

Organization of Arab Petroleum Exporting Countries (OAPEC)



# The Secretary General's

## 38<sup>th</sup> Annual Report

# 38

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ORGANIZATION OF ARAB PETROLEUM EXPORTING COUNTRIES (OAPEC)

# The Secretary General's 38<sup>th</sup> Annual Report

2011  
**38**



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**ORGANIZATION OF ARAB PETROLEUM EXPORTING COUNTRIES (OAPEC)**

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ORGANIZATION OF ARAB PETROLEUM  
EXPORTING COUNTRIES (OAPEC)

## The Ministerial Council

<b>H.E. Dr. Youcef Yousfi</b>	People's Democratic Republic of Algeria
<b>H.E. Shaikh Ahmad Bin Mohammad Al Khalifa <sup>(1)</sup></b>	Kingdom of Bahrain
<b>H.E. Eng. Mohammad Abdullah Ghorab*</b>	Arab Republic of Egypt
<b>H.E. Abdul Karim Luaibi Bahed</b>	Republic of Iraq
<b>H.E. Hani Abdul Aziz Hussein<sup>(2)</sup></b>	State of Kuwait
<b>H.E. Eng. Abdul Rahman Abdulla Bin Yaza**</b>	Libya
<b>H.E. Mohammad Bin Saleh Al-Sada <sup>(3)</sup></b>	State of Qatar
<b>H.E. Eng. Ali bin Ibrahim Al-Naimi</b>	Kingdom of Saudi Arabia
<b>H.E. Eng. Said M. Huneidi <sup>(4)</sup></b>	Syrian Arab Republic
<b>H.E. Mohammad Bin Dhaen Al-Hamli</b>	United Arab Emirates

(1) Succeeded H.E. Dr. Mohammad Mohsen Al-Busairi in February 2012

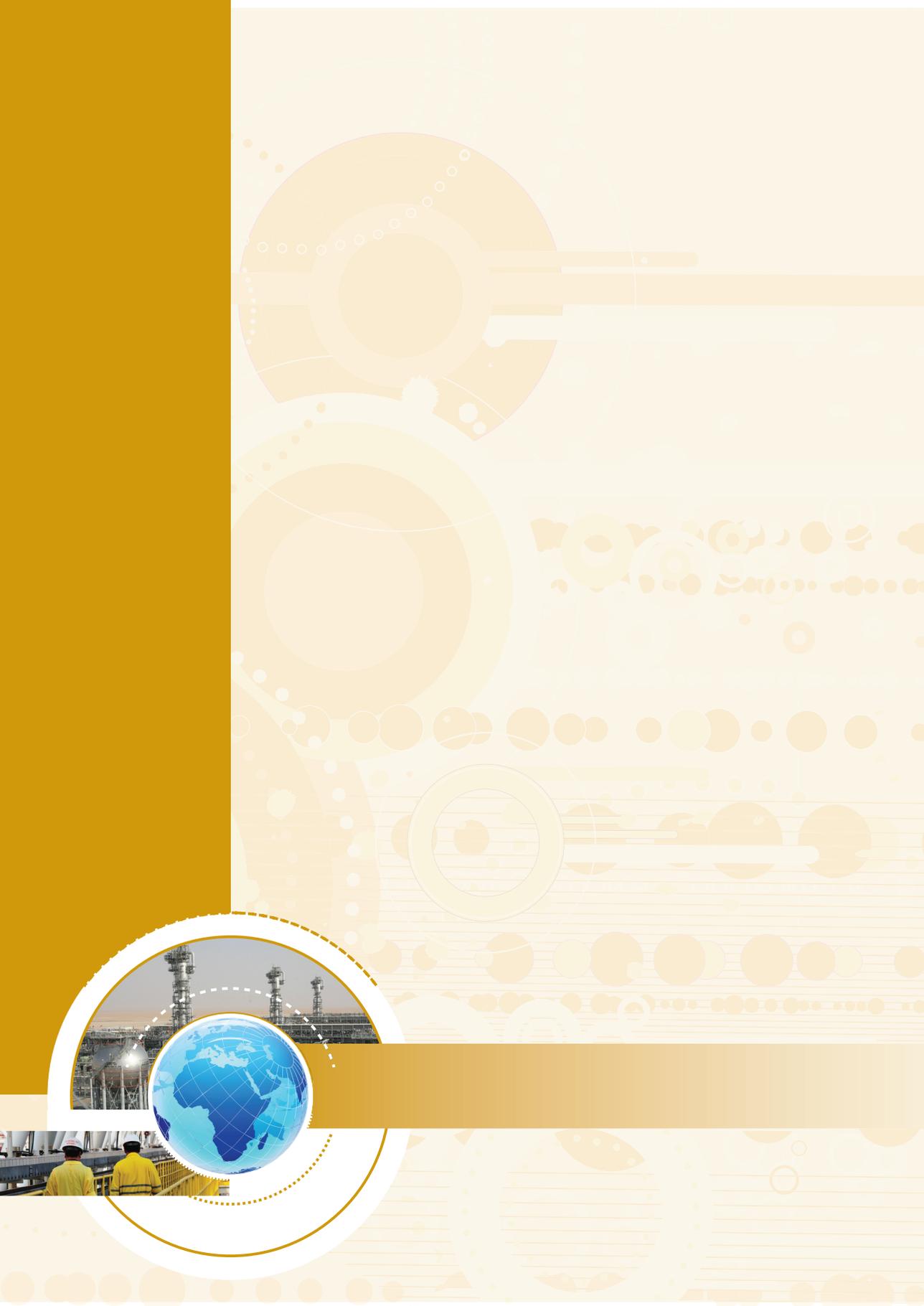
(2) Succeeded H.E. Dr. Abdul Hussein Bin Ali Mirza in July 2012

(3) Succeeded H.E. Abdullah Bin Hamad Al-Attiya in January 2011

(4) Succeeded H.E. Sufian Al Alaw in June 2012

\* He was replaced by H.E. Eng. Osama Mohammed Kamal in August 2012

\*\* He was replaced by H.E. Dr. Abdul Bari Ali Al-Hadi Al Aroussi in November 2012





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## The Executive Bureau

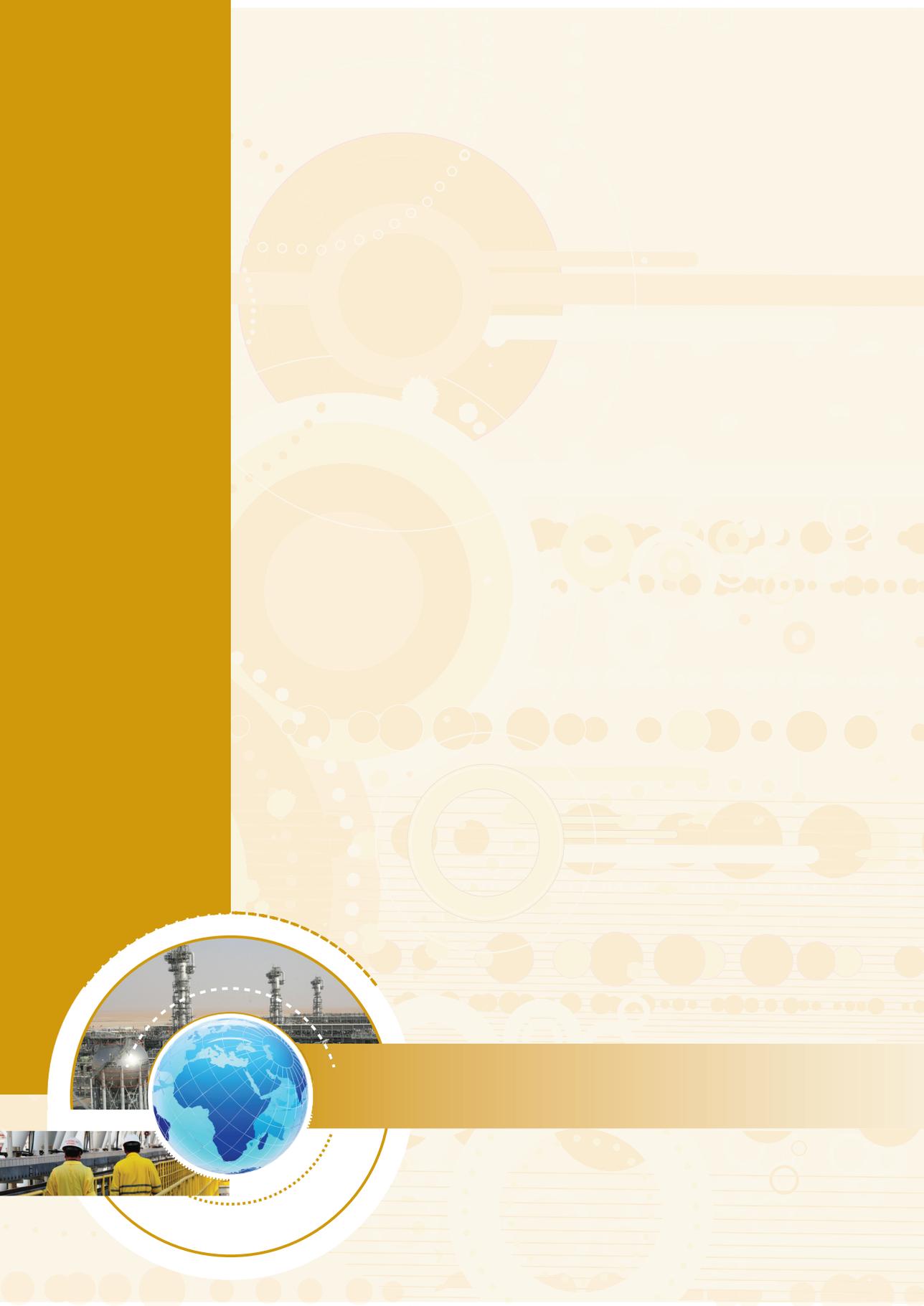
<b>Mr. Abdul Khader Allam <sup>(1)</sup></b>	People's Democratic Republic of Algeria
<b>Mr. Ali Abdul Jabar Al-Sawad</b>	Kingdom of Bahrain
<b>Mr. Eng. Ahmad Saeed Al Ashmawi *</b>	Arab Republic of Egypt
<b>Mr. Hameed Abdul Razaq Salim Al-Saadi</b>	Republic of Iraq
<b>Mr.Eng. Adel Abdul Aziz Al-Jasim</b>	State of Kuwait
<b>Mr. Eng. Mohammad Kamil Al-Zindah</b>	Libya
<b>Mr. Shaikh. Mishaal Bin Jabor Al Thani<sup>(2)</sup></b>	State of Qatar
<b>Mr. Eng. Nasser Bin Ibrahim Al-Fuzan</b>	Kingdom of Saudi Arabia
<b>Dr. Eng. Hassan Zainub</b>	Syrian Arab Republic
<b>Mr. Matar Hamed Al Neyadi <sup>(3)</sup></b>	United Arab Emirates

(1) Succeed Mr. Mohamed Ras Al Kaf in November 2011.

(2) Succeeded Mr. Eng. Naser Mohammed Al Sharhan in January 2012.

(3) Succeed Mr. Salem Buti Al Naimi in June 2011.

\*He was replaced by Eng. Amru Abdul Halim in October 2012

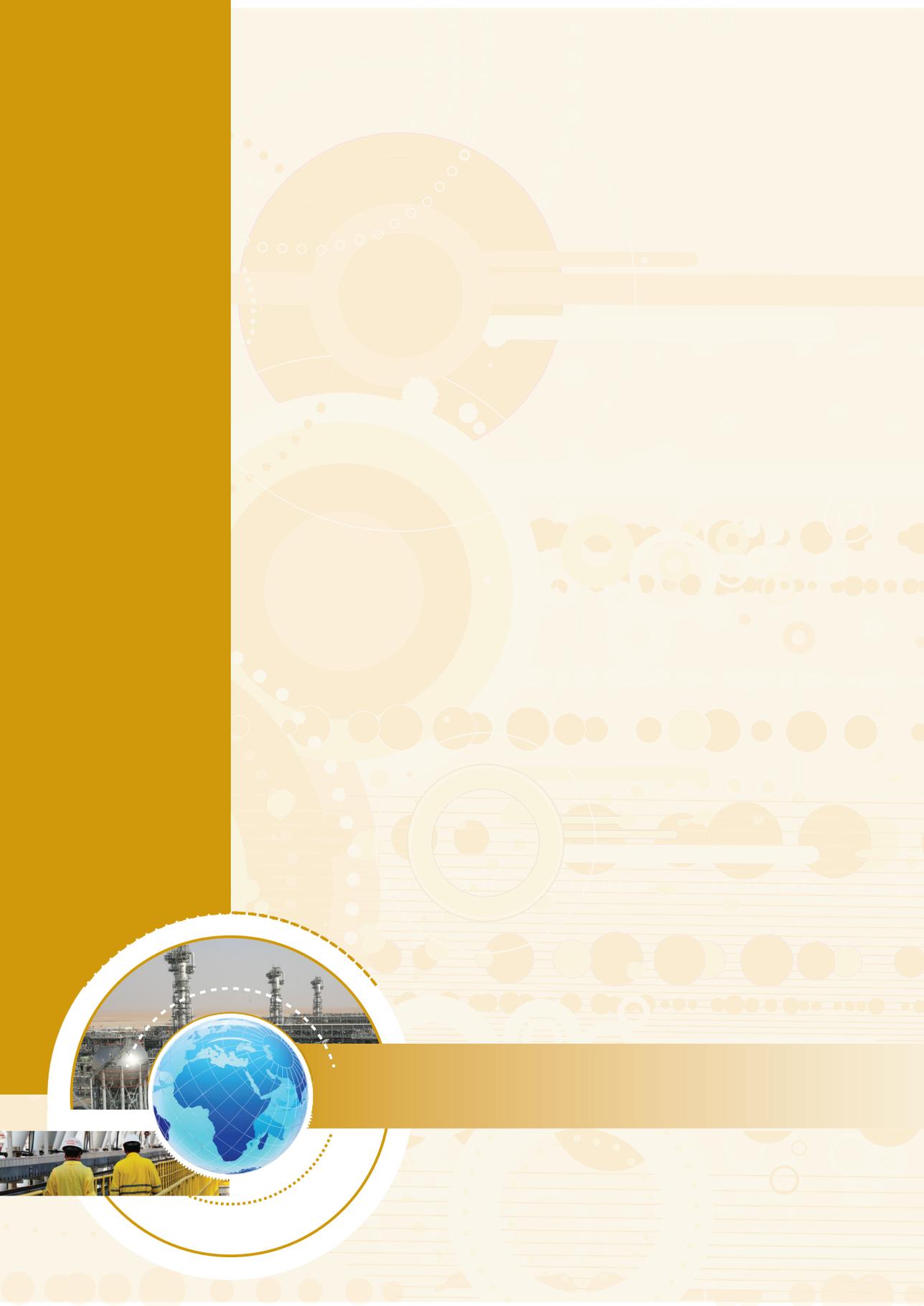




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## The Judicial Tribunal

<b>Dr. Moustafa Abdul Hayy Al-Sayed</b>	President
<b>Shaikh Abdul Rahman bin Jaber Al Khalifa</b>	Vice-President
<b>Mr. Jawad Omar Al-Sakka</b>	Member
<b>Dr. Nabil Abdullah El-Araby</b>	Member
<b>Mr. Khalifa Daalouj Al-Kobaissi</b>	Member





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## The General Secretariat

**H.E. Abbas Ali Al Naqi**

Secretary General

The Arab Center for  
Energy Studies

**Dr. Samir M. El Kareish**

Director of the Technical Affairs  
Department

**Mr. Abdul Fattah Dandi**

Director of the Economics  
Department



**Mr. Aissa Siouda**

Supervisor of the Information  
and Library Department

Director of the Finance and  
Administrative Affairs  
Department\*

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\* The Finance and Administrative Affairs Department is currently under the supervision of the Secretary General





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# PREFACE



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## PREFACE

The year 2011 was considered an extraordinary year, as far as the Arab region is concerned, due to the substantial political and social changes witnessed in some countries and the instability prevailed in some others. This situation is expected to affect the political, and socioeconomic structures of the region. Consequently, uneven impacts are predicted to occur in the different stages of the petroleum industry in the Arab countries, in general, and OAPEC member countries in particular. It is expected that such effects could be reflected on the economic sector due to its close link with the petroleum industry in terms of investment, supply chain and energy resources.

Such changes are hoped to have potential positive factors that could contribute to the development of Arab petroleum industry, allowing for more efficient management of this vital sector and further benefit from the realized technological achievements of the industry. This could be achieved by utilizing part of the realized oil revenues to the utmost through investment in developing the oil industry, especially in exploration and production activities, to support and enhance production capacities to meet the rapid increase in local and world demand for oil and natural gas.

Developing the oil industry and improving its returns will strongly support the integration of the different national industries and will continue, for the foreseeable future, to serve this vital sector which is one of the most important sources of income in most Arab countries, whether member or non-member countries of OAPEC. Considering the regional and international atmosphere, realizing this goal will be the cornerstone of local, regional, and international economic and social stability. Petroleum will remain, for many decades to come, the key driver of the global economy and a major source of development in the Arab region and many other countries.

The 38<sup>th</sup> issue of the Secretary General annual report addresses the transformation and development in the oil and gas industry as well as other energy resources during 2011 on local, regional and international levels, with special focus on Arab countries. In general, the year 2011 was characterized by slow global economic growth. This can be attributed to the deepening of uncertainty and the increasing disturbance in the financial market especially in the industrialized countries, where sovereign debts crisis has worsened (particularly in the Euro Zone) as an extension to the 2008 global financial crisis. Greece was the source of the crisis that has subsequently extended to include several other countries in the region, leading some of them to the brink of bankruptcy. It could be argued that the slowdown in growth has also included major emerging economies, especially China and India, which saw a slight decline in growth rates compared with the previous year. Nevertheless, those growth rates are still relatively high compared to the rest of the world.

In spite of all the disturbances prevailed during 2011 and the resultant difficulties, with their negative impacts, in one way or another, on the local and international economies, the global oil market has registered new record levels during the year. World oil demand reached 87.8 million b/d and oil supplies amounted to 87.5 million b/d with OPEC's share of world oil market reaching 40% or about a 35 million b/d, inspite of an almost complete stoppage of the Libyan oil production from mid February to end September. Thus, 2011 witnessed a level of stability in the global oil markets with respect to supply, demand and prices, leading to some kind of stability in exporting countries oil revenues. The value of OAPEC oil exports increased from US\$ 450.9 billion in 2010 to US\$ 624.8 billion in 2011 representing an increase of US\$ 173.9 billion or 38.6%. These increases opened wider horizons for investment in the different stages of the Arab petroleum industries to support capacity development projects internally and joint projects outside their borders in cooperation with consumers, especially, in East Asia and Europe.

Joint projects include refineries, petrochemical plants, gas transport systems via pipelines, ports and LNG receiving and regasification facilities.

World economic growth of about 4% during the year 2011 resulted in positive impact on oil price stability, recording an average of US\$ 107.5 per barrel. Furthermore, it has positively influenced world oil supply, demand and consumption, in spite of the global economic recession experienced in industrial countries, where growth rate declined to 1.6% in 2011 compared to 2.8% in 2010. In the Asian economies, growth rate also declined to 8.2% in 2011 from 9.5% in 2010 and China growth rate reached 9.5% compared to 10.3% in 2010. Total world oil demand increased by 1% from 86.9 million b/d in 2010 to 87.8 million b/d in 2011 with an increase of 0.9 million b/d.

This Annual Report highlights two major themes; first, energy, in particular, petroleum industry's global supply and demand; second, the role played by our member countries in both OPEC and OAPEC in mitigating the severity of the geopolitical circumstances prevailed in the region in order to secure oil supply and maintain prices at levels accepted by the two parties of the energy equation, the producers and consumers.

OAPEC organized and participated in many regional and international forums and conferences to expand dialogue and consultation among different parties and organizations representing petroleum producing and consuming countries.

The purpose of the 38<sup>th</sup> Annual Report is to provide a review of OAPEC member countries initiatives to support sustainable energy with a focus on new projects implemented in oil and natural gas and other energy sectors, including electricity, solar, wind power and other renewable energy sources.

The Annual Report presents and analyzes data on key aspects of the oil and energy industries. Part One reviews international development in the oil and energy spheres, including global market fluctuations and impacts on OAPEC member countries. It provides an overview of exploration and production of energy sources, with an emphasis on oil and gas proven reserves development. Arab and international developments in the petroleum downstream industries (refining, petrochemicals and natural gas industry) are noted. Moreover, this part of the Report examines the factors influencing the oil market, including market fundamentals such as supply, demand and inventories, as well as other factors affecting markets such as geopolitical issues and energy policies adopted by the different regional economic and political groupings.

Part Two relates to OAPEC's activities during the year, including meetings of the Ministerial Council and Executive Bureau in addition to the studies and reports prepared by OAPEC as well as seminars, conferences, and meetings convened by the organization. It covers the achievements of OAPEC - sponsored ventures initiatives, activities and their efforts in keeping up with the current oil market development during the year.

Finally, we hope that the Annual Report will be of use to researchers as it provides a comprehensive view of the developments witnessed during the year and impacts on all aspects of the Arab and international petroleum industry.

The Report will provide readers with further knowledge and information concerning OAPEC and its activities and goals.

*Abbas Ali Al-Naqi*  
*Secretary General*

# PART ONE



## INTERNATIONAL DEVELOPMENTS IN OIL AND ENERGY



## CHAPTER ONE



### **DEVELOPMENTS IN GLOBAL MARKETS AND THEIR IMPACT ON OPEC MEMBER COUNTRIES**



The Secretary General's  
38<sup>th</sup> Annual Report

38

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

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

**FOREWORD**

In anticipation for a global economic improvement, the year 2011 ended in a marked slowdown in economic growth. Due in part to uncertainty and heightened turmoil in financial markets especially in the industrial economies, fear of Euro sovereign debt bankruptcies that began with Greece and spreading to other countries in the region fostered investment fears. The sovereign debt crises were an expansion of global financial crises that hit the world in summer 2008.

The 2011 economic growth slowdown not only was felt by the industrial economies, but also had a ripple effect on the major emerging economies of China and India which witnessed slight decline in their rates compared to their relatively high growth rates in 2010.

Despite difficulties faced by domestic and international economies such as the shutdown of Libya's oil production from February to

September 2011, global oil demand and Supply achieved notable records for the year which amounted to 87.8 million b/d, and 87.5 million b/d respectively. OPEC's total oil supply accounted for about 40% which represented 35 million b/d.

In 2011, the annual average of OPEC basket of crudes was at unprecedented level of US \$107.5/b, representing an increase of up to US \$30.1/b, which is equivalent to 38.9% compared with 2010. Although the monthly averages of OPEC basket has stabilized and moved within a range of US \$100 to US \$110/b in most months of the year, the difference between the lowest and highest monthly price has reached to US \$25.3/b during the year, compared with \$16.1/ b in the previous year.

Even with OPEC's efforts to stabilize oil production and therefore oil prices particularly in the second half of 2011, the notable crippling influences on oil prices were geopolitical tensions in oil producing countries which included countries in the Arab region. In addition, the intense controversy over Iran 's nuclear program as well as fluctuations in the exchange markets including increased speculation in financial and equities markets caused a pronounced global economic slowdown resulting in expectations for future oil production capacity of crude oil, and oil inventories.

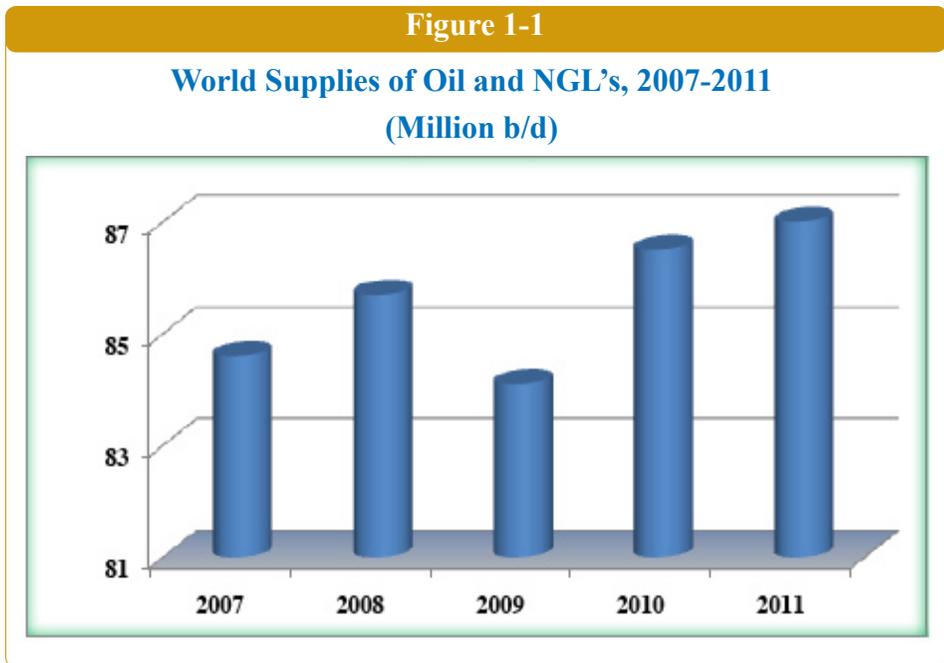
Chapter one deals with the main parameters of the oil market and the main factors affecting it and their implications on value of oil exports in OAPEC members, this Chapter will also review developments in the oil and energy consumption in the Arab countries in general, and in OAPEC members in particular.

## I. MAJOR DEVELOPMENTS IN THE WORLD OIL MARKET IN 2011 AND RELATED FACTORS

In order to shed light and take a comprehensive look at major developments taken place in global oil market in 2011, the following sections review 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 OAPEC members' oil exports.

### 1. Supplies

Average oil supplies (crude oil and natural gas liquids) went up in 2011, by 1.0 million b/d, or 1.2%, compared with the previous year, to reach 87.5 million b/d, as shown in [Table \(1-1\)](#) and [Figure \(1-1\)](#).



On quarterly basis, as a continuation of the upward trend of oil supplies which started in 2010, the first quarter of 2011 has witnessed an increase in global supplies by nearly 300,000 b/d comparing with last quarter of 2010 to reach about 87.5 million b/d. Due to the geopolitical developments in the Arab region, particularly the shutdown of Libyan oil production. Oil supplies changed course in the third quarter and went up by 1.0 million b/d comparing with second quarter, this trend persisted in the fourth quarter of 2011 as oil supplies increased by 1.3 million b/d to reach 88.7 million b/d. It is important to note that the main sources for the increase in oil supply was from non- OPEC countries production and from the increase in OPEC natural gas liquids production.

### 1-1 OPEC Supplies

In 2011 OPEC countries' oil supplies (Crude oil and Natural gas liquids) hiked by around 800 thousand b/d, or about 2.3 %, to stand at 35 million b/d, representing an increase with lower pace though comparing with the increase of 1.2 million b/d in previous year of 2010. The increase in 2011 brought OPEC countries' share of total world oil supplies to 40%, compared with 39.5% in the previous year, as shown in **Table (1-1)**.

OPEC supplies of natural gas liquids and unconventional oils rose from 5.1 million b/d in the first quarter of 2011 to 5.4 million b/d in the fourth quarter. On the other hand, OPEC supplies of crude oil increased from 29.6 million b/d in the first quarter of 2011 to 30.4 million b/d in the fourth quarter of the same year.

In the light of changes in geopolitical region, which has led to a disruption in Libyan supplies for a few months of the year 2011,

OPEC countries redoubled its efforts in order to meet the global demand for oil by increasing the supply of oil despite the uncertainties surrounding the global economic recovery as a result of global financial turbulence and the crisis of sovereign debt in developed countries, especially the Euro countries and concerns about rising inflation rates in emerging countries.

Consequently, OPEC countries were keen to play its role effectively as a major oil supplier, by addressing consumer market needs, and by ensuring price stability.

Through frequent monitoring of the global oil market situation, OPEC held two ordinary meetings in the course of 2011. The meetings are described below:

- OPEC held its first ordinary meeting at its headquarters in Vienna on 8 June 2011, the conference reviewed the oil market situation in light of geopolitical developments and the global financial turmoil, especially sovereign debt crisis and its implications on the fragile improvement in the global economy, OPEC Conference therefore decided once again to keep production quotas unchanged, at a level of 30 million b/d.
- In its second ordinary meeting on 14 December 2011, OPEC noted that the high level of price fluctuations during the year was not as a result of market fundamentals but rather a reflection of the high levels of speculation in the commodities markets, which in turn have increased the intensity of geopolitical developments in the Arab region. The conference also noted the risks facing the decline of the world economy as a result of the sovereign debt crisis in the Euro countries and the continuing

high rates of unemployment in developed countries and the risk of inflation in emerging countries. It is likely to contribute to the planned austerity measures in the Euro countries and the rest of the developed economies to lower levels of growth in the coming years.

Considering the uncertainty surrounding the oil demand, the conference once again agreed to keep quotas unchanged at the level of 30 million b/d, including the present and future production of Libya, and reiterated member countries commitment to market stability (including amendments voluntary in production) and ensuring market stability. As Stated on OPEC's statutes, the Conference is committed to providing oil exports at fair market prices in support of consumer countries and global economies. This commitment is to support and contribute to an economic atmosphere that is conducive to investments for addressing the need for the development of market changes.

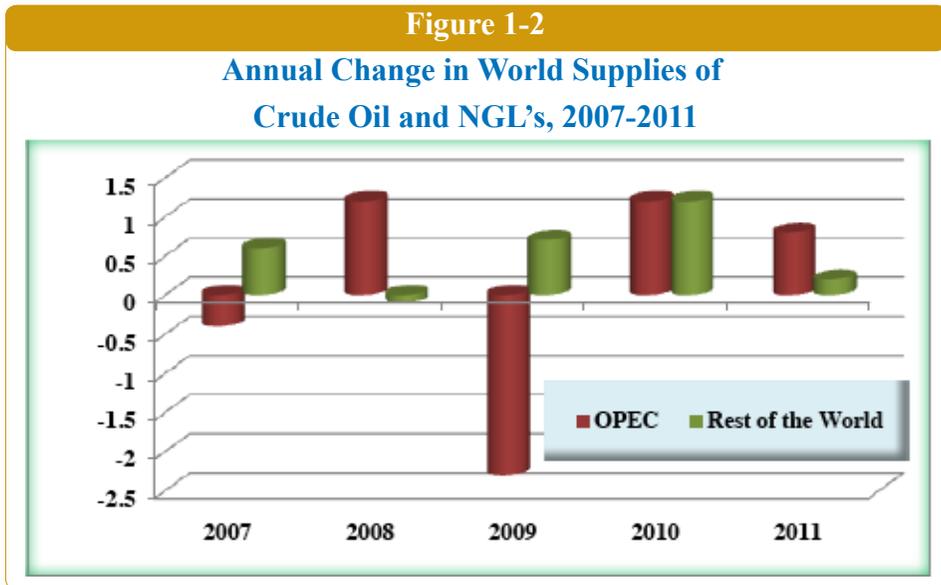
## 1-2 Non-OPEC Supplies

Non-OPEC oil supplies came to 52.5 million b/d in 2011, an increase of 200 thousand b/d compared to the year 2010, a raise of 1.2 million b/d in 2010, as shown in [Table \(1-1\)](#).

It is worth mentioning that in June 2011, the International Energy Agency has released 60 million barrels from its strategic oil stocks to cover the interrupted Libyan oil supply. This is the third time in history that the IEA drawdown of its oil stocks. OPEC was not satisfied with this move as it sees that there is no shortage in supply.

Despite the traditional decline experienced by some groups, the bulk of the increase in Non-OPEC oil supplies, came from the United States, which its production increased by more than 300,000 b/d in 2011 compared with 2010. Canada's production rose by 130,000 b/d, Former Soviet Union supplies increased by 80,000 b/d. In light of the decline in European production, oil supplies from OECD countries was so modest as it reached a level of 20 million b/d, while developing countries oil supplies remained unchanged from last year level.

Figure (1-2) shows the annual change in oil supplies from OPEC and non-OPEC producers in 2007-2011.



## 2. World Oil Demand

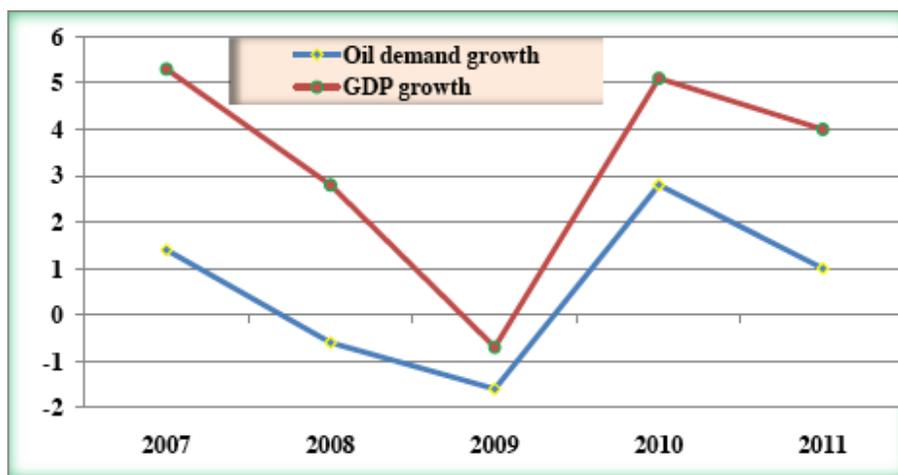
Despite the rise in global oil demand in absolute terms in 2011, the demand growth was lower than previous year level, due to slowdown in global economic growth. This demonstrated the close relationship between economic growth and the growth of global oil demand during the year, as the link between the two variables was

very strong. The change in the direction of global economic growth from 5.1% in 2010 to 4% in 2011 accompanied by a decrease in rate of oil demand growth from 2.8% in 2010 to 1% in 2011.

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

Figure 1-3

**World Economic and Demand Growth 2007-2011**  
(%)



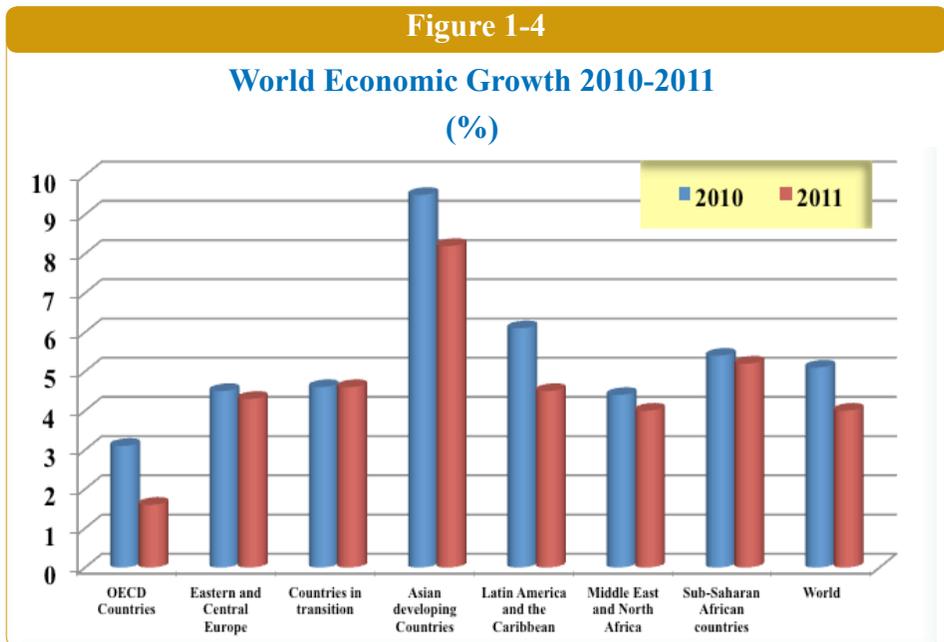
In the second half of 2011, most economies decreased significantly on grow rates, driven by the crisis of sovereign debt in the developed countries, especially in the euro countries, in addition to high unemployment rates and fears rising inflation in the major emerging economies after it became clear that the impacts of the global financial crisis, hurt the entire world economies.

In terms of international groupings, the economic growth rate of OECD countries, which account for about 52% of world oil demand, declined from 3.1% in 2010 to 1.6% in 2011.

Among the OECD countries, the annual growth rate of the United States economy decreased by 50% to 1.5%, while growth rate in the Japanese economy went down from 4% in 2010 to -0.5% in 2011. The growth rate dropped in the euro zone economies from 1.8% to 1.6% in 2011.

The rest of world economies witnessed decrease in their economic growth rates from 7.3% in the previous year to 6.4% in 2011.

The developing countries in Asia witnessed a decline in their economic growth in 2011 to reach 8.2% compared to 9.5% in 2010. The African countries, recorded a slight decrease in their economic growth rate from 5.4% in 2010 to 5.2% in 2011. The rate of economic growth in the Middle East and North Africa was 4% in 2011 compared to 4.4% in 2010. Latin American and the Caribbean also witnessed a decrease in their economic growth rate from 6.1% in 2010 to 4.5% in 2011, as shown in **Figure (1-4)** and **Table (1-3)**.



By tracking the growth rates of world oil demand in 2011 in quarterly basis, notably they fluctuated in response to the slowdown in the global economy as a whole which dominates the world scene. However, the first quarter of the year was marked by a state of optimism in the level of growth of oil demand, this led global oil demand to stand at 87.5 million b/d, a level that 600,000 b/d lower than the fourth quarter of 2010.

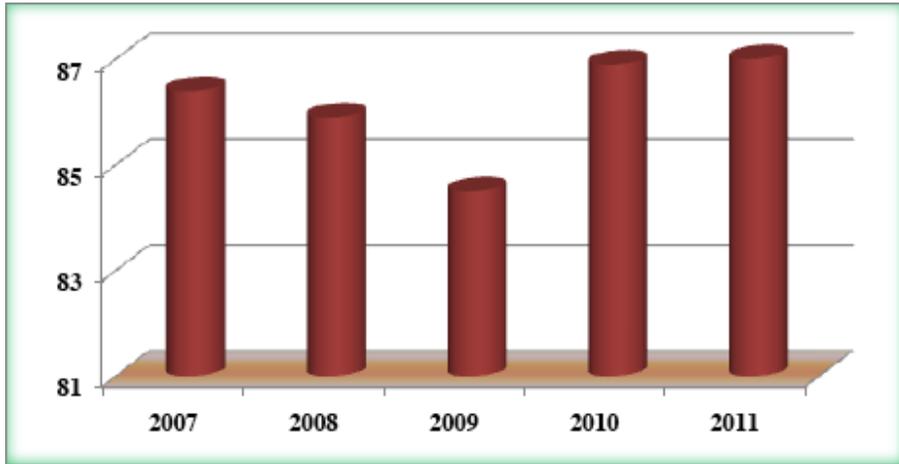
The second quarter of 2011 has witnessed a noticeable decrease in oil demand by 1.2 million b/d compared to the first quarter, this trend changed in the third quarter of the year when demand increased by more than 2 million b/d compared to the second quarter to reach 88.4 million b/d, followed by slight increase by 700,000 b/d in the fourth quarter compared to the third quarter to reach 89.1 million b/d.

This development was reflected in the expectations of global oil demand in 2011 which issued in monthly basis by the key international institutions. In February 2011, OPEC's forecast indicates a rise in world oil demand by 1.4 million b/d, while forecast had been revised in the second half of the year to further decreases to 0.9 million b/d according to its data in October 2011.

Low economic growth rates had a negative impact on world oil demand growth, which rose by only 0.9 million b/d, indicating a growth by 1%, over its 2010 level. World demand for oil in 2011 jumped to a record high amounting 87.7 million b/d, as shown in **Figure (1-5)** and **Table (1-4)**.

Figure 1-5

**World Oil Demand, 2007-2011**  
(million b/d)

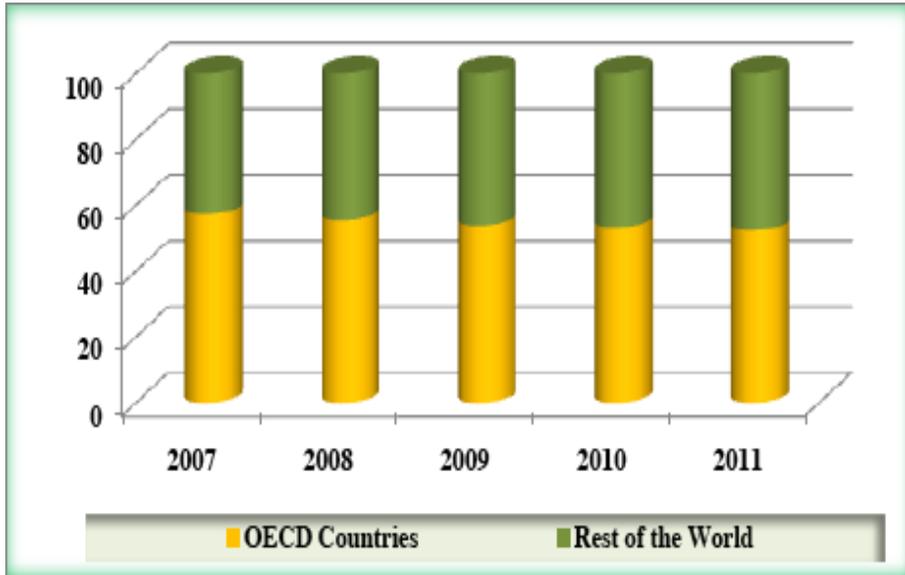


The level of oil demand varied from one international grouping to another. Whilst it decreased in the OECD countries in 2011 by 300,000 b/d from its 2010 level to 45.9 million b/d, it rose in the rest of world countries by 1.2 million b/d, comparing to previous year level.

The change in demand levels of each grouping altered their shares in total world demand in 2011. The share of the OECD countries declined from 53.2% in 2010 to 52.3% in 2011, while the rest of world rose from 46.8% to 47.7%, as shown in [Figure \(1-6\)](#) and [Table \(1-5\)](#).

Figure 1-6

Distribution of World Oil Demand by Region, 2007-2011  
(%)



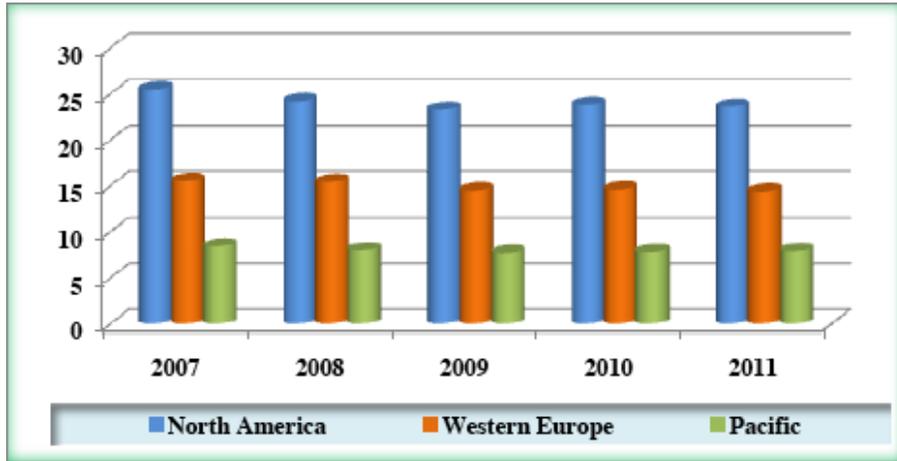
Developments in world oil demand by international grouping are examined below.

### 2-1 OECD Countries

The OECD countries' demand for oil in 2011 decreased by about 300,000 b/d, or 0.6% from its 2010 level to 45.9 million b/d. Demand in North American declined by 200,000 b/d to reach 23.6 million b/d, in Asian industrial countries reached 7.9 million b/d, representing a marginal increase of 100,000 b/d, and in West European fell by 200,000 b/d to reach 14.4 million b/d, as shown in **Figure (1-7)** and **Table (1-6)**.

Figure 1-7

**OECD Demand for Oil by Region, 2007-2011**  
(Million b/d)



Developments in US economy is considered one important factor affecting world oil consumption. In the last few years, United States oil consumption became unpredictable factor with respect to the global demand for oil. After relatively strong growth in the first quarter of 2011, signs of deterioration in American consumption of oil exhibited the downward trend throughout the remainder of the year. US demand for oil decreased by 1.5% in 2011 compared with the previous year. This was due, mainly to the decline in demand for gasoline, which was estimated at 250,000 b / d during the year as a result of economic turmoil and rising retail prices of gasoline in the U.S. market as well as improvement in the efficiency of consumption of vehicle fleet and pessimistic expectations for the future of U.S. economic growth, especially after downgrading the credit rating of the United States during the month of August 2011

by Standard & Poor's for the first time in history. By contrast, the United States consumption of distillates increased during the year, but not at a sufficient level to compensate for the decrease in gasoline consumption.

The largest four European industrial countries, (German, French, Italy, and United Kingdom) showed a weak consumption of oil in the last eight years. The sovereign debt crisis in the euro area, which started at the end of 2009 and worsened in early 2011, has a great impact on the economies of industrialized Europe, it led to reducing economic growth to 1.6% during the year and decline in oil demand growth by (-1.4% ) in 2011. The most affected sectors was the transport and industrial sectors, caused by the decline in the consumption of gasoline and distillates.

As for Japan, the catastrophic explosion of Fukushima nuclear complex has great impact on the overall aspects of the Japanese economy, not only on the demand for oil, but included the whole industrial activities. Despite these difficulties, Japan managed to achieve a positive growth in oil demand by 1.3% during the year, this was mainly due to the use of naphtha in the petrochemical industry and transformation to use crude oil directly as fuel in power plants, especially during the second half of the year to compensate for the closure of several nuclear power plants in Fukushima.

The analysis of oil demand in OECD in a quarterly basis in 2011, estimates of OPEC indicate a decline by 1.7 million b/d in the demand of the group during the second quarter of 2011 comparing with the first quarter of the same year, representing a decrease of about 1.3% comparing with the same quarter of previous year, followed by an

increase of 1.5 million b/d, or 3.4% in third quarter comparing with the second quarter of 2010 and a further increase in the fourth quarter by about 400,000 b/d representing an increase of 0.9% compared with the third quarter of the year.

## **2-2 Developing Countries**

The demand of developing countries (including China) increased in 2011 by 1.1 million b/d, or 3.1% comparing with last year level to 37 million b/d representing a level that had never been reached before. It is worth mentioning that demand of developing countries is the main engine of the global oil demand, as it witnessed an increase by about 5.0 million b/d in 2011 comparing with its level in 2007.

Among this grouping, demand in the Middle East and Africa rose by around 300,000 b/d to 10.9 million b/d, of which the Arab countries accounted for 6.0 million b/d, representing a share of 67% of increase of the region's demand and about 18% of the increase in the developing countries demand. The increase was largely due to high economic growth rates in most countries of the region, in contrast to other countries of the world. The demand of other countries in MENA region went up from 4.8 million b/d in 2010 to 4.9 million in 2011.

The increase in the Arab countries demand divided equally between OAPEC members and other Arab countries, where demand for the first grew by 2% from 5 million b/d in 2010 to 5.1 million b/d in 2011, and demand for oil of other Arab countries went up from 800,000 b/d to 900,000 b/d in the same period.

Demand in the Asian developing countries rose by 700,000 b/d to 19.8 million b/d in 2011. Despite the slowdown in China's

economic growth Chinese demand, which is the main engine of Asian economic growth and recovery, accounted for 47% of total demand in the Asian developing countries, and responsible for 57% of the increase in demand of the Asian developing countries and for 36% of the increase among all developing countries. Chinese demand rose by 400,000 b/d to 9.4 million b/d in 2011. It worth mentioning that Chinese demand for oil went up by more than 9% during the first quarter of 2011. However, it started to fall later to 1.5% during the third quarter of the year. This was due to many factors including the decline in exports which affected by slow down of the global economic growth as a result of the European sovereign debt crisis in addition to the Fukushima disaster. Due to higher domestic prices of petroleum products, especially after the adoption of China's new pricing mechanism that aimed at reducing the gap between the levels of domestic prices and international prices. In addition to the stoppage of the stimulus for registering new cars, although it has estimated that there was an increase in vehicle sales in China up to 15 million during the year.

As for India's economy, the other engine for the growth in Asian economy, the demand for oil has increased by around 200,000 b/d to 3.5 million b/d during the year. Noteworthy, that the growth in oil consumption in the transport and industrial sector, has been compensated by the shift to gas in some other sectors in India, particularly in the petrochemical and generation sector. The shortage of electricity supply was the main motive behind the increase in gas oil consumption by the owners of private generators.

On the other hand, demand in the Latin American went up by 100,000 b/d to 6.3 million b/d, this was a result of the increase in

oil demand in Brazil by about 300,000 b/d to compensate for the decline in oil demand in other Latin American countries of 200,000 b/d during the year, as shown in **Table (1-7)**.

### **2-3 Countries in Transition**

In 2011, oil demand in the countries in transition increased by 100,000 b/d to 4.9 million b/d, the source of entire increase was FSU, as shown in **Table (1-8)**.

## **3. Price Trends**

### **3-1 Crude Oil Prices**

Year 2011 has witnessed an increase in global oil prices to reach an unprecedented levels, as the price of the OPEC basket of crudes passed the \$100/b barrier. The annual rate price of OPEC basket of crudes was up by \$30.1/b, or 39%, as the spot price averaged \$107.5/b, compared with \$77.4 in 2010.

The first half of the year characterized by relatively high degree of price volatility comparing with the same period of previous year. In the second half prices witnessed a relative stability as monthly price of OPEC basket of crudes was moving within the range of \$92.8/b to \$118.1/b.

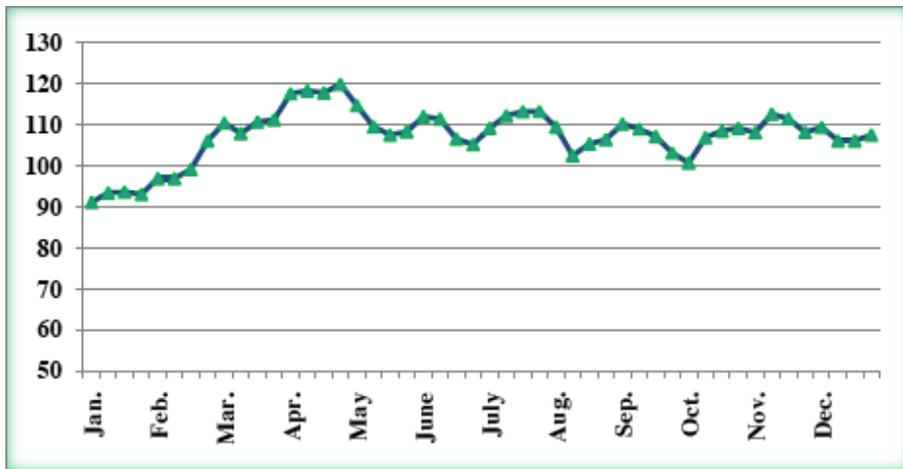
In quarterly basis, the average price of OPEC basket of crudes in the first quarter was about \$101/b, representing an increase of \$17.2/b or 20.5%, compared with the fourth quarter of previous year, rising noticeably in the second quarter by \$11.3/b, or 11.2%, compared with the first quarter to \$112.3/b. Then it fell down by about \$3.8/b, or 3.3% in the third quarter to \$108.5/b and by \$0.6/b to \$107.9/b in

the fourth quarter. Monthly average price of OPEC basket remained above the \$92/b in the course of 2011, and at level above \$100/b for eleven months.

The difference between the highest level of average price of the OPEC basket in 2011 which recorded in April (\$118.1/b) and the lowest that reached in January (\$92.8/b) amounted to \$25.3/b, compared to a difference of \$16.1/b between the highest and lowest level of monthly average price in 2010, as shown in [Table \(1-8\)](#). [Figure \(1-8\)](#) shows the weekly movement of the OPEC basket price.

Figure 1-8

**Weekly Movement of OPEC Basket of Crudes, 2011  
(\$/b)**



The price movement in varying directions during the year was due to several diverse and overlapping factors including market fundamentals, while others, is outside the scope of that:

- Organization of Petroleum Exporting countries' played a key role in restoring balance and stability in the oil market, as the significant reduction in production (4.2 million b/d) carried out by OPEC from the beginning of January 2009 was a decisive factor behind the downward trend in prices since the beginning of the year. The continued application of OPEC's reduction throughout the period 2009-2011 helped reducing the surplus of supply in oil market and was a decisive factor behind the rise in prices and the state of relative stability seen especially during the second half of the year.
- Geopolitical factors, the most important political developments in the Arab region, which began in Tunis at the end of 2010 and the global concern about the possibility of its spreading 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 intensification of Iran's nuclear program and fears of a 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 to become on the brink of bankruptcy forming a major challenge for the global economy. The sovereign debt crisis in the euro area had profound effects on the global economy, especially in the second half of the year through a reduction in international trade and to take austerity measures and the growing credit difficulties in the region. All this has raised fears of facing a second recession after the one seen in 2008.

- Despite the geopolitical circumstances, global oil market was well supplied as it characterized by a state of balance between supply and demand during the year. Thus the Organization of Petroleum Exporting countries (OPEC) did not see any need for the step taken by the International Energy Agency in June 2011 to withdraw the amount of 60 million barrels from strategic stocks to fill the gap left by the Libyan supply disruption.
- Fluctuations in dollar exchange rates (currency of pricing oil in world markets) against major currencies, as the dollar started the year with weak performance against the euro, that was one of the motives behind the rise in oil prices during the first months of the year. The dollar has improved, over the second half of the year, against the euro, which started to retreat against the dollar, since the month of August 2011. Despite the traditional inverse relationship between oil prices and the exchange rate of the dollar against the euro, the relative strength of the dollar exchange rate during the second half of the year had a relatively weak effect on oil prices. This has been justified by some analysts that the inverse relationship between oil prices and the exchange rate of dollar may become less severe during the recent period.
- Despite of procedures which had taken in some industrialized countries to avoid both the fluctuation in the prices and excessive speculation in the market, high speculation activities were still playing as main factor of high level of fluctuation in oil prices during the year. Since oil is treated as a financial asset not for speculation only, but also for the purposes of long-term investments by a variety of investment funds. 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, especially after the tensions entered into the circle of oil-producing countries such as Libya, which ceased production almost completely since the outbreak of revolution in February till September 2011.

- Seasonal factors related to weather, especially cold winter conditions in the northern hemisphere at the beginning of 2011 were considered one of the main motives behind the rise of daily rate of OPEC basket price, compared with the relatively high temperature, especially in Europe during the fourth quarter of the year. In addition to Fukushima disaster, Japan, notably during the year.

The year 2011 witnessed a significant developments in the pattern of price differentials, between light sweet crudes and heavy sour crudes widened to unusual levels compared with previous year. The differential between Dubai crude (representing the heavy crudes) and U.S. light sweet crude reached around \$5.1/b in 2011 compared with only \$1.3/b in the previous year. The same applies for the price of OPEC basket, which was \$3.8/b lower than the price of Brent crude in 2011 compared to \$2.2/b lower in the previous year.

Those developments in price differentials can be attributed to several factors, including:

- Increasing distillate demand during the year due to the increase in using gasoil/diesel in transport and electricity generation sectors,

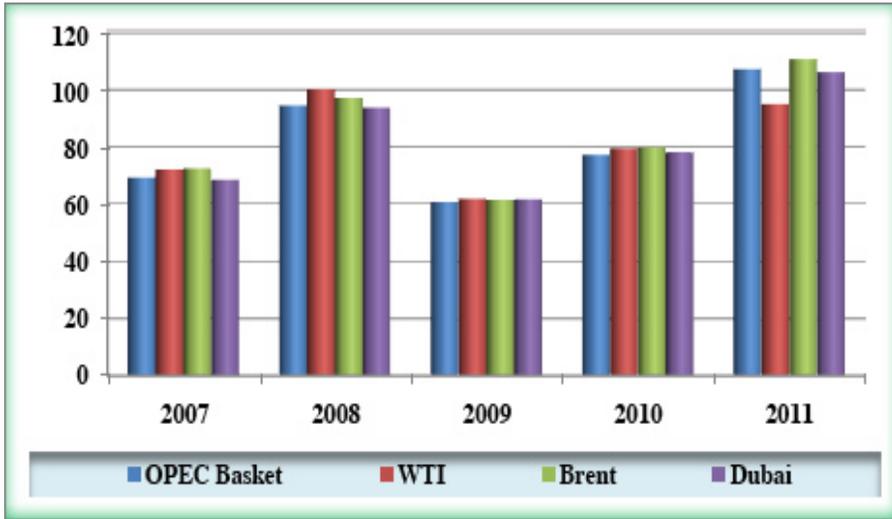
especially in China, also using gasoil/diesel as a heating fuel in very cold weather conditions.

- Interruptions that occurred in the production of light Libyan crudes, had a great affect on the supplies of light crudes, especially in the European market, which was the direct cause of the increased demand for light crudes and their prices, especially Brent. In contrast, the return of Libyan production, in addition to improved production rates in the North Sea after a regular seasonal maintenance had an impact in increasing the availability of light crudes on one hand , and on lowering their prices during the last months of the year on the other.
- As for the West Texas crude, which is a reference of light and low sulfur content crude, since 2007, this crude is suffering from logistics determinants, especially its isolation from other global markets, and its prices are moving in such a way that not related to the fundamentals of the global market . Traditionally, the differences between the prices of West Texas and Brent which are both similar in quality tend to be in favor of West Texas, but the differential of \$16.4 /b in 2011 was in favor of Brent. Even more the price of high-quality West Texas crude was less than the prices of some lower quality crudes. The differential between U.S. light crude and Dubai was at \$11.3/b in favor of Dubai and \$12.6/b compared with the average price of OPEC basket of crudes during the year.

Table (1-10) 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 2007-2011.

Figure 1 - 9

**Annual Average Prices of OPEC Basket, U.S Crude, Brent, and Dubai for the Period 2007-2011 (\$/barrel)**



Spot prices for various Arab crudes followed the same general trend, since they went up in 2011 compared to their levels in 2010 with various degrees. However, the average price of light sweet crudes rose sharply than that of heavy sour crudes. This led to maximizing the differential between different crudes.

Algerian crude increased by \$32.5/b or 40.4% compared to previous year to \$112.9/b, while Kuwaiti crude went up by \$29.3/b or 38.4% to \$105.6/b. This led to maximizing the differential between the two crudes from \$4.1/b in 2010 to \$7.3/b in 2011.

Saudi Arabian light crude rose by 38.6% to \$107.8/b, the UAE's Murban crude increased by 37.4% to \$109.8/b, Libyan Sidra saw stronger increase of almost 41.5% to \$111.9/b. While Qatar Marine crude and Iraqi Basra increased by 36.2% and 38.3%, to \$106.5/b and \$106.2/b respectively, as shown in **Table (1-9)**.

The nominal value of the increase in crude oil prices of \$30.1/b during 2011 was slightly different from its real record value measured in 2000 prices, after adjustment according to the index, which represents the GDP deflator of industrial countries. The real price increase amounted to \$23.6/b, or 36.3%, to reach an average of \$88.6/b during 2011, as shown in **Table (1-10)**.

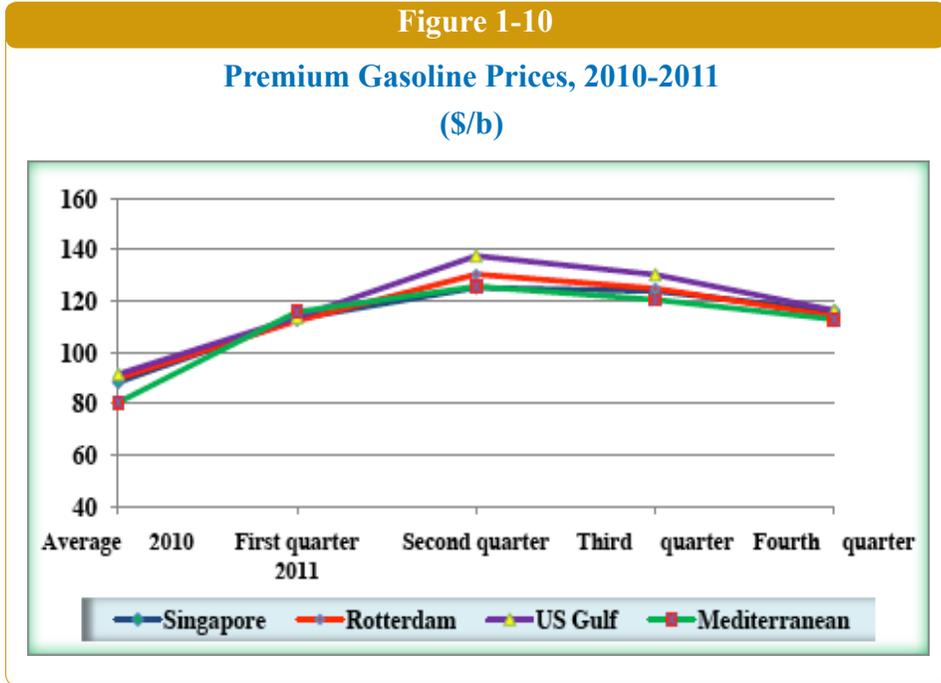
### **3-2 Spot Prices for Oil Products**

There was a huge increase in the annual average prices of various oil products on all major markets in 2011, although the amounts varied according to the product and the market.

#### ***3-2-1 Premium Gasoline Prices***

The average price of gasoline in the US Gulf in 2011 was \$124.5/b, indicating an increase of \$33/b, or about 36.1%, comparing with its level in 2010. In Mediterranean market the average price went up to \$118.7/b, an increase of about \$38.2/b, or 47.5%, above 2010, and in Rotterdam market the average price rose to \$120.4/b, an increase of about \$30.4/b, or 33.8%, above 2010, whilst in Singapore market it reached \$119.6/b, which was \$31.2/b, or about 35.3%, higher than in 2010. Consequently, the US market achieved the highest prices of all four markets in 2011, Rotterdam and Singapore came next,

while Mediterranean achieved the lowest as shown in [Table \(1-11\)](#) and [Figure \(1-10\)](#).

