforming.

Note: Parentheses denote negative figures.

Source:

- Oil & Gas Journal, 6 Dec. 2011 & 3 Dec. 2012.





Table 3-4
World Coke Production Capacity from Thermal Conversion
Process by Region, 2011 and 2012
(Thousand tons/d)

	2011	2012	Difference	(%) Change 2012/2011
North America	133.71	133.73	0.02	0.02
Western Europe	12.61	12.61	0.00	0.08
Asia/Pacific	20.45	20.45	0.00	0.00
Eastern Europe/CIS	12.57	12.57	0.00	0.00
South America	24.64	24.64	0.00	0.00
Middle East	3.30	3.30	0.00	0.00
Africa	1.84	1.84	0.00	0.00
Total	209.12	209.14	0.02	0.01

Source:

- Oil & Gas Journal, 6 Dec. 2011 & 3 Dec. 2012.

Table 3-5
World Hydrotreating Capacity by Region, 2011 and 2012
(Million b/d)

	2011	2012	Difference	(%) Change 2012/2011
North America	16.37	16.58	0.21	1.28
Of which: Canada	na	na	-	-
Mexico	na	na	-	-
USA	na	na	-	-
Western Europe	10.08	10.02	(0.06)	(0.06)
Asia/Pacific	10.23	10.23	0.00	0.00
Eastern Europe/CIS	4.27	4.24	(0.03)	(0.70)
Middle East	2.04	2.04	0.00	0.00
South America	1.90	1.90	0.00	0.00
Africa	0.84	0.84	0.01	0.00
Total	45.73	45.85	0.12	0.26

Source:

- Oil & Gas Journal, 6 Dec. 2011 & 3 Dec. 2012.



Table 3-6
World's Top 25 Largest Refining Companies, January
(2012 - 2013)

Rank as in Jan. 2012	Company	Refining Capacity 1000 b/d	Rank as in Jan. 2013
1	Exxon Mobile	56575.0	1
2	Royal Dutch Shell PLC	4194.2	2
3	Sinope	3971.0	3
4	BP PLC	3322.2	4
5	Valero Energy Corp	2776.5	5
6	Petroleos de Venezuela SA	2678.0	6
7	China National Petroleum Corp	2675.0	7
8	Chevron	2584.6	8
9	ConocoPhillips	2504.2	9
10	Saudi Aramco	2451.5	10
11	Total SA	2304.0	11
12	Petroleo Brasileiro SA	1997.0	12
13	Petroleos Mexicanos SA	1703.0	13
14	National Iranian Petroleum Co	1451.0	14
15	JX Nippon Oil&Energ Corp	1423.2	15
16	Rosneft	1293.0	16
17	Marathon Petroleum Co.LP	1248.0	17
18	OAOLukoil	1217.0	18
19	SK Corp	1115.0	19
20	Repsol	1105.0	20
21	Kuwait National Petroleum Co	1085.0	21
22	Petramina	993.0	22
23	Agip Petroli SPA	904.0	23
24	Flint Hills Resources	816.5	24
25	Sunoco Inco	505.0	25

Source:

- Oil & Gas Journal, 6 Dec. 2011, 3 Dec. 2012.

Table 3-7
Ranking of World's Top Largest Oil Refineries ,
January 2012

	Company	Location	Refining Capacity 1000 b/d
1 -	Paraguana Refining Center	Cardon/Judibana, Falcon, Venezuela	940.0
2 -	SK Corporation	Ulsan, South Korea	480.0
3 -	GS Caltex Corp	Yeosu, South Korea	775.0
4 -	S-Oil Corp	Onsan, South Korea	669.0
5 -	Reliance Petroleum	Jamnagar, India	660.0
6 -	ExxonMobile Refining&Supply Co	Jurong, Taiwan	592.0
7 -	Reliance Industries, Ltd	Jamnagar, India	580.0
8 -	ExxonMobile Refining&Supply Co	Baytown, Texas, USA	560.5
9 -	Saudi Aranco	Ras Tanura, Saudi Arabia	550.0
10 -	Formosa Petrochemical Co	Mailiao, Taiwan	540.0
11 -	Marathon Petroleum Co. LLC	Garyville, Louisiana, USA	522.0
12 -	ExxonMobile Refining&Supply Co	Baton Rouge, Louisiana, USA	502.0
13 -	Hovensa LLC	St. Croix, Virgin Islands, USA	500.0
14 -	Kuwait National Petroleum Co	Mina Al-Ahmadi, Kuwait	466.0
15 -	Shell Eastern Petroleum Co	Pulau, Bukom, Singapore	462.0
16 -	BP PLC	Texas City, Texas, USA	451.3
17 -	Citgo Petroleum Corp	Lake Charles, Louisiana, USA	440.0
18 -	Shell Nederland Raffinaderij	Pernis, Netherlands	404.0
19 -	Sinopec	Zhenhai, China	403.0
20 -	Saudi Aramco	Rabigh, Saudi Arabia	400.0
21 -	Saudi Aramco-Mobil	Yanbu, Saudi Arabia	400.0

Source:

- Oil & Gas Journal, 3 Dec. 2012.

Table 3-8
Installed Refining Capacity in the Arab Countries,
2008-2012
(Thousand b/d)

	Number of Refineries in 2012	2008	2009	2010	2011	2012
Algeria	5	463	491	582.9	582.9	582.9
Bahrain	1	249	267	267.0	267.0	267.0
Egypt	8	726	726	725.5	725.5	725.5
Iraq	12	597	789	860.0	860.0	860.0
Kuwait	3	889	936	936.0	936.0	936.0
Libya	5	378	380	380.0	380.0	380.0
Qatar	2	137	283	283.0	283.0	283.0
Saudi Arabia	7	2095	2109	2107.0	2107.0	2107.0
Syria	2	240	240	240.1	240.1	240.1
Tunisia	1	34	34	34.0	34.0	34.0
UAE	5	798	758	761.3	761.3	761.3
Total OAPEC	51	6606	7013	7177	7177	7177
Jordan	1	90.4	90.4	90.4	90.4	90.4
Sudan	3	140.0	140.0	140.0	140.0	140.0
Somalia	-	-	-	-	-	-
Oman	2	222.0	222.0	222.0	222.0	222.0
Morocco	2	154.7	155.0	155.0	155.0	155.0
Mauritania	1	25.0	25.0	25.0	25.0	25.0
Yemen	2	140.0	140.0	140.0	140.0	140.0
Total other Arab countries	11	772	772	772	772	772
Total Arab countries	62	7378	7786	7949	7949	7949

Source:
- Oil & Gas Journal, 3 Dec. 2012.

Table 3-9
New Refinery Construction Projects in OAPEC Member Countries

Country	Project	Status 2011	Refining Capacity 1000 b/d	Status 2012
Algeria	Tiaret	Study	100	Study
Egypt	Musturud	Study	160	Study
	Ain al-Sokhna	Study	130	Postponing
Iraq	Nasiryia	Design	300	Design
	Karbala	Design	140	Design
	Misan	Design	150	Design
	Kirkuk	Design	150	Design
Kuwait	Mina Al-Zour	Study	530	Study
Qatar	Ras-Laffan	Study	146	Engineering design
Saudi Arabia	Yanbu	Bid Evaluation	400	Bid Evaluation
	Jubail	Construction	400	Construction
	Ras Tanura	Engineering design	400	Engineering design
	Jizan	Bid Evaluation	400	Bid Evaluation
Syria	Furoqlos	Study	140	Study
	Deir Al-zour	Study	140	Cancelled
	Deir Al-zour ²	Study	100	Cancelled
Tunisia	Skhira	Study	120	Study
UAE	Fujaira	Engineering design	200	Engineering design
	Ruwais	Construction	417	Construction



Table 3-10
New Refinery Construction Projects in Other Arab Countries

Country	Project	Status 2011	Refining Capacity 1000 b/d	Status 2012
Oman	Dukum	Engineering design	۲۳۰	Construction
Sudan	Port Sudan	Postponing	۱۵۰	Postponing
Morocco	Al-Jufr Al-asfar	Postponing	۲۰۰	Postponing
Yemen	Rass Issa	Postponing	۱۶۰	Postponing
	Hadramout	Postponing	۵۰	Postponing

Table 3-11
World Top 10 Ethylene Complexes, January 2012

	Company Name	Location	Production Capacity Thousand) (tons/Year
١	Formosa Petrochemical Corporation	Mailiao, Taiwan, China	2935
٢	Nova Chemicals Corporation	Joffre, Alta , Canada	2812
٣	Arabian Petrochemical Company	Jubail, Saudi Arabia	2250
٤	Exxon Mobil Chemical Company	Baytown, Tex	2197
٥	Chevron Phillips Chemical Company	Sweeny - Tex	1865
٦	Dow Chemical Company	Terneuzen, Netherlands	1800
٧	Ineos Olefins & Polymers	Chocolate Bayou, Tex	1752
٨	Equistar Chemicals LP	Channel view , Tex	1750
٩	Yanbu Petrochemical Company	Yanbu, Saudi Arabia	1705
١٠	Equate Petrochemical Company	Shuaiba,Kuwait	1650

Source:

- Oil & Gas Journal, 2 July, 2012



Table 3-12
World Ethylene Capacity by Region,
2010 and 2011
(Thousand tons at the end of the year)

	2010	2011	Difference	(%) Change 2011/2010
North America	34508	34508	0.0	0.00
Asia/Pacific	42631	42631	0.0	0.00
Western Europe	24904	24904	0.0	0.00
Middle East	21659	22859	1200.0	5.54
Eastern Europe/CIS	7971	7971	0.0	0.00
South America	5084	6384	1300.0	25.57
Africa	1698	1698	0.0	0.00
Total	138455	140955	2500.0	1.81

Note: Parentheses denote negative figures.

Source:

- Oil & Gas Journal , 4 July, 2011 & 2 July, 2012

Table 3-13
World Ethylene Production Capacity by Country,
(Thousand tons /Year)

Country	2010	2011	Change
Azerbaijan	330	330	0
Argentina	839	839	0
Spain	1430	1430	0
Australia	502	502	0
Palestine	200	200	0
Germany	5743	5743	0
UAE	600	600	0
Indonesia	600	600	0
Uzbekistan	140	140	0
Ukraine	630	630	0
Iran	4734	4734	0
Italy	2170	2170	0
Brazil	3500	3500	0
Portugal	330	330	0
Belgium	2460	2460	0
Bulgaria	400	400	0
Poland	700	700	0
Thailand	3172	3172	0
Turkey	520	520	0
Czech Republic	544	544	0
Algeria	133	133	0
South Africa	585	585	0
Russia	3490	3490	0
Russian Federation	193	193	0
Romania	944	944	0
Singapore	2780	2780	0
Slovak Republic	220	220	0

/.Cont



Table 3-13 Cont.

Country	2010	2011	change
Sweden	625	625	0
Switzerland	33	33	0
Chile	45	45	0
Serbia and Montenegro	200	200	0
China	12978	12978	0
Taiwan	4006	4006	0
France	3373	3373	0
Venezuela	600	1900	1300
Finland	330	330	0
Qatar	2520	2520	0
Kazakhstan	130	130	0
Croatia	90	90	0
Canada	5531	5531	0
South Korea	5630	5630	0
North Korea	60	60	0
Colombia	100	100	0
Kuwait	1650	1650	0
Libya	350	350	0
Malaysia	1723	1723	0
Norway	660	660	0
Egypt	330	330	0
Mexico	1384	1384	0
Saudi Arabia	11955	13155	1200
UK	2855	2855	0
Norway	550	550	0
Austria	500	500	0
Nigeria	300	300	0
India	3315	3315	0
Netherlands	3965	3965	0
USA	27593	27593	0
Japan	7265	7265	0
Greece	20	20	0

Note: Parentheses denote negative figures.

Source:

- Oil & Gas Journal , 4 July, 2011 & 2 July, 2012

Table 3-14
Top 10 Ethylene Producers
Jan 2012

Company Name	No. of Sites	Production Capacity (Thousand tons/Year)	
		of entire Complexes	With only Company Partial interests
1 - Saudi Basic Industries Corp.	15	13392	10274
2 - Dow Chemical Co.	21	13045	10529
3 - Exxon Mobil Corp.	20	12515	8551
4 - Royal Dutch Shell Plc	13	9358	5947
5 - Sinopec	13	7895	7275
6 - Total AS	11	5933	3472
7 - Chevron Phillips petrochemical Co.	8	5607	5352
8 - Lyondell Basell	8	5200	5200
9 - Iran National Petrochemical	7	4734	4734
10 - Ineos	6	4656	4286

Source:

- Oil & Gas Journal, 2 July, 2012.



Table 3-15
Ethylene Production Capacity in the Arab Countries,
2007-2011
(Thousand tons/year)

	2007	2008	2009	2010	2011
Algeria	133	133	133	133	133
Egypt	330	330	330	330	330
Iraq	120	120	120	120	120
Kuwait	800	1650	1650	1650	1650
Libya	350	350	350	350	350
Qatar	1000	1000	1220	2520	2520
Saudi Arabia	6800	9400	9400	11955	13155
UAE	600	600	600	600	600
Total	10133	13583	13803	17658	18858

Source:

- Oil & Gas Journal, 6 July 2011 & 3 July 2012.

Table 3-16
Consumption of Natural Gas by Region,
2010 and 2011
(Billion cubic meters)

	2010	2011	(%) Change 2011/2010
Europe & Eurasia*	1124.6	1101.1	(2.1)
North America	836.2	863.8	3.3
Asia/Pacific	106.9	109.8	2.7
Middle East	377.3	403.1	6.8
South & Central America	150.2	154.5	2.9
Africa	557.9	590.6	5.9
Total	3153.1	3222.9	2.2

* CIS , Europe and Turkey represented by Europe & Eurasia.

Source:

- BP Statistical Review of World Energy, June 2012.

Note: Parentheses denote negative figures

Table 3-17
Share of Natural Gas in the Total Consumption
of Commercial Energy by Region, 2008 - 2011
(%)

	2008	2009	2010	2011
Middle East	47.0	46.5	47.4	48.5
Europe & Eurasia*	34.7	33.4	34.4	33.9
North America	26.7	27.3	27.4	28.2
Africa	23.6	24.7	25.2	25.7
South & Central America	22.2	20.7	21.8	21.6
Asia/Pacific	10.9	10.7	11.0	11.1
Total	23.5	24.0	23.7	23.7

* CIS , Europe and Turkey represented by Europe & Eurasia.

Source:

- BP Statistical Review of World Energy, June 2009& June 2010 & June 2011& June 2012.

Table 3-18
Natural Gas Exports by Region, 2010 and 2011
(Billion cubic meters)

	2010	2011	(%) of total	(%) Change 2011/2010
Western Europe	199.60	186.20	18.2	(6.7)
Of which: Norway	101.00	96.80	9.4	(4.2)
Netherlands	53.30	50.40	4.9	(5.4)
UK	15.70	16.30	1.6	3.8
Former Soviet Union	254.40	283.90	27.7	11.6
Russia	202.90	221.40	21.6	9.1
Others	51.50	62.50	6.1	21.4
North America	125.20	130.80	12.8	4.5
Of which: Canada	92.40	88.00	8.6	(4.8)
USA	31.90	42.70	4.2	33.9
Africa	113.80	99.60	9.7	(12.5)
Of which: Algeria	56.30	51.50	5.0	(8.5)
Egypt	18.32	8.60	0.8	(53.1)
Libya	9.89	2.40	0.2	(75.7)
Nigeria	15.99	25.90	2.5	62.0
Asia/Pacific	127.70	126.80	12.4	(0.7)
Of which: Australia	24.24	25.90	2.5	6.8
Brunei	8.81	9.40	0.9	6.7
Indonesia	41.70	37.90	3.7	(9.1)
Malaysia	30.73	31.99	3.1	4.1
Mynamar	8.29	8.60	0.8	3.7
Middle East	129.00	158.70	15.5	23.0
Of which: Oman	11.54	10.90	1.1	(5.5)
Iran	5.67	9.10	0.9	60.5
Qatar	95.30	121.80	11.9	27.8
UAE	7.01	8.00	0.8	14.1
South America of which:	36.50	39.60	3.9	8.5
Trinidad & Tobago	20.40	18.90	1.8	(7.4)
Others	16.10	20.70	2.0	28.6
Total	986.20	1025.60		4.0

Note: Parentheses denote negative figures.

Source:

- BP Statistical Review of World Energy, June 2011, June 2012.



Table 3-19
World Natural Gas Exports by Region,
2010 and 2011
(Billion cubic meters)

	2010	(%)	2011	(%)
A- Exports by Pipeline.				
Europe	194.30	28.3	180.90	26.0
Former Soviet Union	241.00	35.2	269.50	38.8
North America	123.60	18.0	128.80	18.5
Africa	55.00	8.0	42.70	6.1
Asia/Pacific	29.80	4.3	29.00	4.2
Middle East	27.60	4.0	28.30	4.1
South America	14.30	2.1	15.60	2.2
Total World Exports by Pipeline	685.60	100.0	694.80	100.0
B- Exports as LNG.				
Europe	5.31	1.8	5.3	1.6
Former Soviet Union	13.40	4.5	14.4	4.3
North America	1.60	0.5	2.00	0.6
Africa	58.80	19.6	56.7	17.1
Asia/Pacific	97.90	32.6	97.8	29.6
Middle East	101.40	33.7	130	39.1
South America	22.20	7.4	24	7.1
Total World Exports as LNG	300.61	100.0	330.79	100.0
Total World Exports	986.21		1025.59	
Exports by Pipeline/ Total Exports (%)	69.52		67.75	
Exports as LNG/ Total Exports (%)	30.48		32.25	

* CIS , Europe and Turkey represented by Europe & Eurasia.