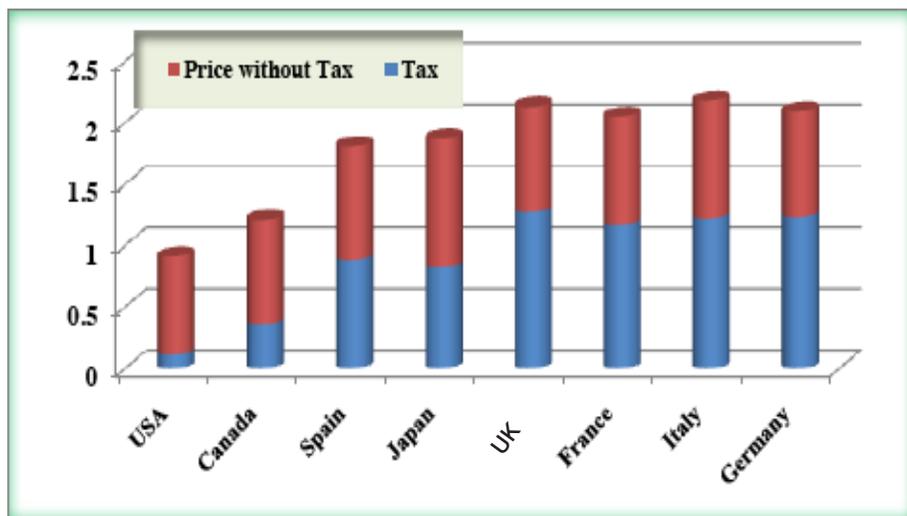


A comparison of the final price of gasoline in some OECD countries showed that it was the lowest in US market, owing to the low taxes in that market.

In October 2011, taxes amounted to about 11.9% of the final consumer price of gasoline in the United States of America, compared with 30% in Canada, 43.8% in Japan, 48.8% in Spain, and over 55% in some other European countries (58.8% in Germany, 59.7% in the United Kingdom, 57.3% in France, and 55.9% in Italy), as shown in [Table \(1-12\)](#) and [Figure \(1-11\)](#).

Figure 1-11

Gasoline Prices in some OECD Countries, October 2011  
(\$/litre)



### 3-2-2 Gasoil/Diesel Prices

Gasoil prices in 2011 were relatively high in most markets compared with gasoline and fuel oil, because the gasoil is in demand throughout the year, especially in the transport sector, heating sector, cooling and power generation in some countries such as China. The highest increase occurred in Rotterdam market, where gasoil prices were 39.7% higher than in 2010, as the average annual price rose to \$126.3/b. The US market came next with an increase of 39.2%, bringing the average price to \$122.6/b, therefore in Singapore market the gasoil prices went up by 38.9%, giving an average price of \$126.3/b, and finally on the Mediterranean market where it increased by 24.7% to \$111.5/b.

### **3-2-3 Fuel Oil Prices**

Fuel oil prices went up in 2011 on all markets. On the US market the average price rose by 39.3% to \$100/b, on the Singapore market it increased by about 40.5% to \$102.6/b, on Mediterranean market the average price of fuel oil went up by 41.5% above 2010 to \$101.2/b, while the price on the Rotterdam market averaged \$100.4/b, which was 39.4%, higher than the previous year.

### **3-3 Oil Freight Rates**

Crude oil freight rates on all routes witnessed a sharp decline in 2011 compared with their 2010 levels for several reasons, on top of that was the economic slowdown and the temporary halt in production and exports in some producing countries which led to decrease in the demand for all tankers.

The average rate for oil shipments from the Arabian Gulf ports to the East on VLCCs (230,000-280,000 dead weight tonne) was 53 points on the World Scale (WS)<sup>1</sup>. This was 20 points, or 74%, lower than in 2010.

Freight rates for shipments from the Arabian Gulf ports to the West, on crude carriers with a capacity of 270,000-285,000 dead weight tonne, averaged 39 points on the WS, which was 12 points, or about 23.5%, lower than in 2010, as shown in **Table (1-13)**.

In the Mediterranean region there was a similar decrease in freight rates for small and medium-sized tankers (80,000-85,000 dwt). The

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<sup>1</sup> World Scale is a method for calculating freight prices. One point on the WS means 1% of the standard price for freight in 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 ton, called "World Scale 100" for all the major routes in the world.

average freight rate in 2011 was 101 WS points, which was 16 points, or about 13.7%, lower than in 2010.

It is worth mentioning that in February 2011 crude oil freight rates on the Arabian Gulf ports to the East route registered the highest level to average 66 points, freight rates started to fluctuate up and down to reach their lowest level in September to average 44 points, they went up in the following months. In contrast, crude oil freight rates on the Arabian Gulf ports to West route started with 32 points in January and then they began to rise reaching their highest level of 44 points in March, then averaged 35 to 41 points in the following months.

In cross the Mediterranean route freight rates started with 74 WS points in January and then they began to fluctuate up and down reaching their highest level of 141 points in December.

#### **4. World Oil Inventories**

The year 2011 witnessed a significant decline in total world oil stocks (commercial and strategic) as they went down by about 174 million barrels, or 2.4%, to 6994 million barrels at the end of December 2011. Crude oil stocks at sea, and independent stocks near consumption countries such as in Caribbean ports and the ports of Rotterdam and Singapore at the end of 2011, totaling 964 million barrels, a level that 67 million barrels lower than previous year.

##### **4-1 OECD Commercial Stocks**

After the total stocks reached 2666 million barrels in the first quarter, they declined by 7 million barrels in the second quarter of the year to average 2659 million barrels, then they went up in the

third quarter by 14 million barrels. In the last quarter of 2011 there was a significant decrease amounted to 56 million barrels compared with the previous quarter, bringing them to 2583 million barrels at year end.

The low levels of commercial inventories in industrialized countries, was reflected in a rise in prices during the year based on the traditional relationship between the movement of inventory and prices.

In 2011, days of forward consumption of all commercial stocks in the OECD countries went down to reach a level of 58 days, which is higher than the usual average.

#### **4-2 US Strategic Petroleum Reserve**

The US Strategic Petroleum Reserve (SPR) passed the 700 million barrel level for the first time in 2008, and continued to be above the mentioned level during the first half of 2011. US Strategic Petroleum Reserve (SPR) witnessed a little drop in 2011.

After reaching 727 million barrels in the first quarter of 2011, which is close to levels of the fourth quarter of last year, the SPR remained unchanged at the end of the second quarter, then fell slightly by 30 million barrels in the third quarter, and remained at the same level at the end of the last quarter of 2011. The decline in the U.S. strategic reserve was due to the decision taken by the International Energy Agency in June 2011 to allow its members to withdraw 60 million barrels from their strategic stocks.

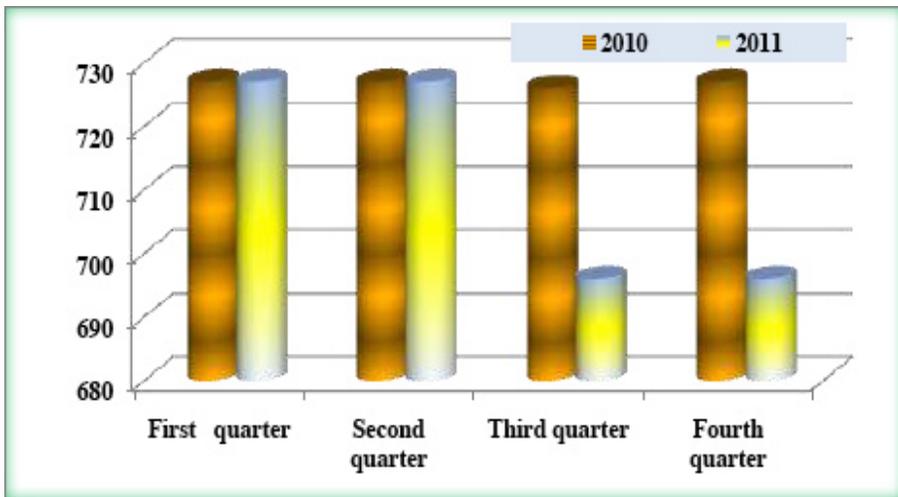
Since 2004, the US Administration has adopted a more flexible attitude toward releasing quantities of the SPR to compensate for any

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 defense to be used only at times of major crisis. See [Figure \(1-12\)](#) and [Table \(1-14\)](#).

The level of usable commercial stocks declined by about 168 million barrels, or 11%, at the end of 2011 to 1368 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.

Figure 1-12

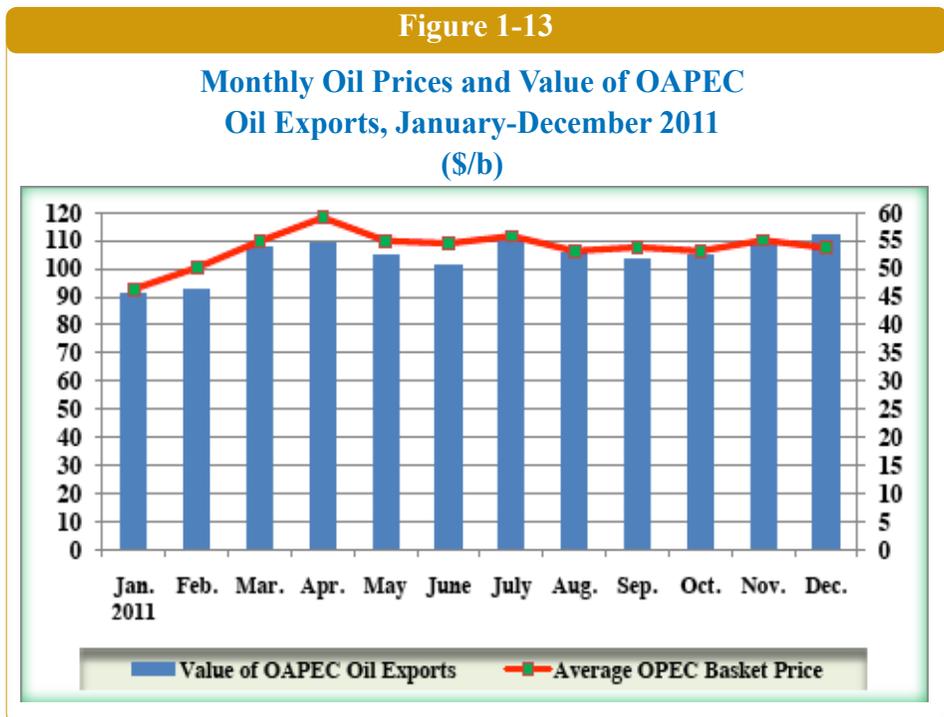
US Strategic Petroleum Reserve (SPR) at Quarter End, 2010-2011  
(Million barrels)



## II. VALUE OF OAPEC MEMBERS' COUNTRIES PETROLEUM EXPORTS

The sharp rise of oil price in 2011, which amounted to \$30/b, had a detrimental effect on the value of oil exports. It is worth mentioning that oil exports are the main engine of socioeconomic development in the oil producing Arab 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 OAPEC 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 38.6% or by \$173.9 billion from \$450.9 billion in 2010 to \$624.8 billion in 2011. An analysis of individual countries shows that the increase varied from one country to another (with the exception of Libya, which witnessed a decline in the value of oil exports by 80% in 2011 compared with the previous year due to the interruption in its production and exports). The increase ranged for example from 44% to 80%, in the United Arab Emirates, Syria, Iraq, Egypt, Saudi Arabia and Kuwait, while it was 35.2% in Bahrain, 33% in Qatar and 32.8% in Algeria, as shown in **Table (1-15)**.

The value of OAPEC members' oil exports in real 1995 prices, after adjustment according to the index, which represents the GDP deflator of industrial countries, rose from \$352 billion in 2010 to \$497.2 billion in 2011, or by 36.1%, 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 2007-2011 in general, and the factors influencing the consumption in 2011 in particular. It also reviews the energy consumption by primary energy sources both at the level of the Arab countries as a whole, or at the level of OAPEC member countries.

#### **1- Arab Countries**

##### **1-1 Total and per capita Energy Consumption by Source**

Growth rates of energy consumption in Arab countries have reached their peak in 2008 at 8.9%, then it soon fell to 3.7% and 3.5% in 2009 and 2010 respectively, but they resumed their climb again in 2011 to 4.7%. Preliminary data indicate that total energy

consumption in the Arab countries amounted to 11.4 million barrels of oil equivalent per day (mboed) in 2011 compared with about 10.9 million boed in 2010.

Energy consumption growth in the Arab countries is affected by three key variables: Gross Domestic Product, population, and prevailing energy prices for local markets. The following paragraphs provide an overview of these variables. However, the main factor that was behind the increase in energy consumption in 2011 is the return of growth in gross domestic product (GDP). The demographic factor comes in second place in terms of its impact on energy consumption in Arab countries. At the same there is no significant increases in energy prices in the domestic market in the Arab countries in recent years. The following paragraphs highlight the developments of these three factors.

- **GDP:** In 2010, Arab economies recovered from the recession which they faced in 2009 due to the global economic crisis that emerged in 2008.

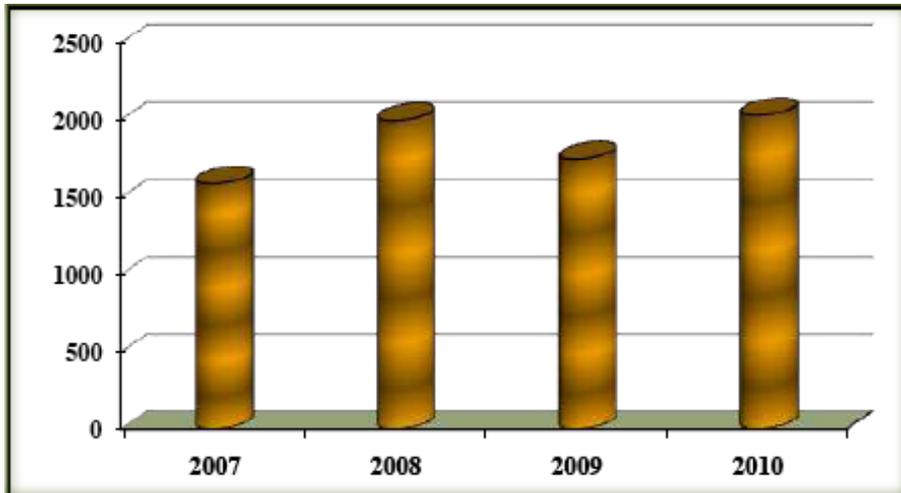
The data published in the Joint Arab Economic Report for 2011 show that the GDP at current prices in Arab countries has increased by 16.3% in 2010 compared with a contraction of 12.6% in 2009. The GDP at current prices increased in the Arab countries from \$1743 billion in 2009 to \$2027 billion in 2010, in 2008 the GDP reached \$1994 billion. The fluctuations in GDP in the Arab oil-producing countries are directly affected by oil revenues which affected by the fluctuations in prices in the global oil market which closely related to developments in the global economy.

Data published in the Joint Arab Economic Report in December 2011 showed that GDP growth rate in constant prices in Arab countries reached 5.5% in 2010.

Arab countries can be classified into two categories, the first category includes countries that exceed the overall average rate of growth in gross domestic product for the Arab countries. This category consists of four Arab countries. The rate of growth in these countries as follows: Qatar (16.3%), Yemen (8%), Lebanon (7.5%), Iraq (5.5%). The second category is countries that have a rate of growth below the overall average for the Arab countries. This category consists of other Arab countries. The rate of growth in these countries as follows: Mauritania (5.2%), Egypt and Sudan (5.1%), Bahrain and Djibouti (4.5%), Libya (4.3%), Oman (4.2%), Saudi Arabia (4.1%), Tunisia (3.8 %), Morocco (3.7%), Algeria (3.3%), Syria (3.2%), Jordan (3.1%), Comoros (2.1%), Kuwait (2%), and the UAE (1.4%). **Figure (1-14)** shows the development of Arab Countries' GPD in the current prices 2007-2010

Figure 1-14

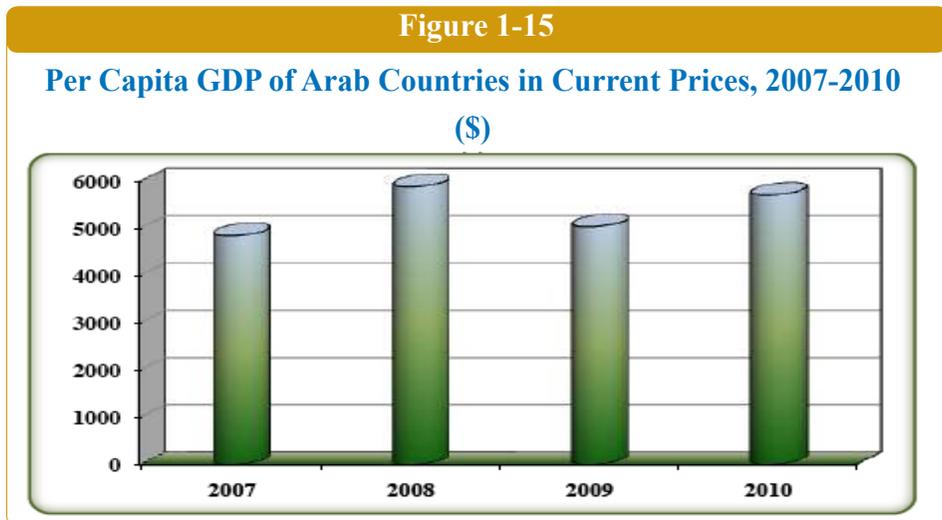
Arab Countries' GPD in Current Prices 2007-2010  
(\$ billion)



As for the average per capita GDP in the Arab countries at current prices despite the escalation of this average rate to 13.4% in 2010 to \$5708 compared with \$5035 in 2009, it still below the average recorded by the Arab countries in 2008, \$5883 as shown in **Figure (1-15)**. Eight countries had a higher per capita GDP than the overall average for the Arab countries, namely, Qatar (\$75687), the United Arab Emirates (\$36017), Kuwait (\$34685), Oman (\$18504), Bahrain (\$17464), Saudi Arabia (\$16245), Lebanon (\$9761), and Libya (\$9515).

The Arab countries whose per capita GDP fell below the average of the Arab countries fall into two groups. The first is those with a per capita GDP in excess of \$3000, but remains below the overall average for the Arab countries. The four countries in this group are Algeria (\$4518), Jordan (\$4330), Tunisia (\$4198), and Iraq (\$3632).

The second group comprises eight countries with a per capita GDP less than \$3000. They were Morocco (\$2863), Syria (\$2857), Egypt (\$2776), Sudan (\$1739), Yemen (\$1265), Djibouti (\$1202), Mauritania (\$1080), and Comoros (\$805).



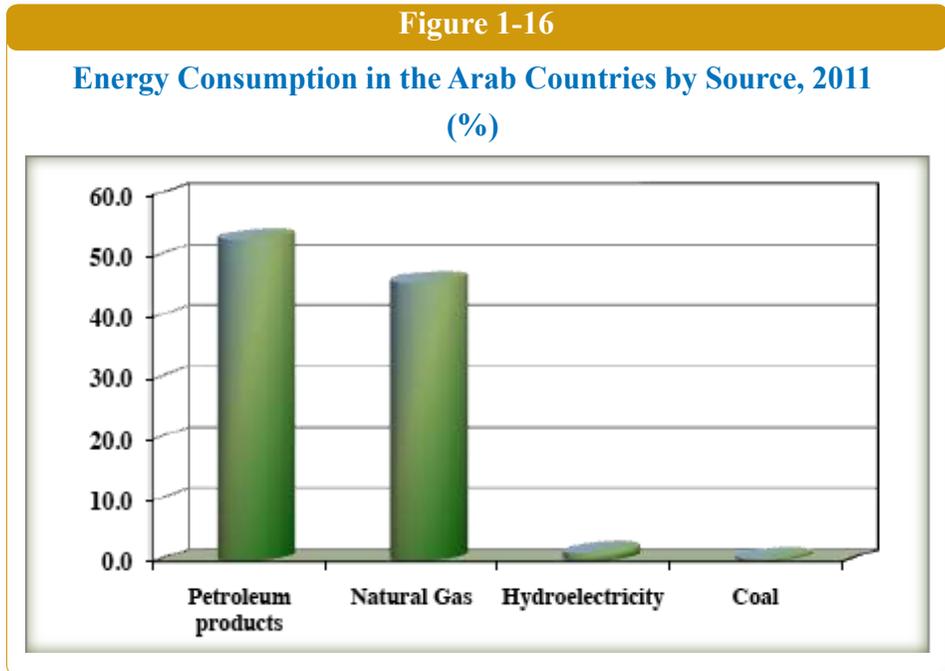
**Population:** The average population growth in the Arab countries during 2007-2011 was 2.6%, when the population of the Arab countries increased from 327 million in 2007 to about 362 million in 2011.

**Prices:** There is no indication that Arab countries in the recent years have resorted to raising the prices of oil products in the local markets in 2011 except Syria which has raised the prices of gasoline in the domestic market. 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 prices of oil products and modify them in line with international prices trends in global markets.

Arab countries rely almost entirely on petroleum resources to meet their energy needs as the share of oil and natural gas together in the total energy consumption in the Arab countries rose from 98.1% in 2007 to 98.3% in 2011. Oil is still the main source of energy consumption in the Arab countries, in spite of the decline in its share from 53.8% in 2007 to 52.7% in 2011. At the same time the relative importance of natural gas increased from 44.3% to 45.7%, and the share of hydroelectric power decreased from 1.4% to 1.3%, and the share of coal declined from 0.5% to 0.4%.

Among non-OAPEC Arab countries oil plays an essential role in the energy mix, accounting for 77.1% of their energy needs, compared with 50.2% in OAPEC member countries. On the other hand, natural gas plays a greater role in OAPEC member countries, accounting for 48.4% of their total energy consumption, compared with 18.3% in other Arab countries, 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 90.9% of total energy consumption in the Arab countries in 2011 compared to a share of 90.3% in 2007. The growth rate of energy consumption in OAPEC members was 5.3% during the period 2007-2011, compared to 3.6% in other Arab countries.

The difference in energy consumption shares within the 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 economic and social development and on the level of energy consumption. OAPEC member countries possessed

98.1% of the Arab countries crude oil reserves and 97.2% of their natural gas reserves at the end of 2011.

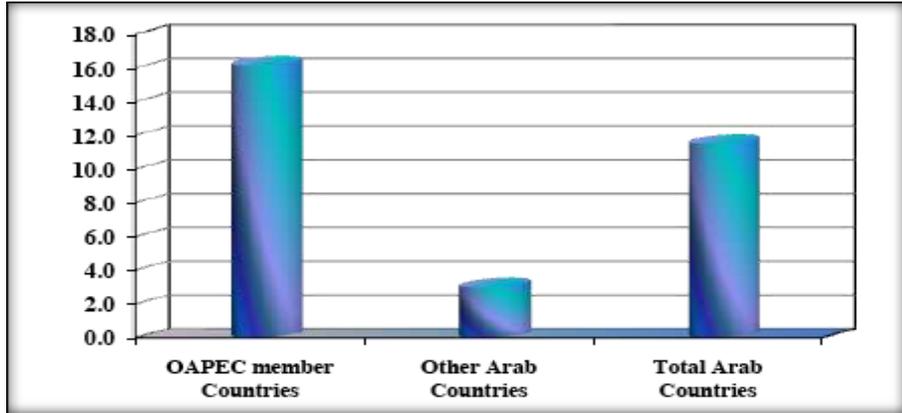
- The **GDP** of OAPEC member countries accounted for about 83.6% of the Arab countries GDP in 2010. OAPEC's GDP at current prices grew at a rate of 7.7% per annum during the period 2007-2010 to reach \$1680 billion in 2010, while GDP for the rest of the Arab countries rose at an annual rate of 10.8% during the same period to reach \$330.2 billion in 2010.
- **Total population:** Population in the Member countries grew at an annual rate of 2.7% during the period 2007-2011, raising from 211 million in 2007 to 234 million in 2011. At the same time the rate of population growth in other Arab countries was 2.5% per annum to reach 128.5 million in 2011 compared with 116 million in 2007. Accordingly, the percentage of the population in the Member countries from the total population of Arab countries rose from 64.5% in 2007 to 64.6% in 2011.

The overall average rate of energy consumption per capita in the Arab countries has increased by 2.5% per annum during the period 2007-2011, rising from 10.4 barrels of oil equivalent (boe) in 2007 to 11.5 boe in 2011.

The average of per capita consumption of energy hides significant disparities among Arab countries, as it increased in OAPEC member countries from 14.6 boe in 2007 to 16.1 boe in 2011, compared with an increase from 2.8 boe to 3 boe in other Arab countries. **Figure (1-17)** and **Table (1-19)** show the per capita energy consumption of the Arab countries in 2011.

Figure 1-17

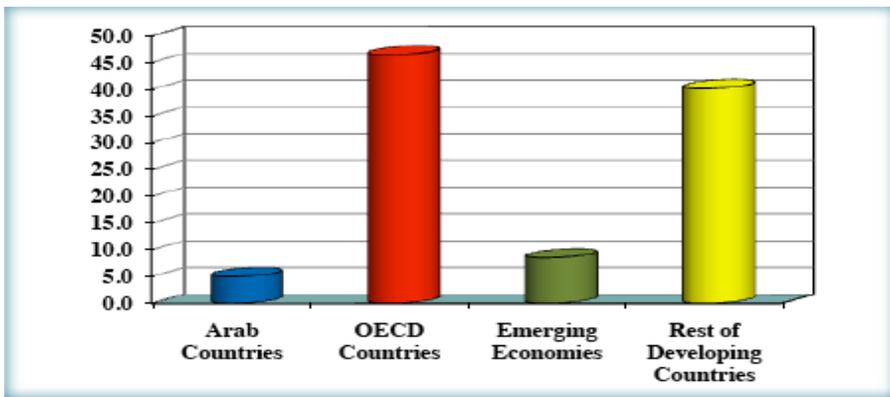
**Per Capita Energy Consumption in the Arab Countries, 2011  
(Boe/year)**



The Arab countries share of total world energy consumption in 2010 was 5.0%, while that of the OECD countries was 46.4%, emerging economies 40.1%, and the FSU countries 8.5%, as shown in **Figure (1-18)**.

Figure 1-18

**Energy Consumption in Arab Countries and the World, 2010  
(%)**



## 1-2 Energy Consumption by Source

### 1-2-1 Petroleum Products

In 2010, Arab economies bounced back after the downturn they suffered in 2009 as a result of the global financial crisis. This has led to the stability of the growth rate of petroleum products consumption in the Arab countries at 4% during 2010 and 2011, after falling to 3.5% in 2009. The actual consumption of petroleum products rose by 4.6% per annum during the period 2007-2011, rising from about 5 million boe/d in 2007 to 5.8 million boe/d in 2010. It is expected to reach up to 6 million boe/d in 2011. Moreover, the share of petroleum products in total energy consumption in the Arab countries in the period 2007-2011 declined from 53.8% in 2007 to 52.7% in 2011.

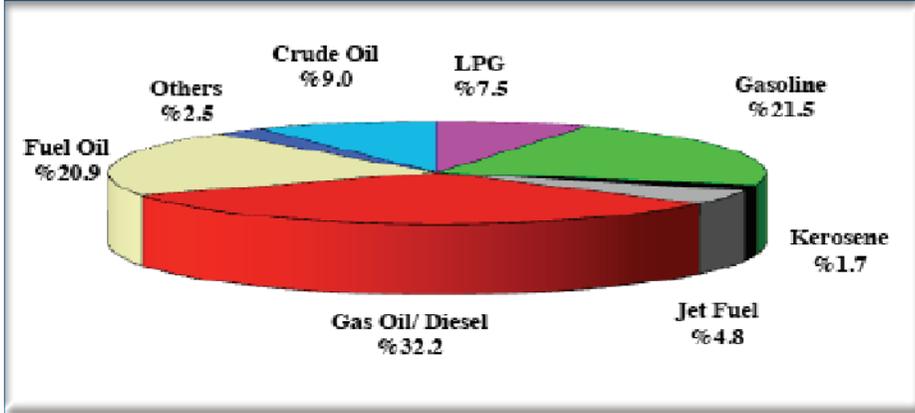
The OAPEC members' share of total petroleum products' consumption in the Arab countries in 2010 was 86.7%, while that of other Arab countries was 13.3%. Other Arab countries consumption increased at an annual rate of 3.5% up to 800 thousand boe/d in 2011 compared with 696 thousand boe/d in 2007.

The relative breakdown of petroleum product consumption in the Arab countries in 2011 puts gasoil/diesel in first place with 32.2%, followed by gasoline with 21.4%, and fuel oil in third place with 20.9%. LPG came next with 7.5% of the total, followed by jet fuel with 4.8%, and lastly kerosene with 1.7%.

Crude oil is still used directly as a fuel in power plants and refineries in several Arab countries, accounting for 9% of total petroleum products' consumption. Figure (1-19) shows the breakdown of petroleum product consumption in the Arab countries.

Figure 1-19

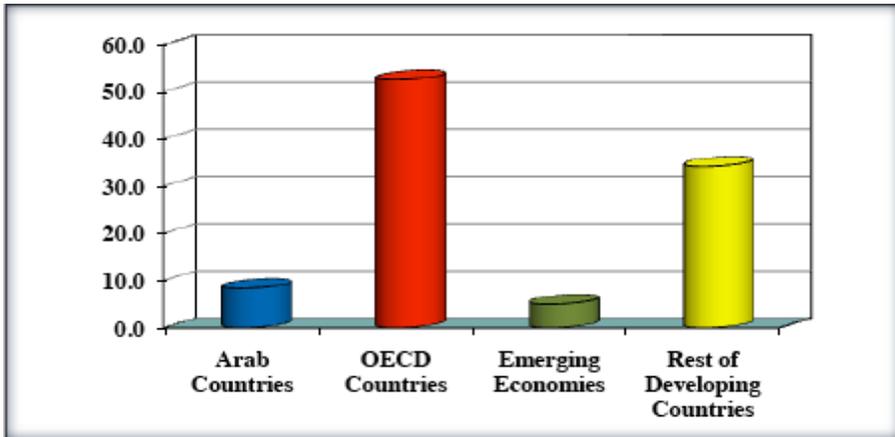
Breakdown of Petroleum Product Consumption in the Arab Countries, 2011  
(%)



The Arab countries accounted for 8.3% of world oil consumption in 2010, while the OECD countries took a 52.5% share, emerging economies 34.2%, and FSU countries 5%, as shown in Figure (1-20).

Figure 1-20

Oil Consumption in the Arab Countries and the World, 2010  
(%)



### *1-2-2 Natural Gas*

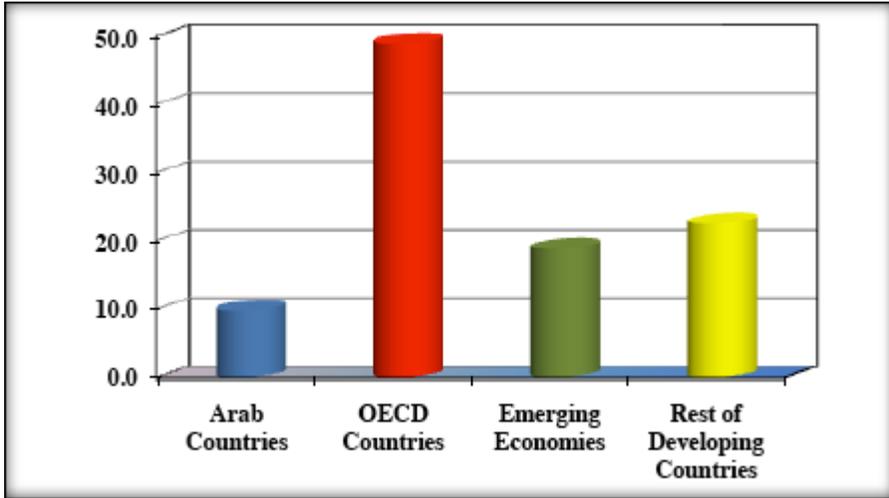
Arab countries are adopting the policy of increasing reliance on natural gas to meet their energy domestic needs, especially for electricity generation, either by raising the level of use of local sources or through imports from neighboring Arab countries. This policy has led to higher growth rate of natural gas consumption which amounted at 6% per annum during the period 2007-2011, bringing the total to 5.2 million boe/d in 2011. This resulted in an increase of the share of natural gas in total energy consumption in the Arab countries from 44.3% in 2007 to 45.7% in 2011. In 2008, growth rates in natural gas consumption in the Arab countries scored its highest level of 11.1%. However, this rate has declined in 2009, reaching 4.1% and decreased to 2.9% in 2010, then returned to rise once again to reach 5.9% in 2011.

OAPEC member countries accounted for 96.4% of the Arab countries total consumption of natural gas in 2011. In practical terms, Natural gas is only consumed in a significant way in four Arab countries, Saudi Arabia, the United Arab Emirates, Egypt, and Qatar. These four countries accounted for 71.1% of the Arab countries total consumption of natural gas in 2011. Other Arab countries consumed small amounts of natural gas which does not exceed 190 thousand boe/d in 2011. This consumption is concentrated mainly in three countries, namely Oman, Jordan, and Morocco.

The Arab countries accounted for 9.8% of world natural gas consumption in 2010, while the OECD countries took a 48.9% share, the emerging economies 22.5%, and the FSU countries 18.8%, as shown in **Figure (1-21)**.

Figure 1-21

**Natural Gas Consumption in the Arab Countries and the World, 2010**



**1-2-3 Hydroelectricity**

The Arab countries have meagre resources of local water needed for building hydroelectricity facilities. This source therefore only makes a limited contribution to the 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. Initial estimates show that the hydroelectricity production and consumption in these countries were at about 143,000 boe/d in 2011. The share of hydroelectricity in total Arab energy consumption reached 1.3% in 2010.

The Arab countries accounted for 0.8% of total world hydroelectricity consumption in 2010, while the emerging economies accounted for 52.1%, the OECD countries for 39.9%, and the FSU countries for 7.2%.

### *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, with an estimated total consumption of about 48,000 boe/d in 2010. Its share of total energy consumption in the Arab countries remained unchanged at the level of 0.4% during the period 2007 -2011.

The Arab countries accounted for 0.04% of world coal consumption in 2010, while the emerging economies accounted for 64.2%, the OECD countries for 31.0%, and the FSU countries for 4.8%.

## **2- Total Energy Consumption in OAPEC Member Countries**

### **2-1 Total and Per Capita Energy Consumption**

Total energy consumption in the OAPEC member countries has been linked closely to developments in the global economy during the past few years as the global financial crisis has led to a decline in OAPEC member countries demand for oil which in turn led to a decline in the value of petroleum exports, thus affecting directly the performance of Arab economies, and indirectly the energy consumption.

The annual rate of growth of energy consumption in OAPEC member countries was 9.4% in 2008, then retreated to 3.7% and 3.4% in 2009 and 2010 respectively. It expected to grow by 4.9% in 2011 to reach 10.4 million boed.

There was a marked difference between OAPEC member countries in terms of energy consumption during the period 2007-2011. Three groups may be identified:

- 1- Three members with a growth rate over 6%, namely, Iraq (10.1%), United Arab Emirates (8.2%), and Qatar (7.5%).
- 2- Six members with a growth rate between 4% and 6%, namely, Saudi Arabia (5.3%), Bahrain (5.2%) Kuwait (4.3%), Algeria (4.2%), and Libya (4.1%).
- 3- Two members with a growth rate of less than 4%, namely, Egypt (3.3%) and Tunisia (2.7%).

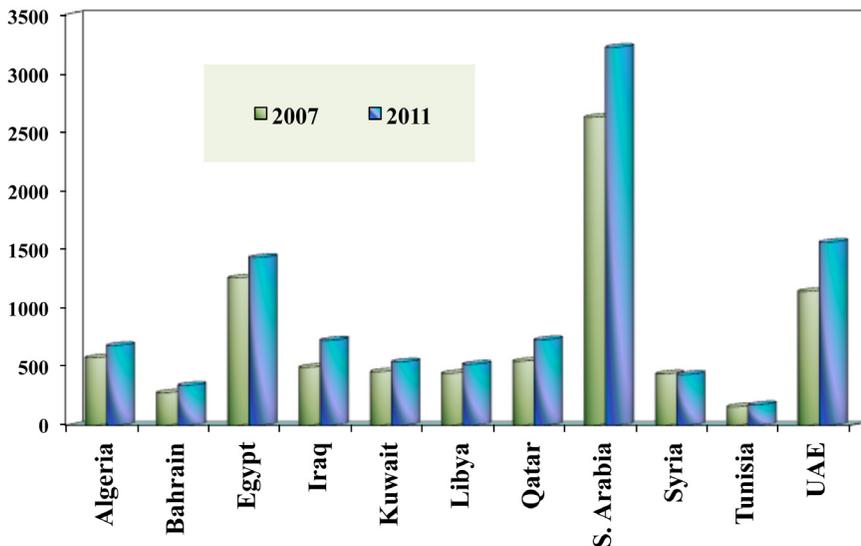
Energy consumption in Syria fell from 438.5 thousand boed in 2007 to 428.4 thousand boed in 2010, and It is expected to go up to 433 thousand boed in 2011.

The rise in energy consumption in OAPEC member countries in 2011 is estimated at 513,000 boe/d. It is mainly attributable to six countries: Saudi Arabia (200,000 boe/d), United Arab Emirates (78,000 boe/d), Qatar (70,000 boe/d), Egypt (31,500 boe/d), Iraq (25,000 boe/d), and Algeria (24,700 boe/d).

The increase in other member countries ranged between 3,000 boe/d in Tunisia and 22,000 boe/d in Bahrain. **Figure (1-22)** and **Table (1-19)** compare OAPEC members' energy consumption in 2007 with 2011.

Figure 1-22

Energy Consumption in OAPEC Member Countries, 2007 and 2011  
(Thousand boe/d)

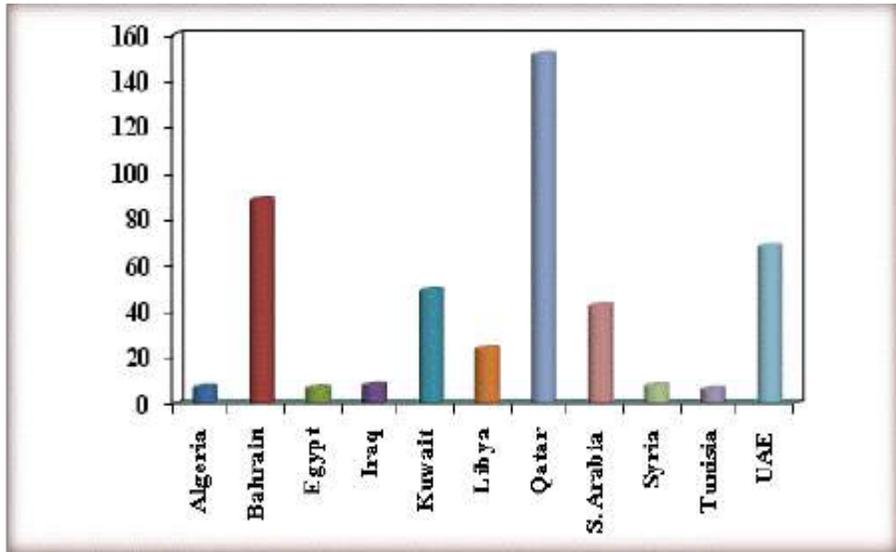


The energy consumption in three Arab countries account for more than half of the total energy consumption in the Arab countries, and these countries are: Saudi Arabia, UAE, and Egypt. Saudi Arabia accounted for about 28.3% of total Arab energy consumption in 2011, followed by the United Arab Emirates with 13.7%, and Egypt with 12.6%. The per capita rate of energy consumption in OAPEC member countries rose by 2.6% per annum in the period 2007-2011, from 14.6 boe in 2007 to 16.1 boe in 2011.

The per capita energy consumption rate vary considerably among OAPEC member countries as it ranged from 6 boe in Tunisia to 151.3 boe in Qatar. **Figure (1-23)** shows the per capita energy consumption of OAPEC member countries.

Figure 1-23

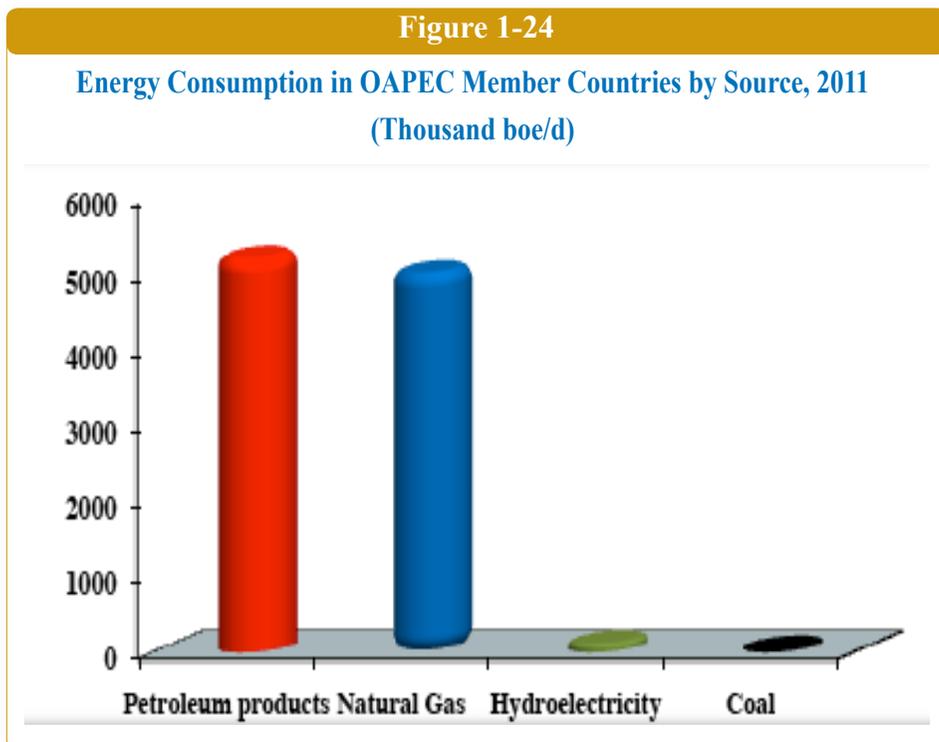
Per Capita Energy Consumption in OAPEC Member Countries, 2011  
(boe)



## 2-2 Energy Consumption by Source

There is a slow and gradual shift in the energy mix in OAPEC member countries, where there is a tendency towards the direction of equal share of petroleum products and natural gas in the coming years. During the period 2007-2011 the relative importance of natural gas in the total consumption has increased from 47.1% in 2007 to 48.4% in 2011. At the same time the share of petroleum products fell from 51.3% to 50.2%. There are no reliable sources of non-petroleum that member countries can rely on, as all available sources of hydroelectric power and coal representing small and decreasing fraction in their energy mix. The share of these two sources together, did not exceed 1.4% in the total energy consumption in OAPEC member in 2011.

The share of hydroelectric was 1.1%, while the share of coal almost 0.3%. **Figure (1-24)** and **Table (1-20)** show energy consumption in OAPEC member countries in 2011 by source.



### *2-2-1 Petroleum Products*

Consumption of petroleum products has increased by growth rate of 4.8% per annum during the period 2007-2011 and expected to reach 5.2 million boed in 2011. It is expected that the consumption of petroleum products in the member countries will increase by about 202 thousand boed in 2011, of which 100 thousand boed from Saudi Arabia, 18 thousand boed from the UAE, and 15 thousand boed each from Iraq, Kuwait, and Egypt.

The increase in the rest of the OAPEC members is expected to be between 2 thousand beds in Tunisia and 10 thousand beds in Qatar , as shown in **Table (1-21)**.

The relative importance of petroleum products in total energy consumption varies from one member country to another. In Kuwait petroleum products accounted for 85.2% of total energy consumption, Syria 71.8%, Iraq 71%, Tunisia 60.2%, Saudi Arabia 60.2%, 52.2% Algeria and 50% in Egypt respectively. In the remaining OAPEC countries the share of petroleum products ranged between 14.7% in Bahrain and 48.1% in Libya.

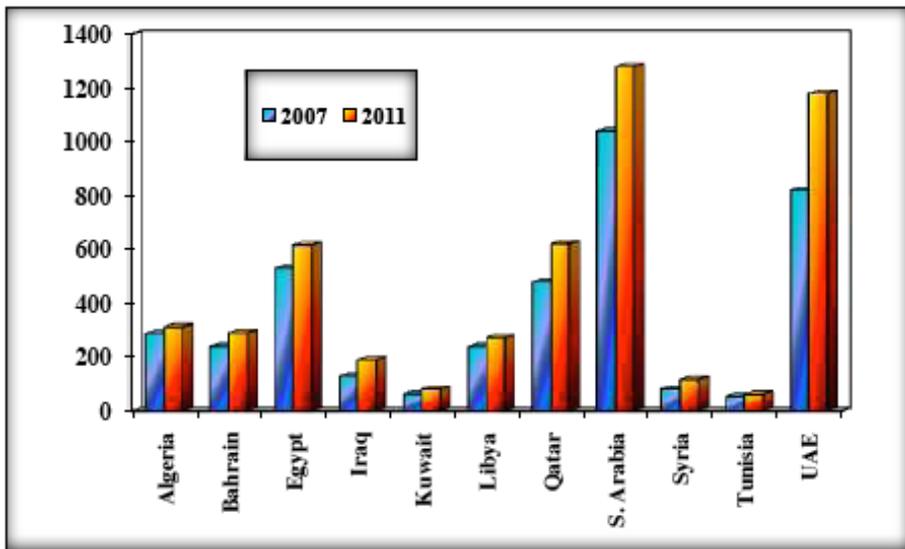
### ***2-2-2 Natural Gas***

Natural gas is playing an increasing role in energy consumption in the member countries, as OAPEC members' consumption of natural gas increased over the period 2007-2011 at an annual rate of 5.9%, compared to 5.3% for total energy consumption. Natural gas consumption rose from 4.0 million boe/d in 2007 to 5.0 million boe/d in 2011.

Natural gas consumption is concentrated mainly in four Arab countries, which accounted for about 73.8% of the total natural gas consumption in OAPEC member countries in 2011. They are Saudi Arabia, UAE, Egypt, and Qatar. Their shares of the total OAPEC consumption of natural gas were more than 25% by Saudi Arabia, followed by the UAE with a share of 23.7%, Qatar ranked third with a share of 12.4%, and Egypt with a share of 12.3%, as shown in **Figure (1-25)** and **Table (1-22)**.

Figure 1-25

Natural Gas Consumption in OAPEC Member Countries, 2007 and 2011  
(Thousand boe/d)



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

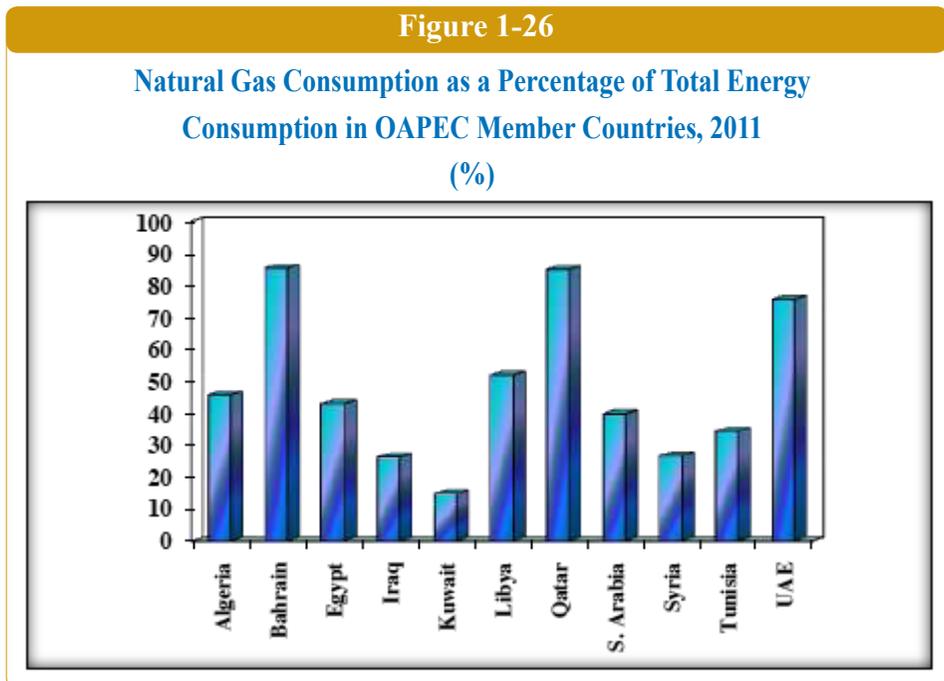
Countries that depend heavily on natural gas to meet over 50% of their energy requirements. Four countries fall into this category: Bahrain, Qatar, the United Arab Emirates and Libya. The share of natural gas in total energy consumption in 2011 was 85.3% in Bahrain, 84.9% in Qatar, 75.6% in the United Arab Emirates, and 51.9% in Libya.

Countries that depend on natural gas to meet 33% to 50% of their energy needs. The four member countries in this group are Algeria, Egypt, Saudi Arabia, and Tunisia. The share of natural gas in the total

energy consumption of these countries was 45.6% in Algeria, 43% in Egypt, 39.8% 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, Syria, Iraq, and Kuwait rely on natural gas for 26.6%, 26.2% and 14.8% 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.



### ***2-2-3 Hydroelectricity and Coal***

OAPEC member countries do not have an adequate sources of Hydroelectricity and coal in order to increase their share in the energy mix at rates in line with the increase in its energy needs. Therefore,

the share of these two sources together in total energy consumption dropped from 1.6% in 2007 to 1.4% in 2011.

Hydroelectricity consumption has increased from 99,000 boe/d in 2007 to about 109,000 boe/d in 2011. Its share in total energy consumption in OAPEC member countries declined from 1.2% in 2007 to 1.1% in 2011. Just five member countries use this energy source: Egypt, Iraq, Algeria, Syria, and Tunisia, as shown in [Table \(1-23\)](#).

Consumption of coal in OAPEC countries was limited to two members with total of 34,100 boe/d: Egypt consumed about 20,000 boe/d, while Algeria consumed 14,000 boe/d of coal. The share of coal in the total OAPEC energy consumption did not exceed 1.4% in 2011, as shown in [Table \(1-24\)](#).

### 3- Local Prices

As stated before, local prices of petroleum products in the domestic market retained at the levels prevailed in 2010, except for Syria, which proceeded in late 2011 to increase the price of gasoline as follows:

- Regular gasoline: 50 Syrian Pound / Liter instead of 44 Syrian Pound / liter.
- Premium Gasoline: 55 Syrian Pound / Liter instead of 50 Syrian Pound / Liter.

[Table \(1-25\)](#) shows current local prices applicable in the member countries in 2011.

In terms of other Arab countries it is known that the Ministry of Energy and Mineral Resources in Jordan working on updating the list of prices of petroleum products in the domestic market on a regular basis, the following is a list of prices of these products as published by the Ministry in the fifth of October 2011.

**Product Prices Effective October 2011**  
**Files /Liter, Unless Otherwise Stated**

Product	Price
Regular Gasoline	620
Premium Gasoline	795
Diesel	515
Kerosene	515
Fuel Oil Industry (JD/Ton)	501.24
Fuel Oil – Bunkers (JD/Ton)	511.32
Jet Fuel –Local Companies	614
Jet Fuel – Foreign Companies	619
Jet Fuel – Non-Recurring Flights	634
Diesel – Bunkers	670
Asphalt (JD/Ton)	536.68
LPG – 50 kg (JD/Cylinder)	44.5
LPG – 12.5 kg (JD/Cylinder)	6.5
LPG – Bulk Central Distribution(JD/Ton)	852.98
LPG – Bulk (JD/Ton)	890

Source: Ministry of Energy and Mineral Resources.  
 JD1=\$1.41.



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# TABLES OF CHAPTER ONE



**Table 1-1**  
**Total & Annual Changes in World Oil and NGLs Supply,**  
**2007 - 2011**  
(Million b/d)

	2007	2008	2009	2010	2011*
<b>Total Supply</b>					
OPEC	34.1	35.3	33.0	34.2	35.0
Rest of the World	50.5	50.4	51.1	52.3	52.5
<b>World total</b>	<b>84.6</b>	<b>85.7</b>	<b>84.1</b>	<b>86.5</b>	<b>87.5</b>
<b>Annual Change</b>					
OPEC	(0.4)	1.2	(2.3)	1.2	0.8
Rest of the World	0.6	(0.1)	0.7	1.2	0.2
<b>World total</b>	<b>0.2</b>	<b>1.1</b>	<b>(1.6)</b>	<b>2.4</b>	<b>1.0</b>
<b>Percentage Change (%)</b>					
OPEC	(1.2)	3.5	(6.5)	3.6	2.3
Rest of the World	1.2	(0.2)	1.4	2.3	0.4
<b>World total</b>	<b>0.2</b>	<b>1.3</b>	<b>(1.9)</b>	<b>2.8</b>	<b>1.2</b>

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

**Table 1-2**  
**Growth in the World Economy and Oil Demand by Region,**  
**2007-2011**  
 (%)

	2007	2008	2009	2010	2011*
OECD countries **					
GDP	2.7	0.2	(3.2)	3.1	1.6
Oil demand	(0.4)	(3.6)	(4.4)	1.5	(0.6)
Rest of the World					
GDP	8.7	6.0	2.5	7.3	6.4
Oil demand	3.9	3.7	1.7	4.4	2.7
World total					
GDP	5.3	2.8	(0.6)	5.1	4.0
Oil demand	1.4	(0.6)	(1.6)	2.8	1.0

\* 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,**  
**2007-2011**  
(%)

	2007	2008	2009	2010	2011*
<b>OECD</b>	2.7	0.2	(3.2)	3.1	1.6
Of which: Euro Area	2.9	0.5	(4.1)	1.5	1.5
Japan	2.4	(1.2)	(5.2)	4.0	(0.5)
Newly industrialized Asian countries	5.8	1.8	(0.9)	8.4	4.7
USA	1.9	0.0	(2.6)	3.0	1.5
Eastern and Central Europe	5.5	3.0	(3.6)	4.5	4.3
<b>Countries in transition (CIS)</b>	9.0	5.3	(6.5)	4.6	4.6
Of which: Russia	8.5	5.2	(7.9)	4.0	4.3
<b>Asian developing countries</b>	11.4	7.7	6.9	9.5	8.2
Of which: China	14.2	9.6	9.1	10.3	9.5
India	9.9	6.4	5.7	10.1	7.8
<b>Latin America and the Caribbean</b>	5.7	4.3	(1.7)	6.1	4.5
Of which: Argentina	8.7	6.8	0.9	9.2	8.0
Brazil	6.1	5.1	(0.2)	7.5	3.8
Mexico	3.3	1.5	(6.5)	5.4	3.8
Venezuela	8.2	4.8	(3.3)	(1.5)	2.8
<b>Middle East and North Africa</b>	6.0	5.0	2.0	4.4	4.0
<b>Sub-Saharan African countries</b>	7.0	5.5	2.6	5.4	5.2
<b>Rest of the World:</b>	8.7	6.0	2.5	7.3	6.4
<b>World</b>	5.3	2.8	(0.6)	5.1	4.0

\* Estimated data.

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

Note:

Parentheses denote negative figures.

Source:

- IMF, World Economic Outlook, October 2011.

**Table 1-4**  
**Total & Annual Change in World Oil Demand,**  
**2007-2011**  
**(Million b/d)**

	2007	2008	2009	2010	2011*
<b>World total demand</b>	<b>86.4</b>	<b>85.9</b>	<b>84.5</b>	<b>86.9</b>	<b>87.8</b>
Annual Change in World Oil Demand (Million b/d)	1.2	(0.5)	(1.4)	2.4	0.9
Change (%)	1.4	(0.6)	(1.6)	2.8	1.0

\* 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,**  
**2007-2011**  
**(Million b/d)**

	2007	2008	2009	2010	2011*
OECD countries	49.4	47.6	45.5	46.2	45.9
Rest of the World**	37.0	38.4	39.0	40.7	41.9
<b>World total</b>	<b>86.4</b>	<b>85.9</b>	<b>84.5</b>	<b>86.9</b>	<b>87.8</b>

\* Estimated data.

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

Sources:

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

**Table 1-6**  
**Total & Annual Change in Oil Demand in**  
**OECD Countries, 2007-2011**  
**(Million b/d)**

	2007	2008	2009	2010	2011*
North America	25.5	24.2	23.3	23.8	23.6
Western Europe	15.5	15.4	14.5	14.6	14.4
Pacific	8.4	8.0	7.7	7.8	7.9
<b>Total OECD</b>	<b>49.4</b>	<b>47.6</b>	<b>45.5</b>	<b>46.2</b>	<b>45.9</b>
<b>Annual Change in demand</b>	<b>(0.2)</b>	<b>(1.8)</b>	<b>(2.1)</b>	<b>0.7</b>	<b>(0.3)</b>
<b>Change (%)</b>	<b>(0.4)</b>	<b>(3.6)</b>	<b>(4.4)</b>	<b>1.5</b>	<b>(0.6)</b>

\* Estimated data.

Note:

Parentheses denote negative figures.

Sources:

- IEA, Oil Market Report (various issues).
- OEAPEC - 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), 2007-2011**  
**(Million b/d)**

	2007	2008	2009	2010	2011*
<b>Developing countries</b>	<b>32.2</b>	<b>33.5</b>	<b>34.3</b>	<b>35.9</b>	<b>37</b>
<b>Arab countries</b>	<b>5.0</b>	<b>5.4</b>	<b>5.6</b>	<b>5.8</b>	<b>6.0</b>
Of which: Member countries	4.3	4.7	4.8	5.0	5.1
Other Arab countries	0.7	0.7	0.8	0.8	0.9
<b>Other countries in the Middle East and Africa</b>	<b>4.6</b>	<b>4.7</b>	<b>4.7</b>	<b>4.8</b>	<b>4.9</b>
<b>Total Middle East and Africa</b>	<b>9.6</b>	<b>10.1</b>	<b>10.3</b>	<b>10.6</b>	<b>10.9</b>
<b>Asian developing countries</b>	<b>17.1</b>	<b>17.4</b>	<b>18.1</b>	<b>19.1</b>	<b>19.8</b>
Of which: China	7.6	8.0	8.3	9.0	9.4
India	3.0	3.1	3.2	3.3	3.5
Other countries	6.5	6.3	6.6	6.8	6.9
<b>Latin America</b>	<b>5.5</b>	<b>6.0</b>	<b>5.9</b>	<b>6.2</b>	<b>6.3</b>
Of which: Brazil	2.3	2.5	2.5	2.5	2.8
Other countries	3.2	3.5	3.4	3.7	3.5
<b>Countries in transition (CIS)</b>	<b>4.8</b>	<b>4.9</b>	<b>4.7</b>	<b>4.8</b>	<b>4.9</b>
Of which: Russia	4.0	4.1	4.0	4.1	4.2
<b>Total Rest of the World</b>	<b>37.0</b>	<b>38.4</b>	<b>39.0</b>	<b>40.7</b>	<b>41.9</b>
<b>Annual Change in demand of Rest of the World</b>	<b>1.4</b>	<b>1.4</b>	<b>0.7</b>	<b>1.7</b>	<b>1.2</b>
<b>Change (%)</b>	<b>3.9</b>	<b>3.7</b>	<b>1.7</b>	<b>4.4</b>	<b>2.9</b>

\* 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,**  
**2007-2011**  
**(\$/barrel)**

	2007	2008	2009	2010	2011
January	50.7	88.4	41.5	76.0	92.8
February	54.5	90.6	41.4	73.0	100.3
March	58.5	99.0	45.8	77.2	109.8
April	63.6	105.2	50.2	82.3	118.1
May	64.5	119.4	57.0	74.5	109.9
June	66.9	128.3	68.4	73.0	109.0
July	71.9	131.2	64.6	72.5	111.6
August	68.7	112.4	71.4	74.2	106.3
September	74.2	96.9	67.2	74.6	107.6
October	79.3	69.2	72.7	79.9	106.3
November	88.8	49.8	76.3	82.8	110.1
December	87.1	38.6	74.0	88.6	107.4
First quarter	54.6	92.7	42.9	75.4	101.0
Second quarter	65.0	117.6	58.5	76.6	112.3
Third quarter	71.6	113.5	67.7	73.8	108.5
Fourth quarter	85.1	52.5	74.3	83.8	107.9
<b>Annual average</b>	<b>69.1</b>	<b>94.4</b>	<b>61.0</b>	<b>77.4</b>	<b>107.5</b>

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, 2007-2011**  
**(\$/barrel)**

Crudes	2007	2008	2009	2010	2011	The increase in 2011
OPEC Basket Of which:	69.1	94.4	61.0	77.4	107.5	30.1
Algeria - Saharan Blend	74.7	98.9	62.4	80.4	112.9	32.5
Arabian Light	68.8	95.2	61.4	77.8	107.8	30.0
UAE - Murban	72.9	99.0	63.8	79.9	109.8	29.9
Kuwait - Export	66.4	91.2	60.7	76.3	105.6	29.3
Libya - Es Sider	71.4	96.7	61.5	79.1	111.9	32.8
Qatar-Marine	69.3	94.9	62.4	78.2	106.5	28.3
Iraq-Basrah	66.4	92.1	60.5	76.8	106.2	29.4
<b>Other crudes</b>						
Brent	72.6	97.4	61.7	79.6	111.3	31.7
UAE - Dubai	68.4	93.8	61.8	78.1	106.2	28.1
WTI	72.3	100.0	61.9	79.4	94.9	15.5

Sources:

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

**Table 1-10**  
**Nominal and Real Prices of Crude Oil,**  
**2000-2011**  
**(\$/barrel)**

	Nominal Price	Index* 2000=100	Real 2000 Prices
2000	27.6	107.5	27.6
2001	23.1	101.9	22.7
2002	24.3	103.5	23.5
2003	28.2	105.3	26.8
2004	36.0	107.5	33.5
2005	50.6	109.3	46.3
2006	61.0	112.1	54.4
2007	69.1	114.6	60.3
2008	94.4	116.9	80.8
2009	61.0	117.8	51.8
2010	77.4	119.0	65.0
2011**	107.5	121.3	88.6

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

\*\* Estimated data.

**Sources:**

-IMF, International Financial Statistics Yearbook , September 2010.

- OAPEC - Economics Department.

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



**Table 1-11**  
**Average Monthly Market Spot Prices of Petroleum Products,**  
**2010-2011**  
**(\$/barrel)**

	Market	Unleaded Gasoline	Gasoil* (0.2 % Sulfur)	Fuel Oil** (3 % Sulfur)
Average 2010	Singapore	88.4	90.9	73.0
	Rotterdam	90.0	90.4	72.0
	Mediterranean	80.5	89.4	71.5
	US Gulf	91.5	88.1	71.8
Average 2011	Singapore	119.5	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
First quarter 2011	Singapore	113.1	119.4	93.2
	Rotterdam	112.3	118.2	91.0
	Mediterranean	115.8	113.9	94.2
	US Gulf	113.6	116.3	91.9
Second quarter	Singapore	125.2	132.4	103.8
	Rotterdam	130.4	130.1	105.3
	Mediterranean	125.7	114.2	105.5
	US Gulf	137.6	127.1	103.8
Third quarter	Singapore	123.9	126.7	106.1
	Rotterdam	124.9	127.3	103.1
	Mediterranean	120.5	108.6	103.3
	US Gulf	130.3	123.7	102.6
Fourth quarter	Singapore	116.1	126.6	107.4
	Rotterdam	114.1	129.5	102.0
	Mediterranean	112.9	109.2	101.8
	US Gulf	116.4	123.4	101.5

\* 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,**  
**2010-2011**  
**(\$/liter)**

	October 2010				October 2011			
	Price without Tax	Tax	End-User Price	Tax (%)	Price without Tax	Tax	End-User Price	Tax (%)
Canada	0.71	0.32	1.03	31.20	0.85	0.36	1.21	29.95
France	0.71	1.15	1.86	61.71	0.88	1.17	2.05	57.26
Germany	0.69	1.21	1.90	63.69	0.86	1.23	2.09	58.84
Italy	0.78	1.10	1.88	58.37	0.96	1.22	2.18	55.88
Japan	0.85	0.76	1.61	47.09	1.05	0.82	1.87	43.79
Spain	0.76	0.86	1.62	53.06	0.93	0.88	1.81	48.82
United Kingdom	0.66	1.20	1.86	64.65	0.86	1.27	2.13	59.72
USA	0.63	0.11	0.74	14.71	0.80	0.11	0.91	11.86

Source:

- IEA, Oil Market Report (various issues).



**Table 1-13**  
**Spot Tanker Freight Rates, 2010 - 2011**  
**(World scale)**

	Arabian Gulf - East *	Arabian Gulf -West **	Mediterranean - Mediterranean ***
<b>Average 2010</b>	73	51	117
January 2010	108	68	123
February	83	57	95
March	82	58	137
April	94	66	114
May	76	56	174
June	96	63	112
July	58	45	110
August	52	41	108
September	47	36	87
October	46	34	117
November	69	45	94
December	60	40	133
<b>Average 2011</b>	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

\* 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,**  
**2010 & 2011**  
**(Million barrel)**

	First quarter		Second quarter		Third quarter		Fourth quarter	
	2010	2011	2010	2011	2010	2011	2010	2011*
<b>North America</b>	<b>1315</b>	<b>1304</b>	<b>1372</b>	<b>1309.3</b>	<b>1396</b>	<b>1337</b>	<b>1330</b>	<b>1275</b>
Of which: USA	1082	1056	1089	1069.6	1087	1097	1067	1022
Europe	992	973	992	939.33	951	924.3	980	919
Pacific	383	388.7	397	410.33	403	412.3	395	389
<b>Total OECD</b>	<b>2690</b>	<b>2666</b>	<b>2761</b>	<b>2659</b>	<b>2750</b>	<b>2673</b>	<b>2705</b>	<b>2583</b>
Rest of the World	1512	1641	1492	1647.7	1492	1676	1548	1673
Other Inventories**	1055	1053	1054	1031.7	1085	994.3	1031	964
<b>Total Commercial</b>	<b>5257</b>	<b>5361</b>	<b>5307</b>	<b>5338</b>	<b>5327</b>	<b>5343</b>	<b>5284</b>	<b>5219</b>
<b>Strategic :</b>	<b>1765</b>	<b>1769</b>	<b>1773</b>	<b>1786.7</b>	<b>1763</b>	<b>1773</b>	<b>1763</b>	<b>1775</b>
US Strategic Petroleum Reserves	727	726.5	727	726.54	726	696	726.5	696
Usable Commercial***	1406	1509	1487	1486.3	1475	1492	1432	1368
OECD Commercial (days supply)	60.6	59.0	61.0	58.0	59.0	58.0	59.7	57.9
Total Commercial (days supply)	72.7	70.6	72.9	70.0	71.5	69.0	71.0	68.6
OECD Strategic (days supply)	35.0	35.0	34.0	34.0	33.0	33.0	34.0	33.0
Usable Commercial (days supply)	19.3	18.1	18.5	15.0	19.7	15.0	19.6	17.9

\* 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,**  
**2007-2011**  
**(\$ Million)**

	2007	2008	2009*	2010*	2011*
Algeria	27757	38543	21497	28089	37289
Bahrain	7106	5895	3275	4664	6305
Egypt***	3128	4911	2166	2593	4689
Iraq	38056	63000	43895	54248	83768
Kuwait	38488	57690	41858	53029	79646
Libya	36944	52084	29446	38764	7391
Qatar	18741	27428	16172	20553	27328
Saudi Arabia	178284	247097	144249	184421	289518
Syria	5644	7989	5414	6689	2994
Tunisia	**	**	**	**	**
UAE	56025	80635	44785	57900	85900
<b>Total</b>	<b>410173</b>	<b>585272</b>	<b>352757</b>	<b>450950</b>	<b>624828</b>

\* Estimated data.

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

\*\*\* Official sources for 2007 & 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, 1995-2011**  
**(\$ 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

\* 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,**  
**2007-2011**  
**(Thousand boe/d)**

	2007	2008	2009	2010 <sup>(1)</sup>	2011 <sup>(1)</sup>
<b>Petroleum products *</b>					
Member countries	4314	4646	4808	4998	5200
Other Arab countries	696	729	750	782	800
<b>Total Arab countries</b>	<b>5010</b>	<b>5375</b>	<b>5558</b>	<b>5781</b>	<b>6000</b>
<b>Natural gas</b>					
Member countries	3963	4413	4594	4729	5010
Other Arab countries	159	168	174	179	190
<b>Total Arab countries</b>	<b>4122</b>	<b>4581</b>	<b>4768</b>	<b>4908</b>	<b>5200</b>
<b>Hydroelectricity</b>					
Member countries	99	107	107	107	99
Other Arab countries	34	34	34	34	34
<b>Total Arab countries</b>	<b>133</b>	<b>141</b>	<b>141</b>	<b>142</b>	<b>143</b>
<b>Coal</b>					
Member countries	34	34	34	34	34
Other Arab countries	13	13	13	13	14
<b>Total Arab countries</b>	<b>47</b>	<b>46</b>	<b>47</b>	<b>47</b>	<b>48</b>
<b>Total Energy</b>					
Member countries	8409	9199	9544	9869	10353
Other Arab countries	902	944	971	1008	1038
<b>Total Arab countries</b>	<b>9311</b>	<b>10143</b>	<b>10515</b>	<b>10878</b>	<b>11391</b>

\* Petroleum products include crude oil used in power plants.

- (1) Estimated data.

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

Sources:

- Country papers presented to the Ninth Arab Energy Conference, Doha, Qatar, 9 - 12 May, 2010.

- OAPEEC - Economics Department.

**Table 1-18**  
**Per Capita Energy Consumption in the Arab Countries,**  
**2007 and 2011**  
**(Boe/year)**

	2007	2011*
Algeria	6.2	6.8
Bahrain	97.5	88.6
Egypt	6.2	6.5
Iraq	6.1	7.6
Kuwait	49.0	49.3
Libya	22.9	23.9
Qatar	163.7	151.3
Saudi Arabia	38.4	42.4
Syria	8.3	7.5
Tunisia	5.6	6.0
UAE	66.9	68.4
<b>OAPEC member countries</b>	<b>14.6</b>	<b>16.1</b>
<b>Other Arab countries</b>	<b>2.8</b>	<b>3.0</b>
<b>Total Arab countries</b>	<b>10.4</b>	<b>11.5</b>

\* Estimated data.

Sources:

- Country papers presented to the Ninth Arab Energy Conference, Doha, Qatar, 9 - 12 May, 2010.
- OAPEC - Economics Department.



**Table 1-19**  
**Energy Consumption in OAPEC Member Countries,**  
**2007-2011**  
**(Thousand boe/d)**

	2007	2008	2009	2010 <sup>(1)</sup>	2011 <sup>(1)</sup>
Algeria	576	605	625	645	680
Bahrain	277	292	306	318	340
Egypt	1255	1317	1358	1398	1430
Iraq	494	600	678	700	725
Kuwait *	457	482	498	520	540
Libya	443	471	497	515	520
Qatar	546	594	634	660	730
Saudi Arabia *	2625	2845	2920	3020	3220
Syria	438	428	413	428	433
Tunisia	157	163	167	172	175
UAE	1140	1402	1447	1482	1560
<b>Total</b>	<b>8409</b>	<b>9199</b>	<b>9544</b>	<b>9869</b>	<b>10353</b>

\* Including energy consumption in the oil industry .

- (1) Estimated data.

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

Sources:

- Country papers presented to the Ninth Arab Energy Conference, Doha, Qatar, 9 - 12 May, 2010.

- OAPEC - Economics Department.

**Table 1-20**  
**Energy Consumption in OAPEC Member Countries by Source,**  
**2007-2011**  
**(Thousand boe/d)**

	2007	2008	2009	2010 <sup>(1)</sup>	2011 <sup>(1)</sup>
Petroleum products*	4314	4646	4808	4998	5200
Natural gas	3963	4413	4594	4729	5010
Hydroelectricity	99	107	107	108	109
Coal	34	34	34	34	34
<b>Total energy</b>	<b>8409</b>	<b>9199</b>	<b>9544</b>	<b>9869</b>	<b>10353</b>

\* Including Oil consumption of the power plants in some OAPEC member countries.

- (1) Estimated data.

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

Sources:

- Country papers presented to the Ninth Arab Energy Conference, Doha, Qatar, 9 - 12 May, 2010.

- OAPEC - Economics Department.



**Table 1-21**  
**Petroleum Products Consumption in OAPEC Member Countries,**  
**2007-2011**  
**(Thousand boe/d)**

	2007	2008	2009	2010 <sup>(1)</sup>	2011 <sup>(1)</sup>
Algeria	273	310	320	340	355
Bahrain	37	42	46	48	50
Egypt	635	659	680	700	715
Iraq **	346	418	482	500	515
Kuwait *	396	414	428	445	460
Libya	203	221	237	245	250
Qatar	66	84	94	100	110
Saudi Arabia *	1584	1718	1770	1840	1940
Syria	351	341	295	306	311
Tunisia	104	108	110	112	114
UAE	320	331	347	362	340
<b>Total</b>	<b>4314</b>	<b>4646</b>	<b>4808</b>	<b>4998</b>	<b>5200</b>

\* Figures include energy consumption of the oil sector and power plants.

\*\* Figures include energy consumption of the power plants.

- (1) Estimated data.

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

Sources:

- Country papers presented to the Ninth Arab Energy Conference, Doha, Qatar, 9 - 12 May, 2010.

- OAPEC - Economics Department.

**Table 1-22**  
**Natural Gas Consumption in OAPEC Member Countries,**  
**2007-2011**  
**(Thousand boe/d)**

	2007	2008	2009	2010 <sup>(1)</sup>	2011 <sup>(1)</sup>
Algeria	288	280	290	300	310
Bahrain	240	250	260	270	290
Egypt	530	560	580	600	615
Iraq	129	162	177	180	190
Kuwait	61	68	70	75	80
Libya	240	250	260	270	270
Qatar	480	510	540	560	620
Saudi Arabia	1041	1127	1150	1180	1280
Syria	80	80	111	115	115
Tunisia	53	55	57	59	60
UAE	820	1071	1100	1120	1180
<b>Total</b>	<b>3963</b>	<b>4413</b>	<b>4594</b>	<b>4729</b>	<b>5010</b>

- (1) Estimated data.

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

Sources:

- Country papers presented to the Ninth Arab Energy Conference, Doha, Qatar, 9 - 12 May, 2010.
- OAPEC - Economics Department.



**Table 1-23**  
**Hydroelectricity Consumption in OAPEC Member Countries,**  
**2007-2011**  
**(Thousand boe/d)**

	2007	2008	2009	2010*	2011*
Algeria	1.0	1.3	1.3	1.3	1.0
Egypt	70.5	78.4	78.4	78.4	80.0
Iraq	20.0	20.0	20.0	20.0	20.0
Syria	7.1	7.1	7.1	7.1	7.0
Tunisia	0.2	0.2	0.2	1.2	1.0
<b>Total</b>	<b>98.8</b>	<b>107.0</b>	<b>107.0</b>	<b>108.0</b>	<b>109.0</b>

\* Estimated data.

Sources:

- Country papers presented to the Ninth Arab Energy Conference, Doha, Qatar, 9 - 12 May, 2010.
- OAPEC - Economics Department.

**Table 1-24**  
**Coal Consumption in OAPEC Member Countries,**  
**2007-2011**  
**(Thousand boe/d)**

	2007	2008	2009	2010*	2010*
Algeria	13.8	13.4	14.0	14.0	14.0
Egypt	20.1	20.1	20.1	20.1	20.0
<b>Total</b>	<b>33.9</b>	<b>33.5</b>	<b>34.1</b>	<b>34.1</b>	<b>34.0</b>

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\* Estimated data.

**Sources:**

- Country papers presented to the Ninth Arab Energy Conference, Doha, Qatar, 9 - 12 May, 2010.
- OAPEC - Economics Department.

**Table 1-25**  
**Domestic Prices of Petroleum Products in OAPEC**  
**Member Countries, 2011**  
**(Local currency/liter)**

	Currency	Gasoline		Household	Gas oil/	LPG
		Premium	Regular	Kerosene	Diesel	
Algeria	Dinar	22.6	21.2	-	13.7	200.0
Bahrain	Fils	100	80	25	100	1200*
Egypt	Piaster	180		55	55	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:

- Country papers presented to the ninth Arab Energy Conference, Doha, Qatar, 9 - 12 May, 2010.
- OAPEC - Economics Department.

## CHAPTER TWO



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



The Secretary General's  
38<sup>th</sup> Annual Report

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## 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

Political and security crises witnessed in 2011 have had different effects on the activities of exploration and production in some Arab countries. In practice, the direct effect was limited to some major oil producers like Libya where oil production rate declined by more than 1.4 million bbl per day as a result of the security incidents that swept the country.

Total has stopped Libya's Al Jurf offshore oil field production along with onshore Mabruk field amid turmoil in the country. Eni SPA has in turn decreased its oil output by two thirds from 280 thousand bbl per day to less than 90 thousand bbl per day. However, both companies (Total and Eni) resumed production in early September 2011.

State-owned Sirte Oil was reported to have restarted production from its eastern gas fields within the same period.

The reports coincided with the Eni's announcement that it has resumed production in Libya, tapping 15 wells and producing 31,900 bbl per day of oil at Abu-Attifel field, 300 km south of Benghazi. Eni's production could reach 140 thousand bbl per day by the end of November 2011.



Total said it has restarted production from the offshore Al Jurf platform, by the time, it expected the production rate to reach 40 thousand bbl per day within several weeks.

The International Energy Agency, commenting on the situation in Libya said: “damage to production facilities, pipelines, refineries, and ports, although believed comparatively light, but the pace of the restoration of production will hinge on whether the fields were professionally shut-in or not. The has agency modestly revised up expectations of Libyan crude production capacity to 350 thousand - 400 thousand bbl per day by late 2011, rising to a total of 1.1 million bbl per day by the fourth quarter of 2012.

Egypt<sup>1</sup> and Tunisia were not affected by the unrest witnessed in both countries, while strife and security situation in Yemen has led Canadian Nexen Inc. to hold oil production in May 2011. OMV oil production has as well been disrupted by an exporting pipeline blast in March<sup>2</sup>, the company decided to resume production by late 2011.

The economic sanctions imposed on Syria have forced the country to reduce its oil output by 30% in the last few months of 2011.

Some economists see that one of the most important implications of the so- called “Arab Spring” for the oil and gas markets is not only the oil and gas lost in 2011, but also the loss of production that was expected to come on line in the next few years<sup>3</sup>. This could be one of the reasons behind the expected increase of exploration and production cost in 2012. A survey conducted by “Dahlman Rose &

1 Egyptian Ministry of Petroleum, official website: [www.petroelum.gov.egy](http://www.petroelum.gov.egy) 25 December 2011.

2 Yemeni Ministry of Oil and Minerals, official website: [www.mom.gov.ye](http://www.mom.gov.ye) .

3 A.F. Al Hajji, Oil and Gas in the Capital, World Oil, Vol. 232 No. 12.

Co. LLC.<sup>1</sup>” showed that exploration and production expenditures on the world scale will increase by 9.3% to touch on \$411.4 billion, comparing with \$376.5 billion in 2011. The survey revealed that those expenditures will reach \$141 billion in the USA in 2012, compared with \$125.5 in 2011. Expenditures in 2012 will be about \$42.8 billion in Canada, compared with \$40.5 billion in 2011.

### **A- Overview of some agreements and contracts signed with Arab countries**

Arab countries have intensified its activities to improve its petroleum production.

In United Arab Emirates, Abu Dhabi’s Supreme Petroleum Council has signed an agreement with Abu Dhabi Oil Co. Ltd. (Japan) (ADOC)<sup>2</sup>, a unit of Cosmo Oil Co. Ltd., for a 30-year renewal of existing concessions for three oil-producing fields, the new concession agreement covers three existing fields namely: Mubarraz, Umm Al Anbar and Neewat Al Ghalan, and an additional exploratory concession area: Hail field. The new agreement is due starting from December 6<sup>th</sup> 2012, which is the conclusion date of the previous agreement.

Abu Dhabi’s National Oil Company (ADNOC) granted a contract to Occidental Petroleum Corp. to develop the \$10 billion Shah natural-gas project; ADNOC will hold 60% of the project’s shares through Abu Dhabi Gas Development Ltd. which was established by Law No. 3 of 2010 on February 1<sup>st</sup> 2010. Occidental will hold the rest. The project includes the construction of gas gathering unites

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1 Oil and Gas Journal, 3/1/2012.

2 Abu Dhabi Oil Co. Ltd.

and processing units to handle about 1 billion standard cubic feet of sour gas, to provide nearly 500 million cubic feet of gas to the gas grid.

ADNOC awarded \$700 million contracts to two companies to develop some parts of the Shah gas field project which overall development cost is estimated at \$10 billion. Consolidated Contractors Co. won a \$550 million contract to construct a sulfur granulation plant and some pipelines for the project. Another contract worth \$150 million for construction of the secondary buildings for the integrated Shah gas projects.

Zakum Development Co. (Zadco) let an engineering services contract to Technip for the Upper Zakum project. The project's aim is to increase Upper Zakum field oil production by nearly 40% to 750 thousand bbl per day by 2015, and sustain the target for at least 25 years.

Upper Zakum field is in the Arabian Gulf, 84 km off Abu Dhabi and holds an estimated 50 billion bbl of oil. The contract includes front-end engineering design for process units on four artificial islands, including gas separation, gas lift compression, booster gas compression, as well as power generation, utilities, interconnecting pipelines, and modification of existing facilities, as well as procurement services for long lead items. Technip expects to complete the front-end engineering in 2011.

Partners in Zadco include Abu Dhabi National Oil Co. 60%, operator ExxonMobil Corp. 28%, and Japan Oil Development Co. 12%.

In **Bahrain**, the establishment of the National Oil and Gas Authority (NOGA) in 2005 by a royal decree has contributed to the vitalization of the oil and gas sector through running joint projects with international companies starting from the production sector. Until mid 2011, NOGA has signed many agreements to explore in the kingdom's four offshore blocks. Exploration and sharing agreements for blocks one, two and three were signed with Occidental. Similar agreements were signed with Thailand PTTEP to improve production from available oil resources. Tatweer Petroleum is considered as one of the largest joint projects between NOGA, Occidental and UAE Mubadalah. It aims to stop the declining of Bahrain oil field, and gradually triple its output within the few coming years. Another agreement was also signed with Occidental concerning the deep gas project. Moreover, a \$350 million project is being considered to renew the pipeline between Bahrain and Saudi Arabia, with the aim of renewal and replacement of the 55-km pipeline trajectory. The path alteration is to avoid crossing the urban and inhabited areas, along with increasing the capacity of the pipeline.

In **Tunisia**, Winstar Resources Ltd., announced in the 4Q 2011 that it will drill a second Silurian exploratory well on its 1700 square kilometers Chouech Essaida concession in southern Tunisia along the Algerian border. The 100% interest CS-10 well is to spud 2.3 km east of the CS-1 discovery well with dual objectives in the Triassic and Silurian reservoirs. The 4,450-m well is to cost \$15- 16 million including a \$5 million completion and test program. Winstar said CS-10 results will help plan the company's drilling and facility programs in anticipation of gas sales through the 320-km, 28-in. Southern Tunisian Gas Project pipeline expected to be completed by the end of 2014.

Within the same time, and after being held due to security issues experienced by the country, drilling activities in the Chorbane / Mahdie State, were resumed. Australian ADX Energy, the operator of the Chorbane license onshore Tunisia, has confirmed that drilling operations on the Sidi Dhaher-1 exploration well commenced. The well planned to reach a depth of 2168 m is targeting an Eocene aged reservoir with operator estimated prospective resources of 175 billion cubic feet (4.247 billion cubic meters) of recoverable gas and a Cretaceous aged reservoir with estimated prospective resources of 44 million bbl of oil.

In mid 2011, NZOG (New Zealand Oil & Gas Ltd) announced that it has been granted a permit in the Mediterranean's Gulf of Gabes; an established oil and gas producing region off the coast of Tunisia. The Diodore permit extends over an area of 1,236 sq km in the relatively shallow (less than 100 meters) water depth of the southern Gulf of Gabes. The permit is surrounded on all sides by discovered and producing oil and gas fields. A two year prospecting permit has been awarded, with priority rights to apply for a subsequent four year exploration permit.

NZOG has also executed an agreement to take a 40% stake in a Tunisian concession that contains an oil field which could be brought into production as early as 2014. The Cosmos Concession in the Gulf of Hammamet, offshore Tunisia, contains the Cosmos South oil discovery. The concession was held by a joint venture comprising Storm Ventures International and Tunisia's state-owned oil company L'Enterprise Tunisienne d'Activites Petrolieres (ETAP). Under the terms of the farm-in agreement, NZOG is paying a \$3

million contribution to past costs, securing the right to participate and earn an interest in the development of the Cosmos concession. A development plan is in preparation. If the development is approved through a Final Investment Decision NZOG will pay the first \$19 million of Storm's share of the development costs.

Independently evaluated proved and probable oil reserves of 6.3 million barrels have been attributed to the Cosmos South block, with additional potential from adjacent lobes. The development plan was based on three wells, a small platform and a floating production and storage offtake vessel, with initial production rates of 15 -20 thousand bbl of oil per day expected in 2014.

Moreover, in November 2011, DNO Company reported that an agreement was signed for the grant of a hydrocarbon exploration license permit called "FKIRINE" between the Norwegian company DNO Tunisia AS, a 100% owned subsidiary of DNO International ASA, and the Tunisian Oil Activities Company (ETAP). Located in central Tunisia, the permit covers an area of 2,064 sq km. The agreement sets out the terms and conditions of the partnership as DNO Tunisia will fund the exploration phase and ETAP has the option to participate within the 50% limit in any possible discovery on this permit. About \$2.5 million will be invested in the exploration program that will be valid for two years.

In **Algeria**, Petrofac Co. has been awarded a \$1.2 billion lump-sum engineering, procurement and construction (EPC) contract to develop southern fields in the In Salah. The fields to be developed are Garet el Befinat, Hassi Moumene, In Salah and Gour Mohmoud. Petrofac's scope of work includes a new central production and gas

gathering facility at In Salah comprising two dehydration trains, with the capacity to produce approximately 16.8 million cubic meters of gas per day, and roughly 300km of pipelines for gas collection from the in-field wells and export to the existing Krechba facility. The existing Teg and Krechba compression facilities will also be upgraded for future operations. The 50-month project, to be completed in phases, will support the maintenance of plateau gas production rates of 9 billion cubic meters per year beyond 2013.

In the 1<sup>st</sup> quarter of 2011, Petroceltic International plc issued well test results from AT-4 in Isarene permit. The well flowed 1.35 million cubic meters of gas per day. AT-4 is considered the first out of the many appraisal well to be drilled in Ain Tsila. In the 3<sup>rd</sup> quarter of 2011, the PetroVietnam Exploration and Production Corporation (PVEP) and its partners Petroleum Authority of Thailand (PTT) and the Japanese Gas Corporation (JGC) have secured a \$451.3 million engineering contract with Sonatrach. The deal will span 31 months and entails the construction of an oil processing centre with a capacity of 20 thousand bbl per day, a compressing plant to transfer fuel from the Bir Seba oil field to Hassi Messaoud city with a daily capacity of 1 million cubic meters, two 130 km- oil pipelines, a water separating plant and a power plant at the oil field in the south of Algeria.

In **Saudi Arabia**, EniRepSa Gas Ltd. a joint venture of Eni SPA (50%), Repsol-YPF SA (30%), and Saudi Aramco (20%) has been granted a 6- month extension to drill an exploration well for natural gas in Saudi Arabia's Rub al-Khali Desert. The consortium's license covers the 52 thousand sq km Block C, where work has been carried

out on a 5-year exploration program that included the acquisition of 5 thousand km of seismic data and the drilling of four exploratory wells. The EniRepSa partners have drilled three wells and were due to complete their final well by yearend 2010. Instead, the group asked for more time to reprocess some of their seismic.

EniRepSa is one of four JV projects that were approved by Aramco and the Saudi government in 2004 to explore for non associated gas in the Rub al-Khali.

The other Joint ventures include Royal Dutch Shell PLC, China Petroleum & Chemical Corp. (Sinopec), and OAO Lukoil. None of the four groups has yet to make a large discovery of gas. However, the Shell venture (a joint venture between Saudi Aramco and Royal Dutch Shell with equal shares), called the South Rub' Al Khali Co (SRAK), made what it calls “promising” discoveries, and said in October that it would start a second phase of exploration. SRAK extended its license by 5 years to 2015, and announced plans to drill three more exploration wells as well as to collect 3,600 km of 3D seismic data and 3 thousand km of 2D data.

The Sino Saudi Gas (SSG) venture, despite finding no gas, also agreed to move to a second exploration phase, proposing to drill one further well during the next 3-year period. SSG is owned 80% by Sinopec and 20% by Aramco.

The Lukoil- Aramco Luksar JV, using Russia's C1 and C2 classification, said it found 70 million tons of condensate and 300 billion cubic meters of gas in Block A's Mushaib-1 and Tukhman wells. But the joint venture decided against undertaking a second exploration period, apparently on commercial grounds.

The South Rub al-Khali Company said it has secured approval from the Saudi government for the Kidan area appraisal plan in the Rub al-Khali. As a result of this approval, SRAK, will be conducting extensive studies aimed at further defining development concepts for the field. The venture expects to complete the appraisal of Kidan area, a large sour gas field by late 2013. SRAK said it completed the first exploration period, which included the drilling of seven exploration wells, the acquisition of approximately 25 thousand km of 2D seismic data, and 750 sq km of 3D seismic data.

In line with its plans to improve gas production<sup>1</sup>, Saudi Aramco is on track to reach a projected production target of 15.5 billion standard cubic feet per day of natural gas by 2015. This shifted focus on gas exploration and development follows close on the heels of adding 2 million bbl per day of oil production capacity during 2004- 2009. Furthermore, during that 5- year period, increases were reached in gas production and processing capacities. Saudi Aramco considers the potential of tapping the kingdom's unconventional resources. Although the kingdom's non associated gas reserves have tripled in the last 15 years, but its gas consumption has risen at an average of 7% annually, with nearly all gas resources being used domestically for electric power generation and petrochemical production. Existing challenges to meeting this gas production goal include technical obstacles in finding new resources, exploration and development costs, and environmental concerns. It is obvious that advancing technologies have made unconventional gas more economically attractive.

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<sup>1</sup> Oil and Gas Journal, 3/5/2011

Developing any unconventional resources, however, has additional issues involved including resource remoteness and the extreme depths of some reservoirs. Saudi Aramco has come across shale-trapped gas and has done some fracturing, but developing such reserves is linked to discover more shale traps.

Two recent major developments in the Arabian Gulf will add a total of 4.3 billion scf/d of gas to the production target by 2014. Karan will be the first non associated offshore gas increment in the company's history. When completed in 2013, Karan will be capable of delivering 1.8 billion scf/d of raw gas via a 110-km subsea pipeline to the onshore Khursaniyah gas plant.

The Wasit gas program, meanwhile, will entail the construction of an onshore grassroots central processing facility capable of processing 2.5 billion scf/d of gas from the offshore Arabiyah and Hasbah fields. Wasit is due on stream in 2014

Syria and Iran signed a gas cooperation deal in early 2011 to construct a pipeline running from Iran's natural gas fields to Syria via Iraq, a work group of the three countries was set to prepare the preliminary studies. Syria, Iran and Iraq signed also a memorandum of understanding to build a pipeline to transport and export Iranian gas through Iraq and Syria to the Mediterranean and eventually to Europe. The 5600 km 56 inch pipeline is planned to transport gas from Assalouyeh region in Iran to Syria through Iraq at a capacity of 110 million cubic meters of gas per day. The about \$10 billion project called "Islamic gas pipeline" involved several European companies and some Mediterranean and European countries. The gas transported from Assalouyeh is to be delivered to Iraq at the province of "Eelam" located to the west of Iran.



Talks between Iran, Syria and Iraq regarding this pipeline took place in early 2009, with the aim of transporting large amounts of gas, so that Syria can fulfill its demand, in addition to exporting the gas from the Syrian ports, which will yield reasonable income and revenue from the gas transit tariff and export duties<sup>1</sup>.

In May 2011, Tunisian H.B.S International Ltd. won a contract to explore for oil and gas in block 7. This took place after the General Petroleum Cooperation has completed evaluating the international companies bids for this 6500 km<sup>2</sup> block, which is located to the east of Syria with in Hasakah and Deir al-Zour governorates and abuts the Iraqi border. It is noteworthy that this is the second time H.B.S operates in Syria after it signed a contract with the Syrian Oil Ministry in 2005, to acquire the exploration and development right in block 22 (Al Raqqa) that covers an area of 4977 km<sup>2</sup>. The company has let the contract after fulfilling all its contractual obligations and did not get any commercial discovery<sup>2</sup>.

In September 2011, the minister of oil and mineral resources inaugurated Sadad Gas Project located 60 km to the south east of Homs, where Sadad-1 and Sadad-3 were drilled by the Syrian Petroleum Company, commercial gas finds of 12 billion cubic meters were reported as proved recoverable reserves<sup>3</sup>. The project aims to exploit the field and put it on trial operation phase by linking it to the gas plant in the south of the Central Region in al-Fruqlus area. Engineering studies to construct and build the gas plant and gas gathering pipeline from the Sadad wells were undertaken by

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1 Syria Oil, 25/7/2011.

2 Syria Oil, 17/5/2011.

3 Syria Gas Company, official website, 20/9/2011.

the Syria Gas Company. The project was implemented in a record time of seven months were available equipments were used by the Syrian Gas Company, while secondary supplies were provided by local contractors. The nominal capacity of the plant is estimated at 1.2 million cubic meters of gas per day at an operation pressure of 85 bar (about 83.9 atmospheres). The plant consists of two separators and manifolds with a capacity of 600 thousand cubic meters per day each, and a 37 km 10 inch gas pipeline. The \$9 million project started operation on 27/7/2011. The Syrian Oil Company discovered several gas fields in the surrounding areas and prepared the engineering studies necessary to complete the development of them, to link the new discoveries to the neighboring gas plants.

Within its interest in the Syrian offshore, the Ministry of Oil and Mineral Resources and the General Petroleum Cooperation called for an international bid round to explore three offshore blocks, the offer deadline was set as of 5<sup>th</sup> October 2011.

In Iraq, Exxon Mobil Iraq Ltd, a subsidiary of Exxon Mobil Corp, said in early 2011 that production from West Qurna field has risen to 285 thousand bbl per day above the set target of 10% agreed upon under the contract technical services terms to develop the field. According to the contract, daily production processes were converted to the Department of West Qurna 1, which is operated by staff of the Iraqi Southern Oil Company and Exxon Mobil Iraq Ltd, the last is the main contractor in developing the field with a share of 60%, the rest goes to the Iraqi Southern Oil Company<sup>1</sup>.

Output at Iraq's giant Rumaila oil field has increased by more than 10% above the 1.066 million bbl per day target established in

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1 Arab and International Oil Resources Monitor, no.1, 2011.

December 2009, when BP PLC and China National Petroleum Corp. (CNPC) signed a technical service contract to expand production. Management of the field's development has been carried out by the Rumaila Operating Organization (ROO), which was originally staffed by 4 thousand employees from Iraq's state-owned South Oil Co. along with 100 technical experts and managers from BP and CNPC.

BP said that the pace of activity on Rumaila has built steadily over 2010, with 41 wells have been drilled, 103 workovers completed, and 122 km of flowlines laid. Employment has more than doubled to 10 thousand workers including by 4 thousand employees from Iraq's state-owned South Oil Company, along with 100 technical experts and managers from BP and CNPC, who all work under the umbrella of Rumaila Operating Organization, the last is operating the field. Development investments are expected to some \$15 billion in over the 20 year lifetime of the contract with the intention of increasing plateau production to 2.85 million bbl per day<sup>1</sup>.

In 2011, Iraqi Oil Ministry announced its intentions to launch a fourth bid round which will be the first to put forth exploration contracts rather than the technical contracts offered in the previous three rounds.

Twelve areas are on offer covering a combined 81,700 sq km with the blocks having a mix of oil and gas prospectivity. However, no discoveries were previously made in the offered area. The blocks are situated in western Iraq along the borders with Syria and Saudi Arabia.

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<sup>1</sup> Oil and Gas Journal, 11/1/2011.

The area, location and expected type of hydrocarbon are shown in table (A) <sup>1</sup>.

**Table (A)**  
**Iraq fourth bid round blocks, 2011**

Block	Area Sq km	Province	Hydrocarbon Expected
1	7300	Nainawa	Gas
2	8000	Anbar, Nainawa	Gas
3	7000	Anbar	Gas
4	7000	Anbar	Gas
5	8000	Anbar	Gas
6	9000	Najaf, Anbar	Gas
7	6000	Qadisia, Babel, Najaf, Muthana	Oil
8	6000	Diyala, Wasit	Gas
9	900	Basra	Oil
10	5500	Muthana, Thiqr	Oil
11	8000	Najaf, Muthana	Oil
12	8000	Najaf, Muthana	Oil

Iraq has witnessed a rapid development steps in 2011. The Iraqi oil ministry has made some good achievements in production and other sector levels. Contracts signed with some international oil companies within the first and the second bid round boosted oil production by 10% in a record -less than planned- time. This is considered as a new case in Iraq according to the burden of huge work represented in executing twelve contracts simultaneously. However, the overall assessment by international bodies suggests that Iraq is doing very

<sup>1</sup> Deloitte Petroleum Services & Oil Voice, 4/7/2011.

well in implementing the contracts of the first phase as the expected production increase of 10% was achieved in one year rather than the planned three years. As for the contracts of the second round, the inspired increase is to be reached within two years instead of three.

The ministry has ratified all the signed contracts. In terms of the concerns about Iraqi exporting capacity and the accelerated production rates, the ministry approved that it has planned projects to improve the exporting capacity to five million bbl per day from Al Basrah oil terminal where the expansion plans are represented in two phases, the first is implemented by the ministry resources, it includes laying two subsea 60 km pipelines, and the installation of three SPMs, the second will utilize a Japanese loan to lay another pipeline and install another SPM with a potential for a fifth SPM. Important stages of the first phase are already completed as the pipelines laying is finished along with a complementary project to install a pipeline from the producing fields to onshore terminal at Al Fao Al Basrah oil terminal, which adds another system to export additional one million bbl per day capacity. Maintaining the current exporting facilities improved its capacity to 1.75 million bbl per day. Iraqi ministry is also working on creating a three- pipeline exporting system via Syria, preparing the 650 thousand bbl per day via- Turkey pipelines exporting system is undertaken, with plans to add 1 million bbl per day of capacity. On the long term, the three systems will avail Iraq with nearly 10 million bbl per day exporting capacity to match the gradual increase of production rates. As for the short term, the Iraqi exporting system will have five million bbl per day exporting capacity<sup>1</sup>.

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<sup>1</sup> Iraqi Oil Ministry, official website, 20/4/2011.

In line with the aspiration to develop the Majnoon oil field, Shell Iraq Petroleum Development BV awarded a contract to Petrofac Services Ltd. for engineering, procurement, fabrication, and construction management services for the development of a new early production system that includes two trains, each with a 50 thousand bbl per day capacity, along with upgrading of existing brownfield facilities.

Petrofac said work on the project began<sup>1</sup> in mid-2010 and it expects to complete the project during fourth-quarter 2012.

By late 2011, Iraq signed a final \$17 billion deal with Shell and Mitsubishi<sup>2</sup> to capture flared gas at southern oilfields, a project that should boost production of badly needed electricity. The 25-year project, one of the largest Iraq has signed with foreign energy firms, is meant to help harness more than 700 million cubic feet a day of gas being burned off at southern fields “Rumaila, Zubair and West Qurna” and will ultimately handle 2 billion cubic feet a day. Increased crude production is expected to bring huge increases in associated gas output and Iraq may soon produce more gas than it can use, opening up the possibility of gas exports. The deal will involve the creation of the Basra Gas Company joint venture, in which the government will hold 51 %, Shell 44 % and Mitsubishi 5 %. The goal of 2 billion cubic feet per day capacity is linked to peak production at the southern fields, which is expected by 2017 when oil production capacity is expected to be 12 million bbl per day. All the preparation to process 1 billion cubic feet per day will be completed within a year, while the other 1 billion cubic feet will depend on the increasing production from the three mentioned oil

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1 Oil and Gas Journal, 31/3/2011.

2 The Financial Times, 27/11/2011.



fields. The project may include the construction of a liquefied natural gas export facility with a maximum capacity of 600 million cubic feet per day. Exports are possible once Iraq's domestic needs are met. The project needs investment of \$12.8 billion to rehabilitate existing facilities and build new ones, and \$4.4 billion for the LNG export unit. Moreover, three international oil companies will invest \$100 billion to upgrade three of Iraq's oil fields. Half of the investment would be spent to upgrade West Qurna Phase- 1 by ExxonMobil, the other half would be spent by BP and Eni on their Rumaila and Zubair fields. The three fields are currently producing 2 million bbl per day, about two thirds of Iraq's current output of 2.9 million bbl per day. The fields are expected to flow 6.8 million bbl per day or more in 2017 under existing contracts. In 2010, Iraq signed a 20-year contract with Shell and Malaysia's Petronas to provide technical assistance in the development of the Majnoon oil field, which lies in southern Iraq, is one of the world's largest oil fields.

The consortium targets a production plateau of 1.8 million bbl per day of oil, up from current 45 thousand bbl per day. Shell which is Majnoon operator holds a 45% share, with partner Petronas holding 30%. The Iraqi state holds 25%.

In **Qatar**, Total has signed an agreement with CNOOC Middle East (Qatar) Ltd, a wholly-owned subsidiary of CNOOC International Limited, to acquire a 25% interest in Qatar's Block BC (pre-Khuff) exploration license. CNOOC Middle East (Qatar) Limited will continue to be the operator with a 75% interest. Located 130 kilometers east of the Qatari coast, the offshore block covers an area of 5,649 square kilometers, with water depths ranging from 15 to 35 meters.

The Block BC Exploration and Production Sharing Agreement (EPSA), entered into with the Government of the State of Qatar, stipulates that 2D and 3D seismic surveys will be conducted and that at least three exploration wells will be drilled by 2014.

On the other hand, Qatar Petroleum and Shell announced the first flow of dedicated offshore gas into the Pearl GTL plant located in Ras Laffan Industrial City.

The project is being developed under a Production and Sharing Agreement with QP, sections of the Pearl GTL plant will be started up progressively over the coming months.

In **Kuwait**, the Burgan Drilling Company signed a five-year' contract worth of KD48.2 million (about \$173.4 million), with Kuwait Gulf Oil Company (KGOC) to provide drilling and maintenance services for shallow wells in Al-Wafrah area.

In **Libya**, Eni and Russian Gazprom achieved a deal by which Eni let 50% of its 33.3% share in El Feel oil field concession located to the south west of Libyan desert 800 km off Tripoli. The El Feel oil field was discovered in 1997, it was put on production in February 2004, its average oil production reached about 126 thousand bbl per day in 2008. The production is pipelined to Melitah storage and marketing facilities.

In **Egypt**, The Egyptian General Petroleum Corporation (EGPC) called the interested international companies to bid for Production Sharing Agreements in its International Bid Round 2011. The bid round offered 15 exploration blocks in the Gulf of Suez, Eastern Desert, Western Desert and Sinai sedimentary basins. The acreage



encompasses more than 18 thousand square kilometers, with a maximum total exploration duration of seven years per block. Deadline for bidding was 30 January 2012.

**Other** Arab countries (non- members of OAPEC) have also witnessed clear endeavor to improve exploration and production activities.

In **Oman**, the Oman Oil Co (OOC) and Abu Dhabi's state-owned International Petroleum Investment Co (IPIC) signed a cooperation agreement on investment projects in the sectors of oil, gas and petrochemicals. The joint effort is intended to result in the establishment of oil refineries and petrochemical projects, in addition to the exchange of expertise and technologies.

In **Morocco**, Longreach Oil & Gas Ltd, signed a formal agreement to take a farmout from Maghreb Petroleum Exploration SA to earn a 50% operated stake in the Sidi Moktar development license in the Essaouira basin in central Morocco. Longreach seeks to raise funds for the drilling of as many as five wells across the Longreach portfolio. The agreement enhances Longreach's existing Moroccan-focused asset portfolio as it operates in three more exploration licenses. The Sidi Moktar licenses have produced 30.5 bcf of gas, according to Morocco's state ONHYM. Consulting engineers found in March 2011 that four existing fields in Sidi Moktar could have undiscovered gas initially in place targets of a low estimate of 111 bcf, a best estimate of 292 bcf, and a high estimate of 776 bcf. Moreover, Pura Vida Energy NL, has acquired a 75% interest and is the operator of the Mazagan block in the Atlantic off Essaouira, Morocco. The Essaouira basin block covers nearly 11 thousand sq km in 1,000-

2,100 m of water separated from shore by a block held by Kosmos Energy Co. The exploration period is eight years. Morocco's state ONHYM holds the other 25% interest.

In **Yemen**, the government has declined Nexen Inc.'s request to extend the production sharing agreement on Masila Block 14, which will be operated by a newly created Yemen national operating company after it expires on December 17<sup>th</sup> 2011.

Nexen has another PSA for East Al-Hajr Block 51 in Yemen, producing 6 thousand to 8 thousand bbl per day net to Nexen, or 3 thousand to 4 thousand bbl per day after royalties. The company noted it is evaluating alternatives with respect to Block 51 and future activities in the country." Nexen said that it has produced more than 1.1 billion bbl of oil since entering Yemen in 1987. It declared its first discovery commercial in 1991, and started production in 1993. Masila block production peaked in 2003 at a rate of 225 thousand bbl per day of oil. Nexen's share of production in 2011 was expected to be 14 to 16 thousand bbl per day after royalties.

## **B- Unconventional Hydrocarbon Resources**

The year 2011 was the scene of prompt orientation towards exploring and developing unconventional oil and gas resources.

Within this context, independent consultants estimated a midrange 1.233 billion bbl of heavy oil in place and a contingent resource of 141 million bbl potentially recoverable on the North Salah ad Din prospect in northern **Iraq**, said Sonoro Energy Ltd., Canada. Sonoro has a 70% working interest in the Salah ad Din license, 260 km north-northwest of Baghdad, and Berkeley Petroleum Mesopotamia



Asphalts Ltd. has 30%. The independent resource evaluation was limited to asphalt of in the Tertiary Jeribe formation to a maximum depth of 450 m on the prospect in the Shirqat district. Sonoro expects to spud three appraisal wells on the prospect.

In **Oman**, in an unprecedented move, Oman started planning to explore shale gas in concession areas of Petroleum Development Oman (PDO). There are no drilling activities yet, as the whole subject is in the study phase, but if found commercially viable, the development of shale gas, which is unconventional natural gas from shale formations, will be the responsibility of oil companies operating in those concessions.

Official negotiations were going on between Oman government and BP for deciding on the terms and conditions for the commercial development of Khazzan and Makarem tight gas fields in block 61. The year 2012 is a crucial year to wrap up discussions with BP. The main issues are price, how much gas the company can produce and over what period of time. In late 2011, the British firm said that it was envisaging a \$15 billion investment over a 10-year period for the full-field development of its block 61 tight gas fields in north-central Oman. The government has signed a major exploration and production sharing agreement with BP in 2007 for developing tight gas fields, the agreement covers an area of some 2,800 square kilometers, which contains a number of tight gas reservoirs, which were first discovered in the 1990s.

Internationally, Sound Oil PLC said its Apennine Energy SRL subsidiary was awarded 100% interest and operatorship of the Costa Del Sole permit in a heavy oil area of southwestern Sicily, **Italy**. The

permit contains the Manfria-1bis oil discovery, which flowed at 150 bbl per day of oil and produced a cumulative 6 thousand bbl during testing. It is estimated to contain a midrange contingent resource of 2 million bbl. The adjacent Cielo prospect, which appears in structural continuity with Manfria, could hold a similar resource.

In **Spain**, BNK Petroleum announced that its wholly owned subsidiary Trofagas Hidrocarburos, S.L., has been awarded an oil and gas concession totaling about 947 square kilometers; located mainly in the autonomous community of Castile and Leon, Spain. Situated in the Cantabrian basin of Spain, the concession has been acquired mainly for shale gas targets but also has some conventional oil and gas potential. The primary target is a Jurassic-aged shale, which ranges, in the most prospective areas, from 100 to 200 m in gross thickness at depths of about 2,500 to 4,500 m. The concession terms include the requirement to conduct geological work in the first year, drilling two wells each in years two, three and four and three wells in year five.

**Ukraine** in turn, according to Ukraine's state gas exploration company "Ukrgezvydobuvannya", has awarded its first shale gas exploration contract to Shell in a deal worth up to \$800 million. The company assured that no official estimate has been made and there is no confirmed figure of how much shale gas might be hidden in the six blocks awarded to Shell near the northeastern city of Kharkiv. The agreement with Shell will be one of the first examples of Ukraine's successful cooperation in hydrocarbons development with an international energy company, Ukrgezvydobuvannya chief said. He stated that Shell would be operating in Ukraine through a joint venture but offered no other immediate details.



In **Australia**, Beach Co. has secured two Ensign rigs, to drill both horizontal and vertical wells targeting its unconventional gas play in the Nappamerri Trough of the Cooper basin. Recent drilling results showed that the target zone in PEL 218 goes beyond shale and incorporates other lithologies that are also gas saturated. Beach believes, that in addition to the substantial shale gas potential, the trough could be an unconventional basin centered gas play.

In **Indonesia**, and in a bid to push the market for alternative energy, the Indonesian government extended nine resource blocks located in Kalimantan, with a focus on coal bed methane reserves (CBM). CBM reserves are pegged at more than 12.8 trillion cubic meters (453 trillion cubic feet). The contracts entail a revised split in profits, as the companies would gain 45% of the share and the government would keep 55% of the profits, making it more lucrative for the companies whose share in profits in oil and gas sectors is quite marginal at 15% and 30% respectively.

In **Argentina**, Americas Petrogas, a Canadian company, announced that it has, through its wholly-owned Argentina subsidiary, Americas Petrogas Argentina S.A., entered into a farm-out agreement with ExxonMobil Exploration Argentina S.R.L., a wholly-owned subsidiary of Exxon Mobil Corp. for the exploration and potential exploitation of Americas Petrogas's Los Toldos blocks (660 sq km). The Los Toldos blocks are located in the western region of the Neuquen basin and are in a favorable location relative to other recent discoveries of shale oil and shale gas. ExxonMobil has committed to fund \$53.9 million (including taxes) during the exploration phase with a further \$22.4 million if the parties proceed to the exploitation phase, for a total potential initial investment of \$76.3 million.

In **Portugal**, American Porto Energy Corp., will exploit oil potential in the tight Lower Jurassic stratigraphic interval on 1,821 sq km of the company's concessions in Portugal's Lusitanian basin. The company signed a memorandum of understanding with Sorgenia International BV of the Netherlands and Rohol-Aufsuchungs AG of Austria to jointly evaluate Lias resource potential. A joint venture agreement is to be signed by the end of 2011. The Lias is being pursued as an unconventional resource throughout Europe

In **UK**, Cuadrilla Resources predicted that its exploration license area at the Bowland basin shale prospect in northwest England holds 200 tcf (5.66 cubic meters) of natural gas in place. Cuadrilla CEO said the firm has as much gas per area unit in Bowland as the successful North American shale plays, adding that Cuadrilla found nearly four times more gas than it was expecting to discover. However, the firm stated that the estimates were preliminary and further exploration and investments are required to confirm the gas-in-place estimate and to assess the proportion that is likely to be recoverable. A further 5-7 exploration wells will be drilled within 18 months before a decision is made on whether or not to proceed with commercial development of the Bowland basin prospect.

Within the same regard, **China** is looking for a major boost in shale gas production and has set targets of 6.5 billion cubic meters by 2015 and a further considerable ramp up to 80 billion cubic meters by 2020. The plan was devised by the National Energy Administration, which advised that the full details of the exploration and production targets will be disclosed later. China, one of the world's largest consumers of energy remains a new entrant in the shale gas domain

with no commercial production recorded. Furthermore, China offers no incentives to investors and firms looking for a foothold in the country's shale domain. The China National Petroleum Corporation's (CNPC) oil and gas production and distribution arm PetroChina, revealed in August 2011 that it is chasing a target of 1.5 billion cubic meters of shale gas by 2015.

In the USA, Chesapeake Energy's first horizontal Utica Shale well, the Buell #8H, tested 6.5 million cubic feet equivalent per day (6.2 million cubic feet of natural gas and 59 bbl per day of condensate), this was noted in a report by Jefferies & Co. Inc. citing the Ohio Department of Natural Resources. As part of its second quarter 2011 financial report, Chesapeake Energy has put a \$15 to \$20 billion valuation on its 5000 square kilometers in Ohio. The Buell well, sits in the wet gas window, was drilled at a vertical depth of nearly 2,560 meter with another 2,072 meter of horizontal lateral. On the other hand, The US Geological Survey said that about 1.45 trillion bbl of shale oil is estimated to be in place in the Eocene Green River formation in the Green River and Washakie basins in southwestern Wyoming. USGS estimated that about 133 billion bbl of the resource is in strata that contain more than 15 gal/ton of rock<sup>1</sup>, of which 72 billion bbl are under federal mineral ownership.

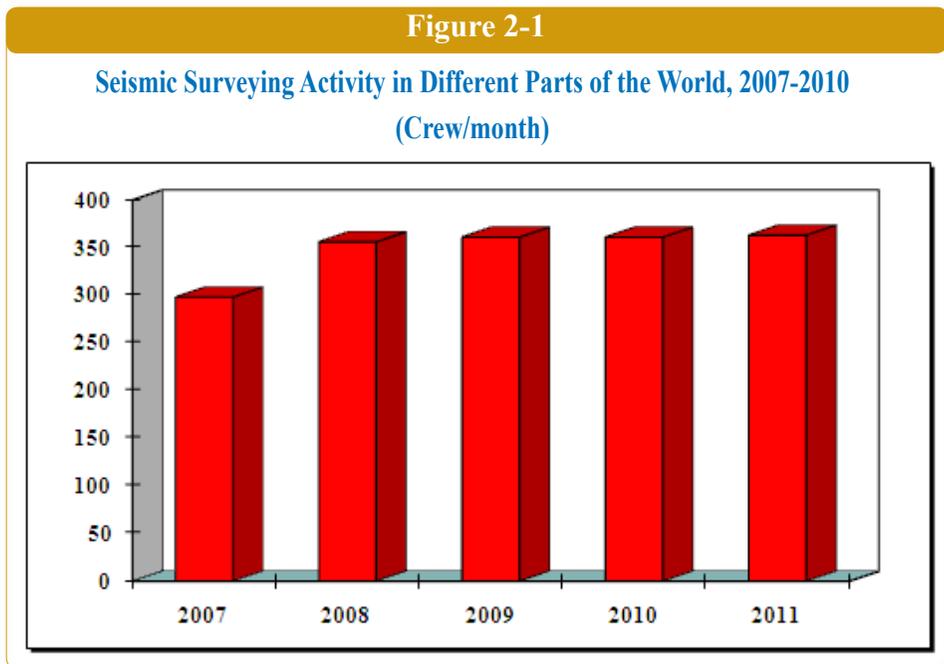
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<sup>1</sup> 1 American Gallon= 3.78 Liter.

**Major oil exploration and production development in the Arab countries and the word are summarized below.**

### **1- 1 Seismic Surveys:**

The number of crews working on seismic surveys worldwide increased slightly from 361 crew/ month in 2010 to 363 crew/ month in 2011, as shown in **Figure (2-1)** and **Table (2-1)**.



### **1- 2 Exploration and Development Drilling:**

Exploratory drilling activities have remarkably increased in 2011, the number of rigs operating in 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 USA increased from



1541 in 2010 to 1875 in 2011, this could partially be attributed to the accelerated interest in unconventional oil and gas resources in the USA in general, and shale gas in particular. Figures (2-2) , (2-3) and Table (2-2).

Figure 2-2

Active Drilling Rigs Worldwide, 2007-2011  
(Rigs)

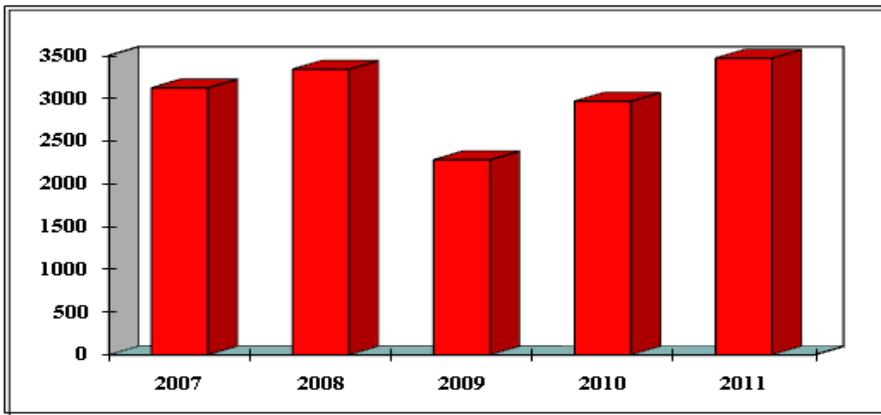
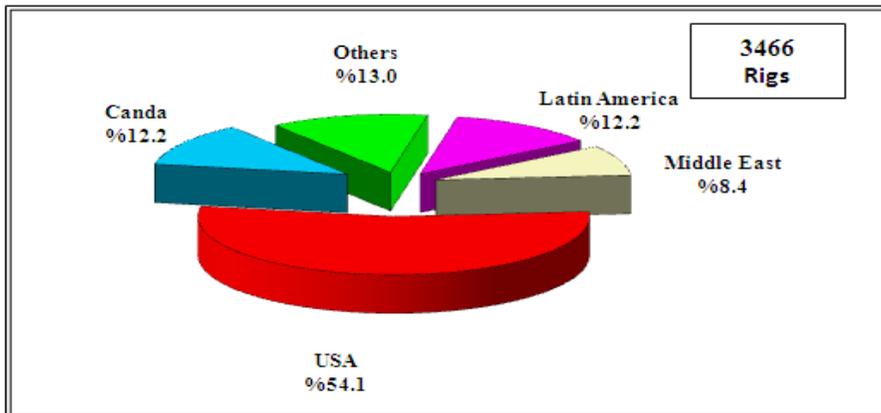
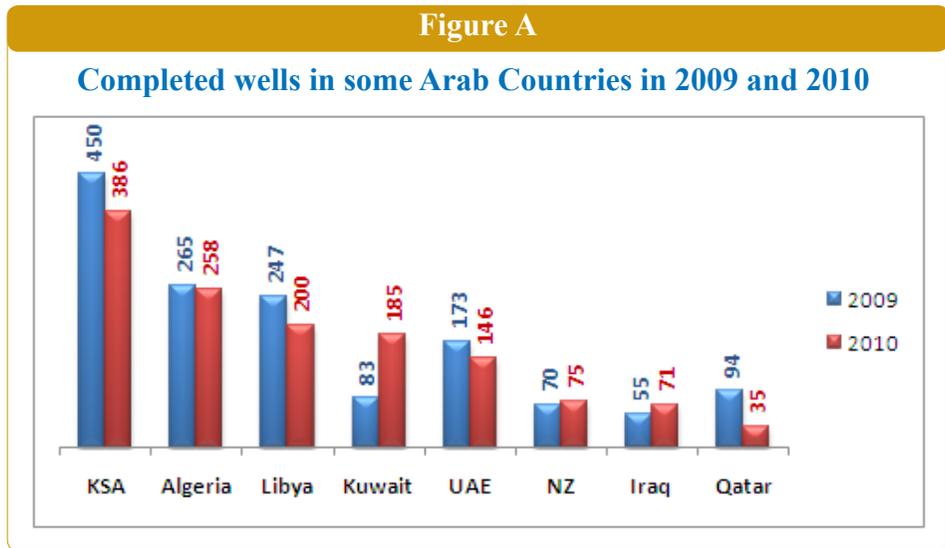


Figure 2-3

Distribution of Active Drilling Rigs Worldwide, 2007- 2011  
(%)



According to OPEC reports, the number of wells completed in 2010 was 146 wells in UAE, 257 wells in Algeria, 386 wells in Saudi Arabia, 71 wells in Iraq, 35 wells in Qatar, 75 wells in Kuwait and 200 wells in Libya, **Figure A**. Comparing 2010 and 2009 figures, it could be noted that the number of completed wells declined in: UAE by 15.6%, Algeria by 2.6%, in Saudi Arabia by 14.2%, in Qatar by 62.8% and in Libya by 19%. While the number of completed wells increased in Iraq and Kuwait by 29.1% and 123% respectively.

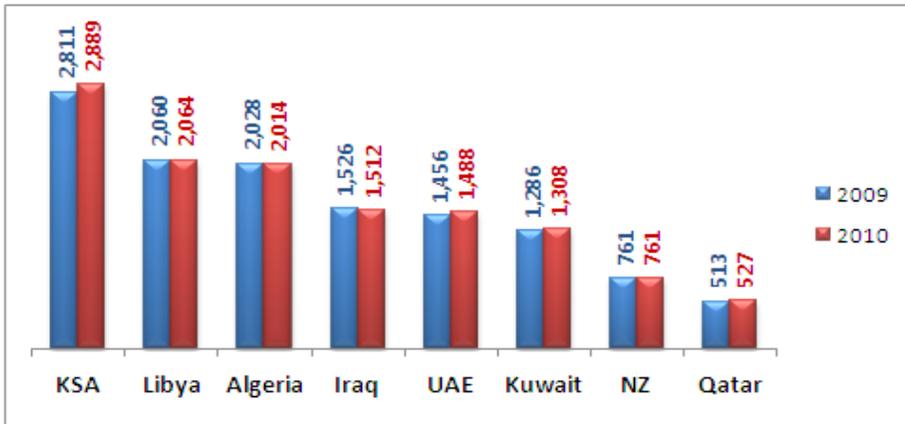


On the other hand, The number of producing wells has declined in Algeria and Iraq in 2010 compared with 2009, while it has increased in UAE, Saudi Arabia, Qatar, Kuwait and Libya. The number remained unchanged in the Neutral Zone as shown in **Figure B**.



Figure B

Producing wells in some Arab Countries in 2009- 2010



Exploration activities and related drillings have resulted in many new finds in the Arab countries in 2011. **Figure (2- 4), (2- 5), and Table (2-3).**

In **Tunisia**, Sonde Resources Corp., reported in 1Q 2011, robust test results from Zarat North-1 well on the Tunisian side of the 7th November block in the Gulf of Gabes.