Source:

- BP Statistical Review of World Energy, June 2011 June 2012.

Table 3-20
Arab Natural Gas Exports,
2007 - 2011
(Billion cubic meters)

	2007	2008	2009	2010	2011
A- Exports by Pipeline.					
Algeria	34.03	37.50	31.77	37.00	34.40
Qatar	3.77	17.10	18.75	19.20	19.20
Libya	9.20	9.87	9.17	9.41	2.30
Egypt	2.39	2.86	5.50	5.50	5.46
Oman	0.95	-	-	-	-
UAE	-	-	-	-	-
Total Arab Exports by Pipeline	50.34	67.33	65.19	71.11	61.36
B- Exports as LNG.					
Algeria	24.68	24.67	21.87	20.90	19.31
Qatar	37.17	41.84	39.68	49.44	75.75
Libya	0.72	0.76	0.53	0.72	0.34
Egypt	14.97	13.61	14.06	12.82	9.71
Oman	11.90	11.90	11.40	11.54	11.49
UAE	7.77	7.55	7.57	7.01	7.90
Yemen	-	-	-	0.42	5.48
Total Arab Exports as LNG	97.21	100.33	95.11	102.85	129.98
Total Arab Exports	147.55	167.66	160.30	173.96	191.34
Exports by Pipeline/ Total Exports (%)	34.12	40.16	40.67	40.88	32.07
Exports as LNG/ Total Exports (%)	65.88	59.84	59.33	59.12	67.93

Sources:

- BP Statistical Review of World Energy, June 2008, June 2009, June 2010 , June 2011 and June 2012.

Table 3-21
Average World Natural Gas Prices*, 2007-2011
(Dollar/Million BTU)

	2007	2008	2009	2010	2011	(%) Change 2011/2010
USA	6.95	8.85	3.89	4.39	4.01	(8.7)
Canada	6.17	7.99	3.38	3.69	3.47	(6.0)
Japan**	7.73	12.55	9.06	10.91	14.73	35.0
European Union	8.93	12.61	8.52	8.01	10.61	32.5
UK	6.01	10.79	4.85	6.56	9.03	37.7

* Average CIF Prices.

** LNG Prices

Note: Parentheses denote negative figures.

Source:

- BP Statistical Review of World Energy, June 2012.

PART TWO

OAPEC ACTIVITIES IN 2012



PART TWO
OAPEC ACTIVITIES IN 2012

CHAPTER ONE
THE MINISTERIAL COUNCIL AND
THE EXECUTIVE BUREAU

I. THE MINISTERIAL COUNCIL

The Ministerial Council of the Organization of Arab Petroleum Exporting Countries held its 88th meeting in Cairo, Egypt, on 28th of Jumada II H, corresponding to 19th of May 2012. The meeting was at the level of Executive Bureau members representing the ministers, and was chaired by HE. Abdelkader Laalem, the representative of the People's Democratic Republic of Algeria in the Executive Bureau. The Council held its 89th meeting in Cairo, Egypt on 9th of Safar 1434 H, corresponding to 22th of December 2012, under the chairmanship of HE. Dr Youcef Yousfi, Minister of Energy and Mines in the People's Democratic Republic of Algeria who chaired the 2012 session.

Resolutions adopted by the Ministerial Council in 2012, are referred to in the press releases issued after the two meetings, these are appended to this report.

II. THE EXECUTIVE BUREAU

OAPEC's Executive Bureau held its 132^d meeting in Cairo on 26th and 27th Jumada II 1433H, corresponding to 17th and 18th of May 2012 to compile the agenda for the 88th meeting of the Ministerial Council (at the level of Executive Bureau members representing the ministers). The

133rd meeting was held in Cairo on the 20th and 21st Zul-Qaadah 1433H, corresponding to 6th and 7th October 2012, to consider the 2013 draft budgets for the General Secretariat and Judicial Tribunal and to submit recommendations to the Ministerial Council.

The Bureau also held its 134th meeting in Cairo, on 6th of Safar 1432H, corresponding to 19th of December 2012 to prepare the agenda for the aforementioned 89th Ministerial Council meeting.

CHAPTER TWO

GENERAL SECRETARIAT

I: Studies, Papers and Reports

OAPEC General Secretariat has implemented its annual program for 2012, including completion of technical and economic studies and research papers relevant to petroleum industries. The General Secretariat has also completed its 2012 proposed program seminars and workshops.

These activities are reviewed as follows:

1.1 Well Blow Out: Environmental Impact

The study highlights the causes of well blow out, and the impact of oil and other well fluids on the environment. The study defines the various types of blowouts, providing a historical background, causes, and places of occurrence. The study discusses the environmental effects resulting from blowouts and the downstream physiochemical purging processes. It has been noticed that despite their immediate intensity of environmental effects, the environment possesses the mechanism of returning back to normal within a period of time depending on the place of occurrence.

The study is divided into four chapters; **Chapter 1** defines blowouts, causes and places of occurrence. **Chapter 2** addresses the effects arising from the spread of the different fluids to the surrounding environment, including oil and gas, underground water, drilling liquids, and chemicals used in drilling and production. This chapter tackles the impact of hydrocarbons on humans and life in general, in water and on the ground. **Chapter 3** reviews several case studies exhibiting the effects of blowouts, including environmental effects of Macond Well blow out that occurred in the Gulf of Mexico in 2012. **Chapter 4** studies the effects of spilled oil containment and treatment operations.

1.2 Energy Conservation Options in Refining Industry

The study presents the conditions of Arab oil refineries, causes of high rate of energy consumption, as measured by global standards, referring to the major future plans to upgrade the performance of such refineries, enabling them to apply energy management programs and improve utilization efficiency.

The study provides examples and practical experiments executed by some global refineries, highlighting the importance of applying energy conservation and utilization improvement programs, as well as the implications for the profit margin of the refinery and improving its compliance with legislation aimed at protecting the environment against pollution.

The study contains 5 chapters; **Chapter 1** tackles the significance of energy conservation in oil refining industry. **Chapter 2** exhibits energy management program in refining. **Chapter 3** addresses energy conservation opportunities in refining and support operations. **Chapter 4** provides a number of examples and experiments of energy efficiency improvement programs, which were implemented in some global refineries, reflecting the importance of applying energy conservation and utilization improvement procedures, and the implications for profit margin of the refinery, while improving its compliance with legislation aimed at protecting the environment against pollution. **Chapter 5** reviews energy conservation programs in Arab oil refineries.

In conclusion a number of recommendations were drawn up to help Arab refineries implement cost-effective energy efficiency improvement programs. Of the main recommendations is a reference to the necessity to support scientific research to develop technologies that contribute to improving energy efficiency in refining processes and support units, enhance integration, cooperation and joint action opportunities in Arab refineries, exchange expertise in the area of energy conservation and utilization improvement, while emphasizing the importance of sustaining

the energy efficiency improvement procedures in refining industry. The aim is to monitor the changes in the consumption rates over time, and to make the proper amendments on a timely basis.

1.3 Drivers of Cooperation between National Petroleum Companies in OAPEC Member Countries and Global Petroleum Companies in Petroleum Downstream Industries

This paper was presented to the Petroleum Downstream Industries Week, held in Abu Dhabi – UAE, during the period 25-28 March 2012, under the sponsorship of Abu Dhabi Oil Refining Company (TAKREER) and a number of global oil companies.

The paper gives a historic background of the development of cooperation between the national oil companies in OAPEC member countries and global oil companies in refining and petrochemical industries. The paper addresses the drivers of national petroleum companies in OAPEC countries to join global companies in refining industry. These drivers are summarized in increasing profitability, sharing risk, protecting capital, and ensuring opportunities for marketing oils of exporting countries in the world's major oil markets. They also include enhancing their competitive edge in global markets, adding value to their oil resources by converting them into petroleum products instead of exporting crude.

The paper briefs the gains the global companies seek from cooperation with national companies in OAPEC countries, as follows:

- Sharing challenges and joint opportunities.
- Sharing risk.
- Exchanging of knowledge in engineering and operation with national companies.
- Transferring skills and technology, and contributing to building local capacity.
- Accessing oil reserves and projects of economic feasibility.

The paper provides practical examples of certain existing and planned joint ventures in downstream petroleum industries in the member countries, reflecting the efforts of both parties towards achieving the common objectives of cooperation.

The papers draw the following conclusions:

National and global companies can create different value-added elements for partners, and realize a higher economic growth in the long run for both parties through risk sharing, and equal shares of gains.

Global petroleum companies, owing to their distinctive and integrated capacity, may contribute to adding value to national companies.

Successful joint ventures between national and global petroleum companies are the outcome of focusing joint efforts of both parties on realizing common interests in the long run.

1.4 Effects of Recent Political and Economic Events in Certain Petroleum Exporting Countries on Arab Refining Industry

This paper was presented during the events of the 6th Annual Global Refining Summit, held in Barcelona, Spain during the period 21-23 May 2012. The paper addresses the impact of political turmoil, which took place in some Arab countries, on the oil prices and supplies, as well on Arab refining industry. The paper refers to the reasons that motivated certain economic analysts working in energy to believe that such conditions will lead to oil price chaos in global markets. However, the findings of a study conducted by OAPC emphasizes that political unrest in certain Arab countries will not affect the stability of oil prices and supplies to global markets, for the following reasons:

- The established cooperation and coordination relationship between world oil producers and consumers motivates them to adopt all possible measures to avoid supply interruption in global markets, thus protecting the common interests of all parties.

- The availability of acceptable levels of global oil inventories.
- The availability of acceptable substitute production capacity of crude oil in certain Arab countries, such as Saudi Arabia, Kuwait, and UAE, is enabling them to compensate the probable shortages in cases of emergency.
- The larger part of oil price fluctuation that emerged with the outbreak of political turmoil is largely correlated to the unjustifiable concerns about the unknown, which is not based on facts.

Regarding the implications of political turmoil that took place in certain Arab countries for refining industry, the paper indicates that in the short term the industry will be adversely affected as a result of the slow pace of implementing the previously announced new refinery establishment projects, and the upgrading of the existing refineries. In the long term, such projects are expected to flourish, driven by the need of governments to provide new job opportunities, and clean petroleum products, and to improve refining industry's compliance with legislation aimed at protecting the environment against pollution.

In conclusion, the paper reviews the strategic plans announced by OAPEC member countries to avoid the probable negative impacts of political turmoil that took place in certain Arab countries for oil supplies to global markets and refining industry. These strategic plans are summarized as follows:

- Enhancing transparency in information exchange between oil producing and consuming countries to ensure security of demand and supply.
- Supporting the new refineries establishment projects and upgrading the existing refineries to contribute to securing adequate supplies of petroleum products to global markets.
- Enhancing cooperation between national and global oil companies to meet the challenges facing the refining industry, share risk, and capitalize on the strengths of each party.



1.5 Development of Crude Oil Pricing Stages in Global Markets

The study primarily aims at highlighting the development of the stages of crude oil pricing in global markets.

The study is divided into 4 main parts. **Part 1** addresses the announced price stage, which commenced in the US from the outset of modern oil industry. In the Middle East region, application of announced prices commenced officially in the 1950s, and continued up to the end of 1973. **Part 2** tackles OPEC and official prices, i.e. the stage which began by fully transferring the pricing decision from companies to OPEC. **Part 3** highlights the market stage, which began with OPEC abandoning the official pricing, and is continuing to the present time. **Part 4** reviews the potential future price trends.

The main conclusions of the study:

- Reconsidering the current pricing system does not necessarily mean a return to fixed pricing system. Yet, it means developing and improving within the current general framework, based on market prices.
- To face the criticism to the current pricing system of reference oils, and the problems it suffers, it is expected to continue the present procedures of adding new types of oils, as much as possible, to the currently used reference oils, so as to alleviate the production decline and justify continued use as reference oils.
- The increasing concentration of member countries on Asian markets necessitates constant close monitoring of the developments in these markets, and their implications for the pricing, which may represent a problem in the future in light of the growing demand for oil, especially that the pricing of oils imported to those markets plays a vital role in pricing the region's imports of liquefied natural gas, which is linked with oil pricing.
- The increasing importance of member countries, especially the large producing countries in the Arabian Gulf region, in global oil markets in the future, necessarily means the increasing

importance of Arabian Gulf as a major global exporting center. Hence, countries may see that it is in their interest to convert the Gulf, in the long run, into a pricing center by establishing a market for their oils, in one way or another, to serve as the reference for pricing their oil exports to global markets.

1.6 Development of Oil and Natural Gas Production and Consumption in Asian Countries (Except China and India): Implications for Member Countries

The study highlights the developments witnessed by the group of Asian countries (except China and India) with regard to oil and natural gas production and consumption. Member countries should monitor these. These countries constitute significant markets in light of their increasing consumption of oil and natural gas, at a time when the demand by industrialized nations is declining.

The study is divided into 5 main thrusts. Thrust 1 describes the main characteristics of Asian oil and natural gas markets, Thrust 2 addresses the development of oil and natural gas consumption in the Asian countries, except China and India, and the impact on member countries trade. Thrust 3 gives a preview of the oil exports of member countries to Asian countries (except China and India). Thrust 4 views the outlook of demand for oil and natural gas in the Asian countries (except China and India) up to 2035. Thrust 5 reviews the role of member countries in meeting the expected Asian demand for oil and natural gas until 2035.

The main conclusion of the study is that the constant economic growth witnessed by the majority of Asian economies (except China and India) over the past two decades led to a progressive increase in oil and natural gas consumption, without being met with a similar increase in production. This was conducive to more dependence of those countries on imports and the concentration of the major part on member countries. The share of developing Asian countries is expected to exceed the share of industrialized countries with effect from 2020. Hence, the importance

of developing Asian countries is expected to increase as a major global oil consumer, which will have implications for the oil of OAPEC member countries, in particular, and the oils of OPEC countries, in general. Meanwhile, all forecasts indicate the increasing importance of the oil of OAPEC member countries in global oil market, against a decline in the shares of other producing groups outside OAPEC.

1.7 Future Outlook of Global and Member Countries Oil Supplies: Opportunities and Challenges

The study mainly highlights the available opportunities and challenges that will face the future oil supplies, in 4 main thrusts. **Thrust 1** addresses the development of global oil supplies over the past three decades, the nature of controversy on the peak oil production, and the concerns about oil depletion. **Thrust 2** highlights the factors affecting the future global oil supplies. **Thrust 3** reviews forecasts of global oil supplies until 2035, by type and geographic sources. This thrust also highlights the ambiguity in the future global oil supplies and investment needs. **Thrust 4** describes the role of member countries in securing future oil supplies by showing the available opportunities and challenges, which are expected to be met in this respect.

The main conclusion of the study is that there is a consensus on the availability of sufficient oil resources to secure the required supplies up to 2035. The critical factor to secure such oil supplies will depend on the developments of oil prices, technological breakthroughs, the level of manpower qualification, and the political factors, which, in their entirety, affect the nature and expectations of investment decision.

1.8 End-use Energy Consumption by Business Sector in Arab Countries

This study mainly exhibits the development of end-use energy consumption in Arab countries over the period 1980-2009. It contains

4 main parts. Part 1 gives a preview of global trends in end-use energy consumption, part 2 reviews the size of the various sources of energy used in meeting the energy requirements in the business sectors, and the relative importance of those sources in end-use energy consumption. Part 3 highlights the end-use energy consumption in the business sectors and the relative importance of the sources of energy that meet the energy requirements in each sector. Part 4 addresses the energy intensity and its development in Arab countries during the period 1980-2009.

As compared to the energy intensity indicator within Arab countries, it may be stated that the main conclusion of the study is that there is a vast potential to increase the efficiency of energy utilization in Arab countries, especially in member countries.

1.9 Development of Liquefied Natural Gas Trade and Implications for Gas Industry in Member Countries

The study highlights the notable developments witnessed by liquefied natural gas industry, and traces the implications for gas industry in member countries. **Part 1** briefs the global and Arab natural gas industry. **Part 2** addresses liquefied natural gas industry, known for its huge investments, and as one of the most sophisticated industries. **Part 3** reviews liquefied gas trade, where the share of liquefied gas of global natural gas trade rose over the past decade from 22% in 2000 to 30% in 2010. **Part 4** tackles the future outlook of liquefied gas trade and the implications for member countries. It is obvious that liquefied gas plays an increasing role in the global energy scene.

The main conclusion of the study is that the current input reflects an optimistic picture and a “golden age” for demand for natural gas, in general, in the long run, in the wake of global concerns about the climate change, especially that gas is considered to be a source of relatively clean energy, in addition to the problems and challenges facing the sources of alternative energy.



II: Conferences and Seminars Organized by the General Secretariat

2-1 The Hydrocarbons Transportation Pipelines in Arab Countries Conference

In pursuant to its 2011 plane, the General Secretariat of OAPEC held a conference on (Hydrocarbons Transportation Pipelines in Arab Countries), from 21 to 23 February 2012, in Cairo, under the patronage of H.E. Minister of Petroleum and Mineral Resources in Egypt, in association with the Japanese Cooperation Centre Petroleum (JCCP).