The well was drilled to 2,965 m vertically and cut 73 net m of pay in the Eocene El Gueria limestone. When tested, the well produced at an average rate of 8- 11.5 million cubic feet per day of gas, and 750 of condensate, it also flowed 200- 350 of water. In Q4 2011, ADX Energy Ltd. announced that oil indications were found at Sidi Dhaher exploratory well on the 2,428 sq km Chorbane permit onshore Tunisia, the company has set 9 5/8 in. casing at 1,295 m to test an interpreted 30-m oil column in the Upper Cretaceous. Wireline fluid sampling recovered a mixture of drilling mud, drilling mud filtrate and oil. The

oil gradient calculated from formation pressures within the interpreted oil column suggests the presence of relatively light oil.

In **Algeria**, Petroceltic International reported a successful test of AT- 4 well drilled in Isarene permit in 1Q 2011. The well flowed 1.35 million cubic feet per day of gas. AT- 4 is the first of many appraisal wells to be drilled in Ain Tsila gas discovery.

In 3Q 2011, Petroceltic made another gas discovery through the AT-6 appraisal well on the Isarene permit in the Illizi basin, the well went to a total depth of 2085m and has logged gas in the main Ordovician reservoir. Initial log interpretations indicate a gross Ordovician reservoir interval of 168m and a net pay interval of 45m. Petroceltic chief executive said: “the initial results from the AT-6 well were very encouraging and increase the proven area of the Ain Tsila field considerably to the southeast with this large step-out”. Later on, the AT-5 well was drilled with a 376m of horizontal section at a location about 4km to the east of the AT-1 discovery well. A multistage open hole packer completion with four zone isolation ports was successfully run before the well was suspended for rigless testing. The four zones were fracture stimulated and a maximum flow rate of 3.50 million cubic feet per day of gas on a 64/64” choke with 60 of condensate and 190 of water was achieved. While the flow rate was lower than pre-test expectations, however, the discovery flow rates were likely to be deemed commercial.

On 26 July 2011, Petroceltic spudded the vertical AT-7 well located in the south west of the Ain Tsila field; the well reached a total depth of 2142 m on 17 August 2011. Following logging operations were ceased in the same month. The well was drilled approximately 12 km

south of the AT-3 well and 15 km west of the AT-6 well to appraise the south western extension of the field and targeted a broad structural culmination in the centre of the main Ordovician glacial channel. A gross reservoir interval of 206 m was drilled with a calculated net pay of 40 m. Calculations suggested a net pay thickness of 40 m, which rhythms with drilling findings. A test program, which will include the hydraulic fracturing of the main reservoir interval was planned to AT- 7.

In 1Q 2011, American Egyptian IPR ceased drilling Al Sabkhawy-1 well in the Al Furat Trough in Syria, the well was spudded on 12/10/2010. Encouraging hydrocarbon shows were reported at different levels during drilling.

Guldsands made an oil discovery in 3Q 2011, the Yousefieh- 6 exploration well has been drilled to test an undrilled structural high located approximately 3 km to the east of the Yousefieh field discovery. The well was deviated at an angle of up to 36 degrees to the vertical in order to avoid obstructions to drilling operations on the surface directly above the target location. The Yousefieh- 6 encountered oil bearing Cretaceous Massive formation reservoir at a depth of 2045 meters measured depth, or 1,560 meters true vertical depth. Interpretation of wireline logs indicated a net oil column of 12.8 meters, average porosity of 18% and average oil saturation of 69%. The well was tested and produced at an average oil flow rate of approximately 250 of 20 degree API.

Viscous oil was also discovered in the exploration well Safa-1 drilled approximately 7 km north of the Khurbet East Field. Production test showed a non-commercial discovery, and the well has been plugged and abandoned.

Syrian Petroleum Company made a gas discovery in Qara town, the well Qara- 1 was drilled 6 km to the west of the town, it went to 3,1333 m, and tested about 400 thousand cu m of gas, and 560 of condensate. The area of the gas bearing structure was estimated at 25 square kilometers, it is located in Al Dawo basin in central Syria where many discoveries were made, like Abu Rabah, North Al Faidh and Qum Qum. The discoveries were put on production in 2009 and named as the South Central Area Project, with an estimated recoverable reserves of nearly 47 billion cubic meters of gas, and 21 million bbl of condensate. Previously discovered structures in the same basin are Saddam, Al Braij, Qara, Der Atieah and Furoglos, with estimated recoverable reserves of 24 billion cubic meters of gas and 22 million bbl of condensate.

Notwithstanding the notice of “force major” regarding production operations in Syria, Gulfsands has continued exploration activities in 4Q 2011, and gauged light oil in the Al Khairat prospect which is an anticlinal structure on a ridge southeast of Yousefieh field outside the development license area, about 3.5 km southeast of the Yousefieh-6. The Al Khairat- 1 well could yield a median of 4 million bbl to an upside of 15 million bbl of recoverable oil. When tested, the well flowed under nitrogen assisted lift at an average of 1,826 of 22 degrees API oil with a trace of formation water. Wireline logs indicated that a 29-m net oil column has been encountered in the Cretaceous Massive formation, with average porosity of 21%, and average water saturation of 19%. Based on wireline and test data, no oil- water contact has been identified in the well.

In **Iraq**, Heritage Oil made a major gas discovery through the well Miran West- 2 in the Kurdish region of Iraq, the largest in three

decades. Estimations of gas in place were 6.8- 9.1- 12.3 Trillion cubic feet (at 90%, 50%, 10% probabilities respectively) along with 71 million bbl of oil and 53- 75 million bbl of condensate. The company said production could start as early as 2015, and expected the flow rate to hit 100 million cubic feet per day. Results of testing different pay zones are shown in the following table:

System/Period	Depth m	Gas million scf/d	Oil bbl/d	API°
Jurassic	3533 -3465	26	70	52.2
Jurassic	3410 -3327	25.5	67	54.3
Jurassic	3115 -2992	26.7	432	60.9
Lower Cretaceous	2220 -2117	0.2	-	-
Upper Cretaceous	1000 - 714	-	Traces of oil	-

WesternZagros Resources Ltd. has successfully completed the initial testing of the oil discovery made in the Jeribe Formation of the Sarqala-1 well. The Company has tested the well at rates up to 9,444 bbl per day of 40 degrees API oil. This rate was reached after flowing and stabilizing the well at progressively bigger choke sizes until reaching the limits of the surface equipment. No water was produced during this initial testing program and no stimulation was applied to the well.

Joint venture General Exploration Partners Inc., made a multi-zone oil discovery at the Atrush-1 exploratory well in northern Iraqi Kurdistan. Three Middle and Upper Jurassic fractured carbonates flowed at a combined, equipment-limited rate of more than 6,393 bbl per day of 26.5 degrees API oil. Preliminary results show the intervals are capable of much higher rates when appropriate facilities are available.

The Atrush block covers 269 sq km, Atrush- 1 was drilled to a total depth of 3,400 m, the well encountered a 726-m potential gross oil column in Lower Cretaceous and Jurassic with 120 m of net matrix pay in Jurassic. Drilling shows and log results indicate as much as 140 m of further potential net pay in the Upper Butmah and Cretaceous formations that will be further tested in later wells.

In **Kuwait**<sup>1</sup>, only one oil and one gas discoveries were made in 2011.

In 1Q 2011, Waha Oil Company of Libya has made a new oil and gas discovery in block MN 98 in Sirte basin, about 60 km to the east of Jalo area. The exploration well S1- MN 98 went to 5,055 m, when Nubian sandstone formation was tested, the well produced at a rate of 1,300- 1,850 bbl of light oil per day (52 degrees API), and 7.7-12.6 million cubic feet per day of gas.

In **Egypt**, RWE Dea Egypt announced that it has made a gas discovery in its own operated North El Amriya concession. The NEA- 3X discovery is located in the offshore some 40 km north of Alexandria. The well was drilled to a total depth of 3,055 meters and encountered gas in the Kafr El Sheik formation. The well flowed with rates of up to 14 million cubic feet per day when tested.

On its website, Dana Gas, has announced its latest gas discovery in the Nile Delta, Egypt.

The South Abu El Naga- 2 well, drilled as an appraisal of the previously announced South Abu El Naga Field in the West El Manzala Concession, encountered 16.6 meters of net pay in the Abu Madi

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<sup>1</sup> Energy data collection form for the year 2011. data are up to September 2011.

formation, thus extending the field. In addition, the well encountered 4.8 meters of net pay in a good quality sandstone reservoir of the El Wastani formation, representing a new pool discovery. On test, the well produced 14.1 million standard cubic feet per day of gas with 718 bbl per day of condensate from the Abu Madi Formation, and 5.9 million standard cubic feet per day of dry gas from the El Wastani Formation.

The discovery came after the announcement of the previous South Abu El Naga-1ST discovery in September 2010, where the calculated reserves estimate was in the range of 50 to 90 billion standard cubic feet of gas, with associated condensate reserves between 1 and 2 million barrels. A preliminary estimate of the discovered reserves in the new pool (El Wastani formation) is in excess of 60 billion cubic feet of gas, with a possible upside still under evaluation. Dana Gas prepared a development plan for this new pool, including several appraisal and development wells.

In mid 2011, Apache Corporation reported five new oil discoveries in its Faghur Basin play in the far southwest of Egypt's Western Desert oil and gas province.

The Faghur Basin discoveries included:

- West Kalabsha-I- 4: when tested, the well flowed 7,150 bbl of oil per day and 11.4 million cubic feet of gas per day.
- Faghur North- 1X: tested 1,444 bbl of oil and 3.9 million cubic feet of gas per day.
- Faghur South- 1X: tested 2,768 bbl of oil and 4 million cubic feet of gas per day.
- Huni- 1X: tested 970 bbl of oil per day.
- Neith North- 1X: no test results were reported then.

In 3Q 2011, Beach Energy Ltd. announced discoveries from its two wells in the Abu Sennan concession. GPZZ- 4 was drilled as the first well of a six- well program in the concession. Hydrocarbon shows were found during initial drilling in the lower and upper Bahariya formations, and the Abu Roash ‘G’ Member. The second well, Al Ahmadi- 1, has also encountered hydrocarbon shows within the Kharita formation, the lower Bahariya formation, the Abu Roash ‘G’ Member and the Abu Roash ‘E’ Member. This was highlighted by preliminary wireline logging and testing. Badr El Din Petroleum Company has also made a new gas discovery (Neag S1- 1) in the Neag East in the western desert, a find that is expected to produce some 12 million cubic feet per day of natural gas, and 5 thousand bbl per day of condensate. The company has made three discoveries in 2010, two of which were put on production (Sitra S4 and Badr 3S- 9) at an average rate of 4,500 bbl per day.

In 4Q 2011, Belayim Petroleum Company (Petrobel) has discovered new oil accumulation in Sinai, 40 kilometers to the south of the Abu Rudais city. The new find “East Belayin Onshore South-1” was drilled to a depth of 3,012 meters, it tested about 2,270 bbl per day of oil. The reservoir is below sea bed, 2,734 meters off the cost of Suez Gulf, directional drilling technology was used to drilled the well, and the company estimated the discovered reserves at about 5.5 million barrels. BP Egypt has made the Salmon gas discovery in the North El Burg Offshore Concession, Nile Delta. Salmon is the third gas discovery BP has made in the concession following Satis- 1 and Satis- 3. Salmon was drilled 50 kilometers to the north of Damietta, in water depths of 87 meters and reached a total depth of 1,600 meters.

In **Oman**, a group led by CC Energy Development SAL found heavy oil in several formations at the Saiwan East-7 well on Block 4 in eastern Oman. The well was drilled to a total depth of 1,890 m and found several intervals of heavy oil but established no flow. The well was temporarily suspended for possible testing and further study. The main target was to test the presence of oil in the Precambrian Neoproterozoic layers in the southern part of the Saiwan East structure. The well identified a more than 90-m thick column of intermittent heavy oil saturation

In **Yemen**, a group led by Oil Search Ltd. gauged oil at a rate of 145 bbl per day on a drillstem test of the Al Meashar-2 well on Block 7 in Shabwah basin. The well was drilled using managed pressure drilling technique, and was suspended for more tests.

In **Morocco**, Circle Oil Plc said in 1Q 2011, that it found its third gas discovery in Sebou permit. The exploration well DRJ- 6 tested 5.36 million cubic feet per day of gas. Oil Search has previously confirmed a gas discovery at the ADD-1 exploration well in the same permit. The well produced from two targets, Guebbas which tested 1.89 million cubic feet per day and Hoot which tested 3.57 million cubic feet per day. The well suspended as a potential producer, with a view to carrying out an extended well test to give a more complete estimation of the reserves. Circle Oil has announced a significant find of gas in the Sebou permit in 2Q 2011. The well KSR- 11 hit the main target Hoot and a secondary target Guebbas sands. No further information were made available.

In **Mauritania**, a group led by Korea National Oil Corp. has made an offshore gas discovery. The exploration well Cormoran-1

was drilled in Block 7 about 2 km south of the late 2003 Pelican-1 gas discovery. The well went to 4,695 meters in 1,630 meters of water, and encountered gas in four thin but good quality gas-bearing sands. When tested, Cormoran-1 flowed gas at an average rate of 22- 24 million cubic feet per day. Dana Petroleum (a partner in the group) said the flow rate was constrained by the need to avoid sand production.

In occupied **Palestine**, new gas discovery was made in 1Q 2011. Tamar- 3 which was drilled to 5,160 meters found a 25-m gas- bearing sand layer bearing (Strata D), it is located under three previously discovered layers (A, B and C). Discovered gas reserves were estimated at 0.5- 1.5 trillion cubic feet. On the other hand, gas reserves estimates revision of Tamar field were increased by Netherland, Sewell and Associates Inc. from 8.7 trillion cubic feet to 9.1 trillion cubic feet. Ratio Oil Exploration announced that its Or 1 license in the Med Yavne prospect has a best estimate of 42.4 billion cubic feet of natural gas with a 50% probability, according to Netherland, Sewell and Associates Inc. The low estimate is 28.9 billion cubic feet with a 90% probability and the high estimate is 59.9 billion cubic feet, with a 10% probability. The Med Yavne covers 52 sq km in shallow water (70 meters) 39 kilometers west of Ashdod.

In general (according to available data), Arab countries (excluding occupied Palestine) have made 20 oil discoveries and 10 gas discoveries in 2011, **Table (2-2)**. Table B shows characteristics of some of the discoveries:

**Table B**  
**Some discoveries characteristics in Arab countries in 2011**

Country	operating company	field/ concession	well	depth (m)	Type of discovery	Test results	Reserves
Tunisia	Sonde Resources Corp	Gulf of Gabes	Zarat North-1	2965	G + C	8- 11.5 million scfd G + 750 bbl/d C	
	ADX Energy Ltd.	Chorbane Permit	Dhafer-1	1295	O		
Algeria	Petroceltic International plc	Isarene permit	AT- 4		G	1.35 million scfpd	
			AT- 6	2085	G	3.5 million scfpd	
Syria	IPR	Al Furat Trough	Al Sabkhawy- 1		O		
	Gulfsands	You- 6		1560	O	250 bbl/d	
	Syrian Petroleum Company	Safa-1			O	Non commercial	
		Al Khairat				O	1826 bbl/d
	Qara	Qara- 1	3133	G + C	560 bbl/d C + 400 thousand cubic meters G		
Iraq	Heritage Oil	Kurdistan region	Miran West- 2		G + C	3743 bbl/d C +0.62 scfpd G	6.8- 12.3 million scf
	General Exploration Partners Inc.	Kurdistan region	Atrash- 1		O	6393 bbl/d	
	WesternZagros Resources Ltd	Kurdistan region	Sarqala-1		O	9444 bbl/d	
Libya	Waha Oil Company	Sirte basin	S1- MN 98	5055		1300- 1850 bbl/d O + 12.6 million scfpd G	

Country	operating company	field/ concession	well	depth (m)	Type of discovery	Test results	Reserves
Egypt	RWE Dea	North El Amriya concession	NEA-3X	3055	G	14 million scfpd	
	Apache	Faghur basin	West Kalabsha-I- 4		O + G	7150 bbl/d O + 11.4 million scfp G	
			Faghur North- 1X		O + G	1455 bbl/d O + 3.9 milliom scfpd G	
			Faghur South- 1X		O + G	2768 bbl/d O + 4 million scfpd G	
			Humi- 1X		O	970 bbl/d	
			Neith North- 1X		O		
			Tayim South 1-X		O	8196 bbl/d	
			Abu Gharadig- 90		O + G	7614 bbl/d O + 1.5 million scfpd G	
	Badr El Din Petroleum	Neag east	Neag S1- 1		G + C	5000 bbl/d C+ 12 million scfpd G	
	Dana Gas	Abu El Naga	South Abu El Naga- 2		G + C	718 bbl/d C+ 20 million scfpd G	
	Belayim Petroleum Company	Belayin	East Belayin Onshore South-1	3012	O	2270 bbl/d	5.5 million bbl
	BP Egypt	North El Burg Offshore Concession	Salmon	1600	G		
Beach Energy Ltd.	Abu Sennan concession	GPZZ-4		O + G	Traces		
		Al Ahmadi- 1		O + G	Traces		
Oman	CC Energy	Block 4	Saiwan east- 1	1890			
Morocco	Circle Oil	Sebou permit	DRJ-6		G	5.36 million scfpd	
		Sebou permit	ADD-1		G	Guebbas 1.89 million scfpd Hoot 3.57 million scfpd	
			KSR-11		G		
Occupied Palestine	Delek Drilling LP	Tamar	Tamar- 3	5160	G		0.5- 1 trillion scf
Mauritania	Korea NOC	Block 7	Cormoran-1	4695	G	22- 24 1.35 million scfd	
Yemen	Oil Search Ltd.	Shabwah basin	Meashar-2		O	145 bbl/d	

Figure 2-4

Oil Discoveries in OAPEC Member Countries and Other Arab Countries, 2007- 2011

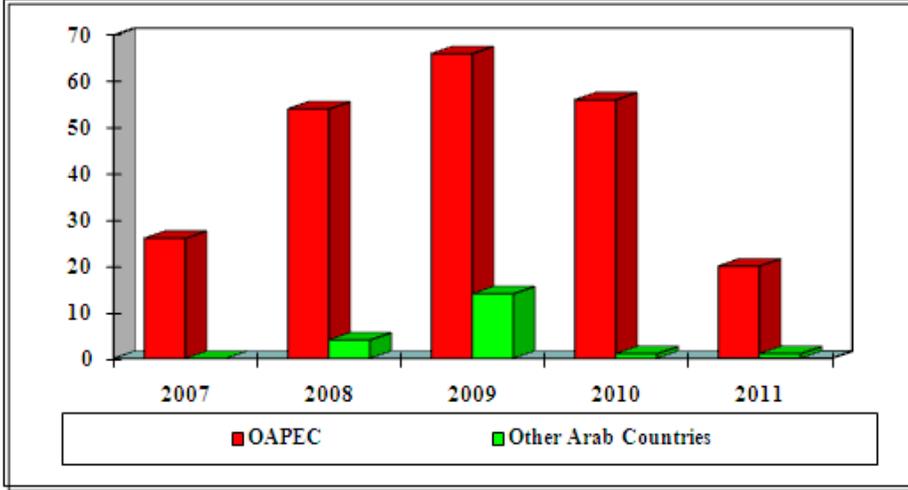
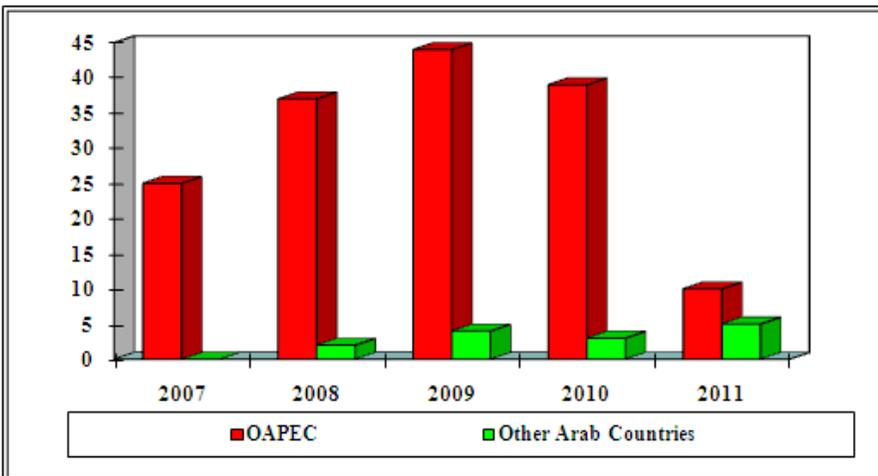


Figure 2-5

Gas Discoveries in OAPEC Member Countries and Other Arab Countries, 2007- 2011



## **2. Oil and Natural Gas Reserves:**

Estimates indicate a rise in oil reserves in 2011, nevertheless, such estimates declined in some countries.

### **2- 1 Oil Reserves:**

World oil reserves were estimated at 1237.8 billion bbl in 2011, with a slight increase (5%) from 2010 estimates of 1231.7 billion bbl. These figures exclude non-conventional sources such as tar sand and shale oil in Canada where BP estimates that tar sand reserves in Canada are more than 26.5 billion bbl. They also exclude the bitumen and very heavy oils in Venezuela estimated at about 197 billion bbl.

#### ***2-1-1 OAPEC Members and Other Arab Countries***

Estimates show that oil reserves in OAPEC member countries reached 698.9 billion bbl, with an increase of more than 28 billion bbl compared with 2010 estimates. The increase came mainly from Iraq. OAPEC amends its reserves estimations for the last two years in every annual report, especially for member countries, that's why no changes are shown in the relevant tables of 2010 and 2011. But reviewing 2009 figures clearly shows the evolution of reserves estimates. The same principle applies to most countries. Hence, Arab reserves estimates increased to reach 712.4 billion bbl in 2011, this figure includes Sudan previous estimates as no official estimates were published after the separation of South Sudan. However, some resources report that 75% of the reserves are located in South Sudan, this suggests that Sudan reserves are about 1.25 billion bbl, and it could be accepted that total Arab oil reserves are about 708.6 billion bbl.

In this context, Cooper Energy announced that following additional specialized processing on the Hammamet 3D seismic dataset, further examination of the petrophysical log data and a detailed review of the Hammamet West-2 production well tests, the base case Hammamet West oil field contingent resources estimate for the Abiod formation reservoir has grown from 57 to 101 million barrels of oil.

Gulf Keystone company has also published new estimations for gross oil in place in some Kurdistan region blocks, following independent evaluation by Dynamic Global Advisors, those included 150% (P90) - 45% (P10) increase in gross oil in place numbers for the Shaikan discovery with a range of 4.9 billion (P90) to 10.8 billion (P10) barrels. Gross oil in place numbers announced for Sheikh Adi following independent evaluation by Dynamic Global Advisors assessed at 1 billion (P90) to 3 billion (P10) barrels

Consulting engineers have estimated a midrange of 636 million bbl of recoverable oil in the Tawke field in the northern part of Iraqi Kurdistan. Field operator DNO International ASA said the estimate is more than double and yearend 2010 estimate of 306 million bbl and far exceeds company expectations when field was discovered in 2006. Recent performance has proven the field's exceptional reservoir quality, the company reported.

Tawke's original oil in place is estimated at 1.748 billion bbl, and the estimated recovery factor of 36.4% is based on the 2011 production profile and updated geological reservoir models. Tawke production averages 70 thousand bbl per day.

Meanwhile, DNO estimated midrange recoverable resources of 100 million bbl for Bastora field and 36 million bbl for Benenan field, the two fields are oil discoveries on the Erbil license. The resources are based on estimated combined OOIP of 950 million bbl and recovery factors of 18% for Bastora and 9% for Benenan. In a previous report DNO estimated that its three operated Kurdistan licenses have a gross potential of 3.05 billion bbl in place in known undrilled geological horizons.

Figure (2-6), shows the contribution rate of OAPEC members and other international groups in global oil reserves by 2011 end, while Figure (2-7) shows OAPEC members' proven reserves evolution between 2007 and 2011.

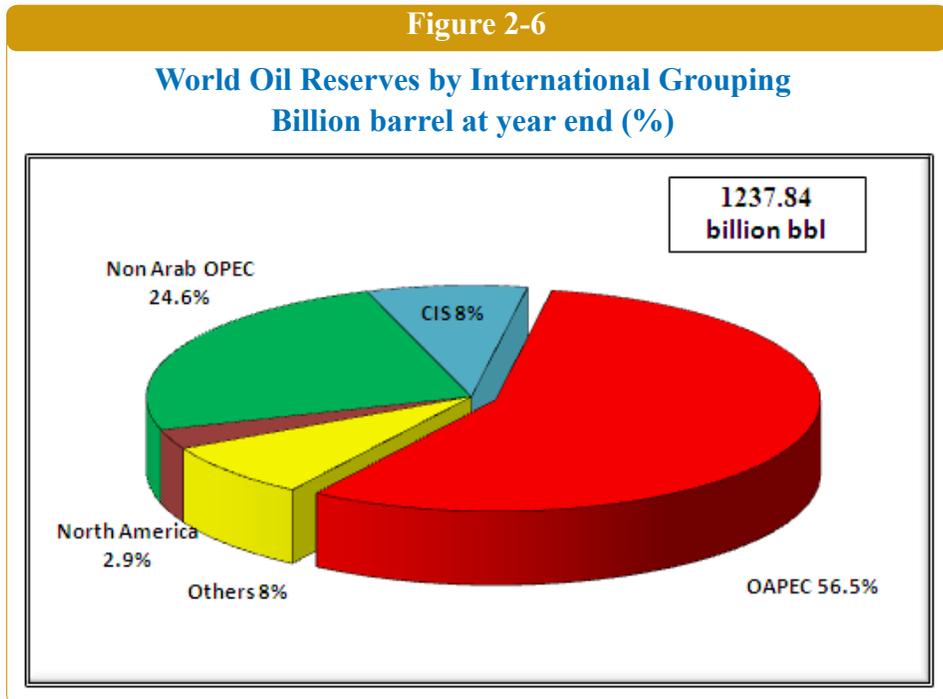
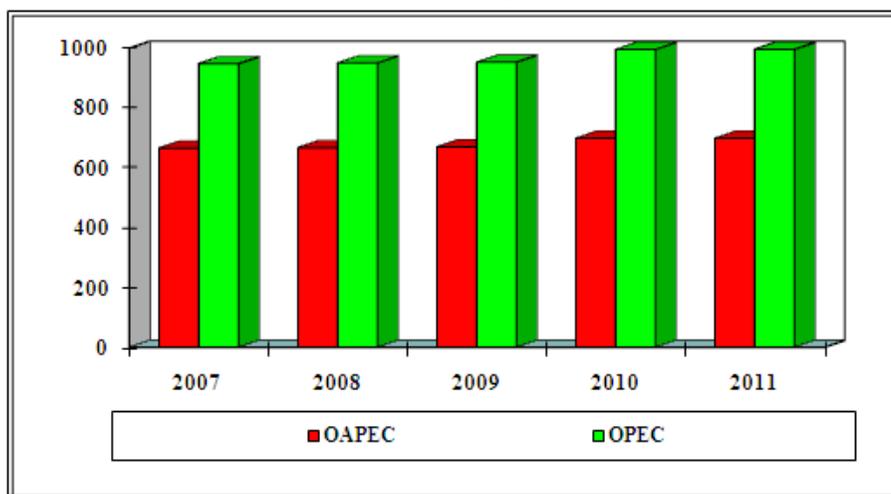


Figure 2-7

The Evolution of Oil Reserves in OAPEC and OPEC Member Countries,  
2007- 2011

(Billion barrel at year end)



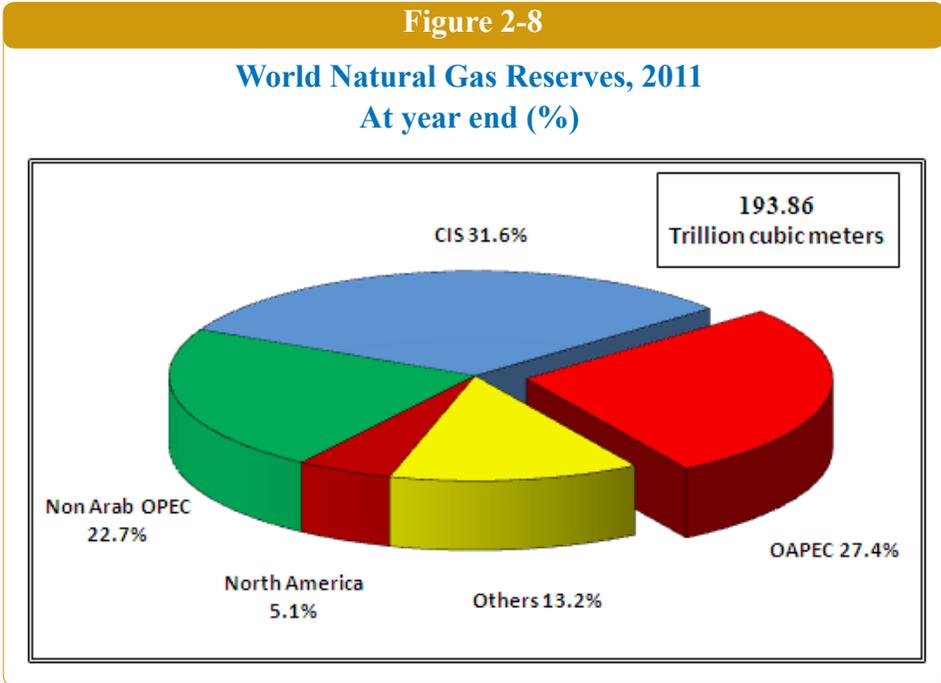
**2-1-2 International Groups and other States:**

Oil estimates rose in many countries like Iran, where reserves were estimated at more than 151 billion bbl in 2011. Ecuador reserves also were increased to 7.21 billion bbl. Hence, conventional proved oil reserves in OPEC members is estimated at more than 996 billion bbl.

On the other hand, new estimates have shown a decline in many countries like UK, Mexico, Canada and others. [Table \(2-4\)](#).

**2-2 Natural Gas Reserves:**

World natural gas reserves were estimated at 193.86 trillion cubic meters in 2011, representing a slight increase from 2010 estimations of 191.86 trillion cubic meters. [Figure \(2-8\)](#) and [Table \(2-5\)](#).



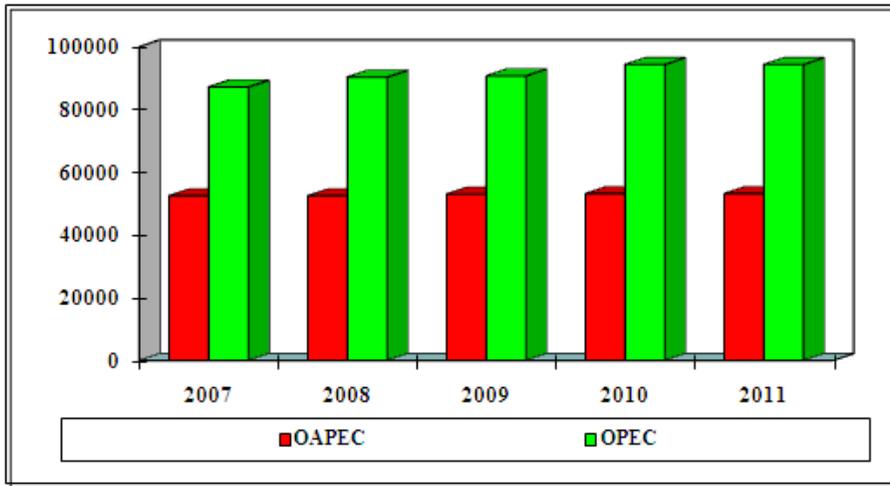
### ***2-2-1 OAPEC Members and other Arab Countries***

No worthwhile change has been observed in natural gas reserves in OAPEC members by 2011 compared with 2010, the figures stood at 53 trillion cubic meters. OAPEC members' natural gas reserves represented 27.4% of total world reserves in 2011, down from 27.7% in 2010, while the Arab countries together accounted for about 28.2% of world reserves at the end of 2011, comparing to 28.5% in 2010. Such figures don't reflect a real decrease in reserves; they rather are due to the corresponding increase of total world natural gas reserves.

Figure (2-9) shows mainly the real evolution of natural gas reserves at member countries and OPEC ones as well in the period 2007- 2011.

Figure 2-9

**The Evolution of Natural Gas Reserves in OAEPC  
and OPEC Member Countries, 2007-2011**  
(Billion cubic meter at year end)



**2-2-2 International Groups and other States:**

Natural gas estimates increased in many countries and particularly in the USA where gas estimates increased by 11.4% to reach 771.7 trillion cubic meters in 2011 compared with 692.8 trillion cubic meters in 2010. The increase could be attributed to the urge of USA to develop its shale gas resources. Brazil natural gas reserves were increased from 366 billion cubic meters in 2010 to 417 billion cubic meters in 2011. Mexico as well increased its natural gas reserves from 339 billion cubic meters in 2010 to 490 billion cubic meters in 2011.

On the other hand, natural gas estimates declined in UK, Norway and Canada by more than 61.8 billion cubic meters, namely 32 billion cubic meters in Norway, 26.6 billion cubic meters in Canada, and 3 billion cubic meters in the UK.

### 3. Hydrocarbon Liquids & Natural Gas Production

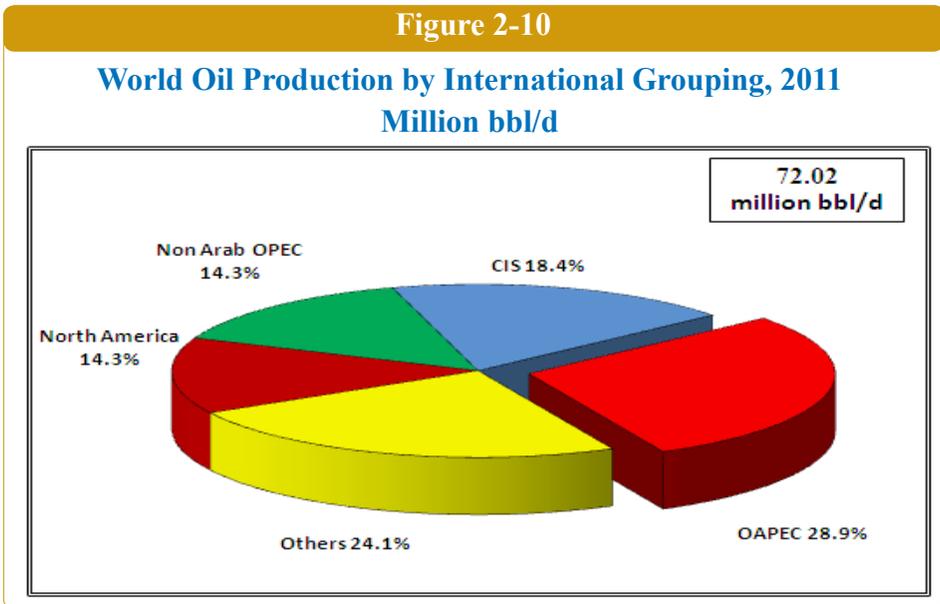
#### 3-1 Hydrocarbon Liquid Production

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 0.3% from 71.8 million bbl per day in 2010 to 72 million bbl per day in 2011. Natural gas liquids production was estimated at about 8 million bbl per day in 2011, bringing total estimated production of hydrocarbon liquids in 2011 to about 80 million bbl per day, a figure which is so close to 2010 estimations of 79.99 million bbl per day.

Figure (2-10) and Table (2-6).



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

The available data indicate that oil production in member countries increased somewhat from 19.77 million bbl per day in 2010, to 20.8 million bbl per day in 2011. In the UAE, oil production increased from 2.3 million bbl per day in 2010 to 2.5 million bbl per day in 2011. Bahrain oil flow increased from 181.1 thousand bbl/ d in 2010 to 187.7 thousand bbl/ d in 2011, thanks to the successful development operations applied to Bahrain oil field (operated by Tatweer Petroleum) which average output reach 45 thousand bbl/ d in 3Q 2011 compared with 30 thousand bb/ d in 2009. The company aspires to produce 50 thousand bbl/ d in early 2012, while the rate could reach 70 thousand bbl/ d within three to four years. The field is planned to produce 100 thousand bbl/ d in 2017. Gas rate production from the field reached 1.7 billion cubic feet a day, with plans to increase it to 2 billion cubic feet per day within two to three years.

Algeria's oil production increased from about 1.19 million bbl/ day in 2010 to some 1.26 million bbl/ day in 2011. Estimates show that Saudi Arabia increased oil production from 8.16 million bbl/ day in 2010 to 9.24 million bbl/ day in 2011. Oil production rates increased in Iraq, Qatar, Kuwait and Egypt.

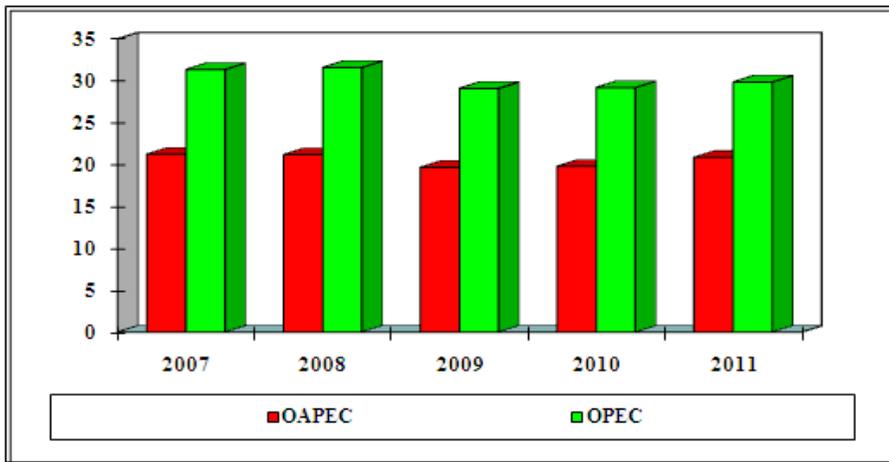
On the other hand, oil production declined in Tunisia from 78.8 thousand bbl/ day in 2010 to 70 thousand bbl/ day in 2011, this was due to crisis witnessed in the country. Syria's oil production dropped from 387 thousand bbl/ day in 2010 to 330 thousand bbl/ day in 2011 as a consequence of the economic sanctions that banned the Syrian oil exports. The most notable decrease was witnessed in Libya which average oil production was estimated at 408 thousand bbl/ day in

2011 as a result of unrest, this represented a 72.6% decline from 2011 rates of 1.49 million bbl/ day.

In non OPEC countries, Sudan recorded a decline from 480 thousand bbl/ day in 2010 to 470 thousand bbl/ day in 2011. The production declined in Yemen from 275 thousand bbl/ day in 2010 to some 190 thousand bbl/ day in 2011. While the output of Oman increased by 4.6% to touch on 790 thousand bbl/ day in 2011 compared with 755 thousand bbl/ day in 2010. **Figures (2-10), (2-11)** and **Table (2-6)**.

**Figure 2-11**

**Oil Production Rates in OAPEC  
and OPEC Member Countries, 2007- 2011  
(Million bbl/ day)**



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

Estimates show that natural gas liquids production slumped by 9.9% from 8.9 million bbl/ day in 2009, to 8.1 million bbl/ day in 2010. OPEC figures illustrate that Saudi Arabia NGL production declined from 1.4 million bbl/ day in 2009, to 882 thousand bbl/ day in 2010. OPEC figures also show that UAE LNG production dropped from 250 thousand bbl/ day in 2009 to 214 thousand bbl/day in 2010. In Algeria, NGL production, on the other hand, increased by 9.4% recording 1.28 million bbl/ day in 2010. Generally speaking, natural gas liquids production declined in member countries by 13% between 2009 and 2010.

In 1Q 2011, Saudi Aramco has finalized its bid selection for the four Lump Sum Turn Key contracts of the Shaybah natural gas liquids program in the utmost south east of Rub' al-Khali. Aramco selected Samsung Engineering Co. Ltd. to perform the engineering, procurement and construction (EPC) work for all the four packages. The scope of this major award includes the construction of the inlet facilities, NGL recovery trains, dehydration, residue gas compression, acid gas compression, NGL storage and shipping, the upgrade of the gas handling capacity for the four existing Shaybah gas oil separation plants and other associated facilities. The program also includes a major upgrade to increase the power generation capacity to more than 1 Giga Watt by installing four cogeneration units, seven single cycle units, a 50-kilometer 230 kilo volt transmission line, and the associated electrical and non-electrical utilities. In line with Saudi Aramco's corporate objectives to meet its commitment for the supply of gas to the local market, the

company is building a grassroots natural gas liquid recovery plant at the Shaybah Field in Rub' al-Khali. These facilities will extract valuable NGL components from 2,400 million standard cubic feet per day of Shaybah associated gas arriving from different existing gas oil separation plants.

In other Arab countries, available data show that average natural gas liquids production increased in Oman by 5% from 100 thousand standard cubic feet per day in 2009, to 105 thousand standard cubic feet per day in 2010. [Table \(2-7\)](#).

### **3-2 Marketed Natural Gas**

The quantities of natural gas marketed worldwide increased by 7.5 % in 2010, from 2987 billion cubic meters in 2009, to 3210 billion cubic meters in 2010. [Figure \(2-12\)](#) and [Table \(2-8\)](#).

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

Marketed natural gas of OAPEC members rose from 410.9 billion cubic meters in 2009 up to 435.2 billion cubic meters in 2010 indicating rises in all member countries except for Egypt, marketed natural gas in Egypt declined from 62.1 billion cubic meters in 2009 to 61.3 billion cubic meters in 2010.

OAPEC total share of world marketed natural gas declined from 13.8% in 2009 to 13.6% in 2010, this can be attributed to the notable increase in world marketed natural gas.

As for non-OAPEC Arab countries, marketed natural gas increased in Oman by 5.2% from 24.49 billion cubic meters in 2009, to about 25.77 billion cubic meters in 2010. Arab countries collective share of

world marketed natural gas dropped from 14.6% in 2009 to 14.4% in 2010. **Figures (2-12), (2-13) and Table (2-8)**. It is notable that Egypt has ambitious plans to improve gas production, comes with this line the governmental instructions to the Petojet Company to accelerate the 7th phase of compressors plant in BG concessions in deep water off western delta. The current and future projects' investments of BG and its partner the Malaysian, Petronas, are about \$2.5 billion for developing the company's projects at its concession areas, including the construction of 36-in pipeline from offshore fields to a gathering station near the compressors plant, this would contribute to stabilize the production at the agreed rates and improve the productivities of the old wells. \$500 million were earmarked as investments for this phase. The 8<sup>th</sup> phase is divided into two parts, part (A) includes the drilling nine wells and tie them to the existing marine facilities of the company's field. Eight wells were already finished, while work on the last well was still ongoing by late 2011. Investments for this part were \$1 billion. Part (B) which includes drilling seven new wells was started in August 2011, with plans to rise gas production by 500 million standard cubic feet at a cost of \$1 billion. The company's gas field's total production represents 35% of Egypt's total natural gas production. In addition, the company plans to implement new phases of development in west delta deep marine concession areas along with drilling 2 exploratory wells in its concession areas, according to the new agreements in Manzala marine area, with investments of \$50 million in 2011, together with drilling another exploratory well in El-Burg offshore area before the end of 2011, with investments of \$200 million. **Figure (2-12), (2-13) and Table (2-8)**.

Figure 2-12

**Marketed Natural Gas by International Grouping, 2010  
(%)**

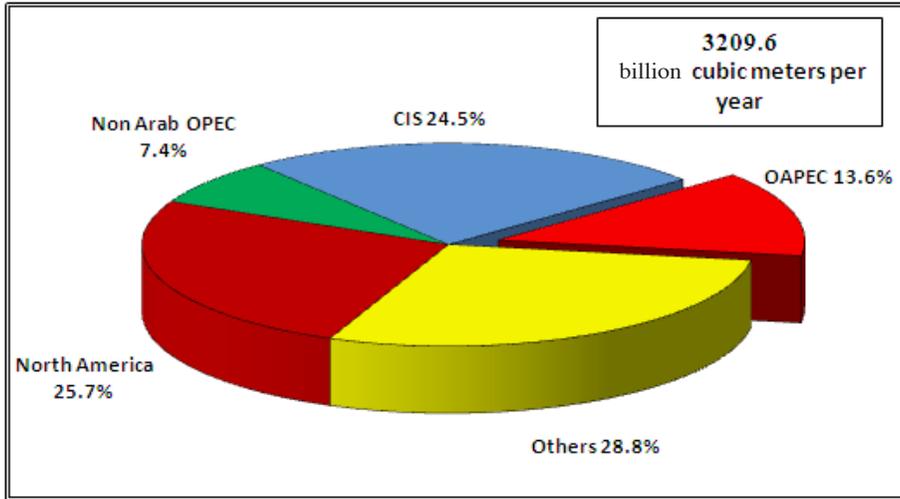
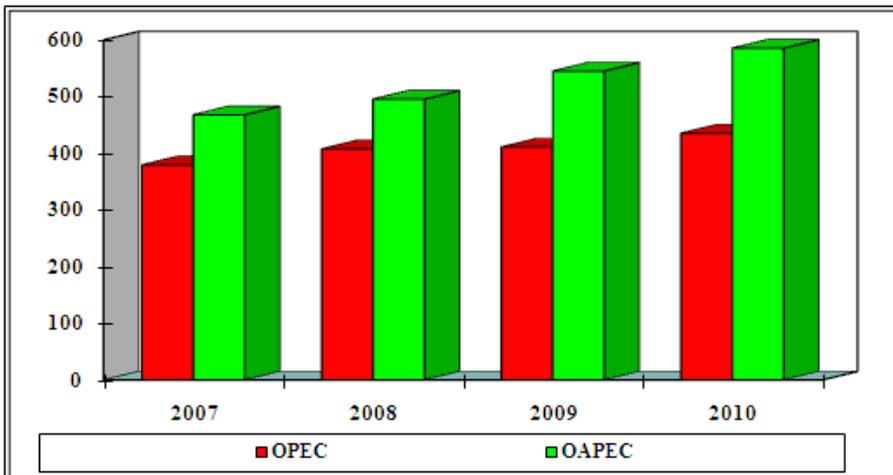


Figure 2-13

**Marketed Natural Gas in OAPEC  
and OPEC Member Countries, 2007-2010  
(Billion cubic meter/year)**



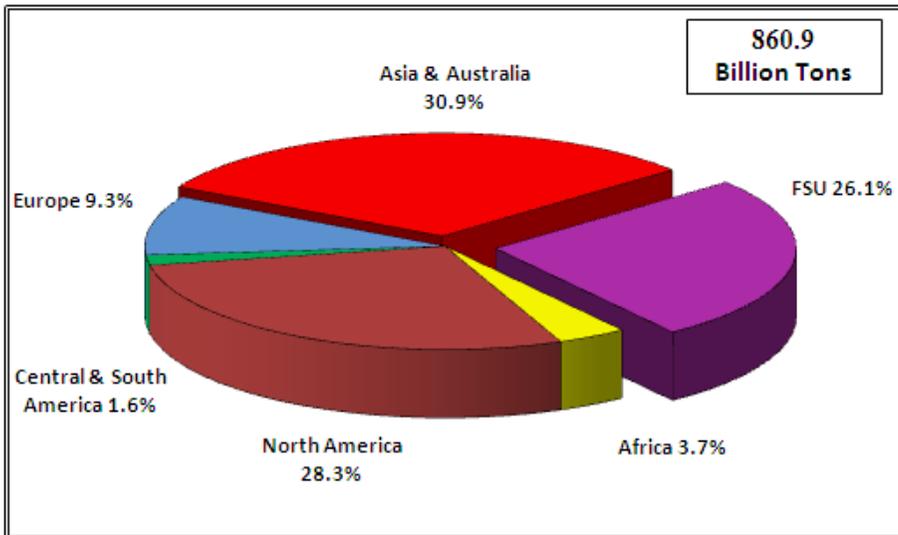
## II. COAL

Proved world reserves of coal increased from 826 billion tons in 2009 to 860.9 billion tons in 2010, as shown in [Table \(2-9\)](#).

The world's largest coal reserves are concentrated in North America, which accounted for about 28.3% of world reserves at the end of 2010, with the USA alone accounting for 28.8%, followed by FSU countries with 26.1%, China with 13.3%, Australia with 8.9%, and India with 7. %. See [Figure \(2-14\)](#).

Figure 2-14

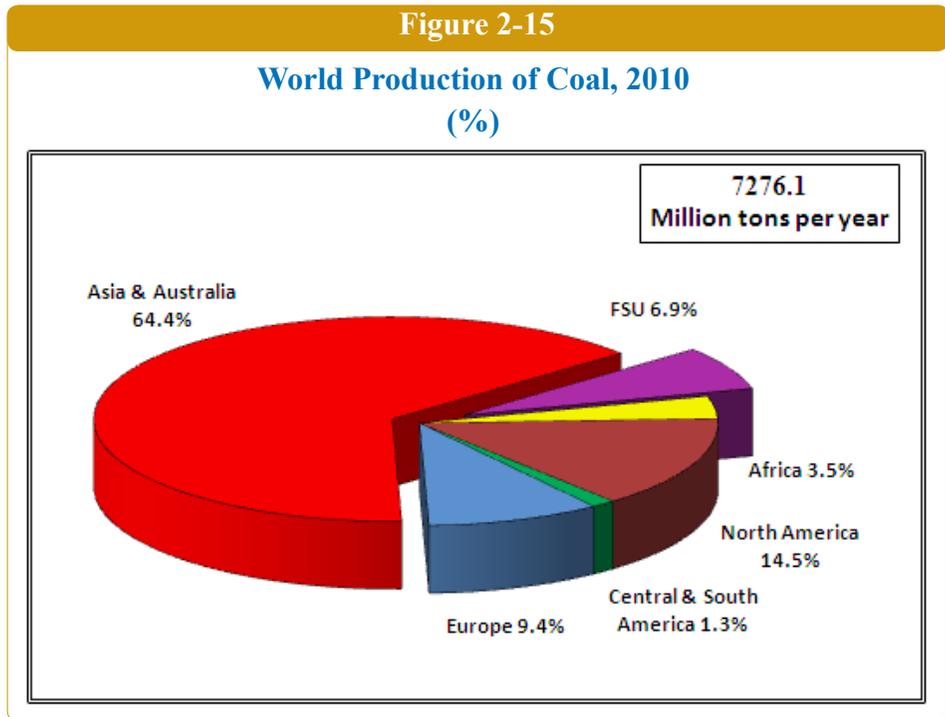
### World Coal Reserves, End 2010 (Billion tons)



World production of coal rose from about 6880 million tons in 2009 to 7276 million tons in 2010. China produced about 44.5% of the world total production, followed by USA with 13.5% of the world

total, then India with 7.8%, next in line came the Russian Federation. See [Table \(2-10\)](#) and [Figure \(2-15\)](#).

In terms of consumption, China came first with about 48.2% of world total consumption in 2010, followed by USA with 14.8% then India with 7.8%.



### III. NUCLEAR ENERGY

At the end of 2010, the number of nuclear power reactors in operation worldwide reached 443 reactors, with a total design capacity of 366,610 MW, and a total of 66 reactors were under construction with a total capacity of 629,41 MW. [Table \(2-11\)](#).

## IV. RENEWABLE ENERGY SOURCES

### 1. Hydropower

#### *1-1 Hydropower in the World*

China came first among the countries that utilize hydropower resources, its total installed hydropower capacity amounted to 200 GW at the end of 2009, followed by the USA who ranked second with a total installed hydropower capacity of 100.67 GW in 2009 compared with 99.7 GW in 2008. Canada came in third place with a total installed hydropower capacity of 75 GW in 2009 compared with 74.4 GW in 2008. In Japan, total installed hydropower capacity declined to 47.2 GW in 2009 compared with 47.3 GW in 2008. Total installed hydropower capacity in France reached 25.3 GW in 2009.

Total installed hydropower capacity in Mexico increased by about 0.5% from 11.47 GW in 2008 to 11.5 GW in 2009.

In Turkey, total installed hydropower capacity increased from 13.8 GW in 2008, to 14.5 GW in 2009, with annual growth rates of 5.24%. Total installed hydropower capacity in the UK rose from 4.37 GW in 2008 to 4.38 GW in 2009, while the annual growth rate declined in Australia and Czech Republic by 0.06% and 0.36% respectively, **Table (2-12)** shows the total installed hydropower capacity in some countries.

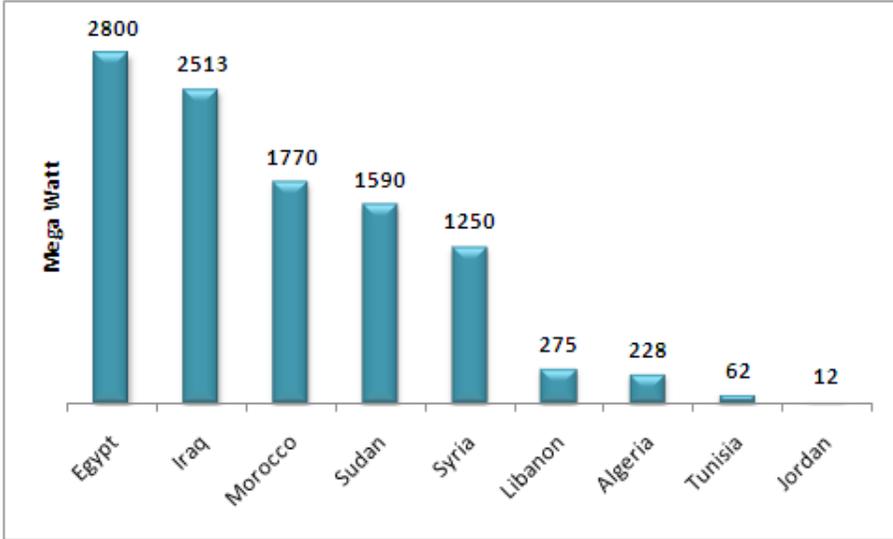
#### *1-2 Hydropower in the Arab Countries*

Several Arab countries with which have sources, use hydropower for electricity generation, especially Egypt, Syria, Iraq, Sudan, Morocco, and others. Figure C illustrates the installed hydropower

capacity in some of those countries according to the nineteenth edition of statistical report of the Arab Union of Electricity, 2010.

Figure C

### Installed hydropower capacity in some Arab Countries in 2009



## 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 24.6% in 2010 amounting to about 200 GW at the end of 2010, as shown in Figure D. Statistics indicate that the annual growth rate of world total installed wind power capacity touched on 27%, which means that the rate was doubled every three years. About 340 terawatt-hours were generated using wind energy in 2010, this accounted to about 1.6% of world total generated electricity from

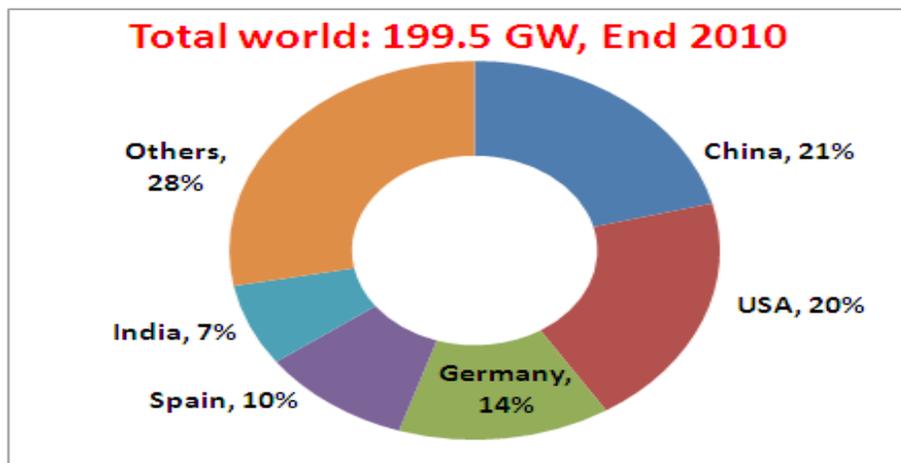


different resources<sup>1</sup>. China exceeded USA in 2010 where it added 16.5 GW to its installed wind power capacity; USA added 5.1 GW in 2010 to its total installed wind power capacity which represented about half of that installed in 2009 that reached 9.9 GW. It seems that the economic crisis experienced by the United States has been an impact on the efficiency of the implementation of some projects in this field in 2010.

EU countries led by Germany and Spain remained the largest regional market for wind energy where total installed wind power capacity amounted to 87.7 GW representing 44% of the world total. Asia and Pacific - led by China and India- have recorded the highest rate of total installed wind power capacity in the last five years, their share reached 32% of world total installed wind energy, this represented double the share recorded in 2006. See [Table \(2-13\)](#).

Figure D

Shares of some countries of the total installed wind power capacity in 2010



<sup>1</sup> BP, Statistical review of world energy, 2011.

## 2-2 Wind Energy in the Arab Countries

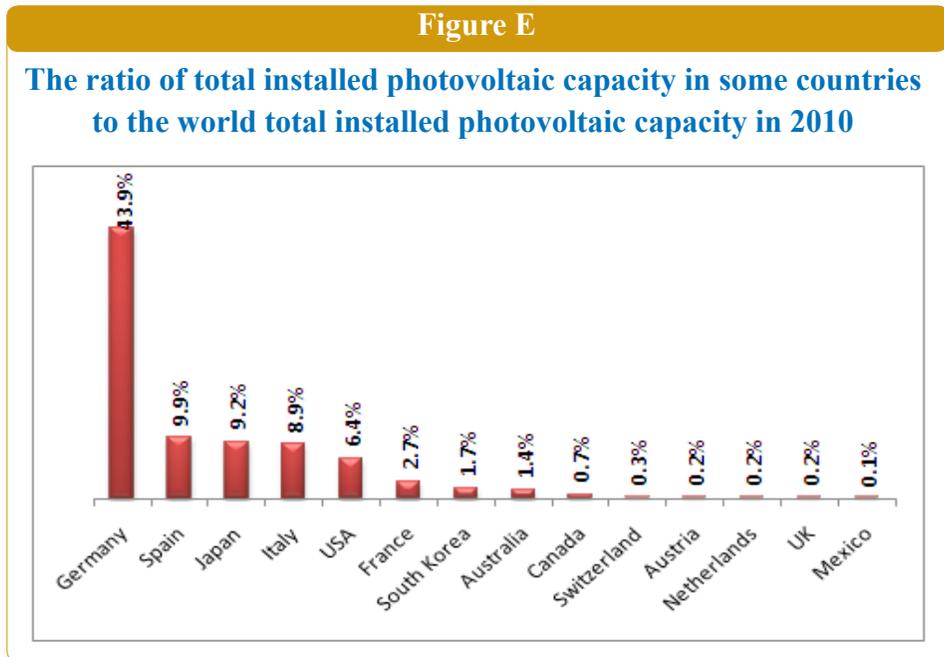
Total installed wind power capacity in Egypt reached 550 MW in 2010 with an increase of 120 MW compared with 2009. Tunisia added 60 MW in 2010; its total installed wind power capacity amounted to 114 MW. Total installed wind power capacity in Morocco increased from 253 MW in 2009 to 286 MW in 2010.

## 3. Solar Energy

### A- Solar Energy in the World

According to IEA statistics, the installed photovoltaic capacity worldwide in 2010 stood at about 395,29 MW **Table (2-14)**.

Figure E shows the rank of some countries according to the percentage of total cumulative installed photovoltaic capacity in 2009.



## *B- Solar Energy in the Arab Countries*

Solar energy is available in the Arab countries at more rates than other countries of the world, project in this field are in their early stages. One example is a solar energy program launched by Saudi Aramco in 2010 to constructing small-scale solar power pilot facilities in cooperation with Solar Frontier, a subsidiary of Showa Shell Sekiyu K.K. Once built, these stations will generate between one and two megawatts of electricity.

Another plan was to power the new North Park tower at Aramco's headquarters in Dhahran entirely from the sun. The adjoining car park will be covered with solar modules, at about 160 thousand square meters. Official website of Saudi Aramco reported that Saudi Arabia completed the first project of its kind in the kingdom at the end of 2011, a project to power Farasan Island located in Jizan to the south west of the kingdom with solar energy. The project is a part of Aramco's efforts to introduce clean energy and save the transportation cost of about 28 thousand barrels of diesel to this Red Sea Island<sup>1</sup>.

In United Arab Emirates, the supreme energy council announced the launching of Mohammed bin Rashid Energy Solar Park Project, which will span a 48 square kilometer plot of land at Seih Al Dahal. The solar park is a part of the supreme energy council strategy to produce 1% of the state's energy requirements from solar energy by 2020, and 5% of the requirements by 2030. The project will begin in 2013 with an initial capacity of 10 MW of electricity generated by photovoltaic cells. Capacity of private and public sectors generation has reached 4.5 MW at the beginning of 2012. The supreme energy

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<sup>1</sup> Saudi Aramco, official website, Solar program with Solar Frontier.

council is also considering the installation of solar panels on the buildings roofs and link them to the public network in a following stage<sup>1</sup>.

In Algeria, the first hybrid solar –gas power plant was inaugurated in Hassi R'Mel to the south of the capital at a cost of €350 million, the plant is planned to generate more than 25 MW of electricity from solar energy<sup>2</sup>.

#### **4. Geothermal Energy**

##### ***A- Geothermal Energy in the World***

The installed geothermal capacity in the world amounted to 10906.2 MW in 2010, at an annual growth rate of 1.8%. See **Table (2-15)**. Figure F shows the shares of installed geothermal capacity in some countries in 2010.