Specialists in operating, maintenance and monitoring of oil pipelines participated to this event. They came from OAPEC members' NOCs and IOCs, the Japan Cooperation Center, Petroleum (JCCP), and regional and international research institutes. His Excellency the Secretary General, Mr Abbas Ali Naqi, opened the conference welcoming the attendees, and browsing in some guidelines the goals and objectives of the conference, as an occasion for exchanging experiences, opinions and views about the latest developments in oil technologies fields and in the rehabilitation and the maintenance of oil and gas pipelines.

In his speech pronounced on his behalf by the Engineer Hani Dhahi , CEO of the Egyptian General Petroleum Corporation, HE Engineer Abdullah Ghorab Minister of Petroleum and Mineral Resources of the Arab Republic of Egypt affirmed that oil and gas pipelines in the Arab countries achieved real industrial jumps and strengthened the bonds of Arab joint cooperation . After that, HE the Ambassador of Japan in the Arab Republic of Egypt gave keynotes in which he welcomed the participants in the conference, praised the constructive cooperation between Japan and the Arab countries in the petroleum industry and other fields . From his part Mr. Morihiro Yoshida, JCCP's CEO pronounced a speech in which he expressed the role of cooperation between the Organization of Arab Petroleum Exporting Countries (OAPEC) and Japan Cooperation Center Petroleum (JCCP) in the exchange of expertise between the two sides.

The conference is a result of the cooperation between OAPEC and the Japanese Cooperation Centre Petroleum after signing a memorandum of understanding in March 2011. The MOU is a part of the General Secretariat of OAPEC initiatives to strengthen and expand its cooperation with international institutions concerned with energy issues and oil related issues in particular.

The conference included in its two days five technical sessions, in which were focused the following main topics:

- Regional Oil and Gas Pipelines in the Arab Countries: The Present Oil and Gas Transportation Pipelines in Arab States: Present and Future Perspectives
- Design and Construction on Onshore and Offshore Pipelines.
- Leakage Monitoring and Safety Operation Concepts of Pipelines.
- The Economics of Oil and Gas Transportation.
- Environmental Protection Measures and Energy Conservation in Pipelines Systems.
- Maintenance & Emergency Repair Technology.
- Pipelines Corrosion Control Techniques.

The third day of the conference was dedicated to a guided visit to the facilities of the Sumed pipeline terminal (Suez-Mediterranean pipeline) at Ain al Sokhna (Gulf of Suez).

2.2 1st Coordinating Meeting of Data Bank Liaison Officers of OAPEC Member Countries

In line with the 2012 General Secretariat's action plan to activate the services of the Data Bank, and to accomplish success of its statistical project, both internally and externally at member countries level, the General Secretariat invited the member countries to attend the 1st Coordinating Meeting of Data Bank Liaison Officers of OAPEC Member Countries. The meeting was held during the period 29-30 April 2012 at the premises of the General Secretariat in the State of Kuwait.

The meeting discussed the energy data collection form, and all aspects of statistical statements relating to oil and energy industry. The form is periodically dispatched to member countries, stating the actions to be taken by the Data Bank staff. The meeting covered the following main topics:

- Familiarizing the liaison officers with the Data Bank at the General Secretariat, and providing them with access to the General Secretariat's database.
- Familiarizing the liaison officers with the contents of the General Secretariat's database, the features of operating system, as well as the approaches of retrieving the required reports.
- Reviewing the energy data collection form and its components, conducting thorough discussions and consultations regarding the gaps and shortcomings relating to the database, if any, preparing the data flow methodology, reviewing the data processing and updating mechanisms, as well as accurately identifying the tasks of the person assigned to update and refer the data to the General Secretariat.
- Discussing the methods of sustaining communication with the liaison officers.

2 -3 Development of Petroleum Production Capacity in Arab Countries Conference

In pursuant to its 2012 plane, the General Secretariat of OAPEC held a conference on (Development of Petroleum Production Capacity in Arab Countries: Current and Future Role in Fulfilling the Global Energy Demand), from 4 to 6 June 2012, in Abu Dhabi – United Arab Emirates, under the patronage of H.E. Mohammed Bin Dhaen Al Hamli, Minister of Energy, United Arab Emirates.

H.E Dr. Matar Hamed Al-Neyadi, Under Secretary, Ministry of Energy, the representative of UAE to OAPEC's Executive Bureau opened the conference, H.E. Mr Abbas Ali Al-Naqi, Secretary General

of OAPEC, gave a keynote address in the opening ceremony, in which he mentioned the important place acquired by the Arab countries in the global oil industry, this position is strengthened by their possession of large portions of the world's proven reserves in oil and natural gas, and their effort to satisfy the global oil markets demand.

Fourteen keynote papers were presented to the conference they enclosed following key issues:

- Current production capacity and ongoing development projects, and its role in meeting the world oil demand.
- The role of NOCs and IOCs in developing production capacity.
- The role of heavy oil and unconventional resources in meeting the global oil and gas demand.
- Improving production capacity and environmental challenges.

Participated in the conference were from different member countries, 15 from UAE, 1 from Bahrain, 5 from Algeria, 1 from KSA, 2 from Iraq, 1 from Qatar, 10 from Kuwait, 2 from Libya, 3 from Egypt, along with 4 from General Secretariat staff, which brought the total number to 45 participants. In addition experts from IOCs and NOCs: KGOC, Halliburton, Canadian Natural Resources, Geopolicity, Hart Energy.

The participants expressed their thanks to the Ministry of Energy in UAE for sponsoring the conference, and the General Secretariat for supervising it, and called for the convening of the conference on a regular basis and alternating between OAPEC member countries.

The General Secretariat presented a paper on "Petroleum Reserves and Production of Arab Countries".

III: Conferences and Seminars in which OAPEC Participated

3.1 17th Meeting of the Climate Change Subcommittee

During the period 10-12 January 2012 the 17th Meeting of the Climate Change Subcommittee was held at the Arab League's premises in Cairo. OAPEC General Secretariat participated in the meeting and presented its perspective regarding carbon tax imposition by the EU countries on aircraft passing through the European air spaces.

Following thorough discussions of all items on the agenda, the Subcommittee recommended as follows:

- Monitor scientific and technical aspects relating to the implementation of the United Nations Framework Convention on Climate Change (UNFCCC), the actions of the Intergovernmental Panel on Climate Change (IPCC), the importance of exchange of climate information and meteorological forecasts, monitoring the studies and research in the area of climate changes and forecasts, and helping the Arab countries in preparing national reporting on climate change, in prelude for submittal to the Secretariat of the UNFCCC.
- Extending thanks and appreciation to the United Arab Emirates for supporting the issuance of the Climatic Atlas of the Arab Region, and distributing it to the Arab meteorological facilities and the concerned scientific entities.
- Requesting the heads of Arab meteorological facilities to appoint focal points from climate experts.
- Assigning the Technical Secretariat of the Subcommittee (League of Arab States), in coordination with the Arab Center for the Studies of Arid Zones and Dry Lands (ACSAD), United Nations Environment Programme (UNEP), and United Nations Economic and Social Commission for Western Asia (ESCWA) to monitor the initiation of a climatic database to study the impacts of climate changes and fluctuations on Arab countries.
- Requesting the Egyptian Meteorological Authority (EMA) to

coordinate with Arab delegations participating in the workshops to be held to study the climatic forecasts.

- Assign the Technical Secretariat of the Subcommittee to continue Arab coordination towards the topics presented to the meetings relating to UNFCCC, Kyoto Protocol (KP) and even the UN Climate Change Conference (COP-18), which will be held in the State of Qatar by the end of November 2012, through Arab coordination with Qatar, and to establish a distinguished Arab stall throughout the conference, Arab participation in the events held on the sidelines of the conference and the incorporated activities, and to coordinate with the Arab Group, African Group and Group of 77 (G77) and China during the forthcoming rounds of negotiations, especially that Algeria will chair the G77 and China for this year.

Arab stances should be emphasized and adhered to, as follows:

- The principle of joint and several liability.
- Supporting Arab countries in issuing their national reports.
- Non-imposition of fees/tax on the flights transiting the EU.
- Assigning the Technical Secretariat of the Subcommittee, in coordination with the UNEP, to set out the data of Arab experts working at IPCC within the planned database of Arab experts working in the area of climate change, as well as capitalizing on the preparation of the IPCC Fifth Assessment Report.
- Assigning the Technical Secretariat of the Subcommittee to coordinate with the organizers of the High-level Ministerial Meeting and those interested in meteorological affairs.

3-2 The 13th Kuwait – Japan Joint Symposium

In response to an invitation from the Kuwait Institute for Scientific Research KISR, the General Secretariat participated in the 13th Kuwait-Japan Joint Symposium on “Advancement in Oil-refining Processes” which was held in the Petroleum Researches and Studies Center on 17 and 18 January 2012. The symposium was sponsored by Kuwait



Institute for Scientific Research “KISR”, Kuwait National Petroleum Company “KNPC”, the Japan Petroleum Institute “JPI” and Japan Cooperation Center- Petroleum “JCCP”.

Three keynote papers were presented to the symposium, along with 15 other papers; they covered the following key issues:

- The development of catalysts and heavy oil processing.
- The clean fuel technique to produce gasoline and gas oil with very low sulphur content.
- Innovative technology in refinery operations such as membranes and catalysts nanotechnology.

3.3 Petroleum Downstream Industries Week

The General Secretariat participated in the Petroleum Downstream Industries Week, which was held in Abu Dhabi – UAE, under the sponsorship of “Takreer” during the period 25-28 March 2012.

The Week featured the following events:

- A seminar on innovated solutions in refining and petrochemicals at difficult situations, presented by Axens of France on 25 March 2012.
- 13th Annual Meeting of Refining Industry in the Middle East, 26-27 March 2012.
- Global Petroleum Industry Executives Summit, 28 March 2012, organized by Honeywell.

Experts from member countries (UAE, Saudi Arabia, Qatar, Kuwait, Iraq and Egypt) participated in these events. Experts from Oman, Morocco, in addition to a number of global oil companies, oil service providers and refining and petrochemical service providers, also participated.

Over a week, a number of papers were introduced, and several sessions were held to review the following main topics:

- Challenges of refining and petrochemical industry in the Middle East.
- Challenges of clean fuel production.
- Embracing innovation and change: a pro-active solution to the chronic refining sector crisis.
- Options of conversion operations of heavy picks to boost refinery production of high quality middle distillates.
- Integration between refining and petrochemical industries.
- Leveraging the profitability of refining industry through catalytic technology.
- Strategic role of research and development (R&D) in improving the performance of refining and petrochemical industry.
- Reformation of refining industry business pattern: a must for future success.
- Influence and diversification: refining industry's economics and new necessity to diversify products.
- Technology and Improvement: would technology help increase output despite the declining profit margins?
- Future of joint ventures.
- Managers in business world – managers discussions.
- Creating opportunities: global smart implementation strategies for excellence in operations.

The General Secretariat participated in the events of the Week by presenting a paper entitled “**Drivers for Cooperation between National Petroleum companies in OAPEC Member Countries and Global Petroleum Companies in Downstream Operations.**”

3-4 The 6th Annual Global Refining Summit

The General Secretariat took part in the 6th Annual Global Refining Summit, which was held in Barcelona- Spain, 21-23 May 2012.

Leading world oil refinery organizations and commercial companies participated in the summit presenting papers and participating in workshops and discussions sessions. Summit topics included the following:

- Oil refineries operational performance
- Energy consumption and improving the efficiency of its usage
- Controlling oil refinery costs
- Commitment to health, safety, and environment
- Study cases on challenges facing the refining industry in the world.

The OAPEC's General Secretariat presented a paper entitled " The impact of the political and economic instability in the Arab world of oil and refining industry".

3-5 The meeting of 89th Session of Arab Economic and Social Council

The General Secretariat attended as an observer, in the 89th meeting of the ordinary session of the Arab League's Economic and Social Council, which was held at the Arab League headquarters in Cairo, 6-9 February 2012.

The meeting was attended by delegations from all Arab States except Syria and Somalia, as well as representatives from 21 Arab Organizations and Institutions. The agenda of the meeting included 14 items, and covered 5 main aspects:

- Monitoring activities of the Arab League included several topics of including decisions of the 88th meeting of the Arab Economic and Social Council of the Arab League Secretariat General.
- Economic and Social Digest of the Council on the Summit Level presents two items that included economic and social digest of

the council on the summit level (Iraq 2012), and the first Arab ministerial committee on the preparation for the Arab summit for the third Session of Economic and Social Development (Riyadh- January 2013).

- Topical areas were the focus for economic topics: Greater Arab Free Trade Area (GAFTA) , Arab Custom Union , investment in Arab countries , Arab entities links , Ministerial Councils , Pan-Arab Shipping Company
- Social topics included two major items, i.e. integrated programs to support reducing unemployment in the Arab States, and a study on the Arab social sector.

3.6 Kick-Off Meeting for Parts 1 and 2 of Overall Arab Electricity Interconnection, and Evaluation of Natural Gas Utilization for Electricity Export

In response to an invitation by the General Secretariat of the League of Arab States (Economic Sector – Secretariat of the Arab Electricity Ministers Council), OAPEC General Secretariat participated in the Kick-Off Meeting for the study on Overall Arab Electricity Interconnection and Evaluation of Natural Gas Utilization for Electricity Export, of which Parts 1 and 2 are financed by the Arab Fund for Economic and Social Development (AFESD). The meeting was held on 8-9 February 2012 at the headquarters of the General Secretariat of the Arab League in Cairo.

The meeting saw the participation of 14 Arab countries: Jordan, UAE, Bahrain, Tunisia, Algeria, Saudi Arabia, Sudan, Iraq, Oman, Palestine, Qatar, Kuwait, Libya and Egypt. In addition the meeting was attended by 4 Arab entities: Gulf Cooperation Council Interconnection Authority (GCCIA) - Octagonal Electricity Interconnection Project, Arab Fund for Economic and Social Development (AFESD), Organization of Arab Petroleum Exporting Countries (OAPEC), Secretariat of the Arab Electricity Ministers Council, Energy Department – Economic Sector of the General Secretariat of the Arab League, in addition to a consulting consortium taskforce.

The study comprises three parts; Part 1 reviews completion of interconnection between Arab countries, on one part, and other countries, on the other part. Part 2 compares between exporting gas as a source of energy and its utilization for generating, and, consequently exporting, electricity. Part 2 addresses upgrading the regulatory and legal measures to establish a regional electricity market, which the implementation is assigned to World Bank.

3.7 Preparatory Meetings for the 3rd Session of China-Arab Energy Cooperation Conference

In preparation for the 3rd Session of the China-Arab Energy Cooperation Conference, OAPEC General Secretariat participated in 2 meetings; The first was the Arab Coordinating Meeting in Preparation for the 3rd Session of the China-Arab Energy Cooperation Conference, which was held in Cairo during the period 29 February-1 March 2012, hosting delegations from the Arab countries, in addition to representative of the Arab Atomic Energy Agency (AAEA). The proposed main topics of the impending conference were agreed upon. The second was the 1st Meeting of the Joint Higher Committee Meeting in Preparation for the 3rd Session of the China-Arab Energy Cooperation Conference, which was held in Beijing during the period 19-20 March 2012. The Joint Higher Committee was formed from both sides in accordance with Article 6 of the Memorandum of Understanding (MOU) on the Mechanism of China-Arab Energy Cooperation, which was signed between the General Secretariat of the Arab League (from the Arab side) and National Energy Agency (from the Chinese side) under the umbrella of the China-Arab Cooperation Forum.

3.8 13th International Energy Forum (IEF)

In response to an invitation by His Excellency the Minister of Oil in the State of Kuwait, and His Excellency the Secretary General of International Energy Forum, OAPEC participated in the events of the

13th International Energy Forum (IEF), which was held in the State of Kuwait during the period 12-14 March 2012 under the auspices and with the attendance of His Highness Sheikh Sabah Al-Ahmad Al-Jaber Al-Sabah, Amir of the State of Kuwait. It is the first ministerial meeting of the forum following the promulgation of the International Energy Forum Charter, which was ratified and signed by Their Excellencies the Ministers of Oil and Energy in 87 countries around the world. Over 3 days, and 4 disciplined sessions, the Forum addressed the following topics:

- Energy market fluctuations and the role of IEF and its member countries in addressing these conditions.
- Long-term demand for energy, security of supplies, and developing adequate policies to secure energy of all types.
- Realization of environmental and social sustainability, mitigating emissions, and energy supply to all.
- Enhancing global dialogue and cooperation in energy.

According to the meeting program, the Energy Forum Business Meeting was held on the day preceding the Ministerial Meeting. The meeting tackled cooperation between the national and global oil companies in the long run, thus serving the expansion of investments in the various activities of energy industry, and establishing successful partnerships between both parties.

IEF is convened in the wake of current global circumstances and fluctuations in global energy markets. Thorough deliberations were made on the developments in global energy sources, requirements of investment in energy, information exchange and transparency. These factors contribute to enhancing supply/demand security, and to coordinating dialogue between the exporting and importing countries, in consistence with energy conservation and mitigation of climate change impact, towards securing energy for all.



3.9 Consultative Meeting at Experts Level of Arab Regional Preparation for Rio +20.

In response to the invitation by the General Secretariat of the League of Arab States (Economical Sector – Environment, Housing and Sustainable Development Department) OAPEC General Secretariat participated in the Consultative Meeting at Experts Level of Arab Regional Preparation for Rio+20, to be held at the Arab League's premises in Egypt during the period 17-18 April 2012.

Participants in the meeting were representative of Arab member countries, Economic and Social Commission for Western Asia (ESCWA), United Nations Environment Programme (UNEP), General Secretariat of the League of Arab States – Environment, Housing and Sustainable Development Department, civil society organizations, World Health Organization (WHO), Organization of Arab Petroleum Exporting Countries (OAPEC), Islamic Development Bank (IDB), and Arab Atomic Energy Agency (AAEA).

The meeting was chaired by the representative of the Arab Republic of Egypt, as his country chairs the present session of the Arab League. Following adoption of the agenda, the Director of Environment, Housing and Sustainable Development Department reviewed the paper of the General Secretariat of Arab League, containing comments of the Arab countries on the (zero) draft of the Ministerial Sustainable Development Declaration on Rio+20 Conference, as well as the conclusive document of Rio+20 Conference from ESCWA.

ESCWA presented a paper covering the progress of the preparatory process for Rio+20 Conference, the negotiations on the zero draft of the conclusive document, and the stances of the various countries and groups. The paper referred to certain side activities of Rio+20 Conference, including the topics of interest to Arab countries, such as the change of the economic system to apply the Green Economy concept, youth labor in the emerging green business sectors, natural resources management, realization of food security, conversion of agricultural sector into a

green sector, and environmental democracy as a main element within the framework of sustainable development.

ESCWA proposed a topic relating to food security in a changing Arab world, to be discussed during Rio+20 Conference. ESCWA, in turn, referred the findings of the Arab Preparatory Meeting to the Conference Secretariat, to be included in the collective document.

Delegations of the countries reviewed their comments and proposals on the zero draft, which came consistent with the Rio Principles and the invitation to industrialized nations to meet their obligations, and to enhance integration of the three dimensions of sustainable development, i.e. economic, social and environmental dimensions, while considering Arab regional integration as a precondition for achieving the sustainable development. The comments also indicated that disputes constitute part of the overall challenges in the international community, and that the green economy is not a replacement of sustainable development, yet, it constitutes a tool for realizing it.

In this context, the representative of OAPEC General Secretariat stressed the importance of including two main principles which were absent in the document:

First: Interests of Arab countries whose economies depend on fossil fuel revenues and renewable energy sources should be considered.

Second: Emphasizing the removal of trade barriers (trade protectionism) under global trade system (EU countries and government procurement service).

In conclusion of the meeting, the definitive recommendations were referred to the Council of Arab Ministers in charge of environmental affairs, in its extraordinary session.

3–10 The Expert Group Meeting on Energy Statistics and Balance

In response to an invitation from the UN Economic and Social Commission for Western Asia (ESCWA), the General Secretariat took part in the “Expert Group Meeting on Energy Statistics and Balance” which was



held in Beirut on 18-20 April 2012. The meeting focused in strengthening national development plans for reporting energy statistics and balance in the ESCWA member countries, for the period from 2011 - 2013.

Representatives coming from oil and energy ministries, oil companies, electricity institutions, central census data offices, statistical offices and economic studies departments of selected ESCWA member countries, and OAPEC attended the meeting.

The objectives of the expert meeting are to review the implementation of the project energy statistics in ESCWA, the coordination of activities with regional and international organizations and member countries, presentation of the reports on needs assessment for energy statistics and balance and discussion on the manual on energy use in the transport sector.

3- 11 Kuwait Energy and Community Forum

Under the patronage of H.E. Eng. Hani Hussain Minister of Oil in Kuwait, OAPEC General Secretariat participated in Kuwait Energy and Community Forum (KECF), held in Kuwait on 22 and 23 April 2012. The Gulf Cooperation Council Joint Program Production institution was the sponsor of this forum in collaboration with Ministry of Oil (Kuwait), and Kuwait Petroleum Corporation.

The aim of the Forum is to discuss the corporate social responsibility as a concept and as a reality on the ground, in light of the international developments in the environmental and sustainable development issues.

Academics and media professionals attended these Forums came from Kuwait and GCC countries.

3-12 UNCTAD – 13 Manar Al-Doha Document: Encourage International Cooperation to Face Economic Challenges and Opportunities

In response to an invitation from the United Nations Commission on Trade and Development “UNCTAD”, the General Secretariat participated

in its Thirteenth Session held in Doha on April 21-26 2012, under the title “Globalization-based Development: Towards Growth and Sustainable Development for All”.

His Highness Sheikh Hamad Bin Khalifa Al-Thani, Amir of the State of Qatar opened the conference by welcoming the attendees and calling for the formulation of the new objectives proposed 2015 in promoting the stability and sustainability of social and economic growth in developing economies. His Highness noted that the State of Qatar national strategy in keeping with an investment climate as a catalyst for domestic and foreign capital investments.

Over 194 UNCTAD delegates participated in the conference. Qatar is the first Arab country to take over the presidency of the UNCTAD, His Excellency Dr. Hamad Bin Abdul Aziz Al-Kawari , Minister of Culture, Arts and Heritage, State of Qatar, was elected as chairman of the 13th Conference assuming the presidency for the next four years.

- A number of recommendations were issued at the end of the conference:
- Strengthen all forms of cooperation and partnerships for trade and development, between the North and South Countries
- Promote an exchange in technology and investments.
- Encourage initiatives and policies related to support economic growth for the comprehensive and sustainable development.
- Increased efforts to the needs of developed countries and least developed countries.
- Industrial Development

His Excellency Dr. Mohammad Bin Saleh Al Sada Minister of Energy and Industry in Qatar attended the Thirteen Session of the United Nations Conference on Trade and Development (UNCTAD) titled «Natural Gas As An Engine For Growth», noted that natural gas offers industrial development especially in the developing countries for rising income and poverty alleviation. It was noted that globalization and interdependence are benchmarks for measuring the world’s economy and that the importance of ensuring continued energy growth requires an atmosphere of transparency,

dialog and cooperation among producing and consuming countries. It is this path that is needed for addressing the challenges being faced in the global energy needs.

In addressing energy challenges, His Excellency added that the future fossil energy accounted for approximately 83% of the global energy consumption, with a continued expected 80% supply. With most forecasts indicating that global demand for energy will rise by 2040 when compared 2010 demand needs.

He pointed out that the state of Qatar has become the largest producer of liquefied natural gas in the world with a capacity of 77 million tons per year, confirming Qatar's commitment to reduce harmful gas emissions as part of global efforts to address the influence on climate change.

His Excellency forecasted future expectation of natural gas will replace coal after oil by 2040.

The General Secretariat was represented by Mr. Abdul Karim Ayed, Economic Expert – Economics Department.

3.13 2nd Gas Data Transparency Conference

In response to an invitation by His Excellency the Secretary General of International Energy Forum (IEF), OAPEC General Secretariat participated in the events of the "2nd Gas Data Transparency Conference", which was held in Doha – Qatar during the period 22-23 May 2012.

The Conference aimed at evaluating availability of gas data, reviewing expertise at local, regional and global levels with regard to gas data collection, and discussing adequate conditions to establish a mechanism for collection of monthly gas data, as a global gas data transparency initiative.

The Conference convened in response to the persistent invitation by the Ministers of Energy during the 13th IEF Ministerial Meeting, held in the State of Kuwait during the period 12-14 March 2012 to expand the

Joint Oil Data Initiative (JODI) to include natural gas data.

IEF organized the 2nd Gas Data Transparency Conference, in cooperation with JODI (“Asia-Pacific Economic Cooperation Organization (APEC)”), EUROSTAT, International Energy Agency (IEA), Latin American Energy Organization (OLADE, Organization of Oil, Exporting Countries (OPEC), and United Nations Statistics Division (UNSD). In addition, the conference witnessed the participation of over 80 global figures from over 30 IEF member countries. Further, Gas Exporting Countries Forum (GECF) and Organization of Arab Petroleum Exporting Countries (OAPEC) participated in the conference.

Of the major recommendations of the conference are:

- Participants in the conference emphasized to the organizations participating in JODI-OIL and member countries that the new initiative should be sustainable and should be termed “JODI-GAS”.
- The need for continued efforts, especially in respect of the commitment of the countries concerned with this initiative “JODI-GAS” to introduce the questionnaire specifically prepared for this purpose, while stressing that compliance with transparency is significant for the development of this phenomenon.
- The Conference encourages the initiative of the GAS Exporting Countries Forum (GECF) to find ways of cooperation in the new initiative “JODI-GAS”. “JODI-OIL” partner organizations and participants in the Conference welcome the initiative of UNSD to proceed on developing the “JODI-GAS” manual and considering it as a reference document for data presentation.
- Invite partner organizations to benefit from the expertise acquired from “JODI-OIL” to ensure efficient development of natural gas global information resources, to emphasize the importance of training programs relating to the previous initiative “JODI-OIL”, and to express the need for similar training programs for the new initiative “JODI-GAS”.

3-14 International Arab Conference on the Role of the Private Sector in Technological Development and Future Industries

Under the patronage of His Majesty King Mohammed VI, and in response to an invitation by the Arab Industrial Development and Mining Organization (AIDMO), the General Secretariat took part in the “ International Arab Conference on the Role of the Private Sector in Technological Development and Future Industries” which was held in Rabat, 6-8 June 2012. The participants in this conference include senior officials from government ministries, public and private technical agencies and institutions, chambers of commerce, industrial associations and related organizations such as universities, institutes and scientific and technological research centers.

The conference objectives is to bring out the mechanisms of setting up a technology partnership and cooperation between the public and private sectors in the Arab, national and international levels. The conference also focused on the most important weaknesses and obstacles aspects in this field and how to address them, encouraging the complimentary relations between the private sector institutions and the Arab research and development entities proceeding from the successful experience at the Arab and International levels, and promoting the Arab private sector orientation toward industries of the future based on the applicable research to raise their competitiveness and integration in the new global economy.

The conference topics consist the challenges and risks facing the private sector and activate its role in the technological development, as well as funding sources and their role in the development of innovative industries and prospect to enhance job creation.

The conference comprised six sessions presented and discussed 20 working papers included the following main topics:

Enhancing the role of the private sector in achieving Arab industrial development according to geo-economics perspective.

Overcoming obstacles that limit the progress effectively with the

public sector by 2030 with the support of Arab institutions and regional specialized.

The General Secretariat was represented by His Excellency Mr. Abbas Ali Al-Naqi who addressed the opening of the conference with a speech entitled “The Role of Petroleum Industry in Economic and Social Development”, and Mr. Abdul Karim Ayed, Economic Expert – Economic Department.

3.15 Informal Ad-Hoc Working Group Meeting

The General Secretariat participated, as observer at the informal meeting of the Ad-Hoc working group on the additional commitments of the parties to Annex-1 of Kyoto Protocol (AWG-KP17), and the Ad-Hoc working on long term action and cooperation (AWG-LCA15), and the Ad-Hoc working group to Durban (ADPI), in Bangkok, Thailand during the period 30-8 / 5-9-2012.

3 – 16 The 34th Oxford Energy Seminar

The 34th Oxford Energy Seminar was held at St. Catherine’s College, Oxford University, on 10-20 September 2012, and titled “The Dynamics of the Global Energy Market”, under the joint sponsorship of St. Catharine’s College, OPEC and OAPEC.

The Seminar aims to enhance professional development through discussion and analyses of energy resource in order to better understand the economic, technical and geographical influences. The Seminar further provided structured opportunities to conduct dialogues between petroleum exporting countries and petroleum consuming countries.

Sixty-one participants attended the Seminar representing a range of institutions, government agencies, private sector energy companies, regional and international organizations. Twenty-five countries with 16 participants were from OAPE countries.

Over 25 Seminar topics were presented in the form of lectures, research papers, panels and discussion sessions. The following were major Seminar topics:

- Oil pricing
- Oil Supply and demand projections
- Oil performance in global economies
- Future of nuclear energy
- Environmental and climate changes
- Oil industries and natural gas markets
- Policy development of oil producers and consumers
- Dialogue challenges between national and international oil company

3.17 3rd Session of the China-Arab Energy Cooperation Conference

In implementation of the concluding statement issued by the 2nd Session of the China-Arab Energy Cooperation Conference, which was held in Khartoum, Sudan during the period 26-28 January 2010, and the recommendations of the 5th Ministerial Meeting of the China-Arab Cooperation Forum, held in Tunis in May 2012, and in line with the China-Arab Cooperation Forum, the 3rd Session of China-Arab Energy Cooperation Conference was held during the period 16-18 September 2012 in the Yangchuan, China.

The conference had 160 participants representing Chinese National Energy Agency, Chinese Foreign Ministry, companies and unions operating in the areas of oil, electricity and renewable energy. From the Arab side, participants were the General Secretariat of the Arab League, OAPEC, and representatives of the entities in charge of energy in a number of Arab countries.

Participants discussed the future of China-Arab cooperation and methods of increasing cooperation in energy. The stressed the importance of capitalize on energy resources and uses of all types to ensure energy security for the entire world, and motivating sustainable community development. Both sides exchanged opinions on cooperation in renewable energy, and

enhancement of cooperation in petroleum, natural gas and power.

Following deliberations and extensive discussions, both sides agreed as follows:

- Stressing the necessity to activate convening of the China-Arab Energy Cooperation Conference on a periodic basis, and emphasizing the importance of implementing the Memorandum of Understanding (MOU) between the Arab League and the National Energy Agency of the People's Republic of China regarding the China-Arab cooperation mechanism in energy.
- Continuing enhancement of the existing energy cooperation, especially in the areas of petroleum, gas, power, and renewable energy, on the basis of mutual interest.

3.1814th Session of the Joint Committee on Environment and Development in the Arab Region (JCEDAR)

Responding to the invitation by the General Secretariat of the Arab League (Economic Sector – Environment, Housing and Sustainable Development Department) OAPEC General Secretariat participated in the 14th Session of the Joint Committee on Environment and Development in the Arab Region (JCEDAR) which held its meeting at the Arab League premises in Egypt during the period 30 September – 3 October 2012.

Participants in the session were representatives of the Arab member states, ESCWA, UNEP, General Secretariat of the GCC, General Secretariat of the Arab League, OAPEC General Secretariat, AAEA, and civil society organizations.

- The agenda covered 23 items, addressing topics of priority to OAPEC activities, mainly:
- Monitoring the implementation of the prescriptions of World Summit on Sustainable Development, Sustainable Development Initiative in the Arab Region, and UN Conference on Sustainable Development – Rio+20.



- Addressing the issues of climate change and Arab movement in climate change negotiations.
- Monitoring the international environmental agreements and meetings.

3 – 19 The 19th Coordination Meeting of Environment and Climate Change Experts in Member Countries

The 19th Coordination Meeting of Environment and Climate Change Experts in Member Countries was held in Cairo, Egypt, on 3 and 4 October 2012. The meeting is an annual event organized by the Secretary General of OAPEC, with participation from environment and climate change experts of the member countries, and representatives from the Arab League and the Cooperation Council for the Arab States of the Gulf and some other international and regional organizations.

The Secretariat General of OAPEC had presented a paper about the output of the Bonn and Bangkok 2012 discussions on the United Nations Framework Convention on Climate Change «UNFCCC». The meeting aims to discuss some of the topics and issues that require coordination between the member countries of OAPEC regarding environmental issues and climate change, which contributes to the maintain the interest of OAPEC members in regional and international forums, especially with regard to coordinating positions ahead of the Conference of Parties (COP 18), which will be held in Doha-Qatar.

3 – 20 The 12th Meeting of Working Group on Potential Cooperation in Natural Gas Investment in the Member Countries

The 12th meeting of the Working Group was held in Cairo, Egypt on 10 - 11 October 2012. Participated in the meeting were 27 specialists from OAPEC member countries. The meeting was inaugurated by H.E. Mr. Abbas Ali Naqi, OAPEC's Secretary General, who welcomed the participants and noted that the meeting of this year aims to review the

developments in natural gas industry in the member countries for the time span between the 11th and the 12th meetings, and some more issues related to the natural gas industry in order to explore the possibility of cooperation between member countries in this field.

H.E. assured the role of OAPEC in following up the latest Arab and international developments of natural gas industry and trading.

In conclusion, H.E. wished the participants success in achieving the objectives of the meeting, and a pleasant stay in the Arab Republic of Egypt.

Participants made presentations included the developments of the natural gas industry in their respective countries. Extensive discussions and constructive questions followed such exhibitions. At the end of the meeting, participants concluded some recommendations that could contribute to strengthening cooperation between member countries in the field of the natural gas industry.

They also praised the efforts of the OAPEC's General Secretariat to hold such meetings, which is considered a prime area for exchanging information and experiences, and demanded it to continue this approach, and in to follow-up the recommendations.

3.21 Asia Cooperation Dialogue Forum

Upon invitation by Kuwait University OAPEC General Secretariat participated in the Asia Cooperation Dialogue Forum, which was held at the Faculty of Social Sciences in Kuwait University during the period 10-11 October 2012 on the sidelines of the Asian Summit, hosted by the State of Kuwait over the period 14-16 October 2012.

Participants in the Forum were intellectuals and academics from the various GCC and Asian countries; Thailand, India, Japan, Turkey, South Korea, China, Indonesia, Malaysia and Iran.

The four sessions of the forum spotlighted the Asian experiment and common factors. Scientific research papers were presented, highlighting a number of countries, such as Thailand, India, Japan, Turkey, China,

Indonesia, Malaysia, Iran, Saudi Arabia and Kuwait. Other research papers addressed more in-depth visions, such as energy issues, the Chinese developmental model, and how far it is suitable for application in the Arab region.