##### ***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.

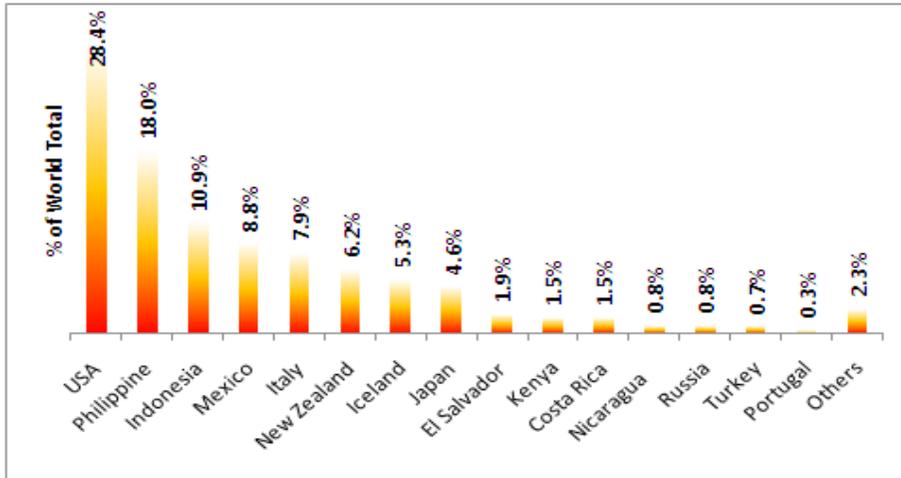
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1 Emirate Alyoum newspaper, 10/1/2012.

2 Kuwait News Agency, 14/7/2011.

Figure F

Ratio of installed geothermal capacity in some countries to the world total installed geothermal capacity in 2010



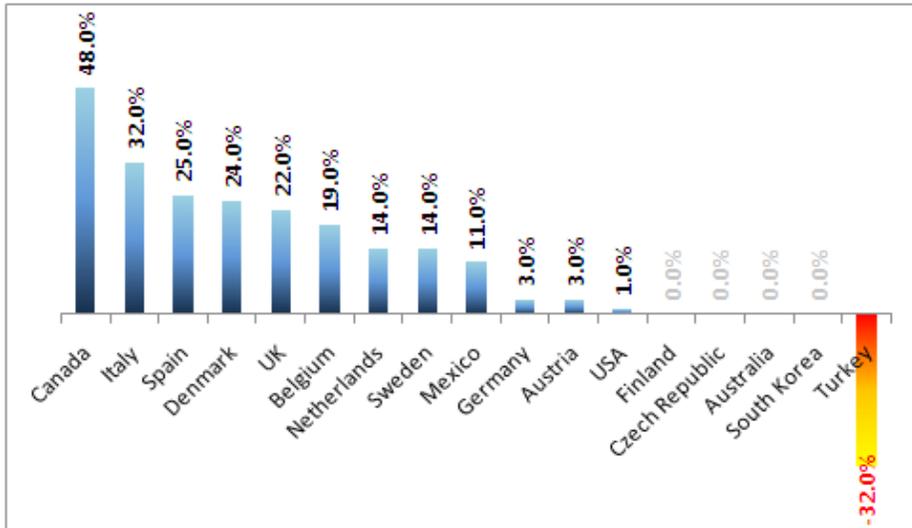
## 5. Solid Biomass Energy

### A- Solid Biomass Energy in the World

The United States ranked first in terms of installed solid biomass capacity, with about 7264 MW in 2009. As for growth rate of total installed biomass capacity between 2008 and 2009, Canada came first with a growth rate of 47.8%, followed by Italy with a growth rate of 3.55%. 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 2008 and 2009, namely Czech, Australia and South Korea, while the installed capacity decreased in Turkey, and increased in the rest member countries. [Table \(2-16\)](#) shows the total installed biomass energy in some countries in 2008 and 2009.

Figure G

## Shares of total installed biomass energy in 2008 and 2009

***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**

In 2010, 554 GW- hours of electricity were generated from tidal, waves and ocean energy<sup>1</sup>. France was ranked first as it generated 521 GW- hours from tidal energy, comparing with 491 GW- hours generated in 2009. Canada followed by 33 GW- hours.

<sup>1</sup> IEA Statistics, Renewables Information, 2011.



According to the IEA statistics the total installed ocean and tidal power Energy in its member countries in 2009 remained unchanged from previous years at about 261 MW. 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,**  
**2007-2011**  
**(Crew /Month)**

	2007	2008	2009	2010	2011
Canada	17	17	10	9	14
USA	71	72	63	63	67
Latin America	29	32	35	40	37
Europe	23	34	32	30	35
CIS	42	48	45	47	47
Middle East	18	29	34	33	68
Africa	56	63	72	71	60
Far East	42	61	70	68	68
<b>World total</b>	<b>298</b>	<b>356</b>	<b>361</b>	<b>361</b>	<b>396</b>

Sources:

- OAPEC Data Bank.
- World Oil, Several issue, Jan. - Dec. 2011.

**Table 2-2**  
**Average Number of Active Rigs Worldwide,**  
**2007-2011**  
**(Rig)**

	2007	2008	2009	2010	2011
Canada	346	379	206	346	423
USA	1769	1878	1075	1525	1875
Latin America	354	384	356	383	424
Europe	78	98	84	94	118
Middle East	265	280	252	265	292
Africa	66	65	62	83	78
Asia/Pacific	241	252	243	268	256
<b>World total</b>	<b>3119</b>	<b>3336</b>	<b>2278</b>	<b>2964</b>	<b>3466</b>

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Sources:

- OAPEC Data Bank.
- Baker Hughes, Jan. 2011.



**Table 2-3**  
**Petroleum Discoveries in OAPEC Members and**  
**Other Arab Countries,**  
**2007-2011**

	2007		2008		2009		2010		2011*	
	Oil	Gas								
Algeria	5	15	2	9	4	12	3	10	-	2
Bahrain	-	-	-	-	-	-	-	-	-	-
**Egypt	9	7	37	24	40	24	41	22	8	4
Iraq	-	-	-	-	3	1	1	1	2	1
Kuwait	1	-	-	-	1	-	-	-	2	1
Libya	5	2	8	-	6	-	6	1	1	-
Qatar	-	-	-	-	-	-	-	-	-	-
Saudi Arabia	2	-	-	-	5	5	-	1	-	-
Syria	1	1	2	-	5	1	2	-	3	1
Tunisia	3	-	2	2	1	-	1	4	4	1
UAE	-	-	-	-	1	-	1	-	-	-
<b>Total OAPEC</b>	<b>26</b>	<b>25</b>	<b>51</b>	<b>35</b>	<b>66</b>	<b>43</b>	<b>55</b>	<b>39</b>	<b>20</b>	<b>10</b>
Oman	-	-	3	1	5	-	1	2	1	-
Sudan	-	-	-	-	-	-	-	-	-	-
Morocco	-	-	-	1	-	3	-	1	-	3
Yemen	-	-	1	-	9	1	-	-	-	2
<b>Total Arab countries</b>	<b>26</b>	<b>25</b>	<b>55</b>	<b>37</b>	<b>80</b>	<b>47</b>	<b>56</b>	<b>42</b>	<b>21</b>	<b>15</b>

\* Preliminary estimates.

\*\* Official sources.

Sources:

- OAPEC Data Bank.

- Energy Resources Monitor, OAPEC, Several issues, 2011.

**Table 2-4**  
**Arab and World Oil Reserves,**  
**2007-2011**  
**(Billion barrels at year end)**

	2007	2008	2009	2010	2011*	(%) Change 2011/2010
Algeria	12.20	12.20	12.20	12.20	12.20	0.0
Bahrain	0.13	0.12	0.12	0.12	0.12	0.0
Egypt**	3.86	4.19	4.41	4.47	4.47	0.0
Iraq	115.00	115.00	115.00	143.10	143.10	0.0
Kuwait	101.50	101.50	101.50	101.50	101.50	0.0
Libya	43.66	44.27	46.42	47.10	47.10	(0.0)
Qatar	25.09	25.41	25.38	25.38	25.38	0.0
Saudi Arabia	264.21	264.06	264.59	264.59	264.52	(0.0)
Syria	2.25	2.25	2.25	2.25	2.25	0.0
Tunisia	0.37	0.43	0.43	0.43	0.43	0.0
UAE	97.80	97.80	97.80	97.80	97.80	0.0
<b>Total OAPEC</b>	<b>666.07</b>	<b>667.23</b>	<b>670.10</b>	<b>698.94</b>	<b>698.87</b>	<b>(0.01)</b>
Oman	5.70	5.50	5.50	5.50	5.50	0.0
Sudan	5.00	5.00	5.00	5.00	5.00	0.0
Yemen	3.00	3.00	3.00	3.00	3.00	0.0
<b>Total Arab countries</b>	<b>679.77</b>	<b>680.73</b>	<b>683.60</b>	<b>712.44</b>	<b>712.37</b>	<b>(0.0)</b>
Angola	9.50	9.50	9.50	9.50	9.50	0.0
Ecuador	6.37	6.51	6.51	6.51	7.21	10.7
Iran	136.15	137.62	137.62	151.17	151.17	0.0
Nigeria	37.20	37.20	37.20	37.20	37.20	0.0
Venezuela	99.38	99.40	99.40	99.40	99.40	0.0
<b>Total non-Arab OPEC</b>	<b>288.60</b>	<b>290.23</b>	<b>290.23</b>	<b>303.78</b>	<b>304.48</b>	<b>0.2</b>
<b>Total OPEC</b>	<b>948.06</b>	<b>950.47</b>	<b>953.12</b>	<b>995.45</b>	<b>996.07</b>	<b>0.1</b>

/.Cont



Table 2-4 Cont.

	2007	2008	2009	2010	2011	(%) Change 2011/2010
Brazil	12.18	12.62	12.80	12.86	13.99	8.8
Canada	5.39	4.94	6.10	6.10	5.60	(8.2)
China	16.30	16.30	20.35	20.35	20.35	0.0
CIS	100.68	98.80	98.90	98.90	98.90	0.0
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	60.00	0.0
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	11.65	10.50	10.40	10.40	10.16	(2.3)
Norway	6.87	6.68	6.68	5.67	5.32	(6.2)
UK	3.60	3.41	3.08	2.86	2.83	(1.0)
USA	20.97	21.32	19.12	19.12	20.68	8.2
Rest of the world	24.83	23.55	33.83	39.19	43.17	10.2
<b>World total</b>	<b>1170.84</b>	<b>1169.08</b>	<b>1185.09</b>	<b>1231.67</b>	<b>1237.85</b>	<b>0.5</b>
<b>(%) OAPEC/ world</b>	<b>56.9</b>	<b>57.1</b>	<b>56.5</b>	<b>56.7</b>	<b>56.5</b>	
<b>(%) Arab countries/ world</b>	<b>58.1</b>	<b>58.2</b>	<b>57.7</b>	<b>57.8</b>	<b>57.5</b>	
<b>(%) OPEC/ world</b>	<b>81.0</b>	<b>81.3</b>	<b>80.4</b>	<b>80.8</b>	<b>80.5</b>	

\* Preliminary estimates.

\*\* Official sources.

Notes: Parentheses denote negative figures.

- Total world reserves excluding :

A - Bitumen and extra heavy oil in Venezuela (197 billion barrels).

B - Unconventional reserves of Canada such as the oil sands estimated by BP at about (26.5 billion barrels).

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

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

Sources:

- OAPEC Data Bank.

- BP Statistical Review of World Energy, June 2011.

- Oil & Gas Journal, 1 Jan. 2011.

- OPEC Annual Statistical Bulletin, 2011.

**Table 2-5**  
**Arab and World Natural Gas Reserves, 2007-2011**  
**(Billion cubic meters at year end)**

	2007	2008	2009	2010	2011*	(%) Change 2011/2010
Algeria	4504	4504	4504	4504	4504	0.0
Bahrain	92	92	92	92	92	0.0
Egypt**	2024	2152	2186	2466	2466	0.0
Iraq	3170	3170	3170	3158	3158	0.0
Kuwait	1784	1784	1784	1784	1784	0.0
Libya	1540	1540	1549	1495	1495	0.0
Qatar	25636	25466	25366	25201	25201	0.0
Saudi Arabia	7305	7570	7920	8016	8016	0.0
Syria	290	285	285	285	285	0.0
Tunisia	55	65	65	65	65	0.0
UAE	6072	6091	6091	6091	6091	0.0
<b>Total OAPEC</b>	<b>52472</b>	<b>52719</b>	<b>53012</b>	<b>53157</b>	<b>53157</b>	<b>0.0</b>
Oman	950	950	950	950	950	0.0
Sudan	85	85	85	85	85	0.0
Yemen	555	479	479	479	479	0.0
<b>Total Arab countries</b>	<b>54062</b>	<b>54233</b>	<b>54526</b>	<b>54671</b>	<b>54671</b>	<b>0.0</b>
Angola	270	272	310	310	310	0.0
Ecuador	9	8	8	8	8	0.0
Iran	26850	29610	29610	33090	33090	0.0
Nigeria	5292	5292	5292	5110	5110	0.0
Venezuela	4708	4983	5065	5525	5525	0.0
<b>Total non-Arab OPEC</b>	<b>37129</b>	<b>40165</b>	<b>40285</b>	<b>44043</b>	<b>44043</b>	<b>0.0</b>
<b>Total OPEC</b>	<b>87140</b>	<b>90290</b>	<b>90669</b>	<b>94292</b>	<b>94292</b>	<b>0.0</b>

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**Table 2-5 Cont.**

	2007	2008	2009	2010	2011*	(%) Change 2011/2010
Brazil	348	365	364	366	417	13.9
Canada	1648	1640	1754	1754	1727	(1.5)
China	2272	2265	3036	3036	3036	0.0
CIS	57052	56458	61301	61301	61301	0.0
Of which: Azerbaijan	849	850	850	850	850	0.0
Kazakhstan	2832	2407	2407	2407	2407	0.0
Russian Federation	47572	47573	47573	47573	47573	0.0
Turkmenistan	2832	2662	7504	7504	7504	0.0
Uzbekistan	1841	1841	1841	1841	1841	0.0
Mexico	392	373	360	339	490	44.6
Norway	2241	2313	2313	2039	2007	(1.6)
UK	412	343	292	256	253	(1.2)
USA	5977	6732	6928	6928	7717	11.4
Rest of the world	11406	11475	17095	17160	18200	6.1
<b>World total</b>	<b>172939</b>	<b>176362</b>	<b>188254</b>	<b>191893</b>	<b>193862</b>	<b>1.0</b>
<b>(%) OAPEC/world</b>	<b>30.3</b>	<b>29.9</b>	<b>28.2</b>	<b>27.7</b>	<b>27.4</b>	
<b>(%) Arab countries/world</b>	<b>31.3</b>	<b>30.8</b>	<b>29.0</b>	<b>28.5</b>	<b>28.2</b>	
<b>(%) OPEC/world</b>	<b>50.4</b>	<b>51.2</b>	<b>48.2</b>	<b>49.1</b>	<b>48.6</b>	

\* Preliminary estimates.

\*\* Official sources.

Notes:

- Parentheses denote negative figures.

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

Sources:

- OAPEC Data Bank.

- Oil & Gas Journal, 1 Jan. 2011.

- OPEC Annual Statistical Bulletin, 2010/2011.

**Table 2-6**  
**Arab and World Hydrocarbon Liquids Production, 2007-2011**  
**(Thousand b/d)**  
**First : Crude Oil Production**

	2007	2008	2009	2010	2011*	(%) Change 2011/2010
Algeria	1398.0	1356.0	1216.0	1189.8	1257.0	5.6
Bahrain**	184.3	182.2	182.4	181.1	187.7	3.6
Egypt**	562.0	528.2	564.3	554.3	695.0	25.4
Iraq	2035.2	2280.5	2336.2	2538.1	2668.0	13.1
Kuwait**	2574.5	2676.0	2261.6	2312.1	2659.0	15.0
Libya	1673.9	1721.5	1473.9	1486.6	408.0	(72.6)
Qatar	845.7	842.8	733.0	733.4	810.0	10.4
Saudi Arabia	8978.6	8532.0	8184.0	8165.6	9241.0	13.0
Syria	370.0	390.0	375.1	387.0	330.0	(14.7)
Tunisia	70.0	85.0	82.0	78.8	70.0	(11.2)
UAE	2529.0	2572.2	2241.6	2323.8	2517.0	8.3
<b>Total OAPEC</b>	<b>21221.2</b>	<b>21166.4</b>	<b>19650.1</b>	<b>19770.6</b>	<b>20842.7</b>	<b>5.4</b>
Oman	651.0	672.0	712.0	755.0	790.0	4.6
Sudan	483.1	457.0	475.2	480.0	470.0	(2.1)
Yemen	319.6	293.5	284.1	275.0	190.0	(30.9)
<b>Total Arab countries</b>	<b>22674.9</b>	<b>22588.9</b>	<b>21121.4</b>	<b>21280.6</b>	<b>22292.7</b>	<b>4.8</b>
Angola	1626.0	1896.3	1896.3	1691.2	1660.0	(1.8)
Ecuador	510.0	501.4	464.7	473.3	489.0	3.3
Iran	4013.0	4055.7	3557.1	3544.5	3623.0	2.2
Nigeria	2166.5	2017.4	1842.0	2048.3	2119.0	3.5
Venezuela	2991.8	3118.5	2878.1	2853.6	2383.0	(16.5)
<b>Total non-Arab OPEC</b>	<b>11307.3</b>	<b>11589.3</b>	<b>10638.2</b>	<b>10610.9</b>	<b>10274.0</b>	<b>(3.2)</b>
<b>Total OPEC</b>	<b>31342.2</b>	<b>31570.3</b>	<b>29084.5</b>	<b>29180.3</b>	<b>29834.0</b>	<b>2.2</b>

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Table 2-6 Cont.

	2007	2008	2009	2010	2011*	(%) Change 2011/2010
Brazil	1761.0	1810.1	1957.0	2049.7	2094.0	2.2
Canada	2182.2	2164.0	2034.0	2016.8	2082.8	3.3
China	3755.0	3802.8	3802.0	4049.0	4090.2	1.0
CIS	12192.3	12429.5	12661.0	13220.5	13264.5	0.3
Of which: Azerbaijan	850.0	914.1	1014.0	1027.4	945.0	(8.0)
Kazakhstan	1100.0	1385.0	1285.8	1600.0	1600.0	0.0
Russian Federation	9830.0	9768.4	9919.3	10147.6	10325.0	1.7
Turkmenistan	189.0	220.0	220.0	220.0	220.0	0.0
Uzbekistan	114.0	105.0	85.0	95.0	80.0	(15.8)
Mexico	3111.9	2807.7	2620.7	2594.3	2561.3	(1.3)
Norway	2242.0	2020.0	2017.0	1875.0	1739.4	(7.2)
UK	1460.0	1343.6	1292.7	1196.2	993.6	(16.9)
USA	5122.2	4940.2	5309.0	5486.0	5642.5	2.9
Rest of the world	19797.5	18553.1	7613.0	7431.4	6986.0	(6.0)
<b>World Oil Production</b>	<b>85606.3</b>	<b>84049.2</b>	<b>71066.0</b>	<b>71810.4</b>	<b>72021.0</b>	<b>0.3</b>
(%) OAPEC/world	<b>24.8</b>	<b>25.2</b>	<b>27.7</b>	<b>27.5</b>		
(%) Arab countries/world	<b>26.5</b>	<b>26.9</b>	<b>29.7</b>	<b>29.6</b>		
(%) OPEC/world	<b>36.6</b>	<b>37.6</b>	<b>40.9</b>	<b>40.6</b>		
<b>Second : Natural Gas Liquids Production</b>						
OAPEC Members Production	<b>3300.0</b>	<b>3270.0</b>	<b>3297.0</b>	<b>2870.0</b>	<b>2870.0</b>	
Arab countries Production	<b>3368.0</b>	<b>3368.0</b>	<b>3417.0</b>	<b>2995.0</b>	<b>2995.0</b>	
World NGL Production	<b>9559.0</b>	<b>9295.0</b>	<b>8980.0</b>	<b>8093.0</b>	<b>8093.0</b>	
<b>Third : Total Hydrocarbon Liquids Production</b>						
World Total Production	<b>95165.3</b>	<b>93344.2</b>	<b>80046.0</b>	<b>29903.4</b>	<b>80114.0</b>	
(%) OAPEC/world	<b>25.8</b>	<b>26.2</b>	<b>28.7</b>	<b>28.3</b>		
(%) Arab Countries/ world	<b>27.4</b>	<b>27.8</b>	<b>30.7</b>	<b>30.4</b>		

\* Preliminary estimates.

\*\* Official sources.

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.

- Oman data is ten months average: Jan. - Oct. 2011

Average six months: Apr.- Sep. 2011

Average six months: Jun.- Sep. 2011

Sources:

- OAPEC Data Bank.

- Oil & Energy Trends, Annual Statistical Review, 2011

- Oil @ Gas Journal, 1 Jan.2012

- OPEC Annual Statistical Bulletin 2010/2011

\_JODI Data Initiative

**Table 2-7**  
**NGL Production in OAPEC Members and Other Arab Countries,**  
**2007-2010**  
**(Thousand b/d)**

	2007	2008	2009*	2010*	(%) Change 2010/2009
Algeria	1160	1100	1180	1280	9.4
Bahrain	10	10	10	10	0.0
Egypt	70	126	124	78	11.4
Iraq	30	30	30	30	0.0
Kuwait	40	30	40	40	0.0
Libya	80	80	80	86	7.5
Qatar	210	200	220	240	14.3
Saudi Arabia	1440	1434	1427	882	(38.2)
Syria	10	10	10	10	0.0
UAE	250	250	250	214	(14.4)
<b>Total OAPEC</b>	<b>3300</b>	<b>3270</b>	<b>3371</b>	<b>2870</b>	<b>(13.0)</b>
Oman**	58	88	100	105	5.0
Yemen	10	10	10	20	0.0
<b>Total Arab countries</b>	<b>3368</b>	<b>3368</b>	<b>3481</b>	<b>2995</b>	<b>(12.4)</b>
<b>World total</b>	<b>9559</b>	<b>9223</b>	<b>9179</b>	<b>8093</b>	<b>(9.9)</b>
<b>OAPEC/world (%)</b>	<b>34.5</b>	<b>35.5</b>	<b>36.7</b>	<b>35.5</b>	<b>(3.4)</b>

\* Preliminary estimates.

\*\* Official sources.

Sources:

- OAPEC Data Bank.

- Oil & Energy Trends, Annual Statistical Review, 2011.

**Table 2-8**  
**Arab and World Marketed Natural Gas,**  
**2007-2010**  
**(Million cubic meters/year)**

	2007	2008	2009	2010*	(%) Change 2010/2009
Algeria	84800	86500	81426	83900	3.0
Bahrain	11800	12700	12800	13100	2.3
Egypt**	56973	60994	62070	61300	(1.2)
Iraq	1460	1880	1149	1303	13.4
Kuwait	12100	12700	11489	11900	3.6
Libya	15280	15900	15900	16814	5.7
Qatar	63200	76981	89300	96335	7.9
Saudi Arabia	74420	80440	78450	87660	11.7
Syria	5800	6000	5950	7800	31.1
Tunisia	3100	3300	3540	3830	8.2
UAE	50290	50240	48840	51282	5.0
<b>Total OAPEC</b>	<b>379223</b>	<b>407635</b>	<b>410914</b>	<b>435224</b>	<b>5.9</b>
Oman**	25179	25200	24496	25768	5.2
<b>Total Arab countries</b>	<b>404402</b>	<b>432835</b>	<b>435410</b>	<b>460992</b>	<b>5.9</b>
Angola	830	680	690	733	6.2
Ecuador	275	260	296	330	11.5
Iran	111900	116300	175742	187357	6.6
Nigeria	32500	32825	23206	28099	21.1
Venezuela	20729	20750	18430	19728	7.0
<b>Total non-Arab OPEC</b>	<b>166234</b>	<b>170815</b>	<b>218364</b>	<b>236247</b>	<b>8.2</b>
<b>Total OPEC</b>	<b>467784</b>	<b>495456</b>	<b>544918</b>	<b>585441</b>	<b>7.4</b>

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Table 2-8 Cont.

	2007	2008	2009	2010*	(%) Change 2010/2009
Canada	184100	173400	161400	159800	(1.0)
China	69200	80300	85200	96800	13.6
CIS	808700	827300	719100	784780	9.1
Of which: Azerbaijan	9300	11000	14900	15100	1.3
Kazakhstan	26800	29800	32200	33600	4.3
Russian Federation	592000	601700	527500	588900	11.6
Turkmenistan	65400	66100	36400	42400	16.5
Uzbekistan	59100	62200	64400	59100	(8.2)
Mexico	54000	54000	58200	55278	(5.0)
Norway	89700	99200	103500	106350	2.8
UK	72100	69600	59600	57100	(4.2)
USA	545600	574400	593400	610998	3.0
Rest of the world	560664	578950	552826	641321	16.0
<b>World total</b>	<b>2954700</b>	<b>3060800</b>	<b>2987000</b>	<b>3209666</b>	<b>7.5</b>
<b>OAPEC/world (%)</b>	<b>12.8</b>	<b>13.3</b>	<b>13.8</b>	<b>13.6</b>	
<b>Arab countries/world (%)</b>	<b>13.7</b>	<b>14.1</b>	<b>14.6</b>	<b>14.4</b>	
<b>OPEC/world (%)</b>	<b>15.8</b>	<b>16.2</b>	<b>18.2</b>	<b>18.2</b>	

\* Preliminary estimates.

\*\* Official sources.

Notes:

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

Sources:

- OAPEC Data Bank.
- OPEC Annual Statistical Bulletin, 2011.
- BP Statistical review of world energy full report 2011.



**Table 2-9**  
**World Coal Reserves,**  
**2007-2010**  
**(Billion tons at year end)**

	2007	2008	2009	2010
<b>North America</b>	<b>249.3</b>	<b>244.9</b>	<b>244.9</b>	<b>243.9</b>
Canada	6.6	6.6	6.6	6.6
USA	242.7	238.3	238.3	237.3
<b>Central &amp; South America*</b>	<b>17.5</b>	<b>16.2</b>	<b>16.2</b>	<b>13.7</b>
Of which: Brazil	7.1	7.1	7.1	4.6
Colombia	7.0	6.8	6.8	6.7
<b>Europe</b>	<b>46.3</b>	<b>46.3</b>	<b>46.3</b>	<b>304.6</b>
Of which: FSU	6.7	6.7	6.7	224.5
<b>Asia/Oceania</b>	<b>257.5</b>	<b>259.3</b>	<b>259.3</b>	<b>265.8</b>
Of which: Australia	76.6	76.2	76.2	76.4
China	114.5	114.5	114.5	114.5
India	56.5	58.6	58.6	60.6
Indonesia	4.3	4.3	4.3	5.5
Africa	49.6	32.0	32.0	31.7
Of which: South Africa	48.0	30.4	30.4	30.2
<b>Middle East</b>	<b>1.4</b>	<b>1.4</b>	<b>1.4</b>	<b>1.2</b>
<b>World total</b>	<b>847.5</b>	<b>826.0</b>	<b>826.0</b>	<b>860.9</b>

\* Including Mexico.

Source:

- BP Statistical Review of World Energy, June 2008 , June 2009 , June 2010 and June 2011 .

**Table 2-10**  
**World Coal Production,**  
**2007-2010**  
**(Million tons/year)**

	2007	2008	2009	2010
<b>North America</b>	<b>1109.6</b>	<b>1131.4</b>	<b>1038.5</b>	<b>1052.5</b>
Canada	69.4	68.4	63.3	67.9
USA	1040.2	1063.0	975.2	984.6
<b>Central &amp; South America*</b>	<b>96.5</b>	<b>98.4</b>	<b>92.9</b>	<b>96.5</b>
Of which: Brazil	6.0	6.6	5.1	5.5
Colombia	12.5	11.3	10.5	9.3
Mexico	69.9	73.5	72.8	74.4
<b>Europe)</b>	<b>1218.5</b>	<b>1231.4</b>	<b>1163.2</b>	<b>1158.1</b>
Of which: FSU	488.1	519.2	476.1	501.0
<b>Asia/Oceania</b>	<b>3895.8</b>	<b>4076.6</b>	<b>4331.1</b>	<b>4683.5</b>
Of which: Australia	392.7	399.2	413.2	423.9
China	2691.0	2802.0	2973.0	3240.0
India	478.4	515.9	556.0	569.9
<b>Africa</b>	<b>251.3</b>	<b>255.7</b>	<b>253.6</b>	<b>256.9</b>
Of which: South Africa	247.7	252.6	250.6	253.8
<b>Middle East</b>	<b>1.6</b>	<b>1.6</b>	<b>1.6</b>	<b>1.6</b>
<b>World total</b>	<b>6573.3</b>	<b>6795.1</b>	<b>6880.9</b>	<b>6940.1</b>

\* Including Mexico.

Source:

- BP Statistical Review of World Energy, June 2008 , June 2009, June 2010 and June 2011.

\* Mexico is classified within Central and South America.

Source:

- BP Statistical Review of World Energy, June 2007 , June 2008, June 2009 and June 2010.

**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	2	935	669.2	5.9
Armenia*	1	375	-	-	234.4	39.4
Belgium	7	5927	-	-	48.2	51.2
Brazil	2	1884	1	1245	14.5	3.1
Bulgaria	2	1906	2	1906	15.2	33.1
Canada	18	12624	-	-	85.2	15.1
China	15	11078	27	27230	76.8	1.8
Czech Republic	6	3678	-	-	26.4	33.3
Finland	4	2716	1	1600	21.9	28.4
France	58	63130	1	1600	407.9	74.1
Germany	9	12068	-	-	140.5	22.6
Hungary	4	1889	-	-	14.8	42.1
India	20	4391	6	4194	20.5	2.8
Iran	1	915	-	-	-	-
Japan	50	44215	2	2756	279.2	29.2
Mexico	2	1300	-	-	5.6	3.6
The Netherlands	1	482	-	-	3.8	3.4
Pakistan	3	725	1	315	256.0	2.6

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Table 2-11 Cont.

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
Romania	2	1300	-	-	10.7	19.5
Russia	32	22693	11	9153	155.1	17.1
Slovak Republic	4	1816	2	782	135.3	51.8
Slovenia	1	688	-	-	5.4	37.3
South Africa	2	1800	-	-	12.9	5.2
South Korea	21	18698	5	5560	141.9	32.2
Spain	8	7567	-	-	61.6	20.1
Sweden	10	9298	-	-	22.1	38.1
Switzerland	5	3263	-	-	25.2	38.0
Taiwan	6	4982	2	2600	40.0	19.3
Ukraine	15	13107	2	1900	82.2	48.1
UK	18	9920	-	-	56.4	15.7
USA	104	101240	1	1165	807.0	19.6
<b>World total</b>	<b>433</b>	<b>366610</b>	<b>66</b>	<b>62941</b>	<b>3909.0</b>	<b>13.4</b>

\* According to IAEA 2008, Armenia's reactor was mothballed, however, it is still listed in its statistics in 2011.

Sources:

- BP Statistical Review of World Energy, June 2011.
- IAEA, Website.(Nuclear Power Plants Information), Nov. 2011.



**Table 2-12**  
**Installed Hydro Power Capacities in Some Countries,**  
**2008 and 2009**

	Installed Capacity (Megawatt-MWe )		Annual Growth Rate 2009/2008 (%)
	2008	2009	
China	147800	200000	35.32
USA	99788	100678	0.89
Canada	74614	75094	0.92
Japan	47341	47243	(0.21)
France	25175	25317	0.88
Italy	21276	21371	0.45
Turkey	13829	14553	5.24
Austria	12504	12512	2.04
Mexico	11389	11530	0.51
Germany	10001	10640	6.40
Australia	9304	9298	(0.06)
South Korea	5505	5515	0.18
New Zealand	5373	5378	0.04
United Kingdom	4373	4389	0.34
Czech Republic	2192	2184	(0.36)
Belgium	1418	1757	0.00
Hungary	51	53	3.92
Netherlands	37	37	0.00
Denmark	9	9	0.00

Note:

- Parentheses denote negative figures.

Sources:

- IEA Renewables Information 2011 .

- WEC- World Energy Council 2010 (Survey of Energy Resources).

**Table 2-13**  
**Installed Wind Power Capacities in Some Countries,**  
**2009 and 2010**

	Installed Capacity (Megawatt-MWe)		Annual Growth Rate 2010/2009 (%)
	2009	2010	
USA	35086	40180	14.5
Germany	25777	27214	5.6
China	25805	42287	63.9
Spain	19160	20676	7.9
India	10926	13065	19.6
Italy	4849	5797	19.6
France	4574	5660	23.7
Denmark	3465	3752	8.3
United Kingdom	4245	5204	22.6
Portugal	3535	3898	10.3
Canada	3319	4009	20.8
Netherlands	2223	2237	0.6
Japan	2085	2304	10.5
Sweden	1560	2163	38.7
Austria	995	1011	1.6
Poland	725	1107	52.7
Turkey	801	1329	65.9
Egypt	430	550	27.9
Morocco	253	286	13.0
Hungary	201	295	46.8
Tunisia	54	114	111.1

## Sources:

- EWEA- European Wind Energy Association, 2010 European Statistics, Feb 2011 .
- Global Wind Energy Council, Global Wind Report, 2010

**Table 2-14**  
**Cumulative Installed Photovoltaic Power Capacities**  
**in Some Countries, 2009 and 2010**

	Cumulative Installed Capacity (Megawatt-MWe )		Annual Growth Rate 2010/2009 (%)
	2009	2010	
Germany	9959.9	17370.0	74.4
Spain	3523.0	3915.0	11.1
Japan	2627.2	3618.1	37.7
USA	1616.0	2534.0	56.8
Italy	1181.3	3502.3	196.5
South Korea	524.2	655.6	25.1
France	335.2	1054.3	214.5
Australia	187.6	570.9	204.3
Netherlands	67.5	88.0	30.4
Switzerland	73.6	110.9	50.7
Canada	94.6	291.1	207.7
Austria	52.6	95.9	82.3
United Kingdom	26.0	69.8	168.5
Mexico	25.0	30.6	22.4
Rest of the world	2636.1	5622.5	113.3
<b>World total</b>	<b>22928.9</b>	<b>39529.0</b>	<b>72.4</b>

Source:

- European Photovoltaic Industry Association, May 2011

- IEA Trends in Photovoltaic Applications, 2011 .

**Table 2-15**  
**Installed Geothermal Capacities in Some Countries,**  
**2009 and 2010**

	Installed Capacity (Megawatt-MWe )		Annual Growth Rate 2010/2009 (%)
	2009	2010	
USA	3086.6	3101.6	0.5
Philippines	1953.0	1966.0	0.7
Indonesia	1189.0	1189.0	0.0
Mexico	958.0	958.0	0.0
Italy	843.0	863.0	2.4
New Zealand	629.3	679.3	7.9
Iceland	575.1	575.1	0.0
Japan	500.0	502.0	0.4
Salvador	204.4	204.4	0.0
Kenya	167.0	167.0	0.0
Costa Rica	166.0	166.0	0.0
Republic of Ni- caragua	87.5	87.5	0.0
Russia	82.0	82.0	0.0
Turkey	81.6	81.6	0.0
Portugal	29.0	29.0	0.0
Rest of the world	164.7	254.7	54.6
<b>World total</b>	<b>10716.2</b>	<b>10906.2</b>	<b>1.8</b>

Sources:

- BP Statistical Review of World Energy, June 2011.



**Table 2-16**  
**Installed Solid Biomass Capacities in some Countries,**  
**2008 and 2009**

	Installed Capacity (Megawatt-MWe )		Annual Growth Rate 2009/2008 (%)
	2008	2009	
USA	7172	7264	1.3
Sweden	2761	3142	13.8
Italy	415	438	5.5
Finland	1757	1807	2.8
Austria	2024	2024	0.0
Germany	1380	2042	48.0
Denmark	558	690	23.7
United Kingdom	517	631	22.1
Mexico	473	473	0.0
Czech Republic	468	559	19.4
Australia	537	537	0.0
Belgium	442	554	25.3
Canada	1372	1526	11.2
Netherlands	405	462	14.1
Spain	374	492	31.6
Turkey	69	47	(31.9)
South Korea	10	10	0.0

Note:

- Parentheses denote negative figures.

Source:

- IEA Renewables Information, 2011 .

## CHAPTER THREE



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



The Secretary General's  
38<sup>th</sup> Annual Report

38

## CHAPTER THREE

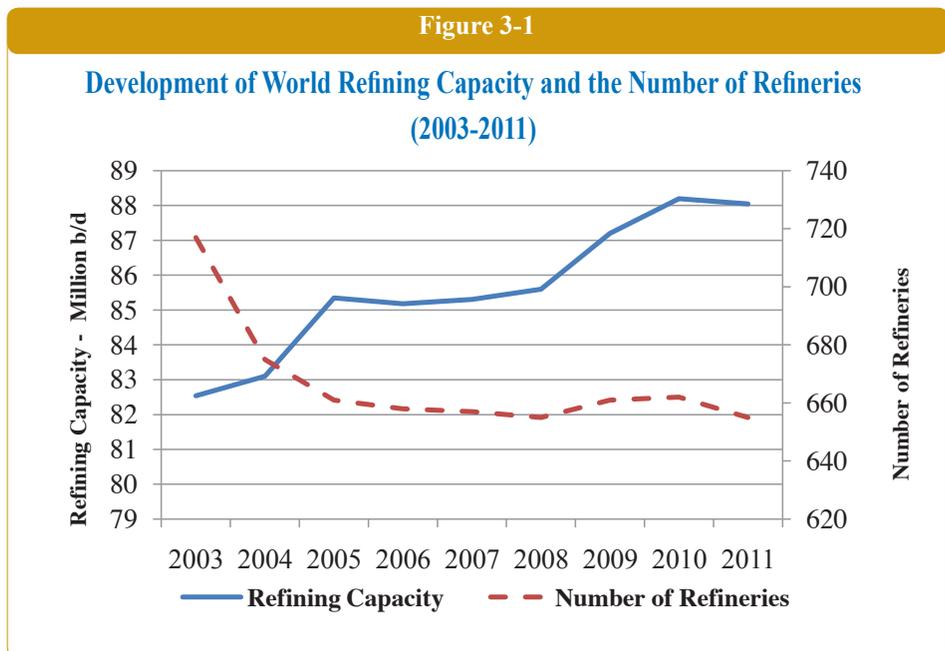
### ARAB AND WORLD DEVELOPMENTS IN PETROLEUM DOWNSTREAM INDUSTRIES

#### I. REFINING INDUSTRY

##### 1. World Developments

Total world primary distillation capacity of crude oil recorded a slight decline for the first time in nearly ten years. Capacity has fallen by 175,000 b/d from its level in 2010. It totalled about 88.05 million b/d at the end of 2011 compared with 88.23 million b/d at the end of 2010. This decline has associated with a decrease in the number of operational refineries from 662 refineries in 2010 to 655 in 2011.

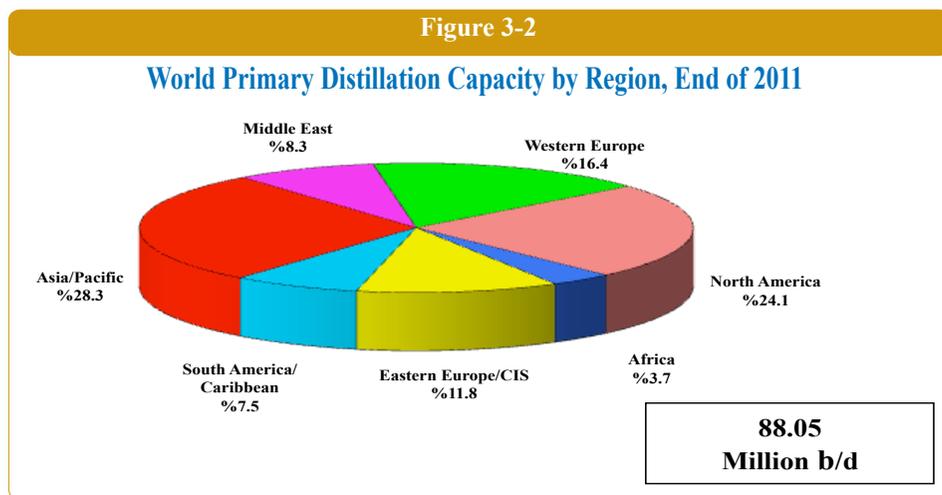
**Figure (3-1).**



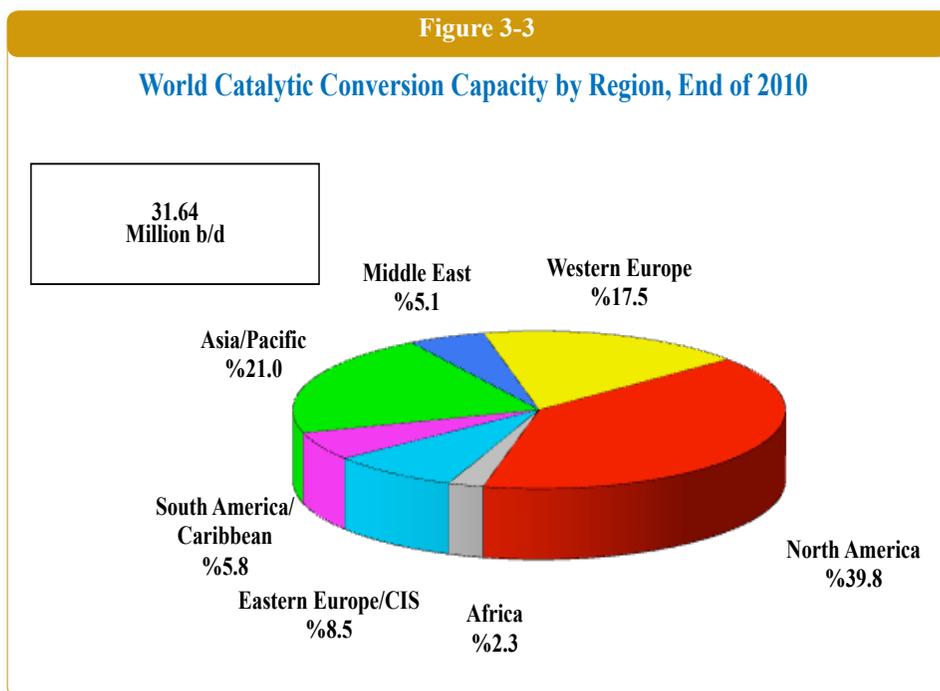
The Global refining industry has faced several challenges in 2011, affected by the debt crises which hit the global markets and the decline in petroleum products demand. These challenges have resulted in delaying or cancelling some of the revamping projects of the existing refineries or closing several process plants. Most of the capacity fall has centred in both North America and Western Europe.

Although Western Europe closed only two refineries this year, total primary crude distillation capacity has fallen by 225,000 b/d or (1.4%). North America has seen a close of four refineries but only a loss of 55,000 b/d in capacity or (0.28%).

On the other hand, the growth in the refining capacity centred in both Asia and Middle East. Asia region has added 44,000 b/d or (0.20%) and the Middle East region has added more than 32,000 b/d or (0.4%). Although these two regions have not started up new refineries in 2011, there are several projects that are under planning or construction, in addition to the expansion projects of most of the existing refineries. **Figure (3-2), Table (3-1)**



In another development, the total capacity for catalytic conversion processes, which include fluid catalytic cracking (FCC), catalytic hydrocracking, and catalytic reforming, rose by 60,000 b/d, or 0.19 %, from its 2010 level. At the end of 2011, it totalled to about 31.64 million b/d compared to 31.58 million b/d at the end of 2010. **Figure (3-3)** and **Table (3-2)**.



Catalytic hydrocracking capacity recorded the biggest increase in total capacity compared with other catalytic conversion processes. At the end of 2011 it rose to about 5.49 million b/d, compared with 5.42 million b/d at the end of 2010, with an increase of 70,000 b/d or 1.3%.

Catalytic cracking came in second place with an increase of 30,000 b/d, or 0.20%. Catalytic reforming capacity recorded a decline of 40,000 b/d, or 0.35%. At the end of 2011, it totalled to 11.46 million b/d compared with 11.50 million b/d in 2010. **Table (3-3)**, **Figures (3-4)**, **(3-5)** and **(3-6)**.

Figure 3-4

World Catalytic Reforming Capacity by Region, End of 2010 and 2011  
(%)

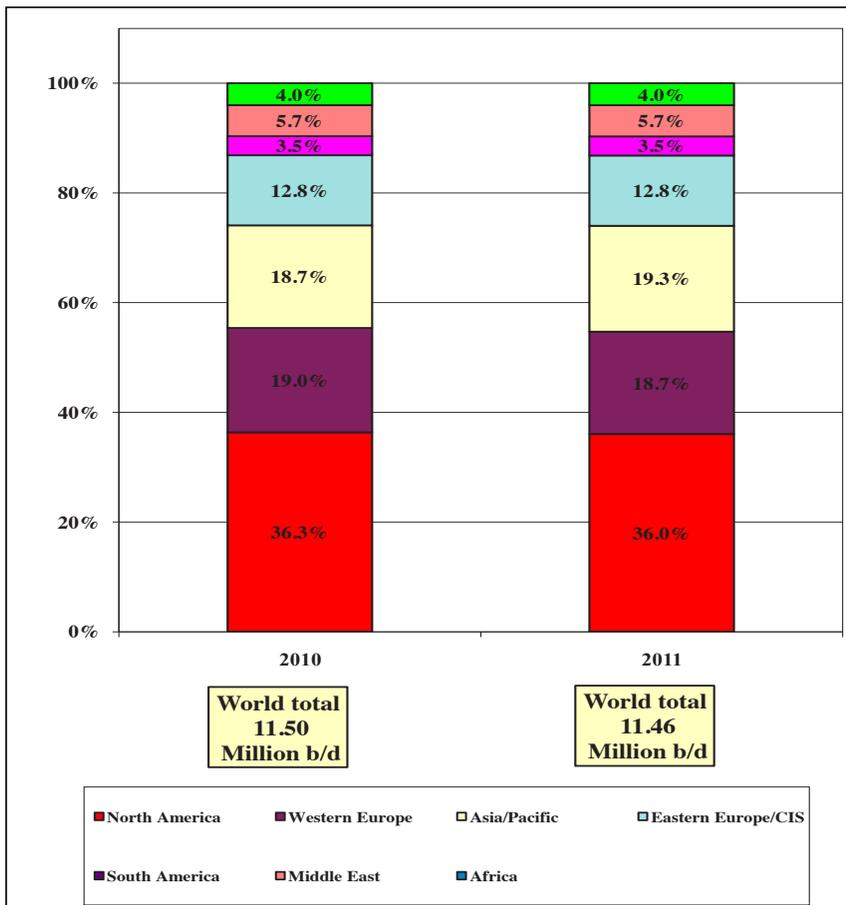


Figure 3-5

**World Catalytic Cracking Capacity by Region,  
End of 2010 and 2011  
(%)**

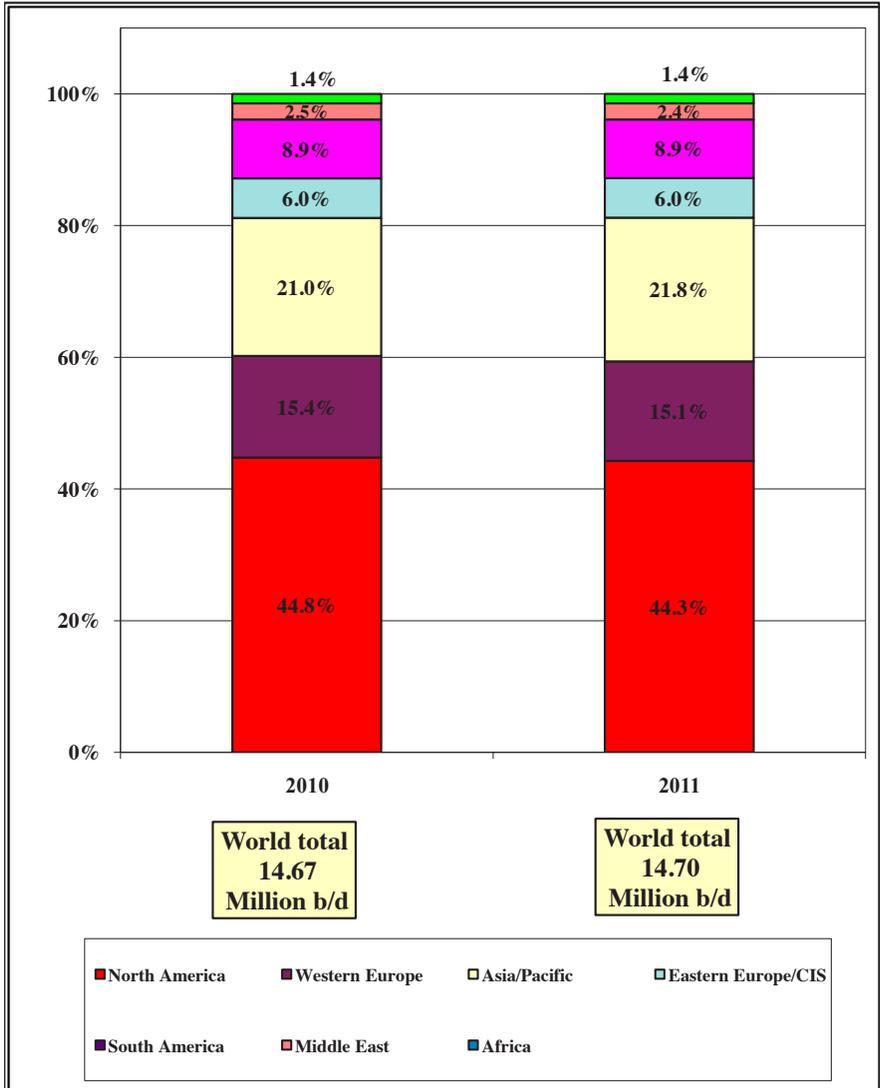
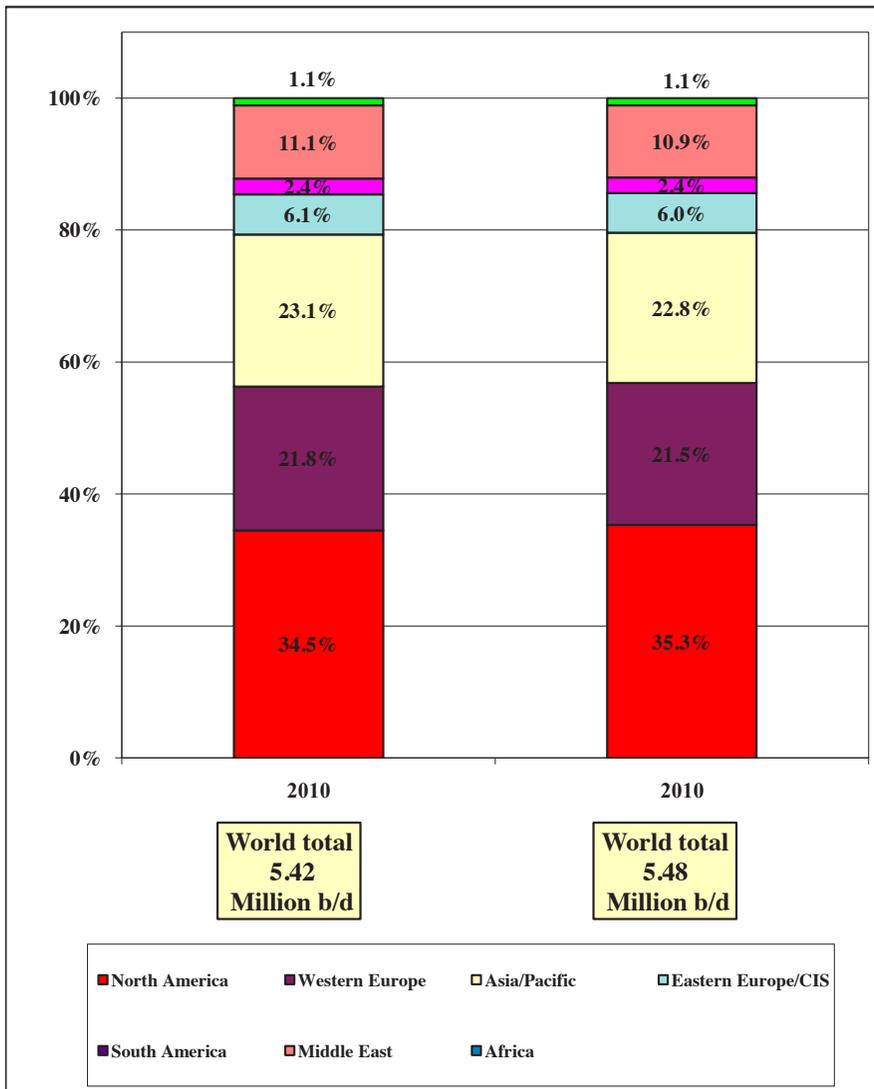
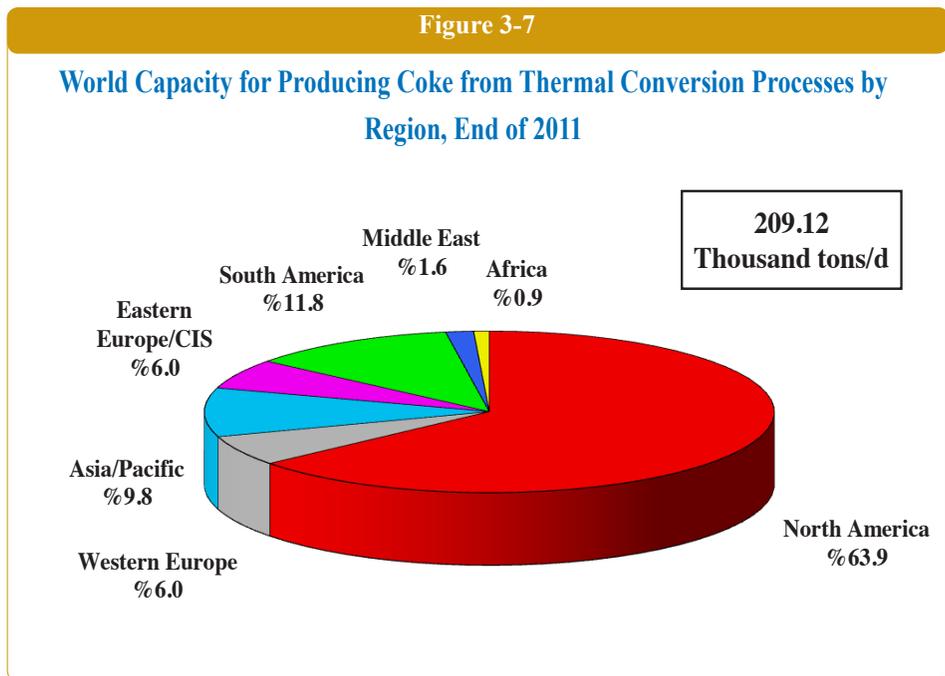


Figure 3-6

**World Hydrocracking Capacity by Region,  
End of 2010 and 2011  
(%)**



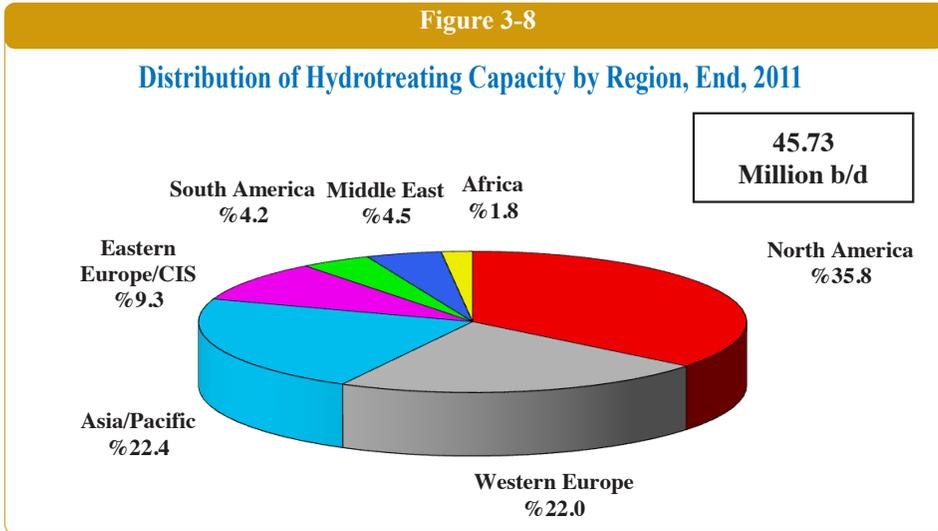
As for thermal conversion processes, which include both coking and thermal cracking processes, their total coke production capacity in 2010 recorded an increase of 2300 tons/day, or 1.1% above its level in 2010. At the end of 2011 it amounted to about 209,120 tons/day, compared with 206,820 tons/day at the end of 2010. Most of the increase centred in North America with around 2290 tons/day, or 1.7%. Western Europe came next with an increase of 10 tons/day, or 0.1%. **Table (3-4), Figure (3-7).**



On the other hand, total hydrotreating capacity recorded an increase of 310,000 b/d, or 0.7 %, compared with its 2010 level. It totalled to 45.73 million b/d compared with 45.42 million b/d at the end of 2010. Asia-Pacific recorded the biggest increase of 200,000 b/d, or 2%, followed by Western Europe with an increase of 60,000 b/d, or

0.6%. North America came next with an increase of 50,000 b/d, or 0.31% compared with its level in 2010. **Table (3-5), Figure (3-8).**

Figure 3-8



**Table (3-6)** lists the top 25 refining companies that own most of the refinery capacity in the world. This table shows the most important changes in the ranking of the companies. Major changes in positions were Valero, which moved up from the 8<sup>th</sup> to the 5<sup>th</sup> class, as a result of the increase in its capacity with about 160,000 b/d. SK Innovation also moved up from the 24<sup>th</sup> to the 19<sup>th</sup> class, as a result of adding 298,000 to its refining capacity. ConocoPhillips dropped from the 5<sup>th</sup> to the 8<sup>th</sup> class as it has decreased its refining capacity with about 210,000 b/d. Chevron Corp also dropped from the 6<sup>th</sup> to the 9<sup>th</sup> class as it has decreased its refining capacity with about 196,000 b/d and Sunoco Inc dropped from the 23<sup>th</sup> to the 25<sup>th</sup> class, it has dropped its refining capacity with about 150,000 b/d. The other refiners remained unchanged.

**Table (3-7)** lists the world's largest refineries with a minimum capacity of 400,000 b/d at the end of 2011. Marathon refinery moved

up from the 17<sup>th</sup> to the 14<sup>th</sup> class as a result of increasing its refining capacity from 436,000 b/d to 490,000 b/d.

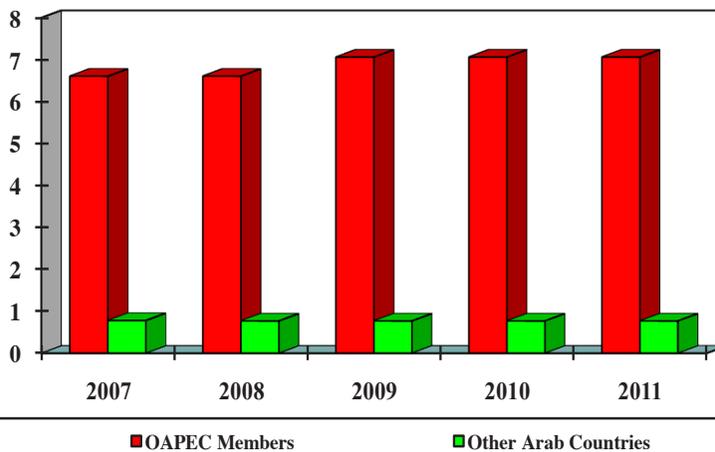
## 2. Developments in Arab Countries

The total primary distillation capacity of refineries in the Arab states in 2011 remained unchanged from its level in 2010. Although Iraq closed two small refineries, the decrease in the total refining capacity has been compensated by increasing the capacity of some other existing refineries.

Total primary distillation capacities of the 51 oil refineries in OAPC member countries accounted for 7.061 million b/d, or 91.03 %, of the total primary distillation capacity of the Arab states amounting to 7.833 million b/d. Total primary distillation capacity of the 11 oil refineries in other Arab states accounted for the remaining 772,000 b/d, or 8.97 %, of the Arab total. **Figure (3-9), Table (3-8).**

Figure 3-9

### Evolution of Primary Distillation Capacity in the Arab Countries, 2007-2011 (Million b/d)



A long list of projects, totalling almost 4.9 million b/d of distillation capacity announced by the Arab countries are still facing many difficulties in implementation due to many 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, Ruwais refinery in the 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 2011.

Moreover, many projects in the Arab countries are oriented towards adding conversion and hydro-treating capacity to meet the rising demand for middle and light distillates to 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 2011.

## 2-1 Algeria

Ministry of Energy and Mining in Algeria, started implementing its plan to double its refining capacity to 800,000 b/d by 2016. Condensate refinery in skikda now under construction with a capacity of 100,000 b/d and a cost of \$380 million through a contract with the China National Petroleum Corporation (CNPC), in addition to the expansion project of its skikda existing refinery from 300,000 b/d to 335,000 b/d.

The National Oil Company (Sonatrach) plans to build a new export oriented refinery in Tiaret, with a capacity of 300,000 b/d, it is expected to come on stream in 2013. The total cost of the refinery is

expected to rise to around \$6 billion, which is three folds higher than the preliminary estimated cost. The project has faced some hurdles which resulted in delaying the awarding process of the engineering, procurement and construction contract.

## **2-2 Bahrain**

State-owned Bahrain Petroleum Company (Bapco) has assigned Nexant technical consultancy company to prepare a study on the Sitra upgrading project to decide whether to boost the 262,000 b/d capacity refinery to 350,000 b/d or 450,000 b/d. The preliminary study estimates costs of around \$5 billion for the first option and around \$7 billion for the 450,000 b/d option.