OAPEC General Secretariat presented a paper entitled “Energy Security from Asian Perspective.”

The Forum drew a number of recommendations, as follows:

- Fostering the role of Asian regional organizations, such as ASEAN and GCC, in interconnecting Asian countries, while encouraging and supporting Asian integration through their capacity and expertise.
- Working towards establishing effective economic, political and social institutions that support the process of development and upgrade the existing organizations in the member countries of the Asia Dialogue Forum.
- Encouraging forums and conferences calling for economic integration, as did Kuwait in this Forum, and adoption of Kuwait’s concept of Asian integration at all levels in the next summit.
- Cooperating in developing policies to confront oil deficit in certain Asian countries by boosting Asia-Gulf dialogue between petroleum exporting and importing countries in the region.
- Capitalizing on the Asian developmental models, such as the Chinese, Malaysian and Indian models, taking the privacy and cultures of societies into consideration.
- Giving consideration to the new technology, while benefiting from certain Asian countries who made progress in this area, such as Japan, South Korea and China.
- Establishing joint research projects about the issues of energy security and utilization of alternative energy.
- Converting the Asia Dialogue Forum into an international organization.

3–22 The 8th Coordination Meeting for Managers of Arab Petroleum Training Institutes in OAPEC Member Countries

The 8th Coordination Meeting for Managers of Petroleum Training Institutes was held on 13 and 14 October 2012. 16 specialists attended the meeting from the training institutes from OAPEC's members except (Bahrain and Syria).

HE Abbas Ali Naqi, OAPEC Secretary General, who welcomed the participants and thanked the Ministry of Petroleum in Egypt for its efforts to hosting the meeting, opened the meeting.

HE also emphasized the importance of these meetings to identify the possibilities and capabilities of the member countries in various fields of training and exchanging of experiences in this vital area, which represents the cornerstone of the oil and gas industry. HE assured the importance of working to achieve integration among the countries to reach the greatest possible utilization of the available capabilities.

Officials of the training institutes of the member countries presented the current situations and training programs in their countries, and the aspiration of these institutes to cooperate with its counterparts. Based on the presentations and the related discussions, the following recommendations were achieved:

On the second day of the meeting, many of the participating delegations attended a field trip to the headquarters of the Oil and Gas Skills Company in New Cairo

3.23 4th Training Course on Energy Statistics

In implementation of the General Secretariat's Action Plan 2012 regarding developing and training the General Secretariat's Data Bank staff, to familiarize them with more global experiments, and upon the invitation by the International Energy Agency (IEA), the General Secretariat participated in the events of the "4th Training Course on Energy Statistics", which was held at the headquarters of IEA in Paris during the period 15-19 October 2012.



The Energy Statistics Center of IEA organized this course to meet the needs of IEA member and non-member countries for tools and techniques to upgrade and maintain rules of complete and accurate energy data and national energy balances. The course witnessed the participation of 28 trainees representing 18 countries and international organizations operating in energy.

The General Secretariat participated in the 4th Training Course on Energy Statistics by presenting a paper entitled “Energy Statistics in OAPEC Member Countries.”

3.24 6th Libyan Oil and Gas Forum and Incorporated Exhibition

In response to the invitation conveyed to His Excellency the Secretary General of OAPEC, the General Secretariat of OAPEC participated in the events of the 6th Libyan Oil and Gas Forum, and the incorporated exhibition, during the period 16-18 October 2012 in Tripoli, Libya.

The forum is convened as part of fostering the areas of fruitful cooperation between the OAPEC member Arab countries. The General Secretariat participated with an addressed by His Excellency the Secretary General, delivered during the opening session of the forum, where he referred to the achievements realized by the oil sector in Libya thanks to the efforts of the employees.

The achievements represent the return of production back to normal prior to revolution, i.e. 1.6 million b/d. In this respect, he stated that the forum serves as an appropriate platform to exchange oil information and technologies between the producing and utilizing countries. He added that the forum evidences the return of global oil companies to operation and investment in Libya, especially upon the success of the revolution of the Libyan people and restoration of security in Libya.

3.25 2nd Meeting of the Arab Negotiating Group on Climate Change

In response to the invitation by the League of Arab States (Environment, Housing and Sustainable Development Department of the Eco-

conomic Sector), OAPEC General Secretariat participated in the 2nd Meeting of the Arab Negotiating Group on Climate Change, which was held at the Arab League Headquarters in the Arab Republic of Egypt during the period 4-5 November 2012. The meeting was held to coordinate stances of Arab countries and delegations participating in COP18 Conference in Doha – Qatar. Representatives of the Arab member countries participated in the meeting.

The meeting aimed at finding readily available approaches to successfully convene COP18 Doha Conference, which will be held under Arab chairmanship, as it represents a pivotal point in the history of negotiations. It requires estimation of stances in the wake of the three dimensions of the outcome of COP17, i.e. the second commitment period of Kyoto Protocol. It also aims at successfully finalizing the works of the AWG-LCA, and ADP.

3–26 Annual Meeting of the Organization of the Islamic Ship-Owners

In response to an invitation from His Excellency Dr. Abdul Latif Bin Abdullah Sultan, Secretary General of the Organization of the Islamic Ship-owners, His Excellency Mr. Abbas Ali Al-Naqi OAPEC's Secretary General participated at the “Joint Annual Meeting of the Executive Commission and General Assembly of the Islamic Union Steamship Owners Organization” held on 21st November 2012 in Dubai – United Arab Emirates with the participation of a number of organization, corporations, and Arab authorities.

His Excellency Mr. Al-Naqi submitted a paper entitled “ The Role of OAPEC in the World Oil Market at the Current Pivotal Situation”. The paper reviewed OAPEC's member countries position in the global oil and natural gas markets, as well as the key role played by member countries to meet future global demand for oil and natural gas. The paper also provided a brief overview of OAPEC-Sponsored Ventures and their role in the finance and investment market in oil and gas sector.



3.27 Meeting on Overall Arab Electricity Interconnection Study and Evaluation of Natural Gas Utilization for Electricity Export

In response to an invitation by the General Secretariat of the League of Arab States (Economic Sector – Energy Department, Secretariat of the Arab Electricity Ministers Council), OAPEC General Secretariat participated in the Meetings on Overall Arab Electricity Interconnection Study and Evaluation of Gas utilization for Electricity Export, as follows:

- 4th Meeting of the Taskforce of Overall Arab Electricity Interconnection Study and Evaluation of Gas utilization for Electricity Export with World Bank Team assigned to implement Part 3 of the study (Institutional and Legislative Frameworks), which was held at the headquarters of the Arab League in Cairo, Egypt, on 29-30 April 2012.
- 3rd Meeting of the Electricity Experts Committee in Arab Countries, which was held at the headquarters of the General Secretariat of the Arab league in Cairo on 4-5 July 2012.

The above meetings monitored the implementation of the Overall Arab Electricity Interconnection Study and Evaluation of Gas utilization for Electricity Export, and discussed the major periodic items on the agenda, mainly the Arab electricity interconnection.

3.28 The Eighteenth Session of the Conference of the Parties (COP 18)

The General Secretariat participated in the UNFCCC Eighteenth Session of the Conference of the Parties (COP 18), the Eighth Session of the Conference of the Parties Serving as the Meeting of the Parties to the Kyoto Protocol (CMP 8), the Thirty-Seventh Session of the Subsidiary Body for Implementation (SBI 37), Subsidiary Body for Scientific and Technological Advice (SBSTA 37), the Seventeenth Session of the Ad Hoc Working Group on Further Commitments for Annex I Parties under the Kyoto Protocol (AWG-KP 17), the Fifteenth Session of the Ad Hoc Working Group on Long-Term Cooperative Action under the

Convention (AWG-LCA 15), Ad Hoc Working Group on the Durban Platform for Enhanced Action (ADP1), held in Doha, Qatar during the period 26 November-8 December 2012.

Following is a brief of the outcome of these meetings:

A- Ad Hoc Working Group on Further Commitments for Annex I Parties under the Kyoto Protocol (AWG-KP)

- Kyoto Protocol (KP).

Bonn Meeting 2012: Negotiations were more productive with regard to the executive and legal matters relating to the establishment of the second commitment period of Kyoto Protocol, which will commence in 2013. The Parties focused on major topics, representing the prolonged commitment period. This phase will be implemented from the first to the second commitment periods and continuity assurance, thus eliminating legal gaps between the commitment periods. On one part, the developed countries view 8 years, while the developing countries view 5 years, on the other part. New Zealand and Australia stated that they would not accede to the second commitment period unless undertakings are made to mitigate emissions in the emerging economies.

Bangkok Meeting 2012: The Chair urged the participants to make concrete progress in certain pending issues, such as the prolonged second commitment period of Kyoto Protocol, and mitigation of emissions.

It was agreed to draft a text as proposed by the Chair of KP as per the discussions made between the countries vis-à-vis those issues, to be presented in Seoul, Korea in October 2012.

B- Ad Hoc Working Group on Long-term Cooperative Action under the Convention (AWG-LCA)

Common Vision: There are variant opinions about whether the numbers for a global goal should be addressed and covered in the discussions. Moreover, countries have not yet discussed the entity or authority to address this problem after the end of work of LCA.

Adaptation: Areas of agreement during Bonn meeting were as follows:

- Adaptation framework comprises nine improved major working areas, including planning of adaptation, evaluation of weakness, enhancing institutional capacities, mitigating the risk of disasters, knowledge, and information.
- Developed countries agreed on raising financial support, continue to provide the necessary finance and technology, and build capacity for the least developed countries.
- Nairobi Ad Hoc Work Programme will continue providing support in order to come out with recommendations to be referred to the Conference of the Parties (COP19) and potential work scopes in the future.

During Thailand Meeting 2012, the areas of agreement represented countries' identification of the matters that require more work, especially means of implementing adaptation – finance for the period 2013-2015, links of finance, national adaptation plans for the least developed countries.

– Mitigation for Developed Countries: Areas of agreement during Bonn meeting 2012 were as follows:

- The need to continue clarifying the goals of mitigation for developed countries. It should be noted that the biennial reports, and national communications every four years, will commence 1 January 2014.
- At Bangkok meeting 2012, several developed country parties highlighted the concrete progress made in the areas of clarification of the international undertakings and evaluation, as well as bridging the gaps. Meanwhile, developing country parties expressed disappointment for lack of tangible results and low ambitions in the list of undertakings by the developed countries and the gaps in efforts.

- Measures of response: Areas of agreement were as follows:
 - SBSTA, SBI approved the action plan for activities in 2012 and 2013.
 - Processing of information received from country parties.
 - Country parties approved to keep the forum to implement the action plan on the measures of response, which are consistent with the general framework of the agreement, while discussing the positive and negative impact, economic and social implications of the mitigation policies.

Notably, there were variant opinions about whether a unified draft text should be prepared during Doha COP-18.

- Various Approaches to Mitigation: Agreement was made to prepare an official note including map of elements that require processing on the new and existing market-based mechanisms.
- As much as the matter is related to technology development and transfer, areas of agreement were as follows:
 - The evaluation team presented three nominations to host Climate Technology Centre and Network (CTCN), where it was agreed that the Secretariat of the Agreement make the contractual arrangements with the nominees. Official selections of the host country will be announced in COP-18, Qatar.
 - There are pending issues, such as the relationship between the CTCN and TEC, and the functions of both entities.
- Intellectual property rights: It was agreed to continue considering these issues. Methodology and timing remain under question.
- Finance: Areas of agreement were as follows:
 - There is an action plan on long-term finance that aims at contributing to the efforts towards increasing the mobilization of finance for post 2012 climate change, initiation of the Green Climate Fund, and that there is an urgent need for finance, and the type of finance, and the initiation of a standing committee for finance to mobilize the financial resources.
 - It should be noted that during Thailand Meeting 2012 there was disagreement on numerous previous issues, and about the

importance of issuing more decisions within this working group, as well as the status of financial issues.

– Green Climate Fund (GCF)

Upon approval to establish the Green Climate Fund (GCF), several major questions were raised about how to operate the fund, its relationship with the negotiations on climate change, especially with mitigation, technology, adaptation, capacity building, and how to cooperate with the entities such as the Technology Executive Committee, Adaptation Committee, and Standing Committee on Finance.

Commitment to supporting the fund with \$100 million annually by 2010. Identifying the sources of climate finance and the role of private sector. Developed countries confirmed mobilization of the private sector by setting strong investment incentives. Developing countries view that private sector finance should not come on account of the public financing liabilities, technology and capacity building. This discussion will continue even after Doha about identifying the role of private sector and the irrelevant issues of incentives and stability.

– Capacity building: On the capacity building side, areas of agreement were as follows:

- Capacity building is essential for any agreement on climate change and supporting it with financial and technological assistance.
- Capacity building needs provision of practical information about the best practices and policies aimed at implementation.
- Cooperation, coordination and participation at highest levels to make the capacity building activities effective at national and sub-national levels.

It should be noted that during Thailand meeting 2012 there were variant viewpoints about how to treat the pending issues of LCA, representing the role of private sector in capacity building, identification of the performance indicators to review the capacity building, methods of observation and review, and linking capacity building with finance to developing countries.

As much as the matter is related to the nationally appropriate mitigation actions (NAMAs), areas of agreement represented several technical issues bid by the subsidiary bodies, such as the request of the Subsidiary Body for Scientific and Technological Advice (SBSTA) to develop general directives for measurement, reporting and verification (MRV), supported by the nationally appropriate mitigation actions (NAMAs), as well as registration and development of methods and procedures for the Subsidiary Body for Implementation (SBI) during Doha meeting.

Regarding the areas of agreement relating to MRV, and despite the on-going negotiations, no agreement has been reached regarding the local areas of MRV supported by NAMAs.

Finally, regarding sectoral approach, there were variant viewpoints on four options in the general framework. Viewpoints still are variant about the fuel used in transport, as five options were addressed. The group will continue work to narrow disagreement on the future options.

C- Ad Hoc Working Group on the Durban Platform for Enhanced Action (ADP)

The first meeting of ADP was held in Bonn in May 2012. Members of the office were elected, and the group organized to main tables on the work tracks to address the vision and ambition of ADP, as well as organizing the work of the team formed in this respect.

3.29 6th Meeting of the International Energy Statistics Taskforce (InterEnerStat)

The General Secretariat participated in the events of the 6th Meeting of the International Energy Statistics Taskforce (InterEnerStat) organized by IEA during the period 4-5 December 2012 in Paris, France. Representatives of 21 international organizations operating in energy participated. The meeting aimed at:

- Recognizing the efforts of international organizations specialized



in energy statistics towards coordinating, matching and unifying the definitions used in preparing energy statistics.

- Identifying the efforts of international organizations and the training programs they extend to their member countries for the purpose of exploring the aspects of cooperation in information exchange between the specialized organization, to improve the training materials and specialized courses.
- Exchanging ideas on the issues and expectations regarding bio-fuel (bio-mass) data collection, for the purpose of utilizing the findings in preparation for a global workshop on bio-fuel energy, which will be organized in 2013.

IV: Cooperation with International Bodies and Institutions

4.1 Visit of African Petroleum Producers Association (APPA) Delegation to OAPEC Headquarters

As part of enhancing and expanding cooperation activities with international institutions and bodies concerned with energy, in general, and petroleum, in particular, and upon the proposal of APPA, expressing their desire that a delegation of the association pay a visit to OAPEC headquarters, a meeting was held between both parties on 8 February 2012 to discuss and explore aspects of joint cooperation.

His Excellency Mr Abbas Ali Al-Naqi, OAPEC Secretary General, opened the meeting, welcoming His Excellency the Executive Secretary of APPA, Chairman of APPA Fund, and the member of delegation of APPA. His Excellency referred to the common factors between both parties, stressing the necessity to enhance the relations of cooperation in all possible areas, so as to confront the common challenges and to carry out all actions towards developing the petroleum industry in member countries, as a number of countries are members in both organizations: Algeria, Libya, and Egypt.

Following the opening, a presentation was made, highlighting OAPEC activities and objectives, as well as the major actions towards achieving those objectives.

From his part, HE the Executive Secretary of APPA delivered an address, where HE extended thanks to HE the Secretary General of OAPEC for hospitality. HE gave a detailed explanation of the Association and its major activities and future plans.

Afterwards, the meeting parties discussed horizons of cooperation between both parties towards achieving the interests of OAPEC and APPA member countries.

Of the main results agreed on between both parties are:

- Continue holding joint meetings between both sides to discuss methods of enhancing future cooperation in all possible areas.
- Exchange invitations to attend events organized by both parties.
- Study the possibility to hold an Arab-African joint conference in the area of petroleum.
- Discuss the possibility of conducting joint technical/economic studies, and initiating a joint database.

The Executive Secretary of APPA showed willingness to sign a memorandum of understanding (MOU) with OAPEC General Secretariat to strengthen cooperation between both parties in the areas of petroleum and energy.

The subject was referred to the Executive Bureau of OAPEC during its 132nd Meeting, which was held in Cairo on 17-18 May 2012. The Bureau commended the efforts of the General Secretariat in developing cooperation with Arab and foreign organizations and associations. The Bureau referred its recommendation to OAPEC Council of Ministers to direct the General Secretariat to continually cooperate with APPA in all the above areas, without financial obligation.