In September 2011, the production operations started at the new base oil plant at Sitra refinery with a capacity of 400,000 tons/year (8500 b/d) of very high viscosity index base oil. The project is a joint venture between Finland's Neste Oil Co., which is responsible for selling and marketing the plant's products 45%, Bahrain Petroleum Company (Bapco) which is responsible for operating the plant 27.5% and the state owned Oil and Gas Holding Company (OGHC) 27.5%. The plant is fed from the nearby Sitra refinery.

Demand for those premium quality base oils is increasing globally, as the new emission legislation and catalytic converter technologies demand better performing base oils.

## **2-3 Egypt**

The political crisis in Egypt had an impact on some project's financing, including the \$3.7 billion Musturud refinery which is being

implemented by the Egyptian Refining Company (ERC) next to an existing complex north of Cairo to process around 5 million tons/year of heavy fuel oil to produce light products, including 2.3 million t/y of high quality diesel according to Euro V standards. However, the project finance will have to wait until the political issues are settled.

## 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.

At the end of 2010, new crude distillation unit started up in Daura refinery together with revamping of two existing units. This project increased the nominal capacity of Daura refinery from 160,000 b/d to around 210,000 b/d. However a lack of infrastructure to bring crude oil to the refinery is limiting effective throughputs to approximately 100,000 b/d.

With respect to the projects of grassroots refineries, Technip is close to completing the front end engineering and design (FEED) on the 140,000 b/d Karbala refinery project which expected to cost around \$4 billion. KBR is working on the study of the 150,000 b/d Misan refinery project, which will include a 47,500 b/d fluid catalytic cracker (FCC) and 45,500 b/d solvent deasphalting unit.

In May 2011, the Iraqi Ministry of Oil announced that the construction work in Al-Naseryia refinery project with a capacity of 140,000 b/d and a cost of \$4 billion. America's UOP LLC has been chosen to provide the Reforming, Isomerisation, Fluidized Catalytic Cracking and Hydrotreating units.

In Kurdistan region, Kurdish firm Kar, which operates Irbil refinery, ordered two more 20,000 b/d units from Ventech, similar to the existing refinery. In addition to crude distillation unit, the refinery includes a 9000 b/d naphtha hydrotreating unit, a 6000 b/d catalytic reforming unit and a 2500 b/d isomerization unit. The project will be the first refinery producing unleaded gasoline in Iraq and it is expected to start operation by the beginning of 2012.

Ventech is also supplying a new 34,000 b/d addition to Sulaimaniya refinery. This refinery includes a 9,000 b/d naphtha hydrotreater, a 6,000 b/d catalytic reformer and a 2,500 b/d isomerisation unit and will also produce 1,000 b/d of LPG.

## **2-5 Kuwait**

The idea of building Al-Zour refinery is still under consideration after being suspended in 2009. Kuwait's Supreme Petroleum Council (SPC) technical committee has recommended a 530,000 b/d capacity option for the planned al-Zour refinery instead of 615,000 b/d. Moreover, there is a consensus to push the clean fuel project which 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:

- 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).

In November 2011, Construction work started on the \$9.3bn 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, and will include a 300,000 b/d capacity 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 Aramco. The project is set to clear the way for Kuwait to achieve its China-bound crude oil export target of 500,000 b/d. Kuwait's supplies to China stood at 198,000 b/d in 2010, up 39% from the previous year. 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 Indonesian, in cooperation with Pertamina company, is still under feasibility study. The expected capacity of the refinery is 200,000 – 300,000 b/d.

Construction works have also started 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 between Kuwait Petroleum International (KPI) and Japanese Idemitsu Company contributes 35.1% each, in addition to the state-owned company PetroVietnam and Japan Mitsui Chemicals Inc., contributing 25.1% and 4.7% respectively.

### **2-6 Qatar**

Qatar Petroleum announced that Al Shaheen Refinery project was indefinitely postponed. The construction of the 250,000 b/d refinery was scheduled in 2008 at a cost of \$ 6 billion. The company is focusing on a plan to double the installed condensate- distillation capacity of its 146,000 b/d Ras Laffan refinery, which was launched in September 2009.

Qatar is willing to enhance its international investment in downstream petroleum industry. In July 2011 it announced the establishment of a joint venture between PetroChina with a share of 51% and Royal Dutch Shell PLC and Qatar Petroleum with a share of 24.5% each. The joint venture includes building a new 400,000 b/d refinery and ethylene plant with a capacity of 1.2 million tons/year in Taizhou, eastern province of Zhejiang at a cost of \$12.4 billion.

### **2-7 Saudi Arabia**

Saudi Aramco has made remarkable progress in many key projects aiming to expand its downstream industry sector. An ambitious plan



to expand the refining capacity by 1.2 million b/d at a total cost of \$ 50-60 billion comes through the construction of three new refineries and two petrochemical plants.

The Al Jubail new refinery project is undertaken by Saudi Aramco and Total Refining & Petrochemical Company (SATORP), a joint venture between Saudi Aramco (62.5 %) and Total (37.5 %). The total cost of the project, which is scheduled to start operation in 2013 rather than 2012, is expected to rise to more than \$12 billion, while it was estimated at \$6 billion at the beginning.

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 has announced that the Chinese Sinopec company has been granted a share of the new Yanbu export refinery project, this came as a result of the Conoco Phillips withdrawal in May 2010. Saudi Aramco is currently working on the construction of the project at Al-Jubail industrial city with a capacity of 400,000 b/d and an estimated investment of \$10 billion. In this regard; seven contracts were signed with local and international companies for engineering, procurement and construction works (EPC). The refinery, which is expected to start production in 2014, was designed to process Arabian heavy crude from Saudi Aramco's Manifa oil field and will produce 90,000 b/d of gasoline, 263,000 b/d of ultra low sulfur diesel (ULSD), 6,300 tons/day of coke and 1,200 tons/day of sulfur.

As for the planned 400,000 b/d Jazan refinery project, the front-end engineering design (FEED) is currently under implementation. 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.

Saudi Aramco has begun producing cleaner, low sulfur diesel at its Ras Tanura refinery in order to comply with tightening environmental standards. The diesel unit has a capacity to produce 105,000 b/d of fuel with a sulfur content of less than 10 parts per million. Ras Tanura is Saudi Aramco's oldest refinery and the largest in the Middle East with a crude processing capacity of 550,000 b/d. This project comes as part of Saudi Aramco's plan of revamping its existing refineries to boost their commitment to the stringent environmental standards, as follows:

- The revamping project at the existing Saudi Aramco and Shell Refinery (SASREF), involves constructing new hydrotreater and upgrading the existing unit.
- The revamping of Ras Tanura and al-Riyadh refineries.
- Rehabilitation of Al-Khafji refinery, which was mothballed in 1990.
- The expansion project at the existing Saudi Aramco Mobil Refinery (SAMREF) which includes two phases. The first phase will involve the construction of a new hydrotreater, upgrading the existing middle distillate hydrotreater and construction of a fluid catalytic cracking unit at a cost of \$700 million. The second



phase will involve the construction of a 40,000 b/d hydrotreater, sulphur recovery unit and hydrogen producing unit at a cost of \$800 million.

In March 2011, Saudi Aramco signed a memorandum of understanding (MOU) with the China National Petroleum Company (CNPC) to build a new refinery in China's southwestern 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 the Saudi firm the biggest foreign investor in China's refining sector in addition to its status as the biggest foreign supplier of crude.

In other development, Saudi Aramco announced on December 2011 that its high olefins fluidized catalytic cracking unit (HOFCC) has passed a significant completion test in Petro Rabigh refinery which is a joint venture between Saudi Aramco and Japan's Sumitomo. The HOFCC is a crucial part of the Petro Rabigh operations because it integrates refining and petrochemical activities.

Saudi Aramco has announced its plan to enhance the cooperation with the South Korean companies through capacity expansion at S-Oil's Ulsan refinery from 580,000 b/d to more than 650,000 b/d making it one of the world's biggest and most sophisticated refineries. Saudi Aramco has a 35% stake in the refinery, which was the company's first investment in Asia made 20 years ago.

## **2-8 Syria**

The Syrian Ministry of Oil and Mineral Resources confirmed its intent to construct the joint venture refinery project in Furqlus near the Syrian city of Homs with a total capacity of 140,000b/d and an approximate cost of \$2 billion. This project was launched in 2006 as a joint venture between the government of Syria (15%), Iran (25%), Venezuela (34%) and the Al-Bukhari Group of Malaysia (26%). However, there has been no significant progress on the project.

It should be mentioned that the Syrian Ministry of Oil has already announced a plan to build a 100,000 b/d refinery at a cost of \$2 billion in the Abu Khashab region, in Deir Al-Zour, northeast of Syria, with the participation of China National Petroleum Corporation (CNPC), in addition to another refinery project in Deir Al-Zour with a capacity of 140,000 b/d. However, the two refinery projects are still under the feasibility study phase.

## **2-9 United Arab Emirates**

The International Petroleum Investment Company (IPIC) revealed on April 2011 that it will continue with its existing plan to build a 200,000 b/d refinery in the Emirate of Fujairah in the north east of the UAE with an estimated cost of \$3billion. The project is currently in the front end engineering design (FEED) stage and it is expected to be completed by mid-2016.

Abu Dhabi Oil Refining Company (Takreer) is currently building a new 417,000 b/d refinery including all the secondary facilities, it will be near Ruwais refinery units about 240km from Abu Dhabi.

The project includes the construction of 21 main new process units in addition to other facilities, and it is scheduled to be completed by 2014.

Abu Dhabi Oil Refining Company (Takreer) is also building a new Base Oil production project at the Ruwais refinery at a cost of \$463 million. The project will have a production capacity of 500,000 tons/year of Group III Base Oil and 100,000 tons/year of Group II Oil. The project also includes the revamping of the existing hydrocracking unit to provide the project with the suitable feedstock in addition to the construction of new storage tanks and other utilities.

Group III Base Oil is a high quality and environmentally friendly oil used for blending top-tier lubricants for car engines. The project which comes within the plan of Abu Dhabi National Oil Company (ADNOC) to develop the downstream industry is expected to begin production in 2013.

The base oil production project is a joint venture between Abu Dhabi National Oil Company ADNOC's refining division 60%, Neste 20% and Austria's OMV 20%. Abu Dhabi Oil Refining Company (Takreer) will operate the project while Neste will market the produced base oil.

As for the non-OAPEC Arab countries, investment projects are limited to Jordan and Oman, specifically:

## **2-10 Jordan**

The revamping project of Al-Zarqa refinery has been delayed. The project which was scheduled to start up in 2014 includes the

construction of new processing units to improve product specifications and to increase the refining capacity from current 100,000 b/d to 130,000 b/d with an approximate cost of \$2.1 billion.

### **2-11 Oman**

The Sohar Refinery Company announced an expansion of its existing refinery project in Sohar from 116,000 b/d to 195,000 b/d, with an approximate cost of \$1.5 billion.

Oman Oil Company (OOC) and Abu Dhabi International Petroleum Investment Company (IPIC) signed a cooperation agreement for the building of refinery and petrochemical complex at Duqm, on the Omani coast with a capacity of 230,000 b/d. The project currently under the engineering design preparation phase and expected to start operation in 2016 with an approximate cost of \$6 billion.

## II. PETROCHEMICAL INDUSTRIES

### 1. World Developments

World ethylene production capacity in 2010 rose by more than 8.6 million tons/year. This increase, which sets a record for one year addition, brought world ethylene production in 2010 to 138 million tons/year, or 6% higher than the 2009 total of 130 million tons/year. It was due to starting up eight ethylene plants, all of them are in China, Saudi Arabia, Thailand and Qatar, in addition to starting up new production trains in one existing plant in China.

The main development of new ethylene plants is as follows:

The total increase in the ethylene production capacity in Asia reached to 4.7 million tons a year in 2010 as a result of starting up the following new projects:

In April 2010, China national petroleum and chemical Corp. (Sinopec) started operations of its one million tons/year ethylene plant in Zhenhai. In August 2010, Sinopec announced that its ethylene joint venture with Saudi Basic Industries Corp in Tianjin had started operations with total production capacity of 1.2 million tons/year. The joint venture company Sinopec SABIC Tinjin Petrochemical Co., total ethylene production capacity increased during the last year in China by 2.2 million tons/year.

In April 2010, Shell Eastern Petroleum Ltd., started up its new 800,000 tons/year ethylene plant in Singapore. The plant is part of Shell Eastern Petrochemicals complex, which consists of modification of the existing Bukon refinery and construction of new world scale mono ethylene glycol plant in Jurong Island.

In Thailand, the joint venture of Siam Cement PLC and DOW Chemical Co. started up a 900,000 tons/year ethylene plant at the Map Ta Phut olefins plant.

The other additions to global ethylene capacity were in the Middle East with a total capacity of 3.95 million tons/year as follows:

Eastern Petrochemical Co. in joint venture with Saudi Basic Industries Corporation and SPDC Ltd. started operating its 1.3 million tons/year ethylene plant at Jubail industrial city in Saudi Arabia.

Saudi Kayan Petrochemical Co., started operations at its petrochemicals complex's main 1.35 million tons/year ethylene unit at Al- Jubail with other units to follow through in 2012. The complex consists of 16 units with production capacity of 6 million tons/year of ethylene, propylene and ethylene glycol. The project will bring the ethylene production capacity in Saudi Arabia to 11.9 million tons/year, third largest country capacity in the world behind the USA and China.

Ras Laffan Olefins Co., started up its new 1.3 million tons/year ethylene cracker unit at Ras Laffan Industrial City.

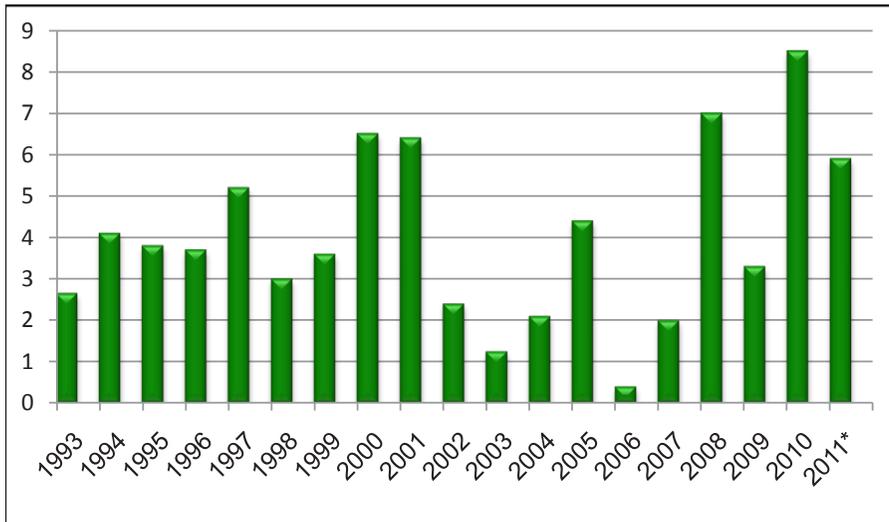
**Figure (3-10)** shows the increases in world existing ethylene production capacities recorded during the period (1993- 2010). The increase in the production capacity of ethylene in the world was the highest in 2010 during the last 5 years after recording the lowest rate of increase in 2006. New projects with 11million tons/year capacity were expected to come on stream in 2010, but the actual capacity came on line was less than that amount.



In 2011, more than 4.8 million tons/year are expected to start up, which is considered as a slackening in the pace of growth for the first time in the last five years.

Figure 3-10

**Increases in World Existing Ethylene Production Capacity**  
(Million tons/year)

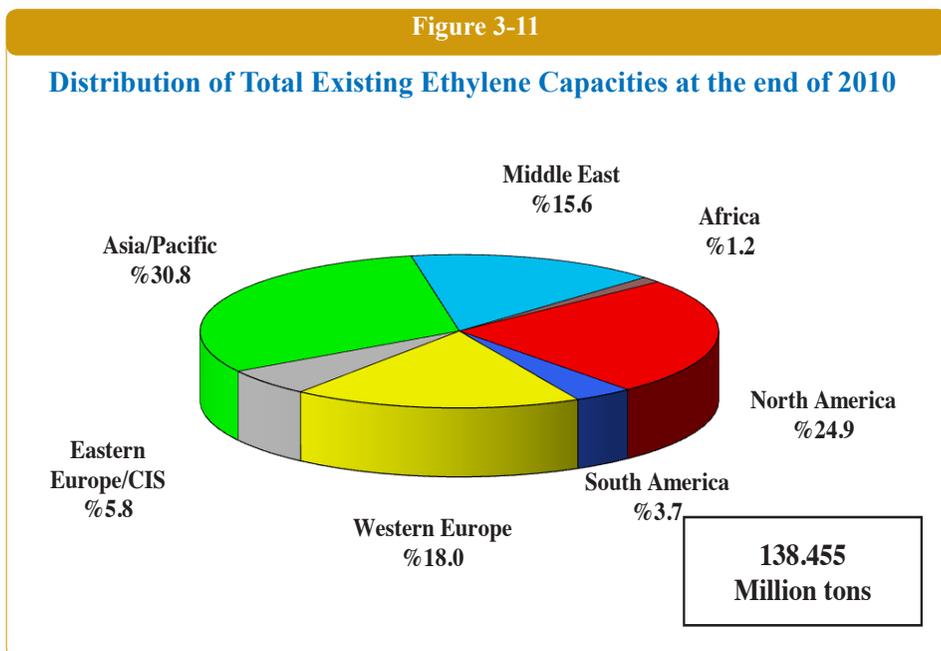


Estimated

**Table (3-11)** shows the world's ten largest ethylene production complexes in 2010. The order remains unchanged except for Chevron Phillips Chemical Co's Sweeny, Texas plant showing a slight increase to 1.865 million tons/year.

**Table (3-12)** compares the existing ethylene production capacity worldwide by regions in 2009 and 2010. **Figure (3-11)** shows the distribution of total existing ethylene capacities at the end of 2010.

Asia Pacific recorded the biggest increase with a share of 4.7 million tons/year. The Middle East and Africa came next, bringing

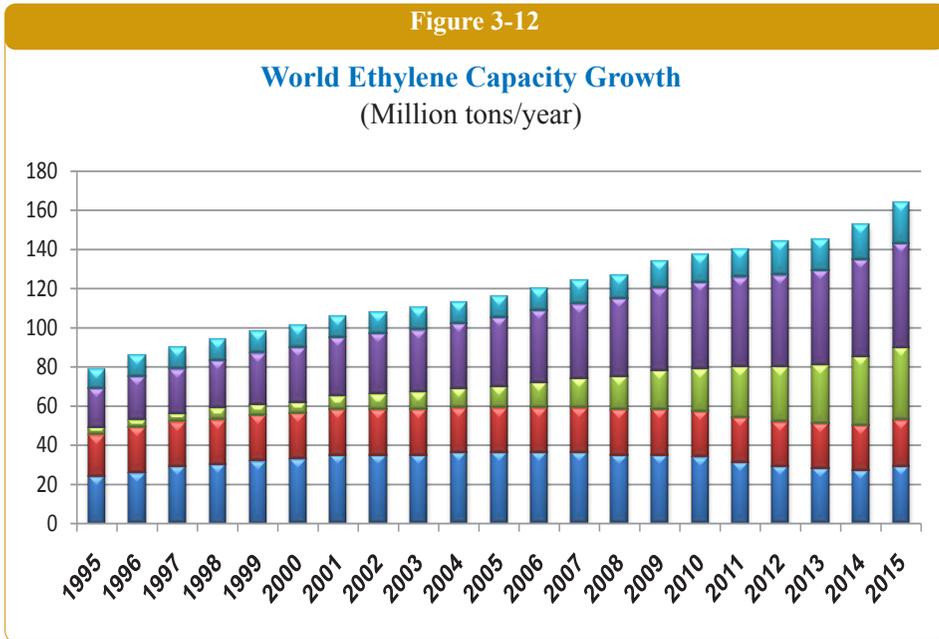


on stream 3.855 million tons/year ethylene capacity. North America recorded a slight increase with 39,000 tons/year. Total ethylene production capacity in Western Europe declined with about 14,000 tons/year, while Eastern Europe and North America remained unchanged.

In mid 2010, Japan's government revealed that the country's ethylene production had risen 7.2% in July 2010 compared with July 2009, as a result of lowering the period needed for the maintenance shutdown. Japanese ethylene plants produced 593,700 tons compared with 553,800 in July 2009 and up by 16.7% from 508,800 tons in June 2010.

Several prospective studies indicate that the increase in world ethylene production capacity will be localized in the Middle East and

Asia-Pacific, while the decline will continue in both North America and Western Europe. **Figure (3-12).**



Regarding the world under construction petrochemicals plant, PetroChina Co. Ltd announced that it will expand the production capacity of its unit in Daqing to 1.2 million tons/year. The project will start operation about a year later the expected date. The work in the plant's expansion project started in 2009.

In the United States, Shell announced preliminary plans to build a world scale ethylene plant in Appalachia based on natural gas produced from the Marcellus shale gas. The company didn't identify a capacity, a sit for the plant and which kind of derivatives will produce. However, the leading option is polyethylene.

In April 2011, Dow Chemical announced plans to increase its ethylene and propylene production capacity in United States and integrate its US operations into feedstock available from increasing supplies of shale gas in the Marcellus and Eagle Ford units.

In order to increase its ethylene supply and ethane cracking capabilities of existing US Gulf Coast plants, the company will restart its ethylene production unit at Hahnville, La by year end 2012. Dow will also improve its ethane feedstock flexibility for an ethylene unit at its plant in Plaquemine, La. in 2014.

In Canada, Williams Company signed a long-term agreement to produce up to 17,000 b/d of ethane and ethylene for NOVA Chemicals Corp., in Alberta. Williams will invest \$311 million (Can.) To expand its two primary plants in Alberta to support the new agreement. The expansion, which will begin operating in first-quarter 2013, will allow the company to produce ethane and ethylene from its operations that process of gas from Alberta oil sands.

**Table (3-12)** compares the existing ethylene production capacity worldwide by regions in 2009 and 2010. **Figure (3-11)** shows the distribution of total existing ethylene capacities at the end of 2010.

**Table (3-13)** shows the distribution of ethylene production capacity worldwide by countries in 2009 and 2010. It is noted that China achieved the largest increase followed by Saudi Arabia, then Qatar, and finally Thailand and Singapore. Germany is the only country which recorded a net decrease of about 14,000 tons/year.

**Table (3-14)** lists the world's ten largest ethylene producers at the beginning of 2011. The table also shows the number of sites and the



total of actual percentages for companies in joint ownership. Two changes have taken place in the order of the companies. Saudi Basic Industries Corp., (SABIC) stepped up in the first place, where it outperformed both Dow Chemical and Exxon Mobile Corp. Chevron Phillips Chemical came new to the list and took the seventh place which led to the withdrawal of Formosa Petrochemicals Co., out of the list, where it was ranked tenth on the list last year. LyondellBasell dropped from the seventh place to eighth place, Ineos dropped from ninth to tenth place.

## 2- Arab Developments

### 2-1 Egypt

Egypt's Orascom Construction Industries (OCI) announced that its subsidiary, OCI Nitrogen in Netherlands, has acquired 51% equity in an integrated ammonia-methanol in Beaumont, Texas, through a joint venture with Janus Methanol, named Pandora Methanol. The project includes upgrading the plant to increase its production capacity to 250,000 tons/year of ammonia and 750,000 t/y of methanol, increasing the storage tank capacity on-site, repairing and updating the plant's operating systems and environmental controls with a total cost of approximately \$65 million. The plant is expected to start operation in 2012.

In June 2011, the foundation stone of the polyester plant in the Free Zone of 'Ain Sukhna on the Gulf of Suez was laid. The plant is owned by the Egyptian-Indian Polyester Company – a joint venture between India's Dhunseri Petrochem and Tea with a share of 70%, the

Egyptian Petrochemicals Holding Company with a share of 23% and Egypt's Enppi with a share of 7%. The plant will have a production capacity of 420,000 tons/year of polyethylene terephthalate with a cost of \$160 million and is scheduled to start up at the end of 2012.

Egypt Hydrocarbon Corporation (EHC) is making progress on the \$5billion petrochemicals complex in the 'Ain Sukhna industrial zone. The project is a joint venture between Egypt Kuwait Holdings, Yemen's Hayel Saeed Anam Group, the Saudi Economic Development Company and Cairo-headquartered Tri Ocean Energy. Although the ownership percentages have not been disclosed, Carbon Holdings are thought to have retained a large stake in the venture.

The complex comprises of three projects, Ammonium Nitrate, olefins and methanol operations. The first project includes 850 tons/day nitric acid production unit to be used as a feedstock to the ammonium nitrate production unit with a capacity of 1.060 tons/day. The anhydrous ammonia feedstock will be provided via a long term supply contract with Transammonia.

The second project is the olefins production complex. The project will include Egypt's first naphtha cracker in addition to petrochemicals units producing polypropylene. The project will have three 450,000 tons/year polyethylene lines, with a combined design capacity of 1.35 million tons/year. One line will be dedicated to high density polyethylene (HDPE) with the other two swing lines will be dedicated to linear low density poly ethylene (LLDPE) and/or high density poly ethylene (HDPE). The third project is also progressing and the EPC contract has been awarded to Mitsubishi. Start up for the olefins and methanol plants are expected in 2016.



## 2-2 Kuwait

In November 2011, construction work started on the oil refinery and petrochemicals complex located in Donghai Island in the southern coastal city of Zhanjiang, China. The project is a joint venture between Sinopec and Kuwait Petroleum Corporation (KPC) and will include a 300,000 b/d capacity refinery and 1 million tons/year ethylene cracker. The project is expected to start operation by 2015 and will secure a stable outlet for Kuwaiti crude oil to China to around 500,000 b/d.

## 2-3 Qatar

Qatari Ras Laffan Olefins Company (RLOC) has announced that it has started the production operations of the 1.3 million tons/year ethylene plant in Ras Laffan industrial city. Ras Laffan Olefins Company is a joint venture between Q-Chem II with a share of 53.31%, Qatofin Ltd with a share of 45.69% and Qatar Petroleum with a share of 1%. Q-Chem II is a joint venture between Qatar Petroleum and a subsidiary of Chevron Phillips Chemical Co.

Qatar Petrochemical Company (QAPCO) awarded US-based Shaw Group a contract to provide basic engineering services for the expansion of a 720,000 tons/year ethylene plant in Mesaieed. According to the contract, Shaw Group will provide the engineering design needed for expanding the plant's capacity by up to 25%.

## 2-4 Saudi Arabia

In March 2011, Saudi Kayan Petrochemicals started trial operations of a polycarbonate (PC) plant at its complex in Al-Jubail

industrial city. The plant is designed to produce 260,000 tons/year of a polycarbonate thermoplastic resin.

The polycarbonate thermoplastic resin, which will be produced for the first time in Saudi Arabia, will contribute to more investments opportunities in downstream industries locally. Kayan also signed a preliminary agreement with Saudi Acrylic Acid Company (SAAC) and a joint venture between Saudi Aramco and Dow Chemical to build, own and operate an n-butanol production plant within the SAAC complex in Jubail city and the three partners will hold equal stakes in the project. The plant which is expected to cost \$480 million with a capacity of 330,000 will start production in the second half of 2014.

Jubail Chemical Industrials Company (JANA), a wholly owned subsidiary of NAMA Chemicals, announced that it has awarded the US-based Jacobs Engineering Group a contract for the provision of technical and management services for both its existing epichlorohydrin plant expansion and a new epichlorohydrin plant at Jubail on the east coast of Saudi Arabia. Under the terms of the agreement, Jacobs is set to provide technical and project management services for the debottlenecking of the existing epichlorohydrin plant, including utilities and tankage, in addition to the cost estimates preparation and project management support for a new epichlorohydrin plant to be built at the same site.

The expansion project is expected to increase the production capacity of the high quality epoxy resins to 240,000 tons/year at the Jubail site and add value to the kingdom's economy, including employment opportunities.



The Saudi Kayan Petrochemicals Company has started operations of some main units at its petrochemical complex in Jubail industrial city. The new ethylene production unit has a capacity of 1.35 million tons/year and the other units are expected to be started up in 2012. The complex will be able to produce more than 6 million tons/year of ethylene, propylene and ethylene glycol through sixteen production units.

In March 2011, Sahara Petrochemicals Company (PCC) and Saudi Arabian Mining Company (Ma'aden) awarded an engineering, procurement and construction (EPC) contract to South Korea's Daelim for a \$750 million ethylene dichloride plant to be built in the Sahara PCC complex in Jubail industrial city. The plant will have a production capacity of 250,000 tons/year of sodium hydroxide and 300,000 tons/year of ethylene dichloride (EDC). It is expected to be completed in the fourth quarter of 2012. The project is a joint venture between Sahara Petrochemicals company (PCC) and Saudi Arabian Mining Company ( Ma'aden).

In April 2011, Saudi Basic Industries Corporation (SABIC) announced the signing of a joint venture agreement with Japan's Asahi Kasei Chemicals Corporation and Mitsubishi Corporation to form the Saudi Japanese Acrylonitrile Company (SHROUQ) in Saudi Arabia. The company will build a plant for the manufacturing of acrylonitrile and sodium cyanide in Jubail industrial city. The unit will be world-scale with a capacity of 200,000 tons/year of acrylonitrile and 40,000 t/y of sodium cyanide.

Acrylonitrile and sodium cyanide are very important chemicals for downstream diversification into acrylonitrile butadiene styrene

(ABS), carbon fibres, acrylic fibres, acrylamide and other products which serve various industries. In particular, sodium cyanide will support the local mining industry in Saudi Arabia.

In July 2011, Saudi Aramco and US Dow Chemical announced establishing their giant \$20 billion joint venture petrochemical complex at Jubail-II 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.

Forecasting studies indicate that Saudi petrochemical production will expand by 32% to reach 70.2 million tons/year by 2015, accounting for 9.2% of global supply. Saudi Arabia currently accounts for 7% of the global supply of basic and intermediary products and 50% of Gulf Cooperation Council's 105.7 million tons/year of total petrochemical capacity, as of 2009. The capacities of ethylene and polyethylene are forecast to grow by 34.7% and 11.2%, respectively, to reach 16.08 million tons/year and 5.45 million tons/year by 2015. It is also expected that the Projects executed by Sahara Petrochemical and Saudi Aramco will expand propylene and polypropylene production capacities by 44.6% and 107.7%, respectively to reach 5.09 million tons/year and 7.52 million tons/year by 2015.

Saudi Arabia's current methanol capacity is 5.36 million tons/year, representing roughly 7.54% of global capacity. Saudi Basic Industries Corporation (SABIC) is the world's second largest producer of methanol. The kingdom has gone from being a net importer to a leading net exporter in the petrochemical sector, supplying over 100 countries. In 2009, the export volume rose to 27.57 million tons, an

11.14% rise year on year despite of the decline recorded last year. It is expected that the Saudi petrochemical sector will continue to hold a considerable market share of product categories, as a result of the decrease in production cost and increase in the profits gained recently. This will enhance the competitive advantage of Saudi Arabia compared to other producers in Europe and United States.

Regarding the Saudi Arabia's international Petrochemical investments, Saudi Basic Industries Corporation (SABIC) announced on September 2011 a plan to build a \$1billion polycarbonate plant in Tianjin City, China, with a production capacity of 260,000 tons/year. The project will help meet the growing demand for plastics in China, where annual demand growth for petrochemicals is expected to exceed 10% for the next 10 years.

## **2-5 United Arab Emirate**

Abu Dhabi Polymer Company (Borouge) a joint venture between Abu Dhabi National Oil Company (ADNOC) and Austria based Borealis- awarded a contract worth \$1.075 billion to the Linde Group of Germany, to build 1.5 million tons/year ethane cracker. The new project will complement the existing 1.5 million tons/year and 600,000 tons/year ethane cracker. After completion of the new cracker, Borouge will have the world's largest ethane cracker complex.

Construction works are in progress in Borouge expansion project at Ruwais (Borouge-3) and expected to be completed in 2014 . The expansion is aimed at quadrupling the facility's production capacity to 4.5 million tons/year by 2013, which will be exported to Middle

East and Asia. A joint venture between Italy's Maire Tecnimont and South Korea's Samsung Engineering won two contracts; include the \$1.255 billion construction of two polyethylene units with combined capacities of 1.08 million tons/year and two polypropylene units with combined capacities of 960,000 tons/year. The consortium was also awarded a \$400 million contract to build a 350,000 tons/year low density polyethylene (LDPE) unit, while Hyundai Engineering and Construction won a \$935 million contract for utilities and off-site facilities construction. Alpine Bau Deutschland AG was also awarded a contract to build 26 utilities, including buildings, offices, process units and workshops.

The company is currently completing the (Borouge-2) expansion, which will add a capacity of 2 million tons/year of polyethylene and polypropylene.

## NATURAL GAS CONSUMPTION, TRADE AND PROCESSING

### 1. World Developments

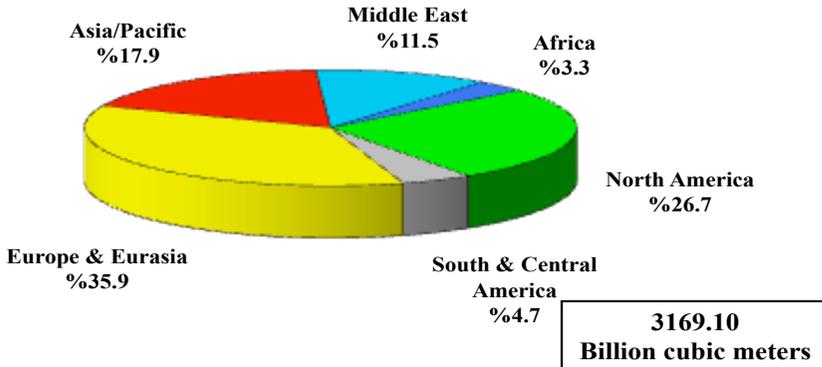
#### 1-1 Natural Gas Consumption

World consumption growth of natural gas in 2010 increased by 7.4% compared with its level in 2009, the highest growth rate since 1984. It totalled about 3 169 billion cubic meters in 2010 against about 2950.2 billion in 2009. The share of natural gas in the world's total commercial energy consumption increased from 23.4% in 2009 to 23.8% in 2010. **Table (3-15)** and **Figure (3-13)** show the distribution of world natural gas consumption by region in 2009 and 2010.

Most regions of the world have seen an increase in gas consumption at various rates in 2010 except in the Middle East region. The maximum increase rate of 12.6% was recorded in Asia-Pacific, where the total consumption increased from 503.9 billion cubic meters in 2009 to 567.6 billion cubic meters in 2010. Central America South came next 9.3%, where the total consumption increased from 134.1 billion cubic meters in 2009 to 147.7 billion cubic meters in 2010. The minimum increase rate of 4.8% was recorded in North America, where the total consumption increased from 807.7 billion cubic meters in 2009 to 846.1 billion cubic meters in 2010. Total natural gas consumption in Europe and Eurasia (including Europe, the CIS and Turkey) increased by 7.2%. Natural gas consumption in the Middle East increased by 6.2%, reaching 365.5 billion cubic meters against 344.1 billion cubic meters in 2009. In Africa, the consumption increased by 6.1%, from 105 billion cubic meters in 2010 against 98.9 billion cubic meters in 2009.

Figure 3-13

## Natural Gas Consumption by Region, 2010



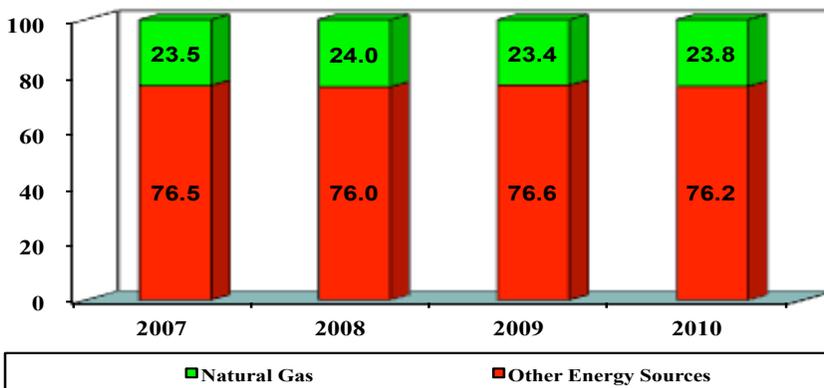
In 2010, most regions of the world maintained its share of natural gas in world commercial energy balance. The Middle East region maintained the highest share with 46.9% against 46.5% in 2009. The share ranged between 11.2% in Asia/Pacific and 37.4% in Europe and Eurasia region.

**Table (3-16)** and **Figure (3-14)** show the evolution of the share of natural gas in total commercial energy consumption by region in 2007-2010.

Figure 3-14

## Share of Natural Gas in the Total Consumption of Commercial Energy, 2007-2010

(%)



## 1-2 Natural Gas Trade

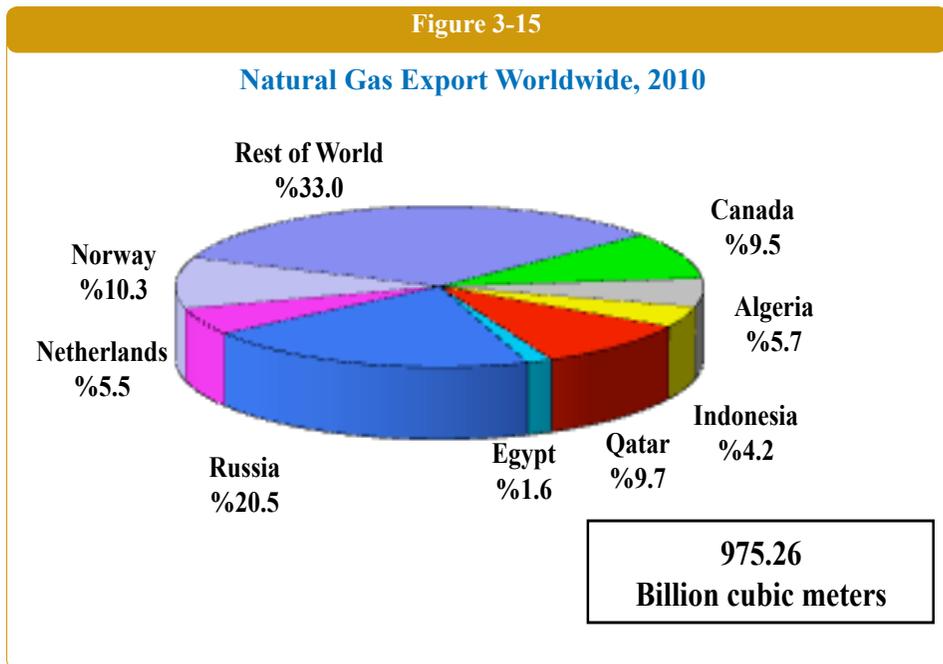
The volume of natural gas exports worldwide increased dramatically by 10.1% in 2010, reaching to 975.26 billion cubic meters from about 791.44 billion in 2009. These figures cover gas exports via both pipelines and as a liquefied natural gas (LNG).

The Former Soviet Union received the largest increase of natural gas exports in 2010 reaching to 251.56 billion cubic meters, equivalent to 70.1%, compared with about 147.92 billion cubic meters in 2009. Middle East region came second with an increase of 38.1%, as a result of Qatar's boost of liquefied natural gas (LNG) exports which accounted to 53.2%. Asia-Pacific came in third place with an increase of 16.8%. South America increased its gas export by 13.1% and Africa increased by 7.5%. Europe and Commonwealth increased by 7%. Finely, in North America it increased by 1.5%.

US net imports of natural gas via pipelines in 2010 totalled about 93.25 billion cubic meters, which represented 13.6% of its total natural gas consumption. Canada remained the largest supplier to the USA. In 2010, US imported LNG from Trinidad and Tobago, Peru, Egypt, Norway, Nigeria Qatar and Yemen, representing about 11.6% of total US natural gas imports (12.23 billion cubic meters) and about 1.8% of the US consumption of natural gas. US exports of natural gas in 2010 increased to 31.98 billion cubic meters. Its exports to Canada reached 20.91 billion cubic meters and 9.43 billion cubic meters to Mexico. Its exports of LNG to Brazil, Belgium, Spain, United Kingdom, Japan and South Korea totalled about 1.84 billion cubic meters.

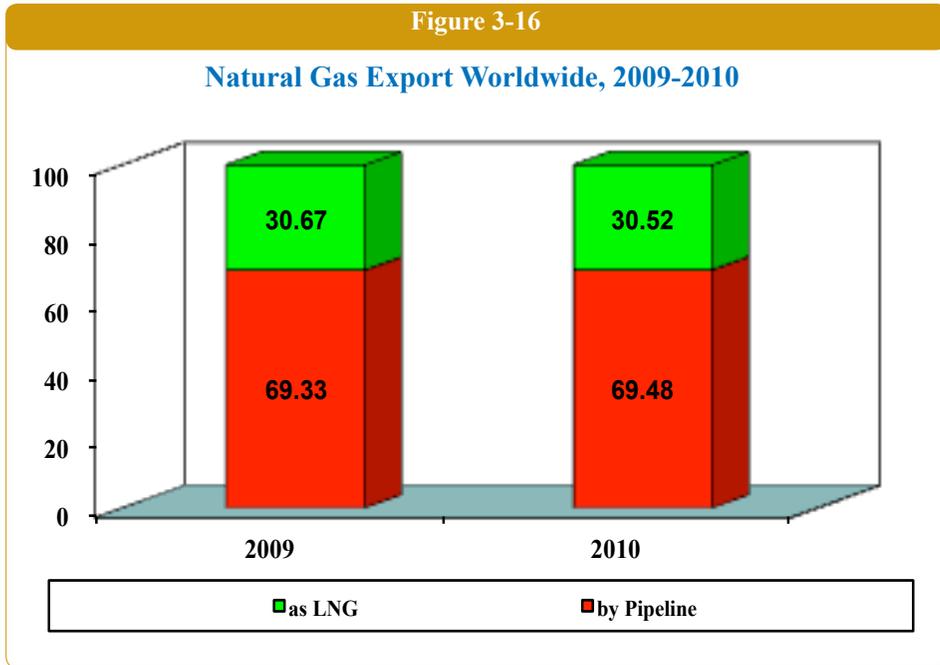
Russia topped the world's natural gas exporters, with a share of about 20.5 % of world exports in 2010. Its natural gas exports

to most European countries totalled 199.85 billion cubic meters, which was 65.06 billion cubic meters less in 2009. Norway came second with 10.3%, followed by Qatar 9.7%, Canada 9.5%, Algeria 5.9%, the Netherlands 5.5% and Indonesia 4.2%. The exports of the aforementioned countries collectively constitute about 65.4% of total world exports of natural gas, as shown in **Table (3-17)** and **Figure (3-15)**.



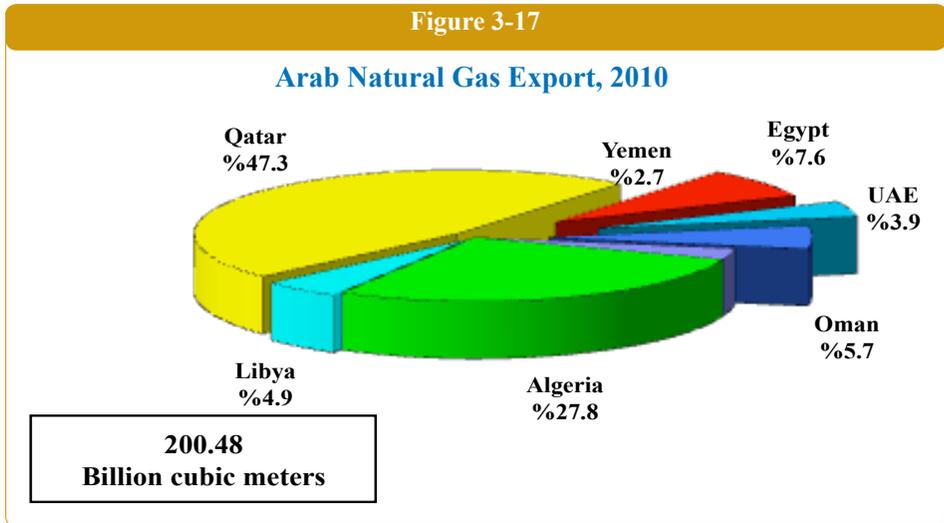
The volume of natural gas exports by pipelines rose from about 548.68 billion cubic meters in 2009 to about 677.62 billion in 2010, or by 23.5%, while LNG exports by tanker rose by 22.6% from 242.76 billion cubic meters to 297.67 billion cubic meters. Pipelines exports accounted for 69.48% of total natural gas exports in 2010, which was slightly higher than 2009 record of 69.33%.

LNG accounted for 30.52% of the total world natural gas exports in 2010, against 30.67% recorded in 2009, as shown in **Table (3-18)** and **Figure (3-16)**.



LNG and pipeline gas exports from Arab countries to the international markets continued to rise in 2010 for the sixteenth consecutive year, reaching 200.48 billion cubic meters compared with 168.04 billion in 2009, an increase of 19.3%. Qatar ranked first place of Arab countries with gas exports of 94.9 billion cubic meters, representing 47.3% of total Arab exports in 2010. Algeria came second with total exports of 54.79 billion cubic meters, or 27.3% of total Arab exports, followed by Egypt 7.5%, Oman 6.9%, Libya 5.7% and finally UAE 3.9%, as shown in **Table (3-19)** and **Figure (3-17)**.

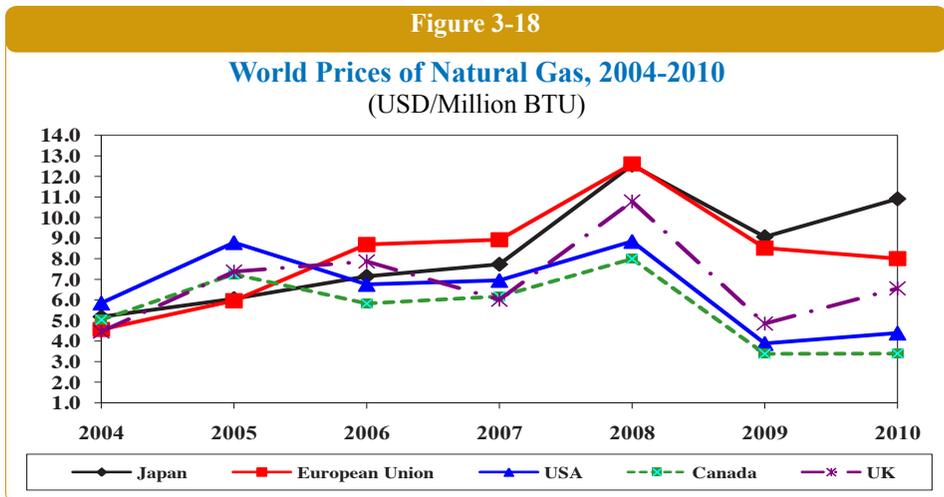
Figure 3-17



### 1-3 World Natural Gas Prices

Natural gas prices, for both pipeline and LNG sales rose in major markets in 2010, compared with its rate in 2009. The price of natural gas in UK markets rose by 35.3% and in the United States by 12.9%. In Canadian markets the prices rose by 0.3%, while it dropped by 6% in the EU countries. Prices of natural gas transported to Japan (in the form of LNG) rose by about 20.4%, as shown in **Table (3-20)** and **Figure (3-18)**.

Figure 3-18



## 2. Arab Developments

### 2-1 Algeria

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

In March 2011, Gas deliveries began through the Medgaz pipeline from Beni-Saf in Algeria to Almeria in Spain. Start-up has been delayed by two years due to technical difficulties and a dispute over the project's gas price.

Sonatrach is drawing up plans to start its first shale gas exploration in early 2012. Several different studies have reported a large potential of shale gas in the country. Memorandums of understanding (MOUs) have already been signed with a number of international companies for this purpose. Sonatrach and Italy's Eni signed a cooperation agreement on 29 April for the development of unconventional resources of natural gas, with a particular focus on shale gas, based on previous assessments of the region.

### 2-2 Bahrain

Bahrain kingdom is studying a number of alternatives and options to meet the needs of local demands for natural gas, such as the construction of LNG receiving terminal and choosing the appropriate location for it. Activities also include the development of Bahrain natural gas resources to meet local demand through the following:

- The development of the Bahrain field according to the production sharing and development agreement signed between

US Accidental, Emirates Mubadala and Bahrain's Oil and Gas Holding Company.

- Exploration for gas offshore (Deep Layers).
- Exploration for gas onshore.
- Development of basic legislation to conserve energy in various sectors.

### **2-3 Egypt**

Egypt implemented 9 projects to develop and produce natural gas in 2010/2011, at a total cost of approximately \$1.7 billion, with a total initial production of 429 million cubic feet per day, and 400 barrels per day of condensates, in addition to reserves estimated at around 1.2 trillion cubic feet of natural gas, and 12 million barrels of condensates.

Delivery of natural gas to the industrial and residential areas continued, and has been connected to 86 industrial units, or 5.7% higher than the previous year, reaching 1596 facilities. Coordination is currently underway to deliver gas to the new industrial areas and the delivery for commercial customers continued reaching to 8676 clients.

The supply of natural gas reached 555 thousand units, an increase of 15% from the previous year, and a total cost of 66 million Egyptian pounds.

The number of vehicles converted to run on natural gas increased by 23 thousand in 2011/10, with an increase of 34% from the previous year, bringing the total to 156378 vehicles, after adding 13 new gas filling stations in 2010/11, bringing the total to 142 filling stations.

Gas pipeline projects for operating three power stations have been completed, with a total length of 90 km, at a cost of 600 million Egyptian pounds.

## 2-4 Iraq

**The Republic of Iraq** has signed an agreement to form a Basra gas company, a joint venture between the Iraqi government with a share of 51%, Shell Royal Dutch with a share of 44% and Mitsubishi with a share of 5%, in order to recover a flare gas in the oil fields of the South at a cost of \$ 17 billion. The project is one of the largest projects signed by Iraq with foreign energy companies, and will contribute to the recovery of about 700 million cubic feet per day of gas, which is being burned in the flare, in the oil fields of the south to be used for meeting the urgent demand of Iraq to operate the power generation plants. It is also expected that the amount of gas recovered will increase to reach about 2 billion cubic feet per day, after the lifting of oil production to 12 million b/d in 2017. The project includes the installation of new units for gas treatment and the revamping of existing units, in addition to the construction of a terminal for exporting the liquefied natural gas.

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.

## 2-5 Kuwait

Kuwait's Jurassic gas development project is facing several challenges 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% sulfur, with some wells testing at significantly higher levels, which also contain corrosive fluids, such as, H<sub>2</sub>S, CO<sub>2</sub> 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, in addition to about 350 thousand barrels per day of light oil and condensates by 2015, to meet the demands of the country for electric power generation.

Kuwait Petroleum Corporation (KPC) announced that Kuwait's committee to study building permanent LNG import facilities didn't make a recommendation yet. Kuwait has imported almost one-third more LNG in the first eight months of 2011 compared to the same period last year, in order to meet the growing demand for gas resulted from expansion of Al-Sabiyah power plant.

In mid 2009, Kuwait completed the project of building the facilities needed for receiving LNG via the floating gas unloading stations and transforming the LNG into gas to be dispatched to the gas transportation pipeline net, at a capacity of 500 million cubic feet per day to meet its local demand for the gas that outreach the production rate in the peak times, starting from April each year and lasts for six months.

In another development, Kuwait seeks to enhance its external investment through acquisition of a stack in the international companies, such as, Wheatstone LNG a joint venture between—Chevron (73.6%), Apache Corporation (13%), the state owned Kuwait Foreign Petroleum Exploration Company (Kufpec) (7%) and Shell (6.4%). The project took the final investment decision on September 2011 to go ahead with its \$28.4 billion project for exporting 8.9 million tons/year of liquefied natural gas to South Korea and Japan. Wheatstone expects to have its first gas cargo to market in 2016.

## 2-6 Qatar

In February 2011, Qatar Gas started up the 7.8 million tons/year Train 7 of its Qatar Gas-4 project. Qatar Gas-4 shipped its first cargo of LNG to India's Hazira receiving terminal aboard the Q-Flex LNG carrier, owned by Qatar Gas Transport Co.

Train 7 is the last of the four mega trains constructed by Qatar Gas at Ras Laffan. In addition to its primary contract with USA, sale agreements have been signed with China and Dubai for LNG.

In March 2011, Qatar Shell announced commissioning its 140,000 b/d Pearl gas-to-liquids (GTL) plant at Ras Laffan. In June 2011,

Qatar Petroleum announced that the state-owned Qatar International Petroleum Marketing Company (Tasweeq) has exported the first shipment of GTL gas oil produced at GTL plant. The project was designed at a cost of \$18-19 billion to produce 140,000 b/d of gasoil, naphtha, LPG and Ethane. The production will come on in two phases and full GTL production is expected to be achieved by mid-2012.

In November 2011, Qatar Gas delivered its first liquefied natural gas to the receiving terminal at Rudong in eastern Jiangsu province in China. The cargo has been transported in a Q-Max vessel – the world's largest class of liquefied natural gas carrier with a capacity of 13,266,000 cubic meters. The cargo was delivered under a long term supply deal signed between Qatar Petroleum and Shell, partners in the Qatar gas-4 project, and Petro China. Qatar gas announced earlier this year that it was looking to double its LNG supplies to Asia to more than 20 million tons/year from the current 11million tons/year through the long term contracts.

Qatar plans to expand the capacity of Britain's South Hook LNG receiving station to 21 billion cubic meters/year from the current 10.5 billion cubic meters/year. Qatar also announced last year a plan to build a new terminal in Greece, and referred to its talks with Bulgaria, which to date have not produced a concrete project. Qatar has also started supplying the UK's Isle of Grain terminal near London. The Isle of Grain terminal can meet 50% of UK gas demand and it is expected by some forecasters to rely on LNG for around 50% of its needs by 2025. In April Qatar Gas signed a deal with UK gas supplier Centrica to deliver up to 2.4 million tons/year of LNG. In July 2011, Qatar Gas delivered its first LNG cargo to the Netherlands, as the country finished commissioning its receiving terminal in Rotterdam.

Northern Europe is building several terminals for receiving LNG. Rotterdam is commissioning an LNG terminal, adding 12 billion cubic meters/year of LNG capacity to the market, about one-third of the total annual consumption in the Netherlands. France is building a 9 billion cubic meters/year terminal in Dunkirk, northern France. Poland is building one on Wolin Island, which could supply the German gas network in addition to Belgium's 9 billion cubic meters/year Zeebrugge terminal. Ras Gas terminal, owned by Qatar Petroleum and Exxon Mobil which has the capacity to ship 4.5 billion cubic meters/year, is also under study an expansion.

In November 2011, Qatar inaugurated the construction of the 1.4 million cubic feet/day Barzan gas project at a cost of \$10.3billion. Barzan gas production is scheduled to start up in 2014, with liquids production expected to ramp up to 100,000 b/d of condensate. The project will supply natural gas to power generation and water desalination plants as well as small and medium sized industries in Qatar. The project will also produce ethane that will be used as feedstock in the local petrochemical industries, in addition to propane and butane for export. The project will be completed in two phases. Train 1 is expected to be operational in 2014 and Train 2 in 2015. Ras Gas is the project manager and operator of the Barzan gas project, through a joint venture between Qatar Petroleum and an affiliate of Exxon Mobil.

## **2-7 Saudi Arabia**

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, 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 fields and will produce around 1.8 billion cubic feet/day of much needed gas for the Saudi master gas system.

## **2-8 Syria**

In July 2011, Syria, Iraq, and Iran signed a Memorandum of Understanding (MOU) for the construction of a natural gas pipeline initially planned to transport gas from the Iranian port of Assaluyeh to Iraq and Syria, and eventually to Lebanon and Europe. The 56-inch pipeline, named the Islamic Gas Pipeline, is expected to have a total length of 5,600 km, including sections of Southern Europe, and a capacity to transport up to 110 million cubic meters of natural gas per day at a cost of \$10 billion.

In August 2011, Syrian Ministry of Petroleum and Mineral Resources inaugurated a new gas field at Sadad, Southeast of Homs. Production from the Sadad field, which is expected to reach to a total of 1 million cubic meters of natural gas per day, will be collected at the south middle area gas processing plant in the Furqlus region. It is



expected that the production from the new field will save \$600,000 daily for the cost of fuel oil used for power generation.

Syria seeks to diversify sources of natural gas supply to meet the requirements of the local market. A feasibility study to build a port to receive the liquefied gas tankers is currently undertaken, in addition to the completion of the construction of the Arab gas pipeline project to be connected with the Turkish gas network in order to import or export the natural gas to Turkish and global markets.

### **2-9 Tunisia**

Tunisia seeks to control the increasing rate of energy consumption by relying on natural gas, reducing the volume of gas consumption, increasing the efficiency of its use and expanding the gas exploration processes. The natural gas sector provides half of Tunisia revenues for fuel and the country is expected to achieve a surplus of gas, an estimated two million tons of oil equivalent in 2012, after the completion of Sadr Bael gas field development and the project of south gas. The construction and improving of the gas transportation network will provide a possibility to connect 75 localities with gas distribution network and increase the number of houses connected to the network from 530 thousand to 800 thousand houses in 2012.

### **2-10 United Arab Emirates**

Abu Dhabi has awarded the last major construction contract for its \$10 billion Shah ultra-sour gas field, allowing the 500 million cubic feet/day of sales gas and 35,000 b/d of the condensate capacity project to come on stream by 2015.

Abu Dhabi Gas Industries (Gasco) a subsidiary of Abu Dhabi National Oil Company (ADNOC) has signed a contract with Athens based Consolidated Contractors Company (CCC) for building 22,000 tons/day sulphur unit. The contract includes sulphur granulation and handling facilities, a marine terminal, and an 11km pipeline, at a cost of \$550 million. The project will make the UAE the world's largest sulphur exporter, and help meet part of the local growing gas needs during the peak demand period.

Abu Dhabi Gas Industries Company (GASCO) has awarded a contract for the engineering, procurement and construction (EPC) work on a new gas pipeline worth an estimated total of \$189 million to Indian multinational conglomerate Larsen & Toubro (L&T). The new (Habshan-Ruwais- Shuweihat) gas pipeline would supply natural gas to both the Abu Dhabi Oil Refining Company (Takreer) refinery expansion at Ruwais, and the water and power plant in Shuweihat. The completion dates for the pipeline project are expected to be 24 and 26 months for the Ruwais and Shuweihat branches respectively.

## **2-11 Jordan**

Jordan is studying building an LNG terminal at its Red Sea port of Al-Aqaba to import 1million tons/year of Qatari gas.

## **3. World's Most Important Gas Activities**

Petrobras announced that it will install a third offshore LNG re-gasification terminal with a capacity of 14 million cubic meters/day. The terminal will supply gas to Bahia state, the heaviest consumer

of gas among the northeastern Brazilian states and will interconnect with a pipeline network at two sites. Construction works will begin in March 2012 with completion scheduled for mid 2013 at a cost of nearly \$425 million.

An international consortium led by Santos Ltd., gave its final approval to develop the 7.8 million tons/year Gladstone LNG project in Queensland, Australia, at a cost of \$16 billion.

Enterprise Products Partners LP has started operations at its fourth natural gas liquid fractionator at Mont Belvieu, Tex., at nameplate capacity of 75,000 b/d. The addition will increase Enterprise's nameplate capacity at Mont Belvieu to 380,000 b/d and provide fractionation for the natural gas liquid produced from shale plays, including Eagle Ford field in Texas and those in the Rocky Mountains and Midcontinent.

Alta Gas Ltd., Has announced that it will construct a gas processing facility and an associated gas gathering system in the Gardendale area, about 100 km northwest of Alta, Canada, at a cost of about \$235 million. The gas processing facility is expected to start operating in late 2012.

DESFA SA, the operator Hellenic Gas Transmission System, awarded a front-end engineering and design contract for the onshore portion of the Greece-Italy Natural Gas Interconnector (IGI) pipeline to Penspen Ltd., and C&M Engineering SA. The 580-km, 42-in diameter, Greek section of the gas pipeline will extend from the Komotini area in eastern Greece to Thesprotia on the west coast, where it will connect with IGI's offshore segment. IGI pipeline will take gas from the Turkish pipeline system and transport it to the Italian

pipeline system, providing an export route to Europe for natural gas from the Caspian region.

Hess Corporation, Houston, has awarded a contract for detailed design and procurement to Mustang Engineering Co., for expansion of Tioga gas plant in North Dakota. The project will include expanding the plant capacity from about 110 million cubic feet/day to 250 million cubic feet/day and installing cryogenic plant for ethane recovery. The project is expected to be completed in the second half of 2012.

Gazprom has announced that Turkey granted all the necessary and unconditional permissions that allow the building and operating of the South Stream project via Turkey's exclusive economic zone in the Black Sea. Turkey's permission was the final hurdle to the pipeline's construction, and was described as the most serious proof that the project will be completed by 2015.

The South Stream project will transport as much as 63 billion cubic meters/year of gas in two branches, the first from Russia to Bulgaria, Serbia, Hungary, Slovenia, Australia, and Italy; and the second from Russia to Croatia, Macedonia, Greece, and Turkey.

The South Stream project was initiated by Gazprom and Eni SPA in 2007, and the two firms established a joint company for the project in 2008 and two other French companies hold minority stakes in the project. The estimated cost of the project is \$20 billion.

Construction of the first line of the twin Nord Stream pipeline system began in April 2010, and was completed in June 2011. The second line, which runs parallel to Line 1, is planned to come on stream in the last quarter of 2012. Each line has a transport capacity of roughly 27.5 billion cubic meters/year of natural gas.

Nord Stream will deliver gas from western Siberia in Russia to the receiving station in Lubmin, Germany, where it can be transported onwards to Belgium, Denmark, France, the Netherlands, the UK, and other countries.

The Nord Stream gas pipeline project is operated by Nord Stream AG, a joint venture in which Gazprom holds a 51% stake, BASF/Wintershall and E.ON Ruhrgas hold 20% each and the remaining 9% stake is held by NV Netherlands Gasunie.

**TABLES  
OF CHAPTER THREE**



**Table 3-1**  
**World Existing Topping Distillation Capacity by Region,**  
**2010 and 2011**  
**(Million b/d)**

	2010	2011	Difference	(%) Change 2011/2010
Asia/Pacific	24.87	24.92	0.05	0.20
North America	21.31	21.25	(0.06)	(0.28)
Western Europe	14.63	14.43	(0.20)	(1.37)
Eastern Europe/CIS	10.37	10.37	0.00	0.00
Middle East	7.25	7.28	0.03	0.41
South America/ Caribbean	6.58	6.58	0.00	0.00
Africa	3.22	3.22	0.00	0.00
<b>Total</b>	<b>88.23</b>	<b>88.05</b>	<b>(0.18)</b>	<b>(0.20)</b>

Note: Parentheses denote negative figures.

Source:

- Oil & Gas Journal, 6 Dec. 2010 & 6 Dec. 2011.

**Table 3-2**  
**World Catalytic Conversion Capacity by Region\*,**  
**2010 and 2011**  
**(Million b/d)**

	2010	2011	(%) Change 2011/2010
North America	12.62	12.58	(0.32)
Asia/Pacific	6.48	6.66	2.78
Western Europe	5.62	5.54	(1.42)
Eastern Europe/CIS	2.68	2.68	0.00
South America/Caribbean	1.84	1.84	0.00
Middle East	1.61	1.61	0.00
Africa	0.73	0.73	0.00
<b>Total</b>	<b>31.58</b>	<b>31.64</b>	<b>0.19</b>

\* Includes catalytic cracking, hydrocracking and catalytic reforming.

Note: Parentheses denote negative figures.

Source:

- Oil & Gas Journal, 6 Dec. 2010 & 6 Dec. 2011.

**Table 3-3**  
**Regional Catalytic Conversion Capacity by Process,**  
**2010 and 2011**  
**(Million b/d)**

	Catalytic Reforming				Catalytic Cracking				Catalytic Hydrocracking			
	2010	2011	Dif-ferent	(%) Change 2011/2010	2010	2011	Dif-ferent	(%) Change 2011/2010	2010	2011	Differ-ent	(%) Change 2011/2010
North America	4.18	4.13	(0.05)	(1.20)	6.57	6.51	(0.06)	(0.91)	1.87	1.94	0.07	3.74
Western Europe	2.19	2.14	(0.05)	(2.28)	2.26	2.22	(0.04)	(1.77)	1.18	1.18	0.00	0.00
Asia/Pacific	2.15	2.21	0.06	2.79	3.08	3.21	0.13	4.22	1.25	1.25	0.00	0.00
Eastern Europe/CIS	1.47	1.47	0.00	0.00	0.88	0.88	0.00	0.00	0.33	0.33	0.00	0.00
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
<b>Total</b>	<b>11.50</b>	<b>11.46</b>	<b>(0.04)</b>	<b>(0.35)</b>	<b>14.67</b>	<b>14.70</b>	<b>0.03</b>	<b>0.20</b>	<b>5.42</b>	<b>5.49</b>	<b>0.07</b>	<b>1.29</b>

\* Includes catalytic cracking, hydrocracking and catalytic reforming.

Note: Parentheses denote negative figures.

Source:

- Oil & Gas Journal, 6 Dec. 2010 & 6 Dec. 2011.

**Table 3-4**  
**World Coke Production Capacity from Thermal Conversion**  
**Process by Region, 2010 and 2011**  
**(Thousand tons/d)**

	2010	2011	Difference	(%) Change 2011/2010
North America	131.42	133.71	2.29	1.74
Western Europe	12.60	12.61	0.01	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
<b>Total</b>	<b>206.82</b>	<b>209.12</b>	<b>2.30</b>	<b>1.11</b>

Source:  
 - Oil & Gas Journal, 6 Dec. 2010 & 6 Dec. 2011.

**Table 3-5**  
**World Hydrotreating Capacity by Region, 2010 and 2011**  
**(Million b/d)**

	2010	2011	Difference	(%) Change 2011/2010
North America	16.32	16.37	0.05	0.31
Of which: Canada	na	na	-	-
Mexico	na	na	-	-
USA	na	na	-	-
Western Europe	10.02	10.08	0.06	0.60
Asia/Pacific	10.03	10.23	0.20	1.99
Eastern Europe/CIS	4.27	4.27	0.00	0.00
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
<b>Total</b>	<b>45.42</b>	<b>45.73</b>	<b>0.31</b>	<b>0.68</b>

Source:

- Oil & Gas Journal, 6 Dec. 2010 & 6 Dec. 2011.

**Table 3-6**  
**World's Top 25 Largest Refining Companies, January**  
**(2011 - 2012)**

Rank as in Jan. 2012	Company	Refining Capacity 1000 b/d	Rank as in Jan. 2011
1	Exxon Mobile	5788.0	1
2	Royal Dutch Shell PLC	4194.2	2
3	Sinopec	3971.0	3
4	BP PLC	3322.2	4
5	Valero Energy Corp	2776.5	8
6	Petroleos de Venezuela SA	2678.0	7
7	China National Petroleum Corp	2675.0	9
8	ConocoPhillips	2568.2	5
9	Chevron	2559.6	6
10	Saudi Aramco	2451.5	11
11	Total SA	2314.0	10
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	1423.0	15
16	Rosneft	1293.0	16
17	OAOLukoil	1217.0	17
18	Marathon Petroleum Co.LP	1188.0	18
19	SK Corp	1115.0	24
20	Repsol	1105.0	19
21	Kuwait National Petroleum Co	1085.0	20
22	Petramina	993.0	21
23	Agip Petroli SPA	904.0	22
24	Flint Hills Resources	815.5	25
25	Sunoco Inco	675.0	23

Source:  
 - Oil & Gas Journal, 6 Dec. 2011.

**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	840.0
3 -	GS Caltex Corp	Yeosu, South Korea	760.0
4 -	Reliance Petroleum	Jamnagar, India	660.0
5 -	ExxonMobile Refining&Supply Co	Jurong/Pulau Ayer Chawan, Singapore	605.0
6 -	Reliance Industries, Ltd	Jamnagar, India	580.0
7 -	S-Oil Corp	Onsan, South Korea	565.0
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 -	ExxonMobile Refining&Supply Co	Baton Rouge, Louisiana, USA	502.5
12 -	Hovensa LLC	St. Croix, Virgin Islands, USA	500.0
13 -	Marathon Petroleum Co. LLC	Garyville, Louisiana, USA	490.0
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, 6 Dec. 2011.

**Table 3-8**  
**Installed Refining Capacity in the Arab Countries,**  
**2007-2011**  
**(Thousand b/d)**

	Number of Refineries in 2010	2007	2008	2009	2010	2011
Algeria	5	463	463	463	463	463
Bahrain	1	249	249	262	262	262
Egypt	8	726	726	726	726	726
Iraq	14	597	597	846	846	846
Kuwait	3	889	889	936	936	936
Libya	5	378	378	378	378	378
Qatar	2	137	137	283	283	283
Saudi Arabia	7	2095	2095	2095	2095	2095
Syria	2	240	240	240	240	240
Tunisia	1	34	34	34	34	34
UAE	5	798	798	798	798	798
<b>Total OAPEC</b>	<b>53</b>	<b>6606</b>	<b>6606</b>	<b>7061</b>	<b>7061</b>	<b>7061</b>
Jordan	1	90	90	90	90	90
Sudan	3	140	140	140	140	140
Somalia	-	10	-	-	-	-
Oman	2	222	222	222	222	222
Morocco	2	155	155	155	155	155
Mauritania	1	25	25	25	25	25
Yemen	2	140	140	140	140	140
<b>Total other Arab countries</b>	<b>11</b>	<b>782</b>	<b>772</b>	<b>772</b>	<b>772</b>	<b>772</b>
<b>Total Arab countries</b>	<b>64</b>	<b>7388</b>	<b>7378</b>	<b>7833</b>	<b>7833</b>	<b>7833</b>

Source:  
 - Oil & Gas Journal, 6 Dec. 2011.

**Table 3-9**  
**New Refinery Construction Projects in OAPEC Member Countries**

Country	Project	Status 2010	Refining Capacity 1000 b/d	Status 2011
Algeria	Tiaret	Feasibility study	300	Constr bidders evaluation
Egypt	Musturud	Study	50	Study
	Ain al-Sokhna	Study	130	Postponing
Iraq	Nasiryia	Engineering designs	300	Basic designs
	Karbala	Engineering designs	140	Basic designs
	Misan	Engineering designs	150	Basic designs
	Kirkuk	Study	150	Basic designs
Kuwait	Al-Zour Terminal	Study	530	Study
Qatar	Al-Shaheen	Study	250	cancel
Saudi Arabia	Yanbu	Construction	400	Construction
	Jubail	Construction	400	Construction
	Ras Tanura	Engineering designs	400	Engineering designs
	Jizan	Engineering designs	400	Engineering designs
Syria	Furoqlos	Study	140	Study
	Deir Al-zour	Study	140	Study
	Deir Al-zour-2	Study	100	Study
Tunisia	Skhira	Study	120	Postponing
UAE	Fujaira	Feasibility study	500	Engineering designs
	Ruwais	Engineering designs	417	Construction

**Table 3-10**  
**New Refinery Construction Projects in Other Arab Countries**

Country	Project	Status 2010	Refining Capacity 1000 b/d	Status 2011
Oman	Dukum	Postponing	200	Engineering designs
Sudan	Port Sudan	Study	150	Postponing
Morocco	Al-Jarf Al-asfar	Study	200	Postponing
Yemen	Rass Issa	Study	160	Postponing
	Hadramout	Study	50	Postponing

**Table 3-11**  
**World Top 10 Ethylene Complexes, January 2011**

	Company Name	Location	Production Capacity (Thousand) (tons/Year)
1-	Formosa Petrochemical Corporation	Mailiao, Taiwan, China	2935
2-	Nova Chemicals Corporation	Joffre, Alta , Canada	2812
3-	Arabian Petrochemical Company	Jubail, Saudi Arabia	2250
4-	Exxon Mobil Chemical Company	Baytown, Tex	2197
5-	Chevron Phillips Chemical Company	Sweeny - Tex	1865
6-	Dow Chemical Company	Terneuzen, Netherlands	1800
7-	Ineos Olefins & Polymers	Chocolate Bayou, Tex	1752
8-	Equistar Chemicals LP	Channel view , Tex	1750
9-	Yanbu Petrochemical Company	Yanbu, Saudi Arabia	1705
10-	Equate Petrochemical Company	Shuaiba, Kuwait	1650

Source:

- Oil & Gas Journal, 26 July, 2010

**Table 3-12**  
**World Ethylene Capacity by Region,**  
**2009 and 2010**  
**(Thousand tons at the end of the year)**

	2009	2010	Difference	(%) Change 2010/2009
North America	34469	34508	39.0	0.11
Asia/Pacific	37731	42631	4900.0	12.99
Western Europe	24918	24904	(14.00)	(0.06)
Middle East	17804	21659	3855.0	21.65
Eastern Europe/CIS	7971	7971	0.0	0.00
South America	5084	5084	0.0	0.00
Africa	1698	1698	0.0	0.00
<b>Total</b>	<b>129675</b>	<b>138455</b>	<b>8780.0</b>	<b>6.77</b>

Note: Parentheses denote negative figures.

Source:

- Oil & Gas Journal , 26 July, 2010 & 4 July, 2011

**Table 3-13**  
**World Ethylene Production Capacity by Country,**  
**(Thousand tons /Year)**

Country	2009	2010	Change
Azerbaijan	330	330	0
Argentina	839	839	0
Spain	1430	1430	0
Australia	502	502	0
Palestine	200	200	0
Germany	5757	5743	(14)
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	2272	3172	900
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	844	844	0
Singapore	2780	2780	800
Slovak Republic	220	220	0

/Cont

Table 3-13 Cont.

Country	2009	2010	change
Sweden	625	625	0
Switzerland	33	33	0
Chile	45	45	0
Serbia and Montenegro	200	200	0
China	11778	12978	2200
Taiwan	4006	4006	0
France	3373	3373	0
Venezuela	600	600	0
Finland	330	330	0
Qatar	1220	2520	1300
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	10700	11955	2555
UK	2855	2855	0
Norway	550	550	0
Austria	500	500	0
Nigeria	300	300	0
India	2515	3315	800
Netherlands	3965	3965	0
USA	27554	27593	39
Japan	7265	7265	0
Greece	20	20	0

Note: Parentheses denote negative figures.

Source:

- Oil & Gas Journal , 26 July, 2010 & 4 July, 2011

**Table 3-14**  
**Top 10 Ethylene Producers**  
**Jan 2011**

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.	19	12515	8551
4 - Royal Dutch Shell Plc	13	9358	5947
5 - Sinopec	13	7575	7575
6 - Total AS	11	5933	3472
7 - Chevron Phillips petrochemical Co.	8	5607	5352
8 - Lyondell Basell (1)	8	5200	5200
9 - Iran National Petrochemical	7	4734	4734
10 - Ineos	6	4656	4286

Notes:

1 - Includes Subsidiary Equistar Chemicals Lp.

Source:

- Oil & Gas Journal, 4 July, 2011

**Table 3-15**  
**Consumption of Natural Gas by Region,**  
**2009 and 2010**  
**(Billion cubic meters)**

	2009	2010	(%) Change 2010/2009
Europe & Eurasia*	1060.5	1137.2	7.2
North America	807.7	846.1	4.8
Asia/Pacific	503.9	567.6	12.6
Middle East	344.1	365.5	6.2
South & Central America	135.1	147.7	9.3
Africa	98.9	105.0	6.2
<b>Total</b>	<b>2950.2</b>	<b>3169.1</b>	<b>7.4</b>

\* CIS , Europe and Turkey represented by Europe & Eurasia.

Source:

- BP Statistical Review of World Energy, June 2011.

**Table 3-16**  
**Share of Natural Gas in the Total Consumption**  
**of Commercial Energy by Region, 2007 - 2010**  
(%)

	2007	2008	2009	2010
Middle East	44.3	47.0	47.2	46.9
Europe & Eurasia*	33.8	34.7	34.4	17.4
North America	24.9	26.7	27.6	17.7
Africa	20.3	23.6	23.4	25.3
South & Central America	22.3	22.2	21.5	21.4
Asia/Pacific	10.7	10.9	10.8	11.2
<b>Total</b>	<b>23.5</b>	<b>24.0</b>	<b>23.8</b>	<b>23.8</b>

\* CIS , Europe and Turkey represented by Europe & Eurasia.

Source:

- BP Statistical Review of World Energy, June 2008 & June 2009 & June 2010 and June 2011.

**Table 3-17**  
**Natural Gas Exports by Region, 2009 and 2010**  
**(Billion cubic meters)**

	2009	2010	(%) of total	(%) Change 2010/2009
<b>Europe &amp; Eurasia*</b>	<b>301.29</b>	<b>446.56</b>	<b>45.8</b>	<b>48.2</b>
Of which: Norway	98.89	100.59	10.3	1.7
Netherlands	49.67	53.33	5.5	7.4
UK	12.17	16.65	1.6	28.6
Of which: Russia	134.79	199.85	20.5	48.3
Turkmenistan	5.77	19.73	2.0	241.9
<b>North America</b>	<b>123.35</b>	<b>125.23</b>	<b>12.8</b>	<b>1.5</b>
Of which: Canada	92.24	92.40	9.5	0.2
USA	30.32	31.98	3.3	5.5
<b>Africa</b>	<b>105.08</b>	<b>112.93</b>	<b>11.6</b>	<b>7.5</b>
Of which: Algeria	52.67	55.79	5.7	5.9
Egypt	18.32	15.17	1.6	(17.2)
Libya	9.89	9.75	1.0	(1.4)
Nigeria	15.99	24.02	2.5	50.2
<b>Asia/Pacific</b>	<b>107.75</b>	<b>125.89</b>	<b>12.9</b>	<b>16.8</b>
Of which: Australia	24.24	25.36	2.6	4.6
Brunei	8.81	8.83	0.9	0.2
Indonesia	35.67	41.25	4.2	15.6
Malaysia	30.73	31.99	3.3	4.1
Mynamar	8.29	8.81	0.9	6.3
<b>Middle East</b>	<b>92.83</b>	<b>128.18</b>	<b>13.1</b>	<b>38.1</b>
Of which: Oman	11.54	11.49	1.2	(0.4)
Iran	5.67	8.42	0.9	48.5
Qatar	68.19	94.90	9.7	39.2
UAE	7.01	7.90	0.8	12.7
<b>South America of which:</b>	<b>32.23</b>	<b>36.46</b>	<b>3.7</b>	<b>13.1</b>
Bolivia	9.81	11.65	1.2	18.8
Trinidad & Tobago	19.74	20.38	2.1	3.2
<b>Total</b>	<b>791.44</b>	<b>975.26</b>		<b>23.2</b>

\* CIS , Europe and Turkey represented by Europe & Eurasia.

Note: Parentheses denote negative figures.

Source:

- BP Statistical Review of World Energy, June 2011.

**Table 3-18**  
**World Natural Gas Exports by Region,**  
**2009 and 2010**  
**(Billion cubic meters)**

	2009	(%)	2010	(%)
<b>A- Exports by Pipeline.</b>				
Europe & Eurasia *	320.18	58.4	427.88	63.1
North America	122.49	22.3	123.59	18.2
Africa	49.94	9.1	54.53	8.0
Asia/Pacific	19.16	3.5	29.80	4.4
Middle East	24.42	4.5	27.57	4.1
South America	12.49	2.3	14.25	2.1
<b>Total World Exports by Pipeline</b>	<b>548.68</b>	<b>100.0</b>	<b>677.62</b>	<b>100.0</b>
<b>B- Exports as LNG.</b>				
Europe & Eurasia *	10.02	4.1	18.68	6.3
North America	0.86	0.4	1.64	0.6
Africa	55.14	22.7	58.42	19.6
Asia/Pacific	88.59	36.5	96.11	32.3
Middle East	68.41	28.2	100.62	33.8
South America	19.74	8.1	22.20	7.5
<b>Total World Exports as LNG</b>	<b>242.76</b>	<b>100.0</b>	<b>297.67</b>	<b>100.0</b>
<b>Total World Exports</b>	<b>791.44</b>		<b>975.29</b>	
<b>Exports by Pipeline/ Total Exports (%)</b>	<b>69.33</b>		<b>69.48</b>	
<b>Exports as LNG/ Total Exports (%)</b>	<b>30.67</b>		<b>30.52</b>	

\* CIS , Europe and Turkey represented by Europe & Eurasia.

Source:

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

**Table 3-19**  
**Arab Natural Gas Exports,**  
**2006 - 2010**  
**(Billion cubic meters)**

	2006	2007	2008	2009	2010
<b>A- Exports by Pipeline.</b>					
Algeria	36.92	34.03	37.50	31.77	36.48
Qatar	-	3.77	17.10	18.75	19.15
Libya	7.69	9.20	9.87	9.17	9.41
Egypt	1.93	2.39	2.86	5.50	5.46
Oman	1.40	0.95	-	-	-
UAE	-	-	-	-	-
<b>Total Arab Exports by Pipeline</b>	<b>47.94</b>	<b>50.34</b>	<b>67.33</b>	<b>65.19</b>	<b>70.50</b>
<b>B- Exports as LNG.</b>					
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
<b>Total Arab Exports as LNG</b>	<b>97.21</b>	<b>100.33</b>	<b>95.11</b>	<b>102.85</b>	<b>129.98</b>
<b>Total Arab Exports</b>	<b>145.15</b>	<b>150.67</b>	<b>162.44</b>	<b>168.04</b>	<b>200.48</b>
<b>Exports by Pipeline/ Total Exports (%)</b>	<b>33.03</b>	<b>33.41</b>	<b>41.45</b>	<b>38.79</b>	<b>35.17</b>
<b>Exports as LNG/ Total Exports (%)</b>	<b>66.97</b>	<b>66.59</b>	<b>58.55</b>	<b>61.21</b>	<b>64.83</b>

Sources:

- BP Statistical Review of World Energy, June 2007, June 2008, June 2009 , June 2010 and June 2011.

**Table 3-20**  
**Average World Natural Gas Prices\*, 2006-2010**  
**(Dollar/Million BTU)**

	2006	2007	2008	2009	2010	(%) Change 2009/2008
USA	6.76	6.95	8.85	3.89	4.39	12.9
Canada	5.83	6.17	7.99	3.38	3.39	0.3
Japan**	7.14	7.73	12.55	9.06	10.91	20.4
European Union	8.69	8.93	12.61	8.52	8.01	(6.0)
UK	7.87	6.01	10.79	4.85	6.56	35.3

\* Average CIF Prices.

\*\* LNG Prices

Note: Parentheses denote negative figures.

Source:

- BP Statistical Review of World Energy, June 2011.

## PART TWO



## OAPEC ACTIVITIES IN 2011



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## **PART TWO**

### **OAPEC ACTIVITIES IN 2011**

## **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 86<sup>th</sup> meeting in Cairo, Egypt, on 20<sup>th</sup> of Jumada II H, corresponding to 23<sup>rd</sup> of May 2011. The meeting was at the level of Executive Bureau members representing the ministers, and was chaired by HE. Ali Abdul Jabbar Al-Sawad, the representative of the Bahrain in the Executive Bureau. The Council held its 87<sup>th</sup> meeting in Cairo, Egypt on 29<sup>th</sup> of Muharram 1433H, corresponding to 24<sup>th</sup> of December 2011, under the chairmanship of HE. Dr Abdul Hussain bin Ali Mirza, minister of energy in Bahrain who chaired the 2011 session.

Resolutions adopted by the Ministerial Council in 2011, 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 129<sup>th</sup> meeting in Cairo on 18<sup>th</sup> Jumada II 1432H, corresponding to 21<sup>st</sup> of May 2011 to compile the agenda for the 86<sup>th</sup> meeting of the Ministerial Council. The 130<sup>th</sup> meeting was held in Cairo on the 3<sup>rd</sup> Zul- Qaadah 1432H, corresponding

to 1<sup>st</sup> October 2011, to consider the 2011 draft budgets for the General Secretariat and Judicial Tribunal and to submit recommendations to the Ministerial Council.

The Bureau also held its 131<sup>st</sup> meeting in Cairo, on 26<sup>th</sup> of Muharram 1432H, corresponding to 21<sup>st</sup> of December 2011 to prepare the agenda for the aforementioned 87<sup>th</sup> Ministerial Council meeting.

## CHAPTER TWO

### THE GENERAL SECRETARIAT

#### I. Studies, Papers and Reports

The General Secretariat has implemented its 2011 annual program in conducting economic and technical studies and research papers related to petroleum industry. Further, the General Secretariat has also completed its 2011 proposed seminars and workshops. These activities are reviewed as follows:

#### **1-1 A study entitled: Unconventional Gas Resources and their Technical and Economic Prospective.**

The study aimed to illustrate the different types of unconventional gas resources, its locations, magnitude, available exploiting and production techniques, and evaluating such resources in light of the prevailed gas prices. The study also pointed out the latest international techniques used to develop these resources along with the future outlook. The study was divided into six chapters; chapter I was an overview of the types of world unconventional gas resources, and the magnitude of current and prospected share of these resources to the world as production. Chapters from II to V focused on the evolution of unconventional gas resources: tight gas, shale gas, coal bed methane and gas hydrates. The chapters reviewed the latest development techniques with many project examples. Chapter VI discussed the factors affecting unconventional gas production economics. The study concluded the importance of urging Arab countries to evaluate and develop their unconventional gas resources provided that they're technically, economically and environmentally viable, so that such resources could become a support to Arab gas reserves and national exploitation, and a boost to crude exports to the international markets which -in turn- would consolidate

the national income. The study also shed light on effect of producing unconventional gas from resources close to the consumption spots in the industrialized countries on the future of Arab natural gas marketing to world gas markets.

### **1-2 A Study entitled: Development of Hydrocarbon Resources in Arab Countries**

The study aimed to shed light on current status of Arab hydrocarbon resources, with a brief review of the development history of such resources in each country. It also summarized some data about the top operating companies in these countries, and surveyed oil and gas reserves and production rates. The study highlighted the important fields that were/ are being focused on. It came in two parts, the first part included member countries of OAPEC, while the second part referred to non- member countries. Many tables were annexed to the study to summarize member countries profiles. Due to its importance, the Arab region attracted much focus to evaluate its undiscovered hydrocarbon resources, thus the study included a number of graphs to show the undiscovered hydrocarbon resources estimations in some Arab basins. The study concluded that the Arab proved oil reserves represented 57.5% of world conventional oil reserves of late 2010. Proved gas reserves represented 29.1% of the world known reserves. However, total Arab oil production was just about 30.4% of world total oil production of 2010, while Arab gas production was about 14.6% of worlds' total in 2009. Collectively, Arab oil reserves compensation was 11% between 2006-2010. The last is a good indicator that exploration and development operations could successfully support known reserves with new ones.

Moreover, the study suggested that more than 90% of Arab proved oil reserves are located in the Middle Eastern Arab countries; those as well have 84% of proved Arab gas reserves. International estimations suggest that the region has vast undiscovered hydrocarbon resources,

the highest share of undiscovered oil resources is in the Mesopotamian basin, while much of the undiscovered gas and condensate are within the Al Rub' Al- Khali basin.

### **1-3 A Study entitled: The Role of Hydrogen Management in Improving the Added Value of Refining Industry**

The importance of hydrogen network management emerged as a result of the growing need to secure large amounts of expensive hydrogen within the context of oil refineries efforts to remove sulfur from petroleum products in accordance with the requirements of clean fuels standards.

The study focused on the most viable options for hydrogen network management technologies in oil refineries, and the ways to maximize production at the lowest cost, it made reference to the role of these technologies in improving the added value and enhancing profitability in the refining industry. The study also confirmed the environmental benefits of hydrogen network management program, as a result of reducing the amount of refinery emissions polluting the environment, which is an outcome of improving the efficiency of hydrogen extraction units of the fuel gas system, and treating the lines of the excess- gas resulting from refining operations, rather than flaring them.

The study came in five chapters; chapter I defined the hydrogen networks that comprise lines and units of hydrogen production, consumption and purification. Chapter II overviewed the factors that led to the growing need to apply hydrogen management network program in oil refineries in the world in general, and in Arab countries in particular, such factors include the inflexibility towards meeting the requirements of refined products specifications, the complexity of refining processes, the decline of the quality of produced crudes, and the rising of construction, operation and maintenance costs of hydrogen production units.

Chapter III described the stages of applying hydrogen management program starting from evaluation stage to assess the status of the network to detect the bottlenecks, and specifying the desired objectives of the program application, through identifying possible solutions to improve network performance, then the actions taken to implement appropriate solutions and follow-up their results. Chapter IV indicated the benefits that can be obtained by the application of hydrogen management program.

Chapter V contained a number of case studies that have implemented the program in some international refineries, along with the reference to the benefits obtained. The study concluded that oil refineries in the member states of the Organization of Arab Petroleum Exporting Countries (OAPEC) experiencing major development in the implementation of many investment projects to improve their performance and enable them to meet the special requirements of international- standards for clean petroleum products, and improve their ability to refining heavy crudes with high sulfur content, which increases the need for hydrogen, and therefore the need to implement programs to manage the network of hydrogen, so to help avoiding the burden of potential high costs of these projects, and to contribute to improving the added value of these refineries and enhance their competitiveness in international markets.

#### **1-4 Dialogue between Producing and Consuming Countries and its Importance to Price Stability**

The study aimed to highlight the importance of dialogue between producing and consuming countries and its significance to achieve oil markets stability in general, and oil price stability in particular. Part I illustrated the oil price development and its fluctuation from 1990-2010. Part II addressed the evolution of energy dialogue within the last two decades, i.e. since it started in 1991 leading to the International Energy Forum which became the focal point of cooperation efforts of

the world energy players. Part III was devoted to the dialogue channels between producing and consuming countries, of which the International Energy Forum that has 86 member countries dominating more than 90% of international oil and gas supply and demand. Part IV of the study reviewed the reflection of the dialogue between oil producing and consuming countries to reduce surplus oil price fluctuation levels. The study concluded that there is an obligation to promote dialogue between all parties related to the oil market, especially at this critical stage, in order to secure oil supplies, which is one of the necessary and urgent issues that should be considered to strengthen and develop such supplies. The study emphasized the correlation between world security of supply, and security of demand, along with strengthen and expand of the dialogue between energy producers and consumers. It also promoted the importance of cooperation in the areas of technical and human resource development in the petroleum industry, and the need to avoid any legislation that could impede the cooperation between the two parties.

### **1-5 Evolution of the Demand Growth for Petroleum Products in the World Key Markets and its Effect on the Member Countries**

The study primarily aimed to shed light on the evolution of the petroleum products demand in the major world markets and the implications for the Member States of the OAPEC. Part I gave an overview of refining industry. The general trend of refining capacity increased despite the crisis that swept the refining industry. Part II was dedicated to address the pattern of demand for petroleum products in the world, where the oil industry, and since its launch faces ongoing change in the pattern of demand for petroleum products in terms of quantity, quality and specifications, in addition to the change in the map of demand and restructuring by countries and international groups. Part III focused on the pattern of demand for petroleum products in some

key markets. The United States stands out as the largest market for oil in the world, in addition to the heavily dominance of gasoline on the USA consumption pattern. Part IV prospected the growth of petroleum products demand pattern and its effect on the member countries. It expected the share of light products including middle distillates to increase from about 78% in 2009 to reach more than 80% of the total global demand for petroleum products by 2030. While heavy products would decrease from more than 22% to less than 19% during the same period, according to the reference case assumptions of OPEC.

### **1-6 Future Prospects for Global Oil Demand and the Role of Member Countries to Meet the Demand**

The study aimed to shed light on the future prospects for global oil demand, and mark its possible geographic and sector sources, and the role of the member countries in meeting such a demand.

Part I of the study provided a broad look at the evolution of global energy demand in general, and the demand for oil in particular from 1990- 2010 where the demand for oil has increased by 20 million barrel per day within the same period. Part II overviewed the main factors that affect the demand for oil, the most important of which are population growth, world economy growth, transport sector growth, evolution of oil prices and the policies of the consuming countries like oil taxes and encouraging of alternative energy resources and its effect on world oil demand from 1990- 2010. Part III addressed the future prospect for oil demand, it was divided into two phases; the first one out looked the short term until 2015, while the second phase was about the long term until 2030. Part IV reviewed the uncertainty surrounding the future of the global demand for oil, in the medium and long term. Part V highlighted the role of member countries in facing the global oil demand. The study concluded that most of the expected increase of demand for oil will be met by supplies of OPEC members; the increase in total OPEC's crude oil and natural gas liquids supply is predicted to reach about 59.5million bbl/d in 2030.

Supplies of OAPEC members are expected to play a vital role in meeting the bulk of the increase in global oil demand in the future, particularly those who are members in OPEC as well. The contribution of this group to the total production of the organization's conventional liquids is expected at about 75.4% in 2030. Member countries are expected to face huge challenges to expand their production and exporting capacities to meet the future oil demand, not only because of the internal and external geopolitics factors and uncertainty of demand, but for other reasons as well such as the hard-to-predict huge investments required in production capacity expansion sector.

### **1-7 The Evolution of Oil and Natural Gas in the USA**

The study aimed -in the first place- to shed light on the development of the oil and natural gas market in the United States, and its reflections on member countries. Part I overviewed the energy sector of the United States, where the USA maintained -for a long time- its position as the world largest energy consumer, until 2010 when it receded to the second place in favor of China. Part II addressed the development of oil market in the USA, which is considered as the homeland for the modern petroleum industry, and where the USA is a major oil producer. Part III addressed the development of the natural gas market in the United States, where the USA is the largest producer of natural gas in the world, followed by Russia. Natural gas production in the United States was characterized by general decrease from the turn of the current century and until 2005, after that it took an upward trend to hit 611 billion cubic meters in 2010, owing primarily to the boom that occurred in the exploitation of shale gas resources, which production was increased by more than 11 folds between 2000 and 2010.

Part IV was devoted to outlook the oil and natural gas market in the USA. Oil production is expected to reach about 6 million bbl per day by 2035, an increase of about 11% compared with 2009. This is in addition to the significant increases in the production of other liquids from non-

oil sources, such as bio- fuel and fluids extracted from biomass, coal and natural gas.

### **1-8 Development of Oil Revenues and its Effects on the Member Countries Economics**

The study demonstrated the prominence of oil revenues in the economies of the member countries, and aimed to clarifying the extent to which the member countries rely on oil exports. Within its six chapters, the study highlighted the main themes of oil exports. Chapter I provided an overview of the theoretical framework of the role of foreign trade in GDP. Chapter II demonstrated the petroleum potential of the member countries in terms of proved oil reserves, oil production and oil and petroleum products exports. Chapter III addresses the evolution of oil revenues at current prices and real term prices in the member countries during the period 2000 - 2010. Chapter IV showed the evolution of the GDP at current prices and real terms, and the status of oil exports in the composition of this product in terms of consumption spending and investment spending on one hand, and in exports of goods and services on the other hand. This chapter explained the openness of the economies of the member countries on the outside world. Chapter V examined the role played by oil exports in public budgets on both sides of public revenues and public expenditures, and the contribution of these exports to cover the deficit or surplus in the general budgets of the member countries. Finally, Chapter VI highlighted the trade balance of the member countries in terms of goods exports and imports, and the status of oil exports in commodity exports and its contribution to the coverage of commodity imports.

The study concluded a key recommendation, which is the need of the member countries to diversify their economic structures and increase the contribution of other economic sectors outside the mining industries sector in general, and the oil sector in particular, so as to limit the dependence of the economies of the member countries on the outside,

and to reduce the degree of the impact of fluctuations in the global economy on their local economies.

### **1-9 Developments in Energy Policy in the Industrialized Countries and its Impacts for Member Countries**

The study primarily aimed to shed light on developments in energy policy in the industrialized countries and the implications for the member countries. Part I of the study reviewed the features of the energy sector in industrialized countries, where energy mix has changed, and the total consumption of energy has increased by about 39% between 1973 and 2009. Part II provided historical background about energy policy in the industrialized countries, where the evolution of the concept of energy policy in the seventies of the last century evolved as a reaction of these countries to the local, regional and international developments that affected the international political and economic frameworks of energy markets. The eighties saw a reduction in interest in energy policy in the industrialized countries as a result of the abundance of supply, low oil prices, greater reliance on market factors and the exclusion of direct state intervention in economic activity. Part III was dedicated to address the key elements of energy policy in the industrialized countries. Part IV dealt with developments in the energy policies in major industrialized countries. In the United States the Energy Act of 2005, is considered as the first comprehensive and important legislation for more than a decade ago to address the challenges of energy, environment and economic growth. After the advent of the Obama administration in early 2009, the USA policy trends were changed by focusing on the so-called “green economy”. Part V of the study addressed the developments in energy policies in some major emerging countries, which included China and India for their growing importance in the global energy scene. Part VI devoted to address the implications for the oil industry and the member countries. Among its most important conclusions, the study said that in light of energy policies adopted in the consuming countries, it seems

that the greatest fear is not the arrival to a world oil production capacity peak, but the arrival of the world oil demand to a peak.

### **1-10 Future Demand for Coal and the Implications for the Oil Demand in the Member Countries**

The study aimed to shed light on coal as one of the main resources available to meet the world energy demand. The study provided a brief about coal types and the methods of extraction and processing, the key areas where it is used and greenhouse gases emitted by combustion, the available and expected technology to be used, coal reserves and production, consumption and trade during the period 1995 - 2009, and estimates of future demand for coal until 2035.

The study covered the subject of past and future emissions of carbon dioxide resulting from the consumption of coal. Finally, the study tried to provide a vision about the potential repercussions of the global demand for coal on the demand for petroleum in member countries. The most important findings of the study were:

- The world's coal consumption rates have risen above the level of energy consumption, where the world's coal consumption during the period 1995 - 2009 increased at an annual rate of 2.7%, while the annual rate of energy consumption increased by 1.9% during the same period.
- Coal is the primary energy source on which China depends heavily to meet its energy needs. China is expected to become the world's largest energy consumer in 2035, as its consumption will reach almost a quarter (24.6%) of total world energy consumption compared with 14.5% in 2005. In light of the increasing Chinese demand for oil and its lower production rate at the same time, China will depend more on oil imports to cover its local demand. According to OPEC scenario, the rate will increase from 53.7% in 2009 to 78.6% in 2030. Thus the member countries will have an important role in providing a good share of the Chinese demand for oil until 2030.

### **1-11 A Paper entitled: Strategies to Improve Specifications of Refined Petroleum Products in Arab Countries**

The paper defined the refining capacity in each member country of the Organization of Arab Petroleum Exporting Countries (OAPEC), and the total refining capacity in the Arab world which amounts to 7.83 million bbl per day, and represents 9% of the total refining capacity in the world that totals 88.2 million bbl per day, and the number of refineries (64 refineries out of world 662 refineries). The paper also showed the specification of oil refined products in the Arab members and non-members of the Organization of Arab Petroleum Exporting Countries, and referred to the reasons for the deviation of the refined products specifications in most Arab countries from the values used in the international standards, which can be summarized as follows:

- Stalemate in the process of implementing most of the investment projects needed for the development of oil refineries in the Arab world, which is due to the following reasons:
  - The decline in profitability of the refining industry, making it more difficult to justify investments in the industry, especially that it needs a long construction time before starting to return the investment.
  - The growing competition in the global markets due to operating many new refineries in the world, especially in India and China.
  - The decline in demand for petroleum products in the international markets as a result of the economic recession.
  - The difficulty of developing most of the existing refineries, due to its operational age and the equipments deterioration.
- The lack of local legislation in most of the Arab countries to force the refineries to adhere to specific standards for the specification of oil derivatives, which in turn is due to the following reasons:

- Poor public awareness of the importance of clean fuel and its role in protecting the environment from pollution.
  - The lack of clarity in the relations that show the role of each of the ministries and national companies and the agencies responsible for drafting environmental legislation.
  - The absence of official bodies responsible for the formulation of environmental standards in some Arab countries.

To address these difficulties, the paper pointed out the strategies used in the Arab countries to meet the challenges that hinder the improvement of the standards of oil derivatives, like the expansion of refining capacity and the development of existing refineries, with an emphasis on the role of initiatives undertaken by each of the League of Arab States and the Gulf Standards Organization, which aim to formulate local standards for specification of petroleum products in the Arab countries and the countries of the Gulf Cooperation Council. This is expected to contribute to the promotion of those who are responsible for the refining industry in the Arab world to implement procedures that could enable the refiners to improve the specification of petroleum products in line with international standards.

Finally, the paper presented some case studies for clean fuel projects being implemented in the member states of OAPEEC, which aim to produce derivatives with specifications identical to the latest European standards (Euro- 5). Examples presented included Al Jubail refinery project which is integrated with the petrochemical industry in the Kingdom of Saudi Arabia (SATORP), a joint venture between Saudi Aramco and France's Total, and the project of producing low sulfur diesel in Bahrain Refinery, and the Clean Fuel Project in the State of Kuwait.

This paper was submitted to the Middle East Downstream Week, which was held in Abu Dhabi - United Arab Emirates, under the patronage of the "Takreer Company" from 11- 8 May 2011.

## **1-12 A Paper entitled: The Future of the Refining Industry in the Arab Countries: Challenges and Opportunities**

The paper presented the total refining capacity in the Arab world amounting to 7.83 million bbl per day, which account for 9% of the total refining capacity in the world amounting to 88.2 million bbl per day, and the number of refineries (64 refineries out of the world 662 refineries).

The paper also showed the total cost of the expected projects, which comprise the building of new refineries and the development of existing refineries, in addition to the goals pursued by refiners to achieve through the implementation of these projects, which are summarized as follows:

- Meeting the growing demand for petroleum products in the local markets.
- Maximizing the light derivatives production rates at the expense of heavy cuts, by adding new capabilities to conversion processes.
- Producing clean fuels with specifications that are compatible with international standards of the protection of the environment from pollution, and by adding new capacities of hydro- treating processes, refinement, isomerization and alkylation.
- Bridging the gap between production and consumption rates of petroleum products, by modifying the structure of processing units in refineries.
- Improving the ability of refineries to meeting the requirements of legislation that prevent the discharge of pollutants to the environment.
- Diversifying the sources of national income.
- Improving the added value of crude oil rather than exporting the crude oil.
- Creating new jobs.
- Involving the private sector in the development of the national economy.

- Maximizing the utilization of the existing service facilities, such as networks of pipelines and tanks, and the loading and unloading stations of crude oil, petroleum products and others.

Finally, the paper addressed the most important difficulties encountered in the implementation of investment projects in the Arab oil refining industry, and the most important strategies followed to address these difficulties and to overcome the negative repercussions. The most important of these strategies are:

- Promoting integration and coordination between the Arab refineries.
- Sharing the risk by building partnerships with foreign and local investors.
- Promoting local scientific centers and research institutes, and strengthening cooperation with international consulting firms.
- Supporting the existing Arab refineries development projects to enable them to continue to provide the local market with derivatives of specifications that are compatible with the requirements of environmental standards, and enhance their competitiveness in international markets.

This paper was submitted to the fifth Global Refining Summit, which was held in Rotterdam - the Netherlands, from 20-18 May, 2011.

### **1-13 1-13 A paper entitled: The Potential and Exploitation of Natural Gas in the Arab Countries, and Transport Networks**

The paper covered the evolution of the Arab and world's vast natural gas reserves within the last two decades. A remarkable growth was recorded as world proved reserves were about 125.7 trillion cubic meters in 1990, and rose to 154.3 trillion cubic meters in 2000, and then to 187.1 trillion cubic meters in 2010. The share of the Arab countries of these reserves was 20.4% in 1990 and 26.2% in 2000, and 28.9% in 2010. The paper pointed out the world's production of natural gas at the

end of 2010, which amounted to 3.1933 trillion cubic meters, and the share of the Arab countries which was about 14.9%. Estimates of the world proven reserves compared to the current production quantities exported from the Middle East to other parts of the world, show that proven reserves are sufficient to meeting local needs for about 160 years according to current rates of production, and up to 113 years in Arab countries. The paper also indicated the expansion of the Arab countries in utilizing the natural gas in various fields such as electricity production, household, industry purposes and as feedstock in the petrochemical industry. Arab countries consumption of natural gas reached about 253 billion cubic meters in 2010. The paper then pointed out that the Arab countries are exporting about 70.5 billion cubic meters of natural gas per year through the pipelines, and some 130 billion cubic meters of liquefied gas.

The paper concluded that the Arab countries have huge reserves of natural gas that are enough to meet the growing expand of local demand, and provides large quantities for export to meet a large part of the global demand in the foreseen future, which will require the expansion of the existing pipelines networks, as well as construction of new pipelines to reach the consumption centers and the exporting terminals. It is hoped that the Arab gas pipeline will play a role in activating the cooperation and support the joint Arab economic and industrial cooperation, and will also contribute to the development of the European economy through the Nabucco project by linking Turkey to Europe. The pipelines that transport gas from Algeria to Italy and Spain, and Nigeria to Algeria act as energy bridges that can promote economic development in order to serve the interests of all related countries. The Arab countries can use natural gas in many areas like electricity generation, as feedstock in the petrochemical industry and as a fuel in cars. Arab countries have taken serious steps to meet their contribution to the global gas market, where they expanded the capacity to produce liquefied natural gas (LNG), where Qatar leads it production.

In addition to the establishment of new regional and international networks of pipelines, Qatar, Egypt and other Arab countries began to invest in the field of gas-to-liquids. The paper was presented to the Meeting of Experts on “Promotion to Reduce Emissions in the Transport Sector”, which took place in the ESCWA headquarters in Beirut - Lebanon on 5 and 6 of July, 2011, and was organized by ESCWA, in cooperation with the Gas Center of the United Nations Economic Commission for Europe.

## **II: Seminars and Meetings Organized by the General Secretariat**

### **2- 1 The 21<sup>st</sup> Forum of Fundamentals of Oil and Gas Industry**

In pursuant to its 2011 plane, the General Secretariat held the 21<sup>st</sup> forum of Fundamentals of Oil and Gas Industry, in its headquarter in Kuwait, from 27- 31 March 2011.

The forum aims to inform those who work in the middle management in the oil industry in Arab countries on the different sides and activities of the oil and gas industry, and help them to develop their abilities and expand their career and vocational prospect by explaining the various stages of the oil industry, by addressing the technical issues in non-technical language to match the level of the attendants.

The meeting provides an opportunity to introduce attendants to each other as members of the oil industry, and strengthen the links between them. Over the five days, selected lecturers - either from OAPEC or from other entities- presented a selection of lectures that covered technical, economic and media fields. Seven presentations were prepared by specialists from outside the General Secretariat, while specialists from the General Secretariat prepared and presented the rest of the lectures.

The Forum was opened by HE the Secretary General, Mr. Abbas Ali Al Naqi, who delivered a speech in which HE welcomed the participants and expressed his gratitude to the member countries for their respond to the invitation to participate in the activities of the forum. HE noted

that the General Secretariat has consistently held this event to provide an opportunity for the participants to deepen their knowledge in the fundamentals of the oil and gas industry, and pursuit the accelerated new technologies. HE said the forum provides good environment to foster closer professional and personal relationships among participant. Because of the benefits achieved in these areas through previous meetings, the forum has gained attention and support by the Council of Ministers of the Organization to ensure its continuation. HE then noted that the forum's program deals with four themes, technical, economic, environment and media, the themes were selected as to meet the needs of participants to improve their knowledge in their fields, whether they are professionals or economists, media or administrators. HE then presented a brief about the Organization of Arab Petroleum Exporting and the sponsored companies. Participated in the forum were from different member countries, 2 from the United Arab Emirates, 6 from the Kingdom of Bahrain, 11 from Saudi Arabia, 3 from the Syrian Arab Republic, 5 from the Republic of Iraq and 18 from Kuwait, along with 4 of the General Secretariat staff, which brought the total number to 49 participants.

As a social activity, the General Secretariat introduced participants to some aspects of development in the State of Kuwait by organizing a field trip to the Exhibition of Kuwait Oil Company in Al Ahmadi City, as well as a tour in the Scientific Center, and a sightseeing tour to the permanent headquarters building for Arab Organizations in the State of Kuwait, which houses the headquarters of the General Secretariat of OAPEC.

## **2- 2 The 11<sup>th</sup> Meeting of Working Group on Potential Cooperation in Natural Gas Investment in the Member Countries**

The 11<sup>th</sup> meeting of the Working Group was held in Cairo, Egypt on 4 and 5 October 2011. The meeting was opened by HE Mr. Abbas Ali Al 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 10<sup>th</sup> and the 11<sup>th</sup> meetings, and will discuss some more issues related to the natural gas industry in order to explore the possibility of cooperation between member countries in this field. HE assured the role of OAPEC in following up the latest Arab and international developments of natural gas industry and trading.

In conclusion, HE wished the participants all the success in achieving the objectives of the meeting, and wished them a pleasant stay in the Arab Republic of Egypt.

The first day included two sessions that reviewed 9 papers. The second day was devoted to discuss the recommendations and conclusions. The participants made presentations that showed developments in the natural gas industry in their respective countries, and received extensive discussions and constructive questions.

### **2-3 The 7<sup>th</sup> Coordination Meeting for Managers of Arab Petroleum Training Institutes in OAPEC Member Countries**

The 7<sup>th</sup> Coordination Meeting for Managers of Petroleum Training Institutes was held on 6 and 7 October 2011. The meeting was attended by 18 specialists from the training institutes from most of OAPEC's members. The meeting was opened by HE Abbas Ali Al Naqi, OAPEC's Secretary General, who welcomed the participants and thanked the Ministry of Petroleum in Egypt for its efforts to host 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 made:

- The continuous exchange of trainers and trainees between all the oil training institutes of the member countries based on bilateral agreements or others.
- The importance of deciding the specific subjects to be discussed in the next meeting, and that the participants should provide the General Secretariat with their visions and suggestions, so that the General Secretariat can review and decide the most appropriate proposals before the end of 2011.

On the second day of the meeting, many of the participating delegations attended a field trip to the new headquarters of the Oil and Gas Skills Company (under construction) in New Cairo.

#### **2- 4 The 18<sup>th</sup> Coordination Meeting of Environment and Climate Change Experts in Member Countries**

The 18<sup>th</sup> Coordination Meeting of Environment and Climate Change Experts in Member Countries was held in Cairo, Egypt, on 8 and 9 October 2011. The meeting is an annual event organized by the General Secretariat of OAPEC, with participation from environment and climate change experts of the member countries, and representatives from the Arab League, the Cooperation Council for the Arab States of the Gulf, and some other international and regional organizations.

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 of the interest of OAPEC members in regional and international forums, especially with regard to coordinating positions ahead of the Conference of Parties (COP-17), which will be held in the city of Durban in South Africa from 28 November to 9 December 2011.

### III. Conferences, Seminars, and Meetings Attended by General Secretariat

#### 3-1 The 12<sup>th</sup> Kuwait-Japan Joint Symposium

In response to an invitation from the Kuwait Institute for Scientific Research KISR, the General Secretariat participated in the 12<sup>th</sup> Kuwait-Japan Joint Symposium on “Upgrading Petroleum Refinery Operation” which was held in the Petroleum Researches and Studies Center on 18 and 19 January 2011. 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 twelve other papers; they covered the following key issues:

- Progress of the refining industry development projects in the State of Kuwait, and the most important challenges encountered during their implementation, and the actions taken to overcome these difficulties.
- Heavy crude oils refining technologies and its applications to the crudes produced in Kuwait.
- New research findings in the field of catalysts based on zeolite to improve the performance of hydrocracking processes and get high-value light cuts.

#### 3-2 The 1<sup>st</sup> Meeting for the Team of Comprehensive Arab Power Grid Study and Assess the Exploitation of Natural Gas for Exporting Electricity, Rabat, Morocco, 6- 7 February 2011.

In response to an invitation from the General Secretariat of the Arab League (Economic Affairs Sector- Energy Department- Secretariat of the Arab Ministerial Council for Electricity), the General Secretariat of OAPEC participated in the First meeting for the Team of Comprehensive

Arab Power Grid Study and Assess the Exploitation Natural Gas for Exporting Electricity, along with the team of the World Bank who is responsible for the third part of the study (institutional and legislative frameworks).

The meeting took place at the headquarters of the World Bank in Rabat, Kingdom of Morocco, on 6 and 7 February 2011. Participants in the meeting represented eight Arab parties, namely:

Qatar General Electricity and Water Corporation (Team Leader), Saudi Electricity Company, Gulf Cooperation Council Interconnection Authority, General Electricity Company (Libya), General Secretariat of Electrical Interconnection of the Maghreb, The Less developed Arab countries were represented by the Republic of the Sudan, the Organization of Arab Petroleum Exporting Countries, and the Embassy of the Republic of Lebanon in Morocco, in addition to the team from the World Bank.

The meeting addressed several important topics, of which: reviewing the scope study of Arab electricity grid interconnection and assessment of the exploitation of natural gas to export electricity and its terms of reference, the mechanism to deal with the World Bank which contributes to the implementation of the study, and discussing -with the World Bank team- the most important observations recorded on the draft of first four chapters of the first phase of the study prepared by the World Bank team. The coming steps for the completion of the final report for the first phase of the study were agreed on, so to present them to the Steering Committee at its next meeting which will be held in April 2011.

### **3-3 the 2<sup>nd</sup> Forum for National Oil Companies and International Oil Companies, International Energy Forum, Paris, France, 7- 8 April, 2011**

The General Secretariat participated in the second forum for national oil companies and international oil companies, which was held on 7 and 8 April 2011 in Paris, France. It is noteworthy that the General

Secretariat has participated in the Special Ministerial Meeting of the International Energy Forum for the signing of the Charter of the Forum Secretariat, which was hosted by the Ministry of Petroleum and Mineral Resources of Saudi Arabia, on 22 February 2011.

The second forum of national and international oil companies emerging from the International Energy Forum was jointly sponsored by Saudi Aramco and Total, with about 100 senior decision-maker participants from national and international oil companies and international service companies, as well as a number of experts and representatives of the producing countries and oil-consuming countries. The theme of forum was “combining distinctive competencies to face the common challenges. The main target of the forum was to enhance the dialogue and discussion to understand some issues and main common challenges facing the oil and gas industry. Senior decision-makers of national and international oil companies were gathered in one place to exchange ideas so to achieve recommendations that can identify ways and means to enhance cooperation between the various parties in the aspects related to investment, technology and management of complex projects and other matters of common interest.

Points of view were exchanged on how to achieve successful and permanent long-term partnerships between the opponents of the energy industry, and discuss key issues and common challenges facing the oil and gas industry through three seminars with participation of more than 14 speakers representing major oil companies such as Saudi Aramco, Total, Chevron, Schlumberger, Technip, Statoil, and Foster Wheeler, and a number of other companies.

In the first seminar, the General Secretariat of OAPEC has addresses a note about the diversity and multiplicity of nature key issues and challenges facing the oil and gas industry, uncertainties of oil demand, energy security in general, the sharp and continuous fluctuations in oil prices, uncertainties relating to the investment requirements, the risk and complexity of large investment projects, growing concerns

about global environmental issues and the increase cost of services in all areas of industry. As well as the continuous and urgent need for new technologies as the technology is the driving force behind the oil industry's ability to ensure the supply of oil and increase the production of gas safely and effectively in an environmentally sound manner.

### **3-4 The 4<sup>th</sup> Asian Ministerial Energy Roundtable, Sustainable Growth and Energy Interdependence, Kuwait, 18 April 2011**

In response to an invitation from HE Ahmad Abdullah Al-Ahmad Al-Sabah, Minister of Oil and Minister of Information in the State of Kuwait, the General secretariat participated in the 4<sup>th</sup> Asian Ministerial Energy Roundtable, which was held in Kuwait, 18 April 2011, under the slogan "Sustainable Growth and Energy Interdependence". Energy ministers of 18 Asian countries attended the meeting, among them was HE the minister of oil and minister of information in Kuwait, HE the minister of petroleum and mineral resources in the Kingdom of Saudi Arabia, HE the minister of energy and industry in Qatar, HE the minister of energy in United Arab Emirates, and HE the minister of energy in the Kingdom of Bahrain. Along with representatives of three international energy organizations, namely: Organization of Petroleum Exporting Countries "OPEC", International Energy Agency "IEA" and International Energy Forum "IEF". The meeting was for consultation and dialogue, and provide visions about the future of the oil industry on the one hand, and foreseeing the future of oil, gas and energy and come out with a full picture to help decision- makers in the development of their future plans.

Participant emphasized the importance of improving nuclear power plants safety and security, and preserving the crude oil as a major energy source in the future. Participants agreed that strong growth in energy demand, which appeared recently in the Asian region, will continue over the next few decades despite high energy efficiency.

The final statement recognized that producers and consumers called to limit the excessive fluctuations in energy prices, and the necessity to support the initiative of the joint international organization statement. Participant stressed the importance of reasonable energy pricing in both that producer and consumer countries.

### **3-5 The 2<sup>nd</sup> Meeting for the Team of Comprehensive Arab Power Grid Study and Assess the Exploitation of Natural Gas for Exporting Electricity, Cairo, 8- 9 May 2011**

In response to an invitation from the of the Arab League (Economic Sector- Energy Management- the Secretary of the Arab Ministerial Council for Electricity), the Secretary General of OAPEC participated in the 2<sup>nd</sup> meeting for the Team of Comprehensive Arab Power Grid Study and Assess the Exploitation of Natural Gas for Exporting Electricity. The meeting coincided with the 4<sup>th</sup> meeting of the coordination committee responsible for following up the study. A team from the World Bank responsible for the third part of the study (institutional and legislative frameworks) was also present.

The meeting took place at the headquarters of Arab League, Cairo, Egypt, on 8 and 9 May 2011. Participants in the meeting were from Egypt, Saudi Arabia, Qatar, Algeria, Gulf Cooperation Council Interconnection Authority, General Secretariat of Electrical Interconnection of the Maghreb, the Less developed Arab countries were represented by the Republic of the Sudan, the Organization of Arab Petroleum Exporting Countries, the Ministerial Council for Electricity in the Arab League, and the Secretary of Eight Interconnection Grid Project, in addition to the team from the World Bank.

The steering committee responsible for monitoring the study of Arab electricity interconnection, and the study team of Arab electricity grid, reviewed the position of the Arab Fund for Economic and Social Development, who agreed to fund the first two parts of the

Comprehensive Arab Power Grid Study and Assess the Exploitation of Natural Gas for Exporting Electricity (the first Part is about the completion of electrical interconnection between the Arab countries on the one hand, and between them and other countries on the other hand, the second part examines the trade-offs between export of natural gas and liquefied natural gas as a source of energy, or using natural gas to generate electricity and then export it).

### **3-6 Fifth Annual Refining Summit**

The General Secretariat participated in the fifth annual global refining summit held in Rotterdam, Netherlands, from 18 to 20 May 2011.

The summit was attended by refining experts from different countries. Many papers were presented during the summit; discussion sessions and workshops addressed the following main subjects:

- Asset Information Solutions to enhance the commitment towards reducing risks in oil industry.
- Applying operation performance improvement programs for oil refineries, and its role in improving performance.
- Practical examples and case studies show the most important challenges that face the world refining industry, and the available opportunities for the industry around the world.

The Secretary General of OAPEC presented a paper entitled: Future of refining industry in Arab world, challenges and opportunities.

### **3-7 The Middle East Downstream Week**

The General Secretariat participated in the Middle East Downstream Week, which was held in Abu Dhabi, UAE, from 8 to 11 May 2011, and was jointly organized by Takreer Company and World Refining Association. Activities of the week included:

- A seminar on developments of refining and petrochemical industry, made by the French Axens Company in 8 May 2011.
- A workshop about the role of technical developments in strengthening and developing the integration between oil refineries and the petrochemical industry units.
- The 12<sup>th</sup> annual Middle East Refining Conference, 9- 10 May 2011.
- The 5<sup>th</sup> Meeting on Clean Fuel, in 11 May 2011.

These activities were attended by experts from member countries, UAE, Saudi Arabia, Qatar and Kuwait, along with participants from Oman, and many international oil companies, oil services companies and refining and petrochemicals companies.

Many papers were presented during the meeting, and many discussion sessions were held, the following subjects were addressed:

- Latest innovative developments in hydrocracking and hydrotreating technologies of middle distillates.
- Options for conversion processes of heavy cuts to boost refinery production of high- quality middle distillates.
- Opportunities for enhancing integration between the refining and petrochemical industries.
- The role of the advanced technologies in the strengthening and development of integration between oil refineries and petrochemical industry.
- Challenges facing the refining industry in the world, and opportunities for the industry in the Middle East. Developments and experiences of integration projects between the refining and petrochemical industries in the Middle East.
- Problems faced by refineries in products marketing in the local and international markets.

- Practical situations and experiences of operators in meeting the challenges of development and expansion of the refining industry.
- Challenges facing the production of clean fuels in the Middle East refineries.

The General Secretariat participated in the events of the week and presented a paper entitled: Strategies to Improve Specifications of Refined Petroleum Products in the Arab Countries. It also chaired a discussion panel entitled: Application of the European fuel specifications euro-5, and the challenges faced by refiners.

### **3- 8 Committee Meeting for Institutions Involved in Preparation of the Joint Arab Economic Report, 2011, Abu Dhabi, 19 to 23 June 2011**

The Arab institutions taking part in compiling the Joint Arab Economic Report, 2011, held a meeting in the headquarters of the Arab Monetary Fund in Abu Dhabi, UAE, from 19 to 23 June 2011. Representatives attended from the Arab League, the Arab Monetary Fund, the Arab Fund for Economic and Social Development and the Organization of Arab Petroleum Exporting Countries.

The meeting was opened with a speech of the technical and economic department of the Arab Monetary Fund, who welcomed the representatives of the Arab institutes, and assured the importance of the meeting. He stressed the importance of the report which is considered as the main source of information and data to the Arab countries. He also welcomed any comments on the chapters of the report as they aim to improve it so that it would be welcomed by Arab countries that provided its contents on one hand, and would become a supportive source for officials and researchers interested in developing economic affairs in the Arab region on the other hand.

### **3 - 9 Symposium on Energy Efficiency in Developing Countries, International Energy Forum, Jakarta, Indonesia, 21- 22 June 2011**

In response to an invitation from the International Energy Forum (IEF), the General Secretariat attended the Symposium on Energy Efficiency in Developing Countries, which was held on 21 and 22 June 2011, in Jakarta, Indonesia. The General Secretariat presented a paper entitled: Energy Efficiency in Arab Countries, the paper detailed the energy situation in Arab countries, and the major factors that affect the energy consumption such as economic growth, population growth, local energy prices in Arab countries and the importance of energy efficiency in Arab countries. The paper also shed light on the efficiency of using energy within the buildings, and the industry and transport sector. The symposium covered many subjects, of which:

- Renewable energy, low carbon energy requirements, energy efficiency measuring, the importance of energy efficiency for the energy security and economics, the participation of energy efficiency to limit the emission of green gases, boosting the energy efficiency in different sectors, energy saving in residential and commercial buildings and manufacturing industries, the necessary mechanisms to ensure efficiency in construction, and the challenges that face the energy efficiency such as technical, economic, financial and social challenges.

One of the main recommendations of the meeting was that energy efficiency is the fastest and cleaner way to meet future energy demand and to enhance energy security in a sustainable manner, and that energy efficiency contributes to reducing energy costs and cutting greenhouse gases, moreover, the initiation of energy efficiency in developing countries requires governmental supportive policies.

This Energy Forum Secretariat will offer recommendations and findings to the Ministers Forum in its thirteenth meeting scheduled for the first quarter of 2012 in the State of Kuwait.