V: SUPPORT ACTIVITIES

5.1 Data Bank

- **Monitoring Developments of Database**

The Data Bank continued to update the database, mainly relying on the data received from member countries (energy data collection form), and the data released by Arab national institutions and authorities, which were made available. Furthermore, the General Secretariat's database was updated with the information in the technical papers and studies presented during the events organized by the General Secretariat or in which it participated.

The Data Bank, in collaboration with the different departments in the General Secretariat, monitored the performance of systems, which it had previously prepared, using ORACLE g11 technology, while feeding it with new technologies. The Data Bank in the General Secretariat activated the e-search service of the contents of the General Secretariat's Library, using ORACLE, and via the General Secretariat's website. The Data Bank, in collaboration with the Information and Library Department, designed the internal borrowing system for the General Secretariat's staff, using ORACLE g11.

- **Reports and Papers**

The Data Bank, in collaboration with the specialized departments in the General Secretariats, completed the statistical report for 2012, covering the period 2007-2011, which was uploaded on the General Secretariat's website, and on CDs.

Energy Data publication was prepared, by world group, for the period 1970-2011, relying on the BP database. This publication is annually updated. It was uploaded on CD. As per the agreement with BP, the distribution of this publication will remain limited to member countries.

The Data Bank arranged the papers presented to the seminars and meetings organized by the General Secretariat, or in which it participated, during 2012, and uploaded them on CDs. The Data Bank also processed and released a publication on the data issued by ENI of Italy, relating to the oil and natural gas production, consumption, imports and exports, published in its annual report “World Oil & Gas Review 2012.”

- **Other Activities**

The Data Bank continued to participate in updating the General Secretariat’s website, monitored the incoming and outgoing e-correspondence of the General Secretariat. The Data Bank plans to download and display the reports released by the General Secretariat, to be presented to third parties via the General Secretariat’s website. It continued to maintain and upgrade the General Secretariat’s hardware, software, as well as providing technical support to users on the software provided by the General Secretariat.

The Data Bank prepared CD-ROM covering the publications of the General Secretariat, and the technical papers and studies to be distributed through its participations, locally or abroad. Besides, the Data Bank monitors the latest technical and technological developments relating to new computers and software.

VI: ENCOURAGEMENT OF SCIENTIFIC RESEARCH

On the outset of 2011 the General Secretariat had announced the topic of the OAPEC Award 2012: “Technological Advancement in the Exploration and Utilization of Unconventional Natural Gas Resources in Arab Countries.” The Award was announced on OAPEC Monthly Bulletin, on Oil and Arab Cooperation Magazine, and the cooperating periodicals. The announcement was placed on OAPEC website and was circulated to member countries, research centers and universities. 31 May 2012 was set as deadline to receive research papers.

Pursuant to the provisions of OAPEC Scientific Research Award, Mr Abbas Ali Al-Naqi, OAPEC Secretary General issued Resolution No. 12/2012, dated 20 June 2012, forming the referee panel to assess the research papers presented to obtain the OAPEC Scientific Award 2012, entitled: “Technological Advancement in the Exploration and Utilization of Unconventional Natural Gas Resources in Arab Countries.” The panel is chaired by HE the Secretary General. Members are:

Dr Atiya Mahmoud Atiya

Head of Petroleum and Gas Engineering Division
British University – Cairo

Dr Abdul Hameed Majeed

Advisor to the CEO
Canadian Natural Resources Co. – Canada

Dr Sameer Mahmoud Al-Qareesh

Director of Technical Affairs Department – General Secretariat

Eng. Turki Hasan Al-Himesh

Petroleum Expert, Technical Affairs Dept. – General Secretariat

The Referee Panel met on 12 October 2012 in Cairo, and discussed the appraisal reports presented by referees. Following deliberation of opinions and comments of the panel members, the following were concluded:

- I: Conceal the first prize of KD 7,000.
- II: Granting the second prize of KD 5,000 equally between the following researchers:

Research No. (4) presented by Ahmad Ali Abdul Majeed, and Mohammad Khalid Khalifa, from Egypt, entitled:

“Latest Technological Advances in Developing Unconventional Gas Reservoirs.”

Research No. (2) presented by Ahmad Mahmoud Shehata, from Egypt, entitled:

“Technical Development of Exploration and Exploitation of Unconventional Natural Gas Resources in Arab Countries.”

Regarding OAPEC Scientific Award 2014, the Executive Bureau, at its 132nd Meeting, held in Cairo on 7 October 2012, adopted the award topic of “Integration between Refining and Petrochemicals.”

VII: MEDIA ACTIVITY

The General Secretariat continued its media activity, covering the following areas:

7.1 Editing, Printing, Publishing and Distribution

The General Secretariat continued to issue all OAPEC's publications, including books and periodicals. This action involved all matters relating to editing, proofreading, translation, designing, layouts, printing, publishing and distribution. Table 7-1 shows the books and periodicals released by the General Secretariat, and the number of copies printed and distributed within 2012.

7.2 Press and Media Activity

A number of press releases were issued by the General Secretariat, covering the various activities of the Organization, such as the meetings of OAPEC Council of Ministers, and the meetings of the Executive Bureau. On the other hand, certain local and Arab newspapers highlighted OAPEC activities, its role in coordinating between its member countries, and its efforts towards supporting the joint Arab action under the Arab and international circumstances and developments. The General Secretariat continued to monitor the contents published by local, Arab and certain foreign newspapers on energy affairs, and collected and archived the top oil, economic and environmental stories. In addition, it monitored certain other topics that belong to member countries in general.

7.3 Website

The General Secretariat released its upgraded website in the first quarter of 2012, with concerted efforts of its technical staff, and in coordination between its various departments. The upgraded website has new sections, including a sections dedicated for OAPEC organs, General Secretariat's activities, addresses of His Excellency the Secretary

General to the conferences and seminars organized by the General Secretariat, or in which it participated, in addition to a presentation of the studies and reports produced by the General Secretariat.

7.4 37th Arab Book Fair

OAPEC General Secretariat participated in the 37th Arab Book Fair, which was held in Kuwait during the period November 21st - December 1st 2012, under the auspices of the National Council for Culture, Arts, and Literature – State of Kuwait.

About 522 publishers, from 13 Arab and 12 foreign countries, participated in the fair, in addition to several Kuwait-based organizations, including the Arab Center for Educational Research, Arabization Center For Medical Science (ACMLS) – League of Arab States, Organization of Arab Petroleum Exporting Countries (OAPEC), and other organizations situated outside Kuwait, including Arab Writers Union - Syria, General Secretariat of the Gulf Cooperation Council (GCC) – Saudi Arabia, and Arab Administrative Development Organization (ARADO).

A number of Arab and foreign embassies, as well as Arab organizations and diplomatic corps participated directly, or indirectly, via publishers. Several cultural and art events were held on the sidelines of the fair.

7.5 Library Services

The General Secretariat's Library is a distinguished comprehensive bibliographic hub, as it contains books and references that address the petroleum industry, all energy issues, in addition to environmental resources. The Library offers references to the General Secretariat's researches and the Data Bank. It extends referential services to researchers from within the General Secretariat and outsiders. It is keenly desirous to maintain cooperation with institutions in the area of information exchange, such as the Library of the Arab Fund for Economic and Social Development (AFESD), Kuwait Petroleum Corporation (KPC), Kuwait University (KU), etc.

The Library continued to expand its bibliographic database, which was initiated in 2008 using the new General Secretariat ORACLE system, by inserting all new data of the books, documents, articles of the Arab and foreign periodicals. It also provides information retrieval service for researchers.

Quarterly bibliography published in the Oil and Arab Cooperation magazine (Volumes 140-143).

Bibliography of new sources in the Library, distributed to all General Secretariat's researchers, on a monthly basis.

Release of the monthly file "New at the Library", covering images of the content pages of new arrivals of books and periodicals, which is circulated to the General Secretariat's staff for acquaintance.

7.5.1 Indexing and Classification

The Library continued its technical services in the areas of indexing and classification, where all books and documents received by the Library were indexed and footnoted, and the information were entered into the relevant database, bringing the acquisitions up to 35,890 books and documents in 2012, from 35,626 in 2011.

7.5.2 Provision

Provision services this year were focused on:

Monitoring the subscriptions of Arab, foreign periodicals and official publications of the government authorities and departments, as well as oil companies in the Arab countries.

Providing the Library with new books and references, and monitoring the updating of annual books and references to acquire new editions, upon the proposals presented by the Office of His Excellency the Secretary General, by discipline.

Monitoring the electronic periodicals and studies received on the

e-mail address of the General Secretariat and downloading them on the General Secretariat's intranet.

The Library downloads, archives, and organizes the electronic sources that the Library receives in PDF format or on CDs.

7.5.3 General Services

During the year the Library continued its services in the hall for the General Secretariat's researchers, visitors, and foreigners, providing the following:

- Internal borrowing.
- Response to inquiries of researchers and provision of referential services.
- Providing readers with guidance.
- Photocopying.
- Binding the important periodicals in the Library, and papers or seminars and conferences.

Furthermore, a file is being issued, covering the content pages of new books and periodicals for access by the General Secretariat's staff to all new publications received by the Library.

VIII: ARAB AND GLOBAL SOURCES OF ENERGY MONITORING BULLETIN

During 2012 the General Secretariat monitored the Arab and Global Sources of Energy Monitoring Bulletin, a quarterly bulletin highlighting the developments in the activities of oil and gas exploration in the member countries, and other Arab countries. It sheds light on the new technologies, and depends in its releases on the information published in the Arab and global periodicals.

IX: ADMINISTRATIVE AND FINANCIAL ACTIVITY

9.1 Development of Administrative Structure

By the end of 2012, the Secretariat General had 45 employees, including 19 at the professional job level, and 26 and the general level. Table 9-1 gives the number of General Secretariat's employees over the years 1968-2012.

9.2 Development of Actual Spending

In 2012 expenditure amounted to KD 1,840,000*. Table 9.2 shows the development of actual spending of the General Secretariat over the years 1968-2012.

TABELS

PART TWO





Table 7-1
Publication Issued and Distributed
by the General Secretariat in 2012

Title of Publication	No. of Editions	No. of Copies	Total Copies Printed	Copies Distributed	Total Copies Distributed
Periodicals					
- OAPEC Secretary General's Annual Report 2011 (Arabic)	1	800	800	790	790
- OAPEC Secretary General's Annual Report 2011 (English)	1	800	800	750	750
- OAPEC Annual Statistical Report 2012	1	300	300	200	200
Oapec Monthly Bulletin, (1 - 12)	11	1000	1100	900	9900
- Oil and Arab Cooperation : issues (140-143)	4	750	3000	550	2200
- Energy Resources Monitor - Arabic and International	4	300	1200	270	1080

Table 9 - 1
General Secretariat Employees, 1968 - 2012

Year	Professional Staff	General Staff	Total
1968	4	7	11
1969	10	14	24
1970	12	22	34
1971	10	23	33
1972	9	24	33
1973	11	23	34
1974	15	33	48
1975	31	48	79
1976	37	58	95
1977	40	70	110
1978	41	71	112
1979	45	79	124
1980	51	81	132
1981	47	87	134
1982	44	90	134
1983	51	88	139
1984	49	86	135
1985	50	82	132
1986	43	75	118
1987	44	51	95
1988	18	43	61
1989	23	39	62
1990	23	41	64
1991	22	39	61
1992	21	36	57
1993	22	33	55
1994	21	28	49
1995	21	29	50
1996	21	30	51
1997	19	32	51
1998	20	30	50
1999	17	36	53
2000	22	29	51
2001	21	31	52
2002	21	32	53
2003	22	30	52
2004	20	29	49
2005	22	29	51
2006	31	20	51
2007	22	31	53
2008	24	32	56
2009	23	32	55
2010	20	27	47
2011	19	26	45
2012	19	26	45



Table 9 - 2
General Secretariat Actual Expenditure
by Budget Category, 1968 - 2012
(Thousand Kuwaiti dinars)

Year	Wages & Salaries	General Expenditure	Studies, Training & Information	Total
1968	9	18	-	27
1969	67	52	18	137
1970	97	75	55	227
1971	107	50	25	182
1972	126	63	17	206
1973	108	66	230	404
1974	152	140	50	342
1975	343	335	81	759
1976	525	306	434	1265
1977	694	329	367	1390
1978	807	335	467	1609
1979	929	401	432	1762
1980	1133	415	437	1985
1981	1277	461	559	2297
1982	1546	527	588	2661
1983	1763	547	634	2944
1984	1812	515	508	2835
1985	1818	447	422	2687
1986	1697	413	286	2396
1987	1439	385	190	2014
1988	799	244	122	1165
1989	733	242	145	1120
1990	771	250	141	1162
1991	693	276	87	1056
1992	734	322	114	1170
1993	765	327	118	1210
1994	718	282	127	1127
1995	709	380	140	1229
1996	725	370	140	1235
1997	725	374	148	1247
1998	735	385	140	1260
1999	712	397	127	1236
2000	799	394	138	1331
2001	886	384	141	1411
2002	885	383	146	1414
2003	874	394	154	1422
2004	762	386	147	1295
2005	928	396	148	1472
2006	837	402	206	1445
2007	1007	437	183	1627
2008	1046	482	196	1724
2009	1048	518	237	1803
2010	982	506	215	1703
2011	1046	509	230	1.786
2012	1111	511	218	1.480
Total	37.380	15.431	9.708	62.519

Chapter 3 OAPEC Sponsored Ventures

In 2011 and 2012 global financial crisis implications, and the geopolitical events, continued to weigh heavily on the Middle East and North Africa (MENA) region. As a result, the activities of certain OAPEC sponsored ventures, particularly the Libya-based APSCO, were affected. The company lost some of its equipment and its properties were exposed to damages due to the events witnessed by Libya. Once the events came to an end, the company formed a number of committees to assess the damages.

Since decades, OAPEC sponsored ventures have faced severe challenges due to the nature of their activity. They have always confronted sharp competition by the major global players of similar activity, on one part, and the difficulty in penetrating Arab markets, on the other part. Despite these circumstances, sponsored ventures exerted intensive efforts over the two years, which culminated in upgrading their performance and developing their business. OAPEC sponsored ventures were not severely affected by those circumstances. Yet, they became more determined to overcome the difficulties, capitalizing, in the first place, on utilizing and investing their expertise acquired over the past decades to step forward towards realizing more successful achievements.

In spite of the difficulties still facing the investment climate in the Arab region, in general, the economies of Arab petroleum producing and exporting countries, achieving good economic growth rates over the past years, had a positive impact on OAPEC sponsored ventures. They managed to benefit from this growth in fostering their activities and maintaining their foothold in their core business, such as investment in energy sector (APICORP), maritime transport market (AMPTC), the shipbuilding and repair market (ASRY), and the drilling and geophysical exploration market (APSCO and its subsidiaries).

OAPEC sponsored ventures have gone forward with confidence in realizing the objectives set out by their OAPEC member owners. This is reflected in the good financial results achieved by those companies in



2011 and the first half of 2012. Notably, they made progress in mutual coordination and cooperation in providing financial and technical support. It should be noted that all the companies are fully independent, and that their annual general meetings have the competence to make decisions, at their own discretion, to manage and set up plans for their development.

Moreover, sponsored ventures still aspire to have more support from OAPEC member countries, and that the forthcoming period will witness the opening of Arab markets for their activities on competitive grounds, if not on a preferential basis.

The following paragraphs provide a brief on the activities of each OAPEC sponsored venture.

Summary of Major Activities Facing Sponsored Ventures

I. ARAB MARITIME PETROLEUM TRANSPORT COMPANY (AMPTC)

Arab Maritime Petroleum Transport Company (AMPTC) was established on 6 May 1972, with an authorized capital of US\$500 million, and paid-up capital of US\$250 million. The company is situated in the State of Kuwait, and all OAPEC members, with the exception of Syrian Arab Republic, have stakes in the company. The object of the company is to carry out maritime transport of hydrocarbons.

1. AMPTC Activities in 2011

The company's fleet consists of 9 crude oil, liquefied gas, and clean petroleum products transport tankers. The company charters out its tankers under time charter contracts or sport voyage system according to the prevailing market rates. All the company's tankers are accepted by all global oil companies, and are subject to their periodic technical examination to continue operation. The company has well-established relations with Arab oil marketing companies, allowing it, from time to time, to charter out some of its tankers to those companies to meet their requirements, at the

rates prevailing in transport market.

The company supplies and transports liquefied gas to the Egyptian General Petroleum Corporation (EGPC) (about 1.6 million tons per annum), using its own liquefied gas tankers, in addition to other chartered tankers from other Arab and foreign transport companies, under time charter contracts, concurrent with liquefied gas supply contracts to the Corporation.

Owing to the current decline in chartering rates at petroleum maritime transport markets, this additional activity of the company (gas supply) enables it to realize subordinate financial revenues in addition to fleet activity, helping it to constantly attain annual profit. This is obvious from the realized financial results. In this context, it should be mentioned that the company, by entering into the field of liquefied gas maritime transport, has successfully concluded liquefied gas purchasing contracts from Arab marketing institutions, with total quantities amounting to about 1.6 million tons annually. This led to enhanced cooperation between the company and national oil companies in the member countries (Saudi ARAMCO, Tasweeq of Qatar, and SONATRACH of Algeria).