### **3-10 The Meeting of Experts on “Promoting Emissions Reductions in the Transport Sector”**

In response to an invitation from His Excellency the Under-Secretary-General, the Executive Secretary of the United Nations Economic and Social Commission for Western Asia (ESCWA), the General Secretariat of OAPEC attended the meeting of experts on “Promoting Emissions Reductions in the Transport Sector”, which was held in ESCWA headquarter in Beirut, Lebanon on 5 and 6 July 2011, the meeting was organized by ESCWA in cooperation with the UN Economic Commission for Europe (UNECE) Gas Centre. Attendants include national experts from Arab countries, members of the energy committee of ESCWA, representatives of concerned national and international institutes and organizations, representatives of hybrid (gas and electricity) European automobiles manufacturers, nongovernmental organizations and civil society organizations working in the field of energy and transport. The meeting highlighted and discussed the main regional and global success stories in emission reduction and mitigation efforts, and particularly the European experiences and lessons learned in this field.

His Excellency Abbas Ali Al Naqi, Secretary General of OAPEC delivered a speech in the opening of the meeting, in which he addressed the importance of the meeting and the role played by OAPEC members in protecting the environment from pollution, and the measures taken to reduce the emissions from industrial sector in general and the petroleum industry - with all its sectors- in particular. HE stressed the importance of developing the technology for obtaining clean energy such as the use of carbon dioxide capture and sequestration technology, and clean development mechanism set out Kyoto Protocol. HE noted the use of renewables that are abundant in the Arab region such as solar and wind energy, and pointed out the contribution and active participation of OAPEC members in the negotiations of the United Nations Framework Convention on Climate Change. HE concluded by referring to the expectations of the organizations and agencies concerned in the oil and energy , that oil will remain a major source of energy in the coming decades.

The General Secretariat has also presented a paper on potential and exploitation of natural gas in the Arab countries, and transport network. The paper outlined the natural gas reserves and production in Arab countries, and the utilization areas and transport routes available through local, regional and international networks of pipelines, or liquefied natural gas, and other ways to benefit from the gas such as the use of compressed gas in the car or turn it into liquids to produce high- quality and superior hygiene petroleum products.

### **3-11 The Regional Meeting on Economic Policies Supporting the Transition to a Green Economy in the Arab Region, ESCWA, Beirut, Lebanon, 20- 21 July 2011**

In response to an invitation from the Economic and Social Committee for West Asia (ESCWA) regarding the preparatory meeting for (Rio +20), the General Secretariat participated in the Regional Meeting on Economic Policies Supporting the Transition to a Green Economy in the Arab Region, which was held in UN and presented a paper about “the Environmental Taxes, Challenges and Results” which was held in UN house in Beirut on 20 and 21 July 2011.

Participants included representatives of the ministries of finance, economic and planning of the member countries, the United Nations Environment Program, the Arab League, experts from the World Bank and the University of Manchester and McMaster University, Canada and the Lebanese American University, the Organization of Arab Petroleum Exporting Countries (OAPEC), UNDP, the Union of Arab Banks, Basil Fuleihan Institute of Finance, and the concerned civil society organizations.

The meeting addressed several important topics, of which, the roadmap for the Rio+ 20, the institutional framework for sustainable environment, environmental economics and finance, the environmental taxes, national experiences in the green economy and green investment

incentives and sustainable public procurement and regional and international cooperation.

It was agreed to present the results and recommendations of the final meeting on the next Ministerial Council on environmental affairs in the Arab League.

### **3-12 The 88<sup>th</sup> Meeting of the Economic and Social Council, Cairo, 12- 15 September 2011**

The General Secretariat of OAPEC participated, as an observer, in the 88th meeting of the Ordinary Session of the Arab League's Economic and Social Council, held in the headquarter of Arab League from 12 to 15 September 2011. Delegates representing all Arab countries attended the meeting, as well as representatives from twenty two other Arab Organizations and Institutions.

The Council's agenda comprised twenty items that covered the following main subjects:

- Following-up the activities of the Arab League under which two subjects are enrolled: the Secretary General report and the following up of the execution of the resolutions and decisions of the Arab Economic and Social Development summit.
- The Economic subjects under which nine topics are enrolled, namely: Greater Arab Free Trade Area, Arab Customs Union (axis of the Council), investment in the Arab countries, the draft strategy of Arab tourism, follow-up implementation of the Declaration of the World Summit on Food Security, water Security Strategy in the Arab region, Arab museum of postage stamps, Draft of amendment agreement of creating the Arab Authority for Civil Aviation, the Arab Strategy for Disaster Reduction, in addition to periodic economic topics, namely: support the Palestinian economy, unified Arab Economic Report, the report of the investment climate in the

Arab countries, unified Arab discourse for the joint annual meeting of the IMF and World Bank, and the report of Arab food Security.

- The Social subjects, including six topics, namely: the integrated program to support employment and reduce unemployment in the Arab countries, social responsibility and current and future challenges faced by a number of Arab countries, the establishment of the Arab Fund to support small-scale and micro industries, a study on the specialized Arab ministerial councils funds of the social sector, professionalization of social work and the development of human resources in social institutions, and juvenile justice. The Economic and Social Council at the Ministerial level adopted the issue of Arab organizations and associations related to the League of Arab States, which has been included under “other issue” at the request of the Minister of Economy in the Hashemite Kingdom of Jordan.

### **3-13 The 33<sup>rd</sup> Oxford Energy Seminar, 19- 29 September 2011**

The 33<sup>rd</sup> Oxford Energy Seminar was held under the title: “New Challenges in the Dynamics of World Energy”. The seminar was sponsored by St Catherine’s College of Oxford University, the Organization of Petroleum Exporting Countries (OPEC), and the Organization of Arab Petroleum Exporting Countries (OAPEC).

The seminar aims to enhance the professional capacities of the participants and increase their understanding of the climate in which political and economic decisions on future energy are taken, it also aims to provide an opportunity to hold meetings and direct dialogues between participants of the petroleum exporting countries on one hand, and the consumer countries on the other. The seminar was attended by 63 participants of 25 nationalities who represented institutional bodies and national and international companies and research centers. Participants from OAPEC member countries were 16, representing 25.4% of total participants, they were distributed as follows: nine participants from

Saudi Arabia, four participants from Kuwait, one participant from each of the Kingdom of Bahrain, the Arab Petroleum Investment Corporation (APICORP) and the Organization of Arab Petroleum exporting countries (OAPEC). The seminar reviewed 35 subjects in the form of lectures and discussions in addition to the opening session and the closing plenary panel discussion. topics of the seminar focused on several subjects, each one included many topics, such as oil prices, demand and the global economy, nuclear energy, the environment, oil and downstream industry, natural gas markets, policies of oil producers, and the challenges facing the national and international oil companies. The seminar also covered topics related to energy policy in many geographical areas such as China, India, Iran and Iraq.

### **3-14 The Kuwait 2<sup>nd</sup> Pipeline Technology Conference & Exhibition**

The General Secretariat attended the Kuwait 2<sup>nd</sup> Pipeline Technology Conference and Exhibition, which was held In Hilton Hotel and Resort on 4 and 5 October 2011, under the patronage of HE Dr. Mohammad Mohsin Al Busairy, Minister of Oil and Minister of State for Parliament Affairs. The main objective of the conference is to share technological advances, operational experiences and to present important ongoing pipeline projects. The main themes of the conference addressed the following topics:

- Pipelines Manufacturing Materials and Technologies.
- Pipeline Project Management.
- Pipeline Design and Construction.
- Pipeline Rehabilitation and Maintenance.
- GIS/Database Development.
- Pipeline Integrity Management.
- Pipeline Automation and Measurement.
- Risk and Reliability.
- Protection, Corrosion and Monitoring Systems.
- Standards and Regulations.

Lecturers represented many bodies including: Kuwait Petroleum Corporation, Kuwait National Petroleum Company, Kuwait Institute for Scientific Research, Saudi Aramco, and Abu Dhabi Company for Onshore Oil Operations.

### **3-15 The 3<sup>rd</sup> Meeting for the Team of Comprehensive Arab Power Grid Study and Assess the Exploitation of Natural Gas for Exporting Electricity, Cairo, Egypt, 16- 17 October 2011.**

In response to an invitation from the Secretary General of the Arab League (Economic Affairs Sector- Energy Department- Secretariat of the Arab Ministerial Council for Electricity), the General Secretariat of OAPEC participated in the third meeting for the Team of Comprehensive Arab Power Grid Study and Assess the Exploitation Natural Gas for Exporting Electricity, along with a team from world bank responsible for the third part of the study (institutional and legislative frameworks). The meeting took place at the headquarters of the World Bank in Rabat, Kingdom of Morocco, on 16 and 17 October 2011. Participants in the meeting represented nine Arab parties, namely: Qatar General Electricity and Water Corporation (Team Leader), Saudi Electricity Company, Gulf Cooperation Council Interconnection Authority, Algerian National Society for Electricity and Gas, General Secretariat of Electrical Interconnection of the Maghreb, the Less developed Arab countries were represented by the Republic of the Sudan, Secretariat of Arab Ministerial Council for Electricity- Energy Department- Economical Sector, the Organization of Arab Petroleum Exporting Countries, in addition to the team from the World Bank.

The meeting discussed the comments of the working team on the final draft of the first phase report “structure and design of the regional market”, which was prepared by the World Bank Team, and the proposed Phase II documents that include road map for the next phase and the initial draft of the memorandum of understanding, and the general agreement on institutions and proposed organizational structures. At

the end of the meeting, it was agreed on the necessary steps for the completion of the report of the second phase of the study.

### **3-16 The Meeting of the Arab Negotiation Group about climate change negotiations, and Discussion of the 2<sup>nd</sup> draft of the Arab Plan of action to Deal with Climate Change Issues**

The General Secretariat of the Organization of Arab Petroleum Exporting Countries participated as an observer in the meeting of the Arab Preparatory Committee for the United Nations Conference on Sustainable Development (Rio+ 20), and the meeting of the 13<sup>th</sup> session of the Joint Committee on Environment and Development in the Arab Countries, and a meeting to discuss the second draft of the Arab Plan of Action to deal with climate change issues, which were held at the headquarters of the League of Arab States from 16 to 20 October 2011.

Participated in these meetings were nearly a 100 representatives of governments, specialized regional and international organizations and civil society, they discussed a number of topics, notably:

- Following up the implementation of the decisions of the Council of Arab Ministers Responsible for the Environment at its 22 session.
- Following up the implementation of the resolutions of the Arab economic, developmental and social summit.
- Follow up the implementation of the decisions of the World Summit on Sustainable Development and the Sustainable Development Initiative in the Arab Region.
- Preparing for the United Nations Conference on Sustainable Development (Rio+ 20) to be held in Brazil in 2012.
- Discussing the second draft of the Arab Plan of Action to deal with climate change issues.

### **3-17 Seminar “Climate Change Impacts on Energy Sector in the Kingdom of Bahrain”, Kingdom of Bahrain, 15 November 2011**

In response to an invitation from the United Nations Development Program, the General Secretariat participated in the Seminar: Climate Change Impacts on Energy Sector in the Kingdom of Bahrain, which was held in the Kingdom of Bahrain, on 15 November 2011. The event was organized by the National Oil and Gas Authority (NOGA) in collaboration with Electricity and Water Authority (EWA), UNDP and the UN program for the Environment, and the General Organization for Protection of Marine Resources, Environment and Wildlife in the Kingdom of Bahrain.

The seminar was attended by specialists and those interested in environmental issues and climate change challenges and their impact on the energy sector.

The agenda included four papers from different parties, including a paper submitted by the General Secretariat entitled “Framework Convention on Climate Change UNFCCC”, which dealt with three main issues concerning climate change convention: confronting the potential effects of climate change (adaptation programs - mitigation), developments in the course of the negotiations and the most important changes in the international blocs in this regard.

### **3-18 The 17<sup>th</sup> session of the Conference of the Parties to the United Nations Framework Convention on Climate Change (COP 17), Durban, South Africa, 28 November to 9 December 2011**

The 17<sup>th</sup> session of the Conference of the Parties to United Nations Framework Convention on Climate Change (UNFCCC COP-17), and the 7<sup>th</sup> session of the Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol (CMP- 7), were held in Durban, South Africa from 28 November to 9 December 2011.

The event was attended by about 12 thousand participants including 5400 representatives of world's governments and countries, and 5800 representative of the United Nations bodies and other governmental and civil society organizations, with 1200 participant of local and international media.

The period from 7 to 9 December 2011 was dedicated for high-level meetings. The conference was extended for two additional days to provide an opportunity for delegates to work out the results on the future of the international community regarding climate change. After strenuous efforts and intensive consultations participating states decided the following:

- Adoption of a legal agreement on climate change at no later than 2015, under the umbrella of establishment of an Ad Hoc Working Group on the Durban Platform for Enhanced Action (AWG-DP)
- Extending the work of AWG-LCA for one year to be able to accomplish its tasks.
- Launching the Green Climate Fund to be ready in 2012 to support the efforts of developing countries to adapt to climate change.

It was also agreed that the next Conference of the Parties (COP 18) will be held in Qatar in 2012.

### **3-19 The 20<sup>th</sup> World Petroleum Conference**

The 20<sup>th</sup> World Petroleum Conference which lasted for five days, has gathered producers and consumers and discussed how to develop innovative ways to exploit and produce oil and gas, and the ways to find reliable sources of alternative energy and the optimization of energy consumption. The conference also addressed the major challenges facing the oil industry from fluctuations of the prices to the performance of the global economy.

This was the first time for the conference to be held in the Middle east since its launch in 1993. The conference provided 18 ministerial

sessions headed by 35 ministers of countries that have influence on petroleum industry, in addition to 11 major sessions (two every day), in which executives of big petroleum companies spoke. Another 16 special sessions were held to address emerging issues like unconventional gas which techniques and usage were developed recently. There was another 11 special sessions that addresses the “best practice in oil sector” by the oil companies that have better practices than others, or those who have successful experience in management or technical aspects, such practices were discussed to take advantage of.

The Conference also held an important face-to-face session between the International Energy Agency as representative for consumers and the Organization of the Petroleum Exporting Countries (OPEC) as a representative of the producers; issues rising on both sides were brought to the debate. The conference also provided about 300 papers that were reviewed during organized seminars that had five themes in the context of scientific sessions, those were: natural gas and liquefied natural gas, the latest scientific achievements in the field of exploration and production, technology and techniques in the downstream industry, alternative energy sources, and the commitment of industry to achieve sustainability. There were 14 roundtable sessions that were chaired by heads of companies and discussed visions of the present and the future of the industry.

### **3- 20 Preparatory Meeting on Compiling the Joint Arab Economic Report, 2012, Cairo, 12- 14 December 2012.**

The General Secretariat took part in a preparatory meeting on compiling the Joint Arab Economic Report 2012, which was held at the headquarter of Arab League in Cairo, from 12 to 14 December 2011. The meeting was attended by representatives of the Arab League, the Arab Monetary Fund, the Arab Fund for Economic and Social Development, and the Organization of Arab Petroleum Exporting Countries,

The participants discussed five major points, the first was about the Joint Arab Economic Report, 2011, the second was about preparation for the report of 2012, the third point was about the statistics of 2012 report, the fourth point was the development of the report, and the last point was about emerging issues.

## **IV: Supporting Activities**

### **4- 1 Data Bank**

#### **4-1-1 The Pursuit of Database Update**

The data bank continued to update its database depending mainly on data from member countries (energy data collection form), information published by national Arab institutions and bodies and the information included in the technical papers and studies presented at Arab Energy Conference, in addition to the data made available by technical papers and studies undertaken by the General Secretariat.

In cooperation with Information and Library Department, the data bank has developed a system of information storage, retrieval and updating for the library's archive of the General Secretariat using the Oracle- 11 g software.

In collaboration with the Department of Personnel, the data bank developed a system for storage, retrieval and update of the personnel in the General Secretariat using the Oracle- 11 software.

#### **4-1-2 Reports and Papers**

- In collaboration with other departments of the General Secretariat, the data bank compiled the Annual Statistical Report, 2011, which covers the period from 2006- 2010. It was posted on the General Secretariat's website and made available on compact disks (CD-ROM).

- Based on the British Petroleum Company's database, the data bank compiled a publication of energy data; the booklet was categorized by international grouping and covered the period from 1970 to 2010. The booklet is annually updated and digital copies (CD-ROM) are exclusively circulated to OAPEC member countries as per the agreement with BP.
- The data bank sorted the papers presented to the seminars and meeting organized or attended by the General Secretariat in 2011, and saved them on compact disks (CD- ROM).
- The data bank processed and printed out the Italian Eni company's data of production, consumption, exports and imports of crude oil, that were published by World Oil and Gas Review, 2011.

## **V: Cooperation with International Institutions and Bodies**

### **5-1 The 2<sup>nd</sup> Arab- Japan Economic Forum**

In response to an invitation from the Arab League, HE Countries Abbas Ali Al Naqi, the Secretary General of the Organization of Arab Petroleum Exporting, participated in the 2<sup>nd</sup> Arab- Japan Economic Forum, which was held in Tunisia on 11 and 12 December 2011, under the title "A New Chapter for Mutual Prosperity".

The forum was held under the patronage of HE Mohammad Al Ghanoshy the Prime Minister of Tunisia. HE Mr. Amro Moussa, the Secretary General of League of Arab States, and HE Mr. Seiji Maehara, Minister for Foreign Affairs of Japan attended the forum.

The forum was held with the participation of a number of government officials from Arab and Japanese sides, and representatives of organizations and regional and international companies specialized in the economy and energy sectors.

The forum aims to strengthen economic mutual ties between Arab countries and Japan, through cooperation in several areas including trade,

investment, energy and technology and human resource development, and aims also to deepen mutual understanding between the public and private sectors in both Japan and the Arab countries, and to provide new business opportunities for concrete benefit for both sides.

The Forum addressed -through six workshops- the fields and prospects of cooperation between Arab countries and Japan, in the sectors of energy, human development and training, the environment, electricity, water and other topics. At the level of the oil and gas industry, the forum browsed Arab - Japan cooperation prospects in the sectors of exploration, drilling and production of crude oil and distribution networks, the peaceful use of nuclear energy, railways, construction, power plants and water.

HE the Secretary General of OAPEC participated in the activities of the first session which was about “the cooperation in energy and environment sectors”, the session was chaired by HE Mr. Afif Chalabi, Minister of Industry in Tunisia, and was attended by an elite of economy and energy experts. The participants in the session assured the importance of technical innovation within the policy of rational consumption of energy. They called for optimal investment of the wealth of the Arab region of oil and natural gas, stressing the importance of making use of the expertise and experience of Japan in this field. They stressed the need for Arab- Japanese cooperation in the economic field, and the need to achieve integration between the two parties. The energy experts reviewed the geographical and natural characteristics of the Arab world that will encourage the Japanese side to increase investment in the region, and enhance cooperation with various Arab countries.

Tunisia Declaration was announced by the end of the forum; it emphasized the common desire to develop economic relations between Japan and the Arab countries, and upgrading them to the best levels including deepening mutual understanding. The Declaration noted that the outcome of this forum is very productive and reflected through the various debates that took place between the companies and institutions

in the Arab countries and Japan. The declaration focused on a number of themes related to the development of economic relations, which would contribute to the achievement of peace and cooperation in the fields of energy, environment, human resources, education, science and technology, trade, investment and tourism and partnership funding.

On the sidelines of the 2<sup>nd</sup> Arab- Japan Economic Forum, OAPEC signed a letter of intent with Japan Cooperation Center for Petroleum, for the purpose of cooperation in the field of downstream industry, through the organization of joint seminars, conferences and workshops, and research studies and training. The two parties agreed to sign a Memorandum of Understanding describes the ways and mechanisms of cooperation in those areas in the near future. HE the Secretary General of the Organization, Mr. Abbas Ali Al Naqi has represented OAPEC in signing the letter of and in the presence of HE MR. Amro Moussa the Secretary General of the Arab League, and HE Mr. Seiji Maehara , the Minister of Foreign Affairs of Japan.

### **5-2 Signing of a Memorandum of Understanding between OAPEC and Japan Cooperation Center for Petroleum**

With the presence of HE the Secretary General of the Organization of Arab Petroleum Exporting Countries (OAPEC) Mr. Abbas Ali Al Naqi, and Japanese Ambassador in Kuwait Mr. Aasoyoshi Momcizo, and Mr. Morihiro Yoshida, Managing Director of the Japan Cooperation Center for Petroleum, and the Senior Officials of the General Secretariat of OAPEC, a ceremony was held to address the signing of memorandum of understanding between the OAPEC and Japan Cooperation Center for Petroleum, on 9 March 2011. The signing ceremony took place at the headquarters of the General Secretariat of OAPEC, Kuwait.

A joint press statement issued in the wake of the signing of the Memorandum of Understanding stated that: in the framework of strengthening and expanding cooperation activities with international

institutions and bodies concerned with energy in general and oil in particular, the Organization of Arab Petroleum Exporting Countries (OAPEC) with Japan Cooperation Center for Petroleum (JCCP), agreed to move towards the establishment of cooperative relations between them in the downstream industry, this was reflected in signing a Memorandum of Understanding in this regard on Wednesday, March 9, 2011, at the headquarters of the General Secretariat of OAPEC in Kuwait city - Kuwait. The Memorandum of Understanding includes the following points:

**Details of the fields to be covered by the cooperation between the two parties:**

- A- Organization of Arab Petroleum Exporting Countries (OAPEC) seeks to search for possibilities of cooperation with various petroleum and energy organizations and bodies concerned with the preparation of studies and conferences relevant to downstream industry (refining and petrochemicals).
- B- Japan Cooperation Center for Petroleum Continue the implementation of its obligations aimed to expand and strengthen the bonds of friendship between the oil-producing countries and Japan, through technical cooperation and exchange of specialists working in the downstream industry.
- C- Exchange of views on linking the bonds of cooperation between the Organization of Arab Petroleum Exporting Countries (OAPEC) and Japan Cooperation Center for Petroleum since May of last year (2010), has led to the signing of a Memorandum of Understanding between them.
- D - Strengthening the cooperation between OAPEC and Japan Cooperation Center for Petroleum through the organization of seminars, workshops and joint research and studies, and other programs related to downstream industry.

## **VI: Encouraging the Scientific Research**

### **6-1 OAPEC Award for Scientific Research for the Year 2010**

Pursuant to the provisions of scientific research policy, OAPEC has honored and deliver certificates to the winners of the scientific prize for the year 2010. The topic of the research was “Results of the New Technologies Application in Petroleum Exploration and Production in Arab Countries, and its Economics “. The ceremony was run by the Council of Ministers of the Organization at its meeting in Cairo - Arab Republic of Egypt on Saturday, 24 December 2011.

### **6-2 OAPEC Award for Scientific Research for the Year 2012**

Pursuant to its policy in encouraging scientific research by awarding two prizes on biennial basis (first prize is KD 7000 and second prize is KD 5000), the topic for the Scientific Research Award for the year 2012 was decided to be: “Technological Progress in the Exploration and Utilization of Unconventional Natural Gas Resources in the Arab Countries”. The General Secretariat has announced and informed the relevant bodies, and continued to publish the announcement in its monthly bulletin and quarterly magazine, and on its website, the deadline for submitting the researches was the end of May 2012.

## **VII: Media Activities**

The General Secretariat continued its media activities in the following areas:

### **7-1 Editing, Printing, Publishing, and Distribution**

The General Secretariat continued to publish OAPEC’s books and periodicals. This involved editing, proofreading, translation, designing, printing, publishing and distribution. Table (5-1) lists the books and periodicals published by the General Secretariat and the number of copies printed and distributed in 2011.

## **7-2 Press and Media**

The General Secretariat has issued several press releases on the Organization's activities, such as meetings of the Ministerial Council and Executive Bureau. Some local and Arab newspapers published articles on the Organization's activities and its role in coordinating the work of member countries and promoting joint Arab action according to Arab and international circumstances and developments. The General Secretariat also continued to monitor what local, Arab and international newspapers publish on energy affairs, and sustainably archived important news and features on oil, economics, environmental and other topics of general interest to member countries.

## **7-3 The Website**

OAPEC continues to develop its the website depending on the concerted efforts of its own technical staff with coordination between different departments, as it became clear that the mandate of some international companies specialized in this domain would be very expensive. The developed website will be launched during the first quarter of 2012 after the completion of the necessary development processes which included all its aspects and contents of reports, technical and economic studies, and other publications, along with the display of such content.

## **7-4 The 36<sup>th</sup> Arab Book Fair**

The General Secretariat participated in the 36<sup>th</sup> Arab Book Fair, which was held in Kuwait, 19- 29 October 2011, and was sponsored by the General Secretariat of Kuwait's National Council for Culture, Arts and Letters, State of Kuwait.

Some 495 publishing houses from 16 Arab and 11 non-Arab countries took part in the fair, in addition to number of Arab organizations based in Kuwait. They included the Arab Center for Educational Research in

the Gulf States, the Arabization Center for Medical Science- the League of the Arab States, the Organization of Arab Petroleum Exporting Countries, and some other organization based out of Kuwait like Arab Book Federation (Syria), the General Secretariat of the Gulf Cooperation Council (Saudi Arabia), and the Arab Organization for Administrative Development- the League of Arab States.

Participants to the exhibition also included a number of Arab and foreign embassies, and a number of Arab organizations and the diplomatic corps, either directly or through the proxy of some publishing houses. The exhibition was accompanied by several cultural and art events, and there was focused on the role of Arab women in the world of publishing and cultural development and creativity.

### **7-5 Library Services**

OAPEC library is considered as an integrated one in the view of availability of books and specialized references on petroleum, economic and commercial energy relevant issues, and environmental subjects. The library provides rich information sources for OAPEC's staff and data bank. The library is keen to provide reference information services for libraries and researchers from outside the Secretariat, and continues the cooperation with other specialized libraries in the field of information exchange, such as library of Arab Fund for Economic and Social Development. More than 220 visitors were availed for the library services in 2011, among them were experts, researchers and university professors and students.

The General Secretariat's library continued entering the information of Arabic and foreign publications into its expanding 2008- Oracle-system database, such entries included books, documents and Arab and foreign periodicals. Entries reach 3394 files. The library provides the researchers with information retrieval services, along with the following documentation services:

- Periodical bibliography which is published in “Oil and Arab Cooperation” bulletin (Issues 136- 139).
- New- arrival resources bibliography which is circulated monthly to all researchers of OAPEC.

### **7-5-1 Indexing and Classification**

The library continued to carry out the implementation of technical services related to indexing and classification of new publications and entering the related information into its Oracle database. The Library’s total collection of books and documents increased from 35,306 in 2010 to 35,626 in 2011.

### **7-5-2 Acquisition**

Acquisition services for the year 2011 were as follows:

- Acquiring new books based on the proposals filed by the Office of HE the Secretary General and the specialized departments and the needs for the library.
- The library has renewed the subscriptions to Arabic and English periodicals of 2011.
- Following up the official publications of different governmental bodies and petroleum companies and corporations.
- Following up the availability of electronic periodicals, and download them to OAPEC server.
- Storing and sorting of the e-resources arriving to the library as PDF files or on CDs.

### **7-5-3 General Services**

The library continued to provide the OAPEC’s researchers and other visitors with the following services

- Lend outs to the General Secretariat’s staff.
- Responding to internal and external queries.

- Provide guidance to the readers.
- Binding books and periodicals.
- Provide photocopying services.

The library issues a file containing the contents page of periodicals and new books to inform OAPEC's staff with the new arriving publications.

### **VIII: Arab and International Energy Resources Monitor**

The General Secretariat continued publishing Arab and International Energy Resources Monitor, which includes the developments of oil and gas exploration activities in member and non- member countries of OAPEC and the world, the monitor also sheds light on new technologies. It sources the information and data from Arab and international periodicals.

### **IX: Administrative and Financial Activities**

#### **9-1 Evolution of the Administrative Structure**

By late 2011, the number of the employees at the General Secretariat was 45, of whom 19 were professional staff and 26 were general staff. **Table (5-2)** shows the number of staff at the General Secretariat in the period 1968- 2011.

#### **9-2 Evolution of Actual Expenditure**

The General Secretariat's actual expenditure in 2011 totaled KD 1,786,000. **Table (5-3)** shows the evolution of the General Secretariat's actual expenditure in the period 1968- 2011.

# TABELS

## PART TWO



**Table 5-1**  
**Publication Issued and Distributed**  
**by the General Secretariat in 2011**

Title of Publication	No. of Editions	No. of Copies	Total Copies Printed	Copies Distributed	Total Copies Distributed
Periodicals					
- OAPEC Secretary General's Annual Report 2010 (Arabic)	1	800	800	790	790
- OAPEC Secretary General's Annual Report 2010 (English)	1	800	800	750	750
- OAPEC Annual Statistical Report 2011	1	300	300	200	200
Arabic / English (1 - 12)	11	1000	1100	900	9900
- Oil and Arab Cooperation : issues (136-139)	4	750	3000	550	2200
- Energy Resources Monitor - Arabic and International	4	300	1200	270	1080

**Table 5 - 2**  
**General Secretariat Employees, 1968 - 2011**

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	24	51	75
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

**Table 5 - 3**  
**General Secretariat Actual Expenditure**  
**by Budget Category, 1968 - 2011**  
**( 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
<b>Total</b>	<b>36.269</b>	<b>14.920</b>	<b>9.490</b>	<b>60.679</b>

## CHAPTER THREE

### OAPEC- SPONSORED VENTURES

In 2010 and the first half of 2011, OAPEC- Sponsored Ventures made every effort to take advantage of the available opportunities in order to develop and improve their performance and fulfill their assigned objectives. The only exception was Arab Petroleum Services Company and affiliates in Libya, this was affected with the turmoil in its headquarter country, it has lost much of its assets and properties. Other companies have performed well, relying on their capabilities, resources and experiences to overcome the difficulties and geopolitical tensions witnessed in the region as well as the world.

OAPEC- Sponsored Ventures were -and still- facing the economic challenges related to their activities. The ventures are always facing intense competition with international major companies of similar activities on one hand, and the difficulty of entry into the Arab markets on the other hand. Nevertheless, these ventures make more efforts and show more determination to face the challenges relying on years of expertise and experience, with the urge to move forward towards more achievements.

As a result of the foregoing, it can be said that OAPEC- Sponsored Ventures can't distance themselves from the effects of geopolitical conditions developments in the region, some of the ventures face obstacles and burdens that often emerge when implementing planned development programs. Such internal obstacles could be linked to the economic situation of the country in which the company is active, or might be due to the nature of competition of similar companies activities and the difficulty of accessing many markets in the Arab countries, or even the markets of Member Countries. It is still very difficult, and by virtue of that fact, for any economic entity (a country or a company) to deal with the global and regional financial and economic instability,

unless such an entity has sufficient experiences and relationships to face the consequences and effects of that instability.

Notably, many Arab countries have faced a lot of economic difficulties in 2010, especially in terms of investment climate and the fluctuations of oil prices and the Dollar exchange rate, but the resilience of the economies of most petroleum -producing Arab countries, has enable them to achieve reasonable and continuous economic growth rates over the past years. This was positively reflected on OAPEC- Sponsored Ventures in 2010, so that they took advantage of the growth to promote their activities and establish themselves in the fields of their disciplines, such as the energy investment sector for Arab Petroleum Investments Corporation “APICORP”, and the petroleum maritime transport market for the Tanker Company in the case of the Arab Maritime Petroleum Transport Company “AMPTC”, and in shipbuilding and repair as in case of the Arab Shipbuilding and Repair Yard “ASRY”, and in drilling and geophysical exploration market as in the case of the Arab Petroleum Services Company “APSCO” and its affiliates. However, violent shocks and political changes that took place in some Arab countries, especially in Libya in 2011, caused APSCO to lose a lot of its properties, and completely stopped its activity just like all Libyan companies.

Other OAPEC-Sponsored Ventures were able to achieve favorable financial results during 2010 and the first half of 2011. This was aided by cooperation and coordination among these ventures in the completion of projects via the provision of financial and technical support.

It should be emphasized here, that all OAPEC- Sponsored Ventures enjoy complete independence, and their general assemblies and boards of directors are responsible for making decisions on their development plans. Based on this, they look to have further support and assistance from member countries, and hope to enter the Arab markets on a competitive basis, if not on preferable basis, since its real launch to support its position and consolidate its continuity and strengthen its successes would then be more effective and sustainable.

The activities of each OAPEC-Sponsored Ventures are summarized below:

### **1. Arab Maritime Petroleum Transport Company (AMPTC)**

The Arab Maritime Petroleum Transport Company (AMPTC) was established in State of Kuwait on 6 May 1972 and commenced its activities on January 1973, with an authorized capital of \$500 million and paid-up capital of \$200 million.

The shareholders in AMPTC are all member countries except of Syrian Arab Republic, and the objectives of the company are to own, operate and charter a fleet of crude oil and oil products tankers.

#### **1- The Activities of AMPTC in 2010**

The fleet of the company includes 11 carriers (crude, LPG and clean petroleum products). The company leases its carriers in Petroleum transportation markets according to “Time Charter” basis or “Spot Voyage” basis depending on the market prevailing prices. The carriers are subject to audit and periodic technical examine to keep them in operation. AMPTC has close ties with Arab oil- marketing companies, occasionally; AMPTC leases carriers to these companies. Moreover, AMPTC supplies and transports liquefied natural gas to the Egyptian General Petroleum Corporation (about 1.6 million tons annually) using its own LPG carriers and other carriers leased on time charter basis synchronized with the gas supply contracts of Egyptian General Petroleum Corporation.

In light of current low charter rates of petroleum maritime transportation, such additional activity “supplying gas” provides financial revenues that support the activity of the fleet, which in turn helps the company to make ongoing annual profit. In this regard, it is important to say that transporting the liquefied natural gas has opened the doors to the company to conclude many LNG purchase contracts from Arab marketing companies with total amounts of about 1.6

million tons per year, this has led to establishing distinguished relations between AMPTC and those sisters companies of its affiliates members (Saudi Aramco, Qatar Marketing, Kuwait Petroleum Cooperation and Algerian Sonatrach).

On the other hand, and despite the world financial crisis, AMPTC -counting on its own resources- continued to implement its plans of fleet renewal and modernization of its fleet units. Two new petroleum products carriers are being built, they are expected to be delivered in 2012 and 2013.

## **2- The Company's Financial Results for the Fiscal year 2010**

In 2010, the actual income generated from vessels rental reached \$99.63 million, while the operating cost of the tankers (without depreciation) was \$60.99 million. The depreciation of the tankers amounted to \$24.45 million.

With regard to gas supply and import projects, AMPTC achieved net profit amounted to \$18.17 million. The final result of the company's activity in 2010 was \$20.14 million.

## **3- Financial Results for the First Half of 2011**

The revenues generated from vessels rental reached \$47.42 million, while the operating cost of the tankers was \$28.92 million. The depreciation of the tankers amounted to \$12.23 million. By adding returns of deposits and current accounts in banks, and considering the administrative expenses, the financial results of the company for the first half of 2011 show a net profit of \$5.30 million.

It is worth to mention that the oil tanker (ZIRKU) was subject to piracy on 28/2011/3/ by Somali pirates, the company has made huge efforts to free the tanker by paying a ransom of \$10 million, the tanker and its crew arrived safe and sound to Salalah Harbor in Sultanate of Oman.

## **II. The Arab Shipbuilding and Repair Yard COMPANY (ASRY)**

The Arab Shipbuilding and Repair Yard (ASRY) was established on 8 December 1973 with a fully paid-up capital of \$340 million (issued and paid-up capital amounted to \$170 million). The headquarters of the company was located at Al-Manama, Kingdom of Bahrain. Share holders are all member countries of OAPEC except Algeria, Syria and Egypt. The objectives of ASRY cover building, repair and maintenance of all types of ships including tankers and other marine transport vessels that are related to the shipping of hydrocarbons.

### **1- The Activities of ASRY in 2010**

The year 2010 was a challenging year for world economy and global shipping industry. The first half of 2010 was a difficult time for ASRY, where the size of business dropped significantly. However, the second half of the year showed a remarkable improvement in performance and financial results.

Number of vessels repaired in 2010 was 203 vessels, which is a remarkable figure in the history of the company compared with 168 vessels in 2009. However, the income of each vessel dropped to \$737 thousand compared with \$769 thousand in 2009.

ASRY has a good reputation as it provides high quality services at reasonable prices for all its clients. Yet, the company faces an increasing competition from the new shipyards. Being one of the most recognizable shipyards in the world, the company has the ability to confront the new competition in a way that will boost its services.

The company is keen to expand its business and reached the best levels, and despite the market challenges, ASRY is making steadily active progress, this couldn't be achieved without the continued support and encouragement of the shareholding countries.

Needless to say that oil tankers and other vessels and drilling rigs would not come for repair in ASRY without the major efforts in the field of marketing and promotion for the company's services, not only by ASRY, but also by the global dealers network that has strong coordinating ties with the company. Without the huge efforts of the agents, many of the repair works won by ASRY would have ended to other shipyards.

## 2- The Company's Financial Results for 2010

Despite the difficult economic conditions and the tough regional and international competition, ASRY was able to make a reasonable income in 2010, with operation profit of \$5.3 million before depreciation, but its net loss after depreciation reached about \$3.1 million, the main reason for that was the intense competition between shipyards, which has led to low repair prices compared with 2009.

## 3- Training

ASRY continued to implement its training and Arabization programs and its plans for the development of Arab employees, the objectives of those plans were to raise the Arabian employment rate, to employ more Arab trainees, and to improve the quality of performance and skills development and promotion of its staff. The training programs included multiple aspects of the company needs in technical and administrative areas in order to face the world vessels repair evolution and confront the intense competition. The number of employees in 2010 was 1633; of them 824 were Arab, compared with 832 Arab employees in 2009. The company also hired 48 temporary staff in 2010, and in peak business times subcontractors were dealt with by the company.

ASRY organized various training programs for senior and middle management supervisory. The company also conducted 273 professional training courses and plenary sessions for its staff, over 1633 employees were involved in these programs.

#### **4- The Company's Activities in the First Half of 2011**

The company faced another challenging year in 2011, but it is very confident that the continues support it receives from the board and executive management, and staff and agents will ensure its steady improvement to meet the new ship repair requirements. The company has an ambitious expansion program that includes a new 1380 meters-quay wall that will enter the service by the end of the year, and a new offshore fabrication area.

#### **5- Financial Results for the First Half of 2011**

In the first half of 2011, Net operating income amounted to \$87,116,000 compared with \$72,555,000 in the same period of 2010, with an increase of 20.1%.

### **III. The Arab Petroleum Investments Corporation (APICORP)**

The Arab Petroleum Investments Corporation was established in the city of Khobar, Kingdom of Saudi Arabia on 14 September 1974, with all OAPEC member countries as shareholders. The authorized capital of the Corporation was \$1200 million, and fully paid-up capital of \$550 million. The prime objective of APICORP is to participate in the equity, as well as the debt financing of projects in the petroleum industry at large. These include all businesses which are based on the development, processing or transportation of the products of the oil and gas industry and its downstream derivatives.

#### **1- Project Financing and Trade in 2010**

APICORP continued to play its role in 2010 as one of the leading financial institutions in the Arab region in the areas of project financing, trade and as a financial advisor to the oil and gas sector, but this at

lower levels because of the adverse conditions in global, regional and local financial markets, and weak economic recovery in many developed countries. These conditions have affected the whole process of investment and financing the oil and gas industries, apart from that, trade financing activity was more dynamic this year.

APICORP issued the first bond of Arab Petroleum Investments Corporation which made 2010 a distinguished year in the 35-year activities of the company. APICORP has managed to achieve significant and remarkable developments in implementation of the company's strategy in a timely manner, this was represented by settlement of its medium- term loan \$250 million due in April 2010, counting on the company's own resources. That was part of the company preparation to acquire its first credit rating, which came in June 2010, where APICORP got a distinctive credit rating (A1) for long- term loans and (Prime 1) from Moody's Investment Services, so that the company has managed to create and prepare its own arrangements, and has successfully completed its first ever fund raising from the Capital Markets issuing a five year Bonds for SAR 2 billion (\$530 million) in October 2010. These bonds were welcomed in the stock markets and were classified as the best issue in the Saudi Market in 2010. At the end of 2010, the net income related to funding the project and trade was about \$26.5 million compared to \$30 million in 2009. The loan portfolio amounted to \$2.5 billion in 2010 compared to \$2.6 billion in 2009.

## 2- Direct Equity Investments in 2010

APICORP's direct equity investments portfolio is comprised of 13 Arab joint venture projects in six Arab countries, namely: Saudi Arabia, Bahrain, Libya, Iraq, Egypt and Tunisia. The projects are engaged in different activities like petrochemical industries, chemical nitrogen fertilizers, Liquefied Petroleum Gas, geophysical exploration services and drilling of wells for oil & gas, and storage of petroleum products.

The net book value of APICORP investments reached \$336 million by the end of 2010 compared to \$339 million in 2009, this 8% increase of the book value is mainly attributed to the increase of the market value of one per portfolio (Yansab) traded on stock markets. Financial statements for the year 2010 showed that the dividends received from contributions have continued its upward course so raised to about \$67 million compared to \$59.5 at the end of 2009.

### **3- Financial Results in 2010**

APICORP's operations in 2010, reported a net income of \$95.2 million, compared to \$58.5 million in 2009, which represent an n increase of 63% compared to last year. Operating income in 2010 reached \$119 million after deducting the financing cost. Total assets by 2010 were \$4312 million, compared to \$4119 million in 2009. Total shareholders' equity also rose by 14% from to \$1002 million in 2009, to \$1141 million in 2010. This can be attributed to the good results achieved by the corporation.

### **4- Projects Financing in the First Half of 2010**

Project finance activity remained low in the Arab Gulf region, and decreased in North Africa. Yet, APICORP managed to participate in financing some good feasibility projects, and managed to increase its trade financing activities at the Arab world level. It is notable that syndicated big loans were paused, but are expected to be again in the financial markets within the second half of the year, particularly in Qatar and Saudi Arabia. As for North Africa, the current political changes have forced the banks to postpone a number of huge financing projects waiting for the situations to settle down.

## 5- Financial Results of the First Half of 2011

APICORP's operations in the first half of 2011 reported a net income of \$40.8 million. Total revenues amounted to \$52, a rate of 75% compared to the same period of the last year. Assets increased to \$4.3 billion compared to \$4.1 billion in 31 December 2009.

Total assets of the corporation reached \$4327 million in 30 June 2011, compared to \$4312 million in 31 December 2010. In the last quarter of the last year, the corporation issued medium- term bonds valued at \$531 million, this came in line with its strategy to reduce dependence on short- term funding to ensure the stability of funding sources. The total equity of the shareholders has risen to \$1,182 million compared to \$ 1,141 million at the end of 2010.

Having received (A1) rating for long- term debt and (Prime-1) short-term debts from Moody's Investors Services, APICORP as Multi-Lateral Development Bank will be able to play a vital role in financing energy projects in the Arab region, at a time when many regional and international enterprises have withdrawn from financing markets.

## 6- Training and Manpower

The corporation has 117 employees at its headquarter in Khubar, Saudi Arabia, most of whom (70%) are Arab nationals (81 employees) and 36 employees of other nationalities. In accordance with the strategy of human resources APICORP used to increase the number of non-Arab personnel in order to achieve a balance between the Arab and the non-Arab expertise in technical and specialized areas.

APICORP is making every effort to develop the skills and capabilities of its staff, in order to achieve a balance between training requirements necessary for the efficient performance of the work and the need to keep up with recent developments in economic, financial, petroleum, administrative and communications, and information technology. This is

undertaken by an analysis program adopted to execute a comprehensive work- improvement plan through upgrading the job ranking and salaries. The corporation has prepared a study by think tank specialist to review and develop the administrative structure to keep up with its expansionist activities, including a plan for the development and rehabilitation of staff to improve the overall performance of career and vocational.

#### **IV. The Arab Petroleum Services Company (APSCO)**

The Arab Petroleum Services Company (APSCO) was established on the 23<sup>th</sup> of November 1975 as a holding company based in Tripoli, Libya, with all OAPEC member countries as shareholders. The company's authorized capital was 100 million Libyan dinars (LYD), and subscribed and paid-up capital was LYD15 million. The capital was increased from LYD44 million to LYD49 million as per the decision of the general assembly of the company No. 221/ 38 / 2010 on 19/6/ 2010. APSCO's goal is to provide petroleum services which used to be monopolized by major oil companies that owns the techniques and expertise and possessed the skills in that field. This is achieved by establishment of companies specialized in one or more of petroleum services branches.

The objective of the company is to carry out Petroleum Services through the establishment of companies specialized in one or more branches of Petroleum Services, which includes the following fields in Particular:

- Drilling and workover.
- Formation evaluation, stimulation and testing.
- Well casing and perforations.
- Electric logging.
- Core and reservoir liquid analysis and crude evaluation.
- Computer application to reservoir studies.
- Reservoir engineering studies and Petroleum geology.

- Construction of field and terminal facilities.
- Topographical surveys for Petroleum services.
- Various geophysical surveys.
- Supply of materials and equipments required for various petroleum operations

### **The Activities of APSCO in 2010**

APSCO decided to focus on improving and developing the activities of the existing specialized companies. The company studies the possibility of entering into partnerships with international companies in one of the areas of petroleum services, in consistent with its purposes.

### **APSCO's Financial Results**

Total revenues of Arab Petroleum Services Company (APSCO) amounted to 5,024,293 Libyan Dinar in 2010. After deducting administrative expenses of 2,520,155 Libyan Dinar, and adding the amount of 104,815 Libyan Dinar amendments of previous years, net profit in 2010 reached 2,608,953 Libyan Dinar. This comprised 10% or 260,895 Libyan Dinar in the legal reserve, and 1,232,139. Total retained profits were 3,253,480 Libyan Dinar as of 31/2010/12/.

### **The Company's Activities in the First Half of 2011**

APSCO continued to monitor and support its three affiliated companies, and considering the possibility of participating in future projects. APSCO signed an agreement with Weatherford to establish a joint venture named "Arab Oil Fields Development Company". The establishment procedures will be completed soon.

### **Manpower and Training**

As of 30/6/2011, the total number of staff was 14 employees, all of them of Arab nationalities.

### **APSCO's financial results in the first half of 2011**

Financial results of APSCO's in the First Half ended in 302011/6/ were as depicted in following table:

Total Revenues:	13.5 thousand Libyan Dinar
Total Expenses:	950.5 thousand Libyan Dinar
Total Loss:	(937.0) thousand Libyan Dinar

(Only ninehundredandthirty-seven thousandLibyanDinars)

### **V. The Arab Well Logging Company (AWLCO)**

AWLCO was established in Baghdad, Iraq, on 24 March 1983 with a fully paid authorized capital of 7 million Iraqi Dinars, with all OAEPC members participating equally as shareholders. The company is specialized in performing well logging and perforation operations, AWLCO owns two operation centers one in the southern Iraq and the other in the North.

#### **1- The Company's Activities from 1/1/2010 to 30/6/2011**

In 2010, the company continued its well logging and perforations services across Iraqi fields, notes on activities are as follows:

- Decrease of the number of operations that have been implemented for a number of companies, this was because the international service companies that acquired the licensing contracts and took over most of the jobs in the southern Iraq.
- The company can undertake and accomplish a number of possible assigned jobs through the use of its available equipment or through cooperation with international companies.
- The company's revenues decreased despite the quality of services it provides.
- The company's profits decreased due to lower revenues despite rationing expenses.

- Provide logging and perforations services for private companies contracting with the Iraqi Oil Ministry.
- Provide new services to the producing companies, such as logging the erosion of wells casing.
- The company managed to purchase a number tools and equipments and new materials by investing its own profits.
- The company entered new perforation tools to use them in complicated reservoirs; this enables it to accept any required job.
- The company continued conducting maintenance and rehabilitation of facilities, vehicles, and old equipments for sustaining the business.
- These jobs were conducted in the light of authentic contracts signed with each of the South Oil Company and the North Oil Company some and private sector companies.
- Number of jobs performed in 2010 and the first half of 2011 was 425 successful logging jobs, which generated revenues and profits of \$3,204,753 and \$356,567 respectively.

## **2- Relations with the Iraqi Beneficiaries**

Coordination with the Oil Ministry and its departments, and North and South Oil Companies and production oil companies regarding various business requirements has continued, for instance:

- The Oil Ministry directed its operating companies in the exploration sector to cooperate with AWLCO's services, and provided the needed fuel and some jobs requirements.
- The Ministry dedicated \$9 million to AWLCO apart from debts repayment, the same is to be repaid from revenues of tools and equipment at a rate 25%, and these amounts will be used to purchase equipment for the development of the company's business to enable it to keep up with the technological and technical development.
- The Ministry has provided the company with all types of fuels and some jobs requirements.

- Providing the necessary protection for the company and its staff especially when transporting perforation tools and projectiles and radioactive materials.
- Signing contracts logging and perforation operations with exploration companies for the year 2011, the contracts are to be approved by the Ministry of Oil.
- The Ministry provided warehouses to store the perforation tools.
- The exploration companies settled most of the 2010- operations costs, and provided down payments for 2011 operations, the down payments will be settled by the end of the year as usual.
- The Iraqi Ministry of Oil and the Arab Petroleum Services Company have agreed upon a mechanism to settle the company's debts owed by the exploration companies, the subject could be resolved.

### **3- Training and Improvement**

During 2010 and first half of 2011, a number of the company's employees involved in training courses within the country as follows:

- Training of 2 engineers and maintenance official in the factories of SDS company.
- Training of 8 staff of different levels in Turkey with an American company on using and storing the perforation equipments.
- Training of 2 engineers in China on the open hole logging tools.
- Training of 3 engineers in China on casing corrosion logs interpretation.

### **4- Staff and Manpower**

Number of staff reached 67 in 2010.

### **5- Financial Results in 2010 and the First Half of 2011**

The company continued carrying on logging and perforation operations in the North and South Companies fields in 2010 and the

first half of 2011, net profit of 2010 amounted to \$3,204,753, while the net profit of the first half of 2011 reached \$356,576.

## **VI. The Arab Geophysical Exploration Services Company (AGESCO)**

The Arab Geophysical Exploration Services Company (AGESCO) was established in Tripoli, Libya 1984 with an authorized capital of 19 million Libyan dinars and a paid-up capital of 19 million Libyan dinars. The Arab Petroleum Services Company holds 66.66% of the shares, the Arab Petroleum Investment Corporation (APICORP) and the Libyan National Oil Corporation with 16.67% each.

### **1- The Crews Activities in 2010**

#### **Crew AG-002**

Crew AG-002 continued its operations in block MN-106 for Sirte Oil Company, where it has recorded 192.67 square kilometers in January, and 163.75 square kilometers in February, thus finalizing Sirte Oil Company's commitment. The crew moved to work for Arab Gulf Oil Company in block MN-118, and started the acquisition in 14 March; the crew accomplished 100.89 square kilometers.

The crew then moved to block MN-100 for Arab Gulf Oil Company and acquired 25.40 square kilometers in June, 238.36 square kilometers in July, 206.01 square kilometers in August, 213.54 square kilometers in September, 202.98 square kilometers in October, 194.09 square kilometers in November and 120.14 square kilometers in December. The crew moved later to the northern of MN-100 and acquired 95.19 square kilometers by late December, thus, Crew AG-002 acquired 2420.79 square kilometers in 2010.

#### **Crew AG-003**

Crew AG-003 continued working for Arab Gulf Oil Company in concession 65, then worked in block MN-66, MN-7, and MN-40 B,

then MN-7 aging after renewing the recording instruments. The crew acquired 2515.72 square kilometers in 2010.

### **Financial Results in 2010**

The operations and other revenues of the crews totaled LYD71,097 million in 2010, while expenditures reached LYD55,018 million. This has led AGESCO to make a net profit of LYD16,079 million.

### **Training and Manpower**

The company has run some local and external training courses for the staff, six employees received local training, and some others received external courses.

The number of the company's staff was 759 in 2010, 40 of them were Libyans, 98 of Arab nationalities and 40 of other nationalities.

At the end of 2010, The number of company's employees was 759 workers, of whom 520 Libyan, 96 Arab nationalities, and 42 foreigners.

## **2- The Crews Activities in the First Half of 2011**

### **Crew AG-002**

Crew AG-002 continued its work for Arabian Gulf Oil Company in block MN-100, the crew acquired 219.08 square kilometers in January, and 50.05 square kilometers in the first seven days of February, this has completed the agreed job of the block. The crew moved to work for Tatneft Company in block MN-4-82 and acquired 14.90 square kilometers, AGESCO received a letter from Tatneft in February 21<sup>st</sup> asking to stop the surveying program in accordance with the terms of force majeure resulted by the events that took place in Libya, so the crew ceased the job as of 21 February 2011.

### **Crew AG-003**

Crew AG-003 continued surveying operations for the Arab Gulf Oil Company in block N-7 and acquired 237.27 square kilometers in January, and 173.31 square kilometers in the period from 1- 21 February 2011 where it ceased the operations.

### **Financial Results in the First Half of 2011**

Due to halting the jobs of crews in the second half of February 2011, the operating income and other income for that period totaled LYD10,318 million, while total expenses reached LYD10,387 million, leading to a loss of LYD69 thousand.

### **Training and Manpower**

Due to halting the jobs of crews in the second half of February 2011, the training was stopped. Number of staff in the company was 269 employees, all of Libyan nationality.

## **VII. The Arab Company for Detergent Chemicals (ARADET)**

The company was established in Iraq on 12 March 1981, with an authorized capital of ID72 million (Iraqi Dinars), and subscribed and fully paid-up capital of ID36 million. Equity in the company divided among three member countries (Iraq, Saudi Arabia and Kuwait), and three companies, namely: the Arab Petroleum Investments Corporation (APICORP), the Arab Mining Company/ Jordan, and the Arab Investment Company.

### **1- The Company's Activity in 2010**

The company managed to keep a high level of performance in operating and marketing in 2010 thanks to the continuous support of

Iraqi Ministry of Oil and the board of directors, and after operating some units and the continued rehabilitation of production lines and stability in the electricity and preparing of feedstock.

As a result of growth of demand to its products, the company achieved record sales in 2010 of more than ID78 billion, which is equivalent to \$3,66 million. The company marketed 36326 tons of Linear alkyl benzene compared to 36500 tons in 2009. The company has also marketed the surplus of its intermediate products such as 5000 tons of paraffin and about 6900 tons of B.T.X, and some other products.

According to the agreement signed with the Ministry of Oil, the company is still favored with 10% discount on processed raw materials, the agreement expires on 31/12/2011.

### **Financial Situation in 2010**

The financial statements of the company for the year 2010 was prepared -for the first time- in accordance with the standards issued by the International Accounting Standards Board and Interpretations Committee of International standards for Financial Reporting in accordance with the laws and regulations of observed headquarter country, where the data verified gross activity profit of about \$8,9 million compared to the overall profit of 2009 which amounted to about \$1.10. The total profit for the fiscal year that ended in 31/12/2010 was about \$12 million compared to \$ 9,11 million in 2009.

### **Manpower and Training in 2010**

The number of staff was 346 employees by 2010, including 282 of Iraqi nationality, and the rest were of other Arab nationalities. The old labor- force was stable, and new younger staff were hired to fill the vacancies in the cadre of the company.

## 2- The Activities of the Projects Division in the First Half of 2011

The company was able to achieve the production plane thanks to the stability of providing the feedstock by the North Refineries Company, and the lower number of interruptions caused by electricity cuts in the first half of 2011.

On the marketing side, the company marketed high percentage of its products to many companies and factories in the exporting market despite the concerns and anticipations because of the ongoing events in the region. In the second quarter many projects were undertaken, like:

- Tanks: to increase the storage capacity for the desired intermediate materials, the company started building two tanks with a capacity of 500 cubic meters each, to store B.T.X and other intermediate materials. A tender to build 1000 cubic meters tank to store other materials was also announced.
- Building 20 low- cost house and bachelor housing and six services shops in Direct Execution way where a committee was considered as a contractor to reduce the costs, and guarantee the best technical specifications used in the establishment of residential complexes.
- Developing the Oracle- based computer systems in the company.
- Technical studies have been conducted to identify the critical equipment due to replacement or rehabilitation where a contract was signed with the Belgian company KPS, to prepare the plants (V1/ V208) and the oven H1-08. The company signed contracts to upgrade the rotary valve control system in the paraffin production unit. ARADET also signed contracts to purchase some control pumps to replace the low- efficiency existent ones that exceeded their lifetime.
- In the field of studies, and after the completion of the study to develop the aromatics line which was conducted by GTC- Tech, the company is willing to accomplish engineering and purchases

of equipment and materials and construction through an agreement with a consortium of contractors. A tender to study the development of the paraffin line/ alkylation to increase the production capacities was granted to a Chinese engineering company, which conducted such development to a similar production line for the Chinese SINOPEC company.

### **The Financial Results in the First Half of 2011**

The financial results in the first half of 2011 show that the company made a profit of about \$3,7 million, adding other income and realizing capital gain and deducting marketing and general expenditures lead to a net profit of about \$9,7 million.

### **Manpower and Training in the First Half of 2011**

The company endeavored to develop the staff performance in the technical, administrative and financial fields, through involving the staff in qualification courses to increase their professional competencies, participants in the development programs reached about 45% of the planned until mid-2011. The number of staff was 335 employees including 293 Iraqis and one Arab staff.



# APPENDICES



## APPENDICES

### PRESS RELEASES OF OAPEC MINISTERIAL COUNCIL MEETINGS IN 2010

#### 1- 86<sup>th</sup> Meeting of OAPEC's Ministerial Council

OAPEC's Ministerial Council held its 86th meeting in Cairo, on 23 May 2011. The meeting was at the level of the Executive Bureau members representing the ministers and was chaired by H.E. ALI Al-Sawad, Representative of Bahrain, which holds the chairmanship of the OAPEC's Ministerial Council and Executive Bureau in 2011.

- The Council approved the final accounts for 2010 for the General Secretariat and the Judicial Tribunal. It reviewed the Secretariat's activities since its last meeting and the studies it had conducted on oil, energy and the environment. It also reviewed reports on the Secretariat's symposiums and meetings in addition to planned symposiums on various topics for this year.

- The Council agreed that the 87th OAPEC's Ministerial Council will be held on 24 Dec.2011 in Cairo - Egypt, Arab Republic.

- The Council concluded its meeting by, expressing its gratitude to Egypt for facilitating the success of the meeting.

**Cairo, 24 May 2011.**

## 2- The Eighty-Seventh Meeting of the Ministerial Council

The Council Ministers held its Eighty-Seventh Meeting on 29 Muharram 1433 AH, corresponding to 24 December 2011 in Cairo, Egypt. The meeting was chaired by H.E. Dr Abdul Hussain Bin Ali Mirza, Minister of Energy in the Kingdom of Bahrain which has the chair for the current session.

H.E. the Chairman welcomed their Excellencies the Ministers and heads of delegations, especially those who are attending the Council's meeting for the first time: H.E. Dr Mohamed Bin Saleh Al Sada, Minister of Energy and Industry in Qatar, H.E. Mr Muhammad Abdullah Ghurab, Minister of Oil and Mineral Resources in Egypt, H.E. Dr Mohammad Mohsen Al Busairi, Minister of Oil and Minister of State for Parliamentary Affairs in Kuwait, and H.E. Mr Abdul Rahman Abdullah Bin Yazzah, Minister of Oil and Gas in Libya, wishing them all success in their deliberations listed on the proposed agenda emphasizing the importance of cooperation among OAPEC member countries to achieve the Organization's objectives.

H.E. Dr Mirza praised OAPEC's achievements witnessed in 1973, as well as its initiatives in the seventies of the last century in the establishment of numerous successful projects which has become a good example of Joint Arab Cooperation.

He was followed by H.E. Mr Abbas Ali AL Naqi, the Secretary General of OAPEC, who also welcomed their Excellencies the Ministers and heads of delegations, wishing them all success in their deliberations and expressed hope for their continued support for the Organization's activities, wishing the Arab Republic of Egypt further progress and prosperity.

The Council then approved the proposed agenda for its meeting, whereupon it:

- Honored the recipients of the 2010 OAPEC Award for Scientific Research, for their research papers on the (New Technologies for Petroleum Exploration and Production in Arab Countries), where withheld the First Prize amounting to 7000 Kuwaiti Dinars.

The Recipients of the awards are:

The Second Prize, amounting to 5000 Kuwaiti Dinars, was awarded and divided between:

a- Dr Khaled Ahmad Khalaf

b- Dr Musab Badr al-Din al-Baraidi From Syria.

- Approved the 2012 budget of OAPEC (The General Secretariat and the Judicial Tribunal) amounting 2,067,310 Kuwait Dinars.
- Appointed the Bassam and Partners Accountancy Office as auditors for OAPEC for the year 2012.
- Reviewed a progress report on the activities in 2011 related to the OAPEC Data Bank; the participation and organization of technical meetings as well as studies carried out, monitoring the issue of environment and climate change. The Council congratulated the State of Qatar for hosting the COP-18 Conference to be held from 26 November -7 December 2012.
- Decided that the Republic of Iraq continues its supervision on the Arab Petroleum Training Institute for one further year beginning 12012/1/.
- Reviewed a progress report on the activities of OAPEC-Sponsored Ventures and results of the operational and financial achievements during 2010. The Council was also briefed of the results of the Fortieth Meeting held in Cairo on 32011/10/, which was reviewed aspects of cooperation.

- People's Democratic Republic of Algeria will chair the next session (2012) of the Ministerial Council and the Executive Bureau in alphabetical order as of January, 1, 2012.
- A cable was sent by H.E. the chairman on behalf of their Excellencies the Ministers to the Rule of Field Marshal Mr. Hussein Tantawi, Head of Military Council in Egypt, for the generous hospitality and the facilities provided which were conducive to the success of the meeting.
- Decided to convene the next Ministerial Council on the 22 December 2012 in Cairo.

**Cairo, 29 Muharram 1433 AH, corresponding to 24 December 2011.**



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