On the other hand, the company continued to implement its plans aimed at upgrading and increasing the units of its maritime tanker fleet, depending on its own resources, despite the continuing implications of the global financial crisis. The company concluded contracts to build two new tankers for clean petroleum products, which are scheduled for delivery in 2012 and 2013. Due to the continuing circumstances in the Arab Republic of Egypt since 2011, the company has been supportive for the Egyptian General Petroleum Corporation (EGPC) facing the crisis witnessed by the fuels sectors in Egypt. As a result, the company still faces difficulties in collecting its financial dues from EGPC, of about US\$285 million.

2. AMPTC Financial Results for the Financial Year 2011

In 2011 the company's operating income amounted to about US\$86.02 million, and the actual operating expenses, before tanker depreciation,

stood at US\$52.79 million. Book depreciation of tankers amounted to nearly US\$424.34 million.

Gas transport and supply projects posted a net profit of about US\$17.98 million. As a result, the net profit posted by the company rose by about US\$15.36 million, compared to 2011.

3. Company's Financial Results for the First Half of 2012

Tanker operating income amounted to approximately US\$44.21 million, and the operating expenses were nearly US\$35.65 million. Meanwhile, book tanker depreciation amounted to about US\$11.98 million. Net of general and administrative expenses, and financing interest to banks, the company posted a net profit of about US\$30.12 million for the first half of the year 2012.

II. THE ARAB SHIPBUILDING AND REPAIR YARD COMPANY (ASRY)

The Arab Shipbuilding and Repair Yard Company was established on 8 December 1973, with an authorized capital of US\$340 million, issued and paid-up capital of US\$170 million. The company is located in Manama, Kingdom of Bahrain, and all O.A.P.E.C member countries, with the exception of the Democratic People's Republic of Algeria and Arab Republic of Egypt, have stakes in the company. The objectives of the company cover all operations of building, repairing and maintaining all types of ships, tankers, and other maritime vessels for transporting hydrocarbons.

1. ASRY activities in 2011

The year 2011 marked ASRY's celebration, in December, of the 35th anniversary of operation in the new 1380m long offshore platform. The official ceremony was held under the patronage of His Majesty Sheikh Hamad Bin Issa Al Khalifa, King of Bahrain, and was attended, on His Majesty's behalf, by His Royal Highness Prince Salman Bin Hamad Bin Issa Al Khalifa, Crown Prince, and Deputy Chief Commander.

During the year, 200 vessels were repaired, against 210 vessels in 2010. Average revenue per vessel rose to about US\$843,000, compared to US\$710,000 for the previous year.

The company has successfully built a good image in the region, and was crowned with “Yard of the Year 2011” among the awards of “Lloyd’s List Middle East & Indian Sub-continent”. The next step, however, is to enhance this reputation in all aspects of international navigation, and to prove the company’s deserved image and ability to take the challenges ahead.

Hence, ASRY will remain keenly desirous to continue its expansionary business plans, realizing outstanding performance by diversifying income through offshore repairs. Despite the challenges prevailing in the market, the company keeps attaining progressive growth. Had it not been for the constant support by the stakeholder countries to boost its management and business, the company would not have been able to achieve such progress.

It should be noted that relentless efforts were exerted in the areas of marketing and promotion for the company’s services upon entry of oil tankers and other vessels, as well as drilling platforms, to ASRY for repairs. Those efforts were not limited to ASRY; yet, they extended to include the global agents network, with whom ASRY makes concerted efforts. Had it not been for the extensive efforts made by our agents, much repair works awarded to ASRY would have been referred to other yards.

2. Financial Results 2011

Despite the difficult economic conditions, and the sharp competition at the regional and global levels, the company posted a good net profit of US\$3,821,232.

3. Training

In 2011 ASRY continued its training and Arabization plans aimed at developing the Arab staff. In line with the plan, more Arab trainee staff were either employed or promoted, and staff performance and skills were



developed. Training included several aspects, covering the company's technical and administrative requirements. The objective was to cope with scientific development in ship repair and to confront the severe competition in the industry.

In 2011 the company had 1646 employees, including 808 Arabs. The company recruited 13 interim employees in 2011 to meet the business needs. At peak times, the company outsources sub-contractors.

ASRY organized different training programs for top management, middle management and supervisory levels, and held 273 different vocational and general courses for 1633 of its Arab staff.

4. ASRY Activities in the First Half of 2012

The company had another year full of challenges in 2012. However, ASRY is confident that the ongoing support it receives from its board of directors, executive management, customers and agents, is an assurance that it will go forward steadily to meet the new requirements of ship industry and offshore operations in the years to come.

5. Financial Results in the First Half of 2012

The company achieved good results in the first half of 2012, with operating revenues amounting to US\$84,188,000, a decline by 3.36% against the same period of 2011, of US\$87,116,000. The company posted a net profit of US\$509,000.

III. THE ARAB PETROLEUM INVESTMENTS CORPORATION (APICORP)

The Arab Petroleum Investments Corporation (APICORP) was established in Khobar, Saudi Arabia on 11 September 1974 with an authorized capital of US\$1.2 billion. The fully paid-up capital is US\$550 million. All OPEC member countries have stakes in this corporation,

whose objective is to participate in the financing of oil industry's projects and relevant activities, or to assist in such projects to the benefit of member countries by supporting their ability to benefit from their petroleum resources and invest their savings to boost their economic and financial capacity.

1. Projects and Trade Finance in 2011

In 2011 APICORP maintained its foothold as one of the largest regional financial institutions in project and trade finance sector, which saw some signs of recovery in the GCC countries during 2011, compared to the previous year. In North Africa, the geopolitical events caused the delay of certain financing operations commenced in 2010. Under such circumstances, the project financiers and developers were obliged to take precautionary measures.

APICORP continued to improve its loan portfolio, with net value by end of 2011 amounting to about US\$2.8 billion, compared to US\$2.5 billion by the end of 2010. Despite the political events recently witnessed by the Arab region, APICORP maintained a high quality loan portfolio, giving grounds for rating it at an affirmed "stable", with AA for internal rating. Meanwhile, defaults on loan installment repayments remained at their minimum levels.

Project and trade finance activity posted a net profit of about US\$30.75 million in 2011, compared to nearly US\$26.0 million in 2010. For the second consecutive year, the pricing of financing deals signed in 2011 went up, and the company gained on purchasing assets from secondary markets, with good discounts.

2. Direct Participations in Project Capitals for 2011

APICORP's objective is to participate in developing hydrocarbon and energy industry projects in the Arab region. APICORP participates in the capitals of 12 projects that have presence in 5 Arab countries: Saudi



Arabia, Libya, Iraq, Egypt, and Tunisia. Those projects cover different activities, including petrochemical industries, nitrogen fertilizers, liquefied petroleum gas (LPG), geophysical services, oil and gas well drilling, and storage materials for petroleum products.

By the end of 2011 the corporation's net book value of equity portfolio amounted to about US\$325 million, compared to nearly US\$366 million by the end of 2010. The decline, by about 12.6%, is attributable to two reasons: divestment from Bahrain National Gas Company. (BANAGAS) during the fourth quarter of 2011, and the provisioning for certain participations of APICORP portfolio.

APICORP's financial statements for 2011 saw a continuing upward trend of earnings from participations, which increased to about US\$100 million, compared to nearly US\$67 million earned in 2010. Notably, this level of dividend distribution for 2011 reflects an unprecedented record in the history of APICORP equity portfolio.

3. Financial Results in 2011

APICORP posted a net profit of US\$105.3 million in 2011, compared to a net profit of US\$92.5 million realized in 2010, an increase by 11% over the previous year. Operating revenues for 2011 stood at US\$159 million, net of cost of funding. APICORP's general assembly, upon recommendation by the company's board of directors, at its meeting held in April in the Arab Republic of Egypt, approved the distribution of US\$45million as profit for 2011, and the transfer of US\$10.5million to the statutory reserve, and US\$94.8 million to the general reserve, from the retained earnings account.

4. Project Finance Activity for the First Half of 2012

Primary market of project finance activity in the GCC countries and North Africa suffered from recession during the first quarter of 2012, while the secondary market for project finance and international trade was

active. In the second quarter, two mega projects were offered for finance in the market. These are: Sadara petrochemicals Project, which is being promoted by Saudi ARAMCO and the US DOW, and the EMAL Company Expansion Project in Abu Dhabi. In this context, APICORP proposed to participate in the arrangement of Sadara Project with US\$100million.

APICORP also participated in securing the European Investment Bank's loan to the project of the Egyptian Company for Refining with US\$40million. The guarantee under the anticipated cooperation between APICORP and the European Investment Bank was provided when the company was awarded AA credit rating by Moody's.

Year-to-date APICORP has concluded agreements to purchase a number of loans from the secondary market, totaling US\$190million. Discount rate was reduced as the European Central Bank injected liquidity into the banking system. Regarding the issuance of L/Cs, APICORP finalized all procedures and tests in June 2012. A vast branch network of JP Morgan supports this service. Those financial services were offered to a number of customers, who welcomed cooperation with APICORP in this area.

5. Financial Results for the First Half of 2012

APICORP posted a net profit of US\$50.6million in the first six months of 2012. The company's assets totaled US\$5,121million as of 30 June 2012, compared to US\$4,630million as of 31 December 2011. The corporation's total shareholders' equity increased to US\$1,227million, from US\$1,219million as of 31 December 2011. APICORP borrowed the equivalent of US\$667million via a medium term loan. About US\$400million of the loan amount was to be utilized in the settlement of the existing loan with maturity on 27 May 2012, and the balance to be utilized in covering the corporation's financing needs.

In line with APICORP's five-year plan approved by the board of directors on 25 December 2011, which aims at developing the company's investments and assets, reducing reliance on short-term sources of finance, depending on medium and long-term sources of finance, and reducing asset/

liability mismatches, APICORP, during the first half of 2012, borrowed US\$133 via a medium-term loan, to be utilized in covering the company's financing needs, and increasing the medium-term sources of finance.

6. Staff and Training

Currently, APICORP employs about 116 staff members at the corporation's headquarters in Khobar, Saudi Arabia, and at the foreign banking unit in the Kingdom of Bahrain. About 69% of the employees are Arabs (80 employees), and the others are of non-Arab nationalities (36 employees). According to the human resources strategy, and as needed, the corporation increases the number of non-Arab employees to achieve balance between Arab and non-Arab expertise in certain technical and specialist jobs that require experience unavailable to Arabs, or difficult to obtain.

The corporation exerts efforts to develop the skills and capabilities of its employees to achieve balance between the training requirements necessary for the efficient performance of work and the necessity to cope with the latest developments in economic, financial, petroleum, administrative, and ICT areas. To realize this goal, the corporation utilizes the employee performance appraisal program.

The corporation sets plans to develop the skills of its employees by engaging them in short intensive courses in the various fields, while focusing on the brief courses in the banking and petroleum industries. The company trains fresh graduates of Arab nationalities, who join work at the company, locally or abroad.

IV. THE ARAB PETROLEUM SERVICES COMPANY (APSCO)

The Arab Petroleum Services Company (APSCO) was established on 23 November 1975, with an authorized capital of 100 million Libyan dinars, and a paid-up capital of Libyan Dinars 44million. The company is situated in Tripoli, Libya, and all OAPEC member countries have stakes in the company. The company was established to provide petroleum services, which were monopolized by the major oil companies that own the secrets, technologies,

expertise and skills in the area of petroleum services, by establishing companies, specialized in one or more areas of petroleum services.

APSCO's capital was increased from Libyan Dinar 44million to Libyan Dinars 49million by General Assembly Resolution No. 221/38/2010 issued on 16 June 2010.

1. APSCO's Activities in 2011

The company continued its activities by monitoring the supporting the three existing companies and studying future projects to participate in. It should be noted that the joint venture with Weatherford for establishing a joint venture under the name Arab Oil Fields Development Company was unsuccessful, and is still under follow-up by the company's management. Meanwhile, the company made several contacts and held discussions with other companies to establish joint ventures in line with the company's objectives.

A number of meetings were held with Kuwait Energy and Synergy companies to agree on establishing a joint venture in the area of geological studies. Negotiations are still under way to sign a memorandum of understanding (MOU) and to complete the incorporation procedures in the forthcoming period.

Moreover, several meetings were held with Schlumberger and Stern Geco, and contacts are continuing to find a suitable format for partnership. The company decided to focus on improving and upgrading the performance of its current companies: Arab Drilling and Workover Company (ADWOC), Arab Well Logging Company (AWLCO), and Arab Geophysical Exploration Services Company (AGESCO), expand through those companies, and study the opening of branches in the member countries.

2. Financial Results for 2011

APSCO's net loss for 2011 amounted to Libyan Dinars 469,429, net of total expenses of Libyan Dinars 2,449,437 from the amounts received as interest on the deposit of Libyan Dinars 104,806, and adjustments for

previous years, of Libyan Dinars 1,915,162. The net loss was charged to retained earnings account, bringing it up to Libyan Dinars 297,839 as of 31 December 2011.

3. Manpower and Training

As of June 2012, the company employed 14 staff members, all Arabs.

4. Financial Results for the First Half of 2012

APSCO's financial results for the first half ended 30 June 2012, are summarized as follows:

LD'000

Total revenues	24.6
Total expenses	1,425.9
Losses for the period	(1,401.3)

One million four hundred and one thousand and three hundred Libyan dinars

V. THE ARAB DRILLING AND WORKOVER COMPAN (ADWOC)

The Arab Drilling and Workover Company is an Arab company specialized in offshore/onshore oil and gas well drilling and workover. It is a subsidiary of some OAPEC sponsored ventures.

The company was established in 1979 under an international agreement between three companies: Arab Petroleum Services Company (APSCO), Arab Petroleum Investments Corporation (APICORP), and Santa fee International Services Company.

The company's authorized capital is Libyan Dinars 12 million, and its paid-up capital is Libyan Dinars 12 million, which was later increased to Libyan Dinars 60 million. The company is located in Tripoli, Libya. In 2009 Santa fee sold its stake in ADWOC to First Energy Limited.

1. Company Activities in 2011

During the first two months of 2011 the company achieved an operating rate of 100%, operating 17 rigs owned by the company, in addition to 5 chartered rigs from the Chinese company, 1 rig from the Kuwaiti company, and 2 rigs from CROASCO, bringing the total to 25 rigs operating for the company early in the year.

In the aftermath of the events that occurred in Libya, the company's management assessed the situation and prepared plans to evacuate all the employees, except for those who expressed willingness to continue work and to secure the company's properties of 27 sites in the desert (16 rigs owned by the company, 8 chartered rigs, and two fixed sites; one under concession A103, and the other under concession 115, in addition to the company's headquarters in Tripoli). All desert sites were evacuated in coordination with the operators.

A transport company, located in Ojla city, was assigned to provide protection to a number of the company owned and chartered rigs, in addition to concession site A103. A large number of the company's trucks, cranes and vehicles were stored in the location of the transport company in Ojla, and were thus protected.

The company, in coordination with the employees of the company residing at Zala area and the fields of Al-Sharara and Al-Feel, as well as some natives in the areas where the rigs and equipment were stored, including Mount Nafousa and Tripoli stored a number of the company's equipment and vehicles in their farms for preservation purpose. A number of the vehicles and equipment at the company's headquarters were seized. Therefore, the management decided to develop an emergency plan, summarized as follows:

- Setting a financial plan to maintain the national employees of the company in light of the available liquidity.
- Providing the necessary guard services for all the company's rigs and sites in the desert.
- Contacting the Arab British Commercial Bank and competent



authorities in the British government to disburse the dues to third parties, especially the suppliers.

- Possibly operating certain rigs of the company.
- Continuing work of Rig No. 1 in Syria, and replace employees drawing high salaries with other employees.
- Possibly collecting debts due on operators.

The company managed to safeguard the contents of the warehouses, estimated at about US\$15 million. It also managed to smuggle out certain vehicles and equipment from the company's headquarters to farms of some of its employees.

As the events in Libya came to an end in August 2011, the company's management formed committees to assess the damages at all sites, and to recover the lost equipment and vehicles, as much as possible. The company also formed committees for rig and site workover to return them back to work as soon as possible. The company managed to return two rigs back to work by the end of 2011.

2. ADWOC Financial Results for 2011

During the events, the company lost some of its equipment, while others were sabotaged. Loss of equipment represented movable assets, such as vehicles and cranes, as well as power generators on rigs, camping equipment, air conditioners, kitchens, workshop tools and other movables. Initial report indicated that the size of losses and loss of equipment sustained by the company could be up to US\$25million. However, this figure largely reduced thanks to the efforts of some company employees, who were able to recover many of the equipment and vehicles.

The company managed to recover equipment and vehicles valued at US\$12,600,000 in total. The equipment and vehicles, which were not recovered, were charged to the books as losses, with original value amounting to Libyan Dinars 14,062,065, and book value amounting to Libyan Dinars 6,212,519. The profit and loss account was charged with Libyan Dinars 6,212,519, being the book value of the lost assets.

3. Manpower and Training

Employees began to return to work gradually from 20 August 2011, as needed. With effect from 1 February 2012 management issued instructions to all national employees to return to full time work. The company employs 822 nationals, 14 Arabs, and 5 foreigners, totaling 841 employees.

4. Company Activities in the First Half of 2012

The first six months of 2012 saw a stable demand for drilling operations. The drilling market has not witnessed demand for more rigs. Yet, some companies minimized their drilling programs, urging many drilling contractors to reduce the number of operating rigs. The impact was the release by ADWOC of one of its rigs. However, the company returned the rig back to operation, and reduced the rig operating cost.

The base country has not seen any notable drilling activity. This was attributable, among other causes, to the delayed approval of petroleum companies' budgets, where 18 rigs are currently out of operation in the country, not all in good condition. Demand for drilling services is expected to improve after the relative regression of the global financial crisis implications for certain institutions and countries.

5. Company Budget Highlights for 2012

Budget was approved for the period from 1 January 2012 to 31 December 2012. The company management expects the total income for the period to total US\$58,454,000, and the expenses to amount to US\$51,056,000, bringing the net profit to US\$7,398,000, and cash earnings to US\$20,555,000.

Capital budget was also approved for the period from 1 January 2012 to 31 December 2012 of US\$14,154,000 for Libya operations, and US\$1,000,000 for Syria operations, totaling US\$15,154,000.



VI. THE ARAB WELL LOGGING COMPANY (AWLCO)

AWLCO was established on 24 March 1983, with a fully paid-up capital of US\$20million, and is based in Baghdad, Iraq. All OAPEC member countries have stakes in the company equal to their stakes in the Arab Petroleum Services Company (APSCO). The company specializes in well logging and perforation, and has operation centers in the north and south.

1. Company Activities During the Period from 1 January 2011 to 30 June 2012

In 2011 AWLCO continued to provide well logging and perforation services in all the Iraqi fields. The main features of its activity were as follows:

- Higher volume and quality of business extended to North Oil Company, while the volume of business continued to maintain its level of 2010, which was implemented to the favor of a number of companies in the south due to the entry of licensing contracts in the south, outsourcing the services of international companies. AWLCO is capable of completing a larger number of business activities by utilizing its equipment or through cooperation with global companies, due to its competitive edge.
- Company's revenues maintained level, with slight improvement, despite the development of service quality.
- Higher profit of the company compared to 2010, due to higher volume of business and continued cost rationalization.
- Providing companies having contracts with the Iraqi Oil Ministry with well logging and perforation services.
- Providing production companies with new services, such as well lining erosion measurement loggers and production testing.
- The arrival of new underground devices and equipment, which were acquired by investing the company's profits in this area. The company had made contracts for acquisition in 2011. Currently, the company uses such equipment and devices with success in North Oil Company fields.

- The company adopted all types of perforators for use in the complicated reservoirs, providing the company with the ability to implement any such business activity.
- The company continued to carry out maintenance and re-construction of old installations, vehicles, devices and equipment for the purpose of sustaining business and buildings.
- Well logging and perforation operations were completed as per original contracts executed with the Iraqi south and north oil companies, Iraq drilling companies, and Missan Oil Company.

It is noted that the company's business activities and profits have slightly increased as the company upgraded its equipment and vehicles, and as it obtained certificates in industrial safety and environment from the UK, and non-boycott certificate from the US government. In 2011, and the first half of 2012, the company completed a total of 351 successful logs, which realized revenues and profit for the periods of US\$8,103,371, and US\$1,317,338, respectively.

2. Relations with Iraqi Beneficiaries

The Ministry of Oil, its government departments, north and south oil companies, Missan Oil Company, Middle Oil Company, and Iraqi Drilling, continued to provide AWLCO with assistance, as follows:

- His Excellency the Minister of Oil directed the Middle Oil Company to allocate a plot of land as a work site for AWLCO in the company's locations at East Baghdad Field, as per the request of AWLCO.
- Economic Department prepared all official letters required by the tax and customs departments to cover the business activities of the company.
- Economic and Financial Department caused the issuance of all security approvals to acquire and enter perforators into Iraq, with delivery to the work sites.
- Administrative Department provided the company with all administrative letters necessary for its business.
- Production companies provided all fuels and certain materials necessary for work.

- Studies, Planning and Follow-up Department assisted the company to obtain licenses for possession of radioactive elements and its shelters.
- Reservoirs and Field Development Department assisted the company in all technical matters the company requires, as well as in the interpretation of logs of a number of wells. The Department also trained an engineer to interpret the well logs.
- Providing the necessary protection for the company and its employees, especially upon transporting the perforation output and radioactive elements by the oil protection units.
- Signature of logging and perforation operations contracts with production companies for 2012. The Studies and Planning Department is promoting ratification of the contracts by the Ministry of Oil.
- Production sector companies provided stores for keeping the perforators and the relevant accessories.
- Production sector companies settled all costs of operations for 2011, while the North Oil Company provided financial advances for the activities of 2011. Such advances will be settled along with the costs of works to the company by the end of the year, as per the annual practice.
- North Oil Company and South Oil Company repaid both first and second installments for 2011 and 2012 of the debts of AWLCO on the Iraqi Ministry of Oil under the company's debt settlement agreement, and the settlement mechanism signed between the representatives of the Iraqi government and AWLCO.

3. Training and Development

The company engaged a number of its employees in training courses within the country during 2011 and the first half of 2012, as follows:

- Training two engineers on the operation of production loggers.
- Training the Industrial Safety Division Manager in England, as the company obtained Health, Safety and Environment (HSE) Certificate.
- Training two engineers in China on open well logging devices.
- Training one engineer in China on interpreting the lining erosion loggers.

4. Company Employees

In 2012 the company had 61 employees.

5. Company Financial Results

In 2011 and the first half of 2012 implementation of logging and perforation operation continued in the fields of North Oil Company and South Oil Company. In 2011 the company posted a net profit of US\$713,962, and posted a net profit of US\$603,376 in the first half of 2012.

VII. THE ARAB GEOPHYSICAL EXPLORATION SERVICES COMPANY (AGESCO)

AGESCO was established in 1984 in Tripoli, Libya, with an authorized and paid-up capital of LD19 million. APSCO has a stake of 66.66%, APICORP has a stake of 16.67%, and National Oil Corporation has a stake of 16.67% in the AGESCO.

I. Company Activities in 2011

Crew AG-002

The Crew continued their activity on concession No. MN-100 for Arabian Gulf Oil Company, recording 219.10km² in January and 51.05km² in February. Afterwards, the Crew moved to work for Tatnaft Company, in concession No. 4-82, recording 14.90km² during the first days of February. On 20 February, seismic activity of the crews was suspended due to the events witnessed by Libya in 2011.

This crew recorded a total of 285.05km² during 2011.

Crew AG-003

This crew continued work for Arabian Gulf Oil Company in concession No. MN-7A. The crew recorded 237.27km² in January, and 173.31km² in February. By the end of 2011 the crew completed a total of 410.58km².



Joint Seismic Data Processing Center with CGG:

The Seismic Data Processing Center, jointly established by AGESCO and CGG VERITAS, ceased activity in 2011 due to the events that took place in Libya.

Financial Results for the First Half of 2011

Operating and other revenues totaled Libyan Dinars 10,383, while expenses totaled Libyan Dinars 16,791, realizing a loss of Libyan Dinars 6,448.

Manpower and Training

The company's training and development program was completely ceased as a result of the events that took place in Libya in 2011.

By the end of 2011 the company had 218 employees, out of whom 217 were Arabs, and one foreigner.

2. Crew Activity in the First half of 2012

Crew AG-002

The crew resumed activity after a cessation of one year due to the events in Libya. The crew continued surveying for Arabian Gulf Oil Company in concession No. 47, and completed 165.20km² in May, and 237.88km² in June. The total productivity of this crew for the period in question was 403.08km².

Crew AG-003

The crew resumed activity after a cessation of one year due to the events that took place in Libya for Arabian Gulf Oil Company in concession No. MN-4, accomplishing 34.42km² in February, 232.58km² in March, 217.45km² in April, 236.48km² in May, and 228.94km² in June, totaling 949.87km² for the period.

AGESCO/CGG VERITAS Seismic Data Processing Center

AGESCO/CGG VERITAS Seismic Data Processing Center ceased activity in 2011 due to the events in Libya, and has not resumed activity to this date.

Financial Results for the First Half of 2012

Operating and other revenues amounted to Libyan Dinars 14,543, while expenses totaled Libyan Dinars 12,364, i.e. posting a net profit of Libyan Dinars 2,179.

Manpower and Training

By the end of first half of 2012, the company had 646 employees.

VIII. THE ARAB DETERGENT CHEMICALS COMPANY (ARADET)

The company was established on 12 March 1981 in Baghdad, Iraq, with an authorized capital of Iraqi Dinars 72million, and subscribed and fully paid-up capital of Iraqi Dinars 36million. Three OAPEC member countries, i.e. Iraq, Saudi Arabia, and Kuwait, in addition to three companies: APICORP, Arab Mining Company – Jordan, and Arab Investment Company, have stakes in ARADET.

I. Company Activities in 2011

In 2011 the company managed to maintain high levels of operation and marketing, and attained good results during the year, although marketing operations were affected by the events in Syria, as the major clients of the company are from Syria.

During the year the company achieved net sales exceeding Iraqi Dinars 83million (equivalent to about US\$5.70million). The company marketed 34,504 tons of Linear Alkyl Benzene, against about 36,326 tons marketed in 2010. The company also marketed, in 2011, the surplus of its intermediate products, such as Paraffin, about 1,490 tons, and B.T.X, about 6,600 tons, as well as other by-products.

The Company's Financial Status in 2011

The financial statements showed a total profit in 2011 of nearly US\$9.10 million, compared to a total profit of about US\$8.9 million realized in 2010.

Meanwhile, net profit for the financial year ended 31 December 2011 was about US\$9.7 million, against US\$12 million in 2010.

Manpower and Training in 2011

Manpower movement in 2011 was characterized by the stability of the remaining senior staff, and young employees were appointed to occupy vacancies of company owners. By the end of 2011 the company had 338 employees, including 295 Iraqis and Arabs.

2. Projects Division Activities for the First Half of 2012

As a result of cessation of the Benzene production in the second quarter of 2012 due to furnace qualification works and replacement of reactors in the Benzene production units (aromatics line), the company compensated the shortage by importing the required quantities to sustain the production process. The company achieved the production plan.

Work was implemented in a set of projects, including:

Tanks: To increase the storage capacity of the intermediate materials required in the market at the company plants, the completion ratio registered 96% for the construction of two tanks, of 500m³ capacity each, to store BTX and other intermediate materials. Also, the construction of a 1,000m³ tank was completed to store other intermediate materials, with completion ration being 88%.

A 20 low-housing unit project was implemented, including bachelor quarters, and 6 service shops. The company's ORACLE operated systems were upgraded by replacing the current systems with other developed and flexible systems.

Upon conducting technical studies to identify the critical equipment to be replaced or qualified, the manufacturing and mobilization of V1/V208 reactors, and H108 furnace qualification works are being monitored with KPS Company of the Czech Republic. Rotary Valve operating control system upgrading works are under way at the Paraffin production unit (Molex Unit). A contract was made to acquire a cooling tower for the nitrogen unit and air compressor.

In an endeavor to upgrade performance of the employees in the technical and administrative areas, the company engaged its staff in vocational programs to increase their professional efficiency. About 51% of the planned staff up to mid 2012 participated in the development programs. Upon completion of the study for upgrading the aromatics line, which was conducted by GTC-Technology, the company seeks to accomplish the engineering works and purchasing of equipment and materials, as well as installations, via agreement with an alliance of contractors for implementation. A study was conducted to upgrade Paraffin and Alkyl lines to increase the production capacity to 72,000 tons/lab with Mei Yang Engineering, which also upgraded the Paraffin and Lab production lines for SINOPEC of China.

Financial Results for the First Half of 2012

Financial statements for the first half of 2012 show a total profit of US\$6.4million. By adding the other revenues and, net of general expenses, the company's net profit for the period is about US\$2.3million.

Manpower and Training in the First Half of 2012

The company sought to develop the performance of its employees in the technical and administrative areas by engaging them in qualifying programs to increase their professional efficiency. About 45% of the planned staff up to mid 2012 participated in the development programs. The company has 342 employees, including 297 Iraqis and one Arab.

APPENDICES





Press Release

The Eighty-Eighth Meeting of OAPEC Council of Ministers

OAPEC's Council of Ministers convened its Eighty-eighth meeting in Cairo on 19 May 2012. The meeting was held at the level of Executive Bureau members representing their Excellencies the Ministers and chaired by His Excellency Mr. Abdul Qader La'alam, representative of People's Democratic Republic of Algeria, which has the chair for the current session.

His Excellency Mr. Abdul Qader La'alam welcomed their Excellencies the Ministers, and the Secretary General of OAPEC, he also welcomed His Excellency Dr. Mattar Al Neyadi the representative of United Arab Emirates who is attending the council's meetings for the first time. Mr. La'alam expressed the Council's appreciation to the Arab Republic of Egypt for their hospitality in hosting the Council's meeting.

His Excellency Mr. Abbas Ali Al-Naqi, the Secretary General of OAPEC, welcomed their Excellencies the ministers wishing them success in their deliberations and expressed appreciation to His Excellency Engineer Mohammad Abdullah Ghorab, Minister of Petroleum and Mineral Resources in Egypt for the hospitality and generosity accorded to them during their stay in Cairo.

The Council's approved the proposed agenda for its meeting included:

- Approved the Ministerial Council's Seventy-eighth agenda held in Cairo on 24/12/2011.
- Approved the General Secretariat and the Judicial Tribunal 2011 budget.
- Reviewed the preparations for the 10th Arab Energy Conference to be convened in Beirut in 2014.

- Reviewed memoranda on OAPEC internet network, progress related to Data Bank, monitoring the issues of climate change and environmental affairs, seminars and conferences attended and organized by the General Secretariat as well as studies carried out.

The council concluded the meeting by expressing its appreciation to the Arab Republic of Egypt for all facilities provided which were conducive to the success of the meeting.

Cairo, May 19, 2012.

The Eighty- Ninth Meeting of OAPEC's Council Ministers

The Council of Ministers held its Eighty- Ninth meeting on 22nd December 2012 in Cairo. The meeting was chaired by H.E. Dr. Youcef Al-Youcefi, Minister of Energy and mines in the Arab Republic of Algeria.

H.E. the Chairman welcomed their Excellencies the Ministers and Heads of Delegations wishing them success in their deliberations, and called for cooperation among member countries to achieve OAPEC's objectives.

H.E. the Chairman welcomed their Excellencies the Ministers those who are attending the Council's meetings for the first time: H.E. Mr. Hani Abdul Aziz Hussein, Minister Petroleum in Kuwait, H.E. Dr Abdul Bari Ali Al-Hadi Al-Arousi, Minsiter of Petroleum and Gas in Libya, H.E. Eng. Osama Mohammad Kamal, Minister Osama Mohammad Kamal, Minister of Petroleum and Mineral Resource in Egypt wishing them all success.

He was followed by H.E. Mr. Abbas Ali Al-Naqi, OAPEC Secretary General, who welcomed their Excellencies the Ministers and Head of Delegations upon their arrival, and expressed hope for the continued support of the Council for OAPEC activities.

The Council then approved the proposed agenda for its Meeting where upon it:

- Received the decision of the Arbitration panel of the 2012 OAPEC Award for Scientific Research, for their paper addressing the topic of « *Technical Development of Exploration and Exploitation of unconventional Natural Gas Resources in Arab Countries*», the Council announce the names of the winners as follows:
- **The First Prize**, amounting to 7000 Kuwaiti Dinars, was withheld.
- **The Second Prize**, amounting to 5000 Kuwaiti Dinars was awarded and divided equally between the research papers presented by Mr. Ahmad Ali Abdul Majeed, and Mr. Mohammad Khalid Khalifa from Egypt, and the research presented by Mr. Ahmad Mahmoud Shehata from Egypt.

- Approved the 2013 budget of OAPEC (The General Secretariat and the Judicial Tribunal) amounting to KD 2,102,000.
- Re-appointed Mohammad Al-Bassam and Partners as auditors of the Organization's (General Secretariat and the Judicial Tribunal) for 2013.
- Reviewed the 2012 General Secretariat Activities, Data Bank Development, followed up issues related to the environment and climate change, participation and organization of meetings and symposia as well as the preparation of various technical studies on oil, gas and energy industry.
- The Council expressed sincere congratulation to the State of Qatar for the great success organizing and chairing the Eighteenth Session of the Conference of the Parties (COP 18), hosted by Doha during the period November 26 to December 8th 2012. The Council also commends the outcome of the conference, reaffirms its support for the «*Doha Declaration: Doha Climate Gateway*» and stresses the importance of the General Secretariat's continual efforts towards following up the climate change negotiations and Sustainable Development and its role in coordination between member countries to protect its oil interests.
- Extending Iraq's supervision over the Arab Petroleum Training Institute for one more year effective 1st January 2013.
- Reviewed a progress report on the activities of OAPEC-Sponsored Ventures, and their operating and financial results in 2011, as well as the first half of 2012, it also reviewed recommendations of the 41st coordinating meeting held in Cairo, October 9th 2012, which reviewed ways to support cooperation between enterprises in under the challenges and developments witnessed by Arab and international oil industry.
- Saudi Arabia presides over the next session (2013) of OAPEC's Ministerial Council and the Executive Bureau, by Alphabetical order, with effect from January 2013.
- A Cable was sent to His Excellency president Mr. Mohammad

Morsi, on behalf of their Excellencies the Ministers for the warm reception and the generous hospitality. The Council concluded its meeting by expressing appreciation to the Arab Republic of Egypt for the gracious hospitalities and the facilities provided which were conducive to the success of the meeting.

- Agreed that the next meeting of the Ministerial Council to be held in Doha, on December 21st 2013.

Cairo, Dec 22, 2012.