



مركز الإحصاء  
STATISTICS CENTRE



# Energy and Water Statistics 2013

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## Introduction

This report presents statistics of energy and water in the Emirate of Abu Dhabi for the year 2013, comprising statistics of water and electricity production sector and oil and gas sector. The main sources for these statistics are Abu Dhabi National Oil Company – ADNOC, Abu Dhabi Water and Electricity Authority – ADWEA, Abu Dhabi Future Energy Company – Masdar, Abu Dhabi Water and Electricity Company, Abu Dhabi Distribution Company, Al Ain Distribution Company and TAKREER.

The Explanatory Notes section at the end of this report provides an explanation of the key terms and technical concepts used in the compilation of energy and water statistics. Readers are encouraged to refer to that section in conjunction with reading the statistics and information outlined in the report.

## Water and electricity statistics

Water and electricity production sector has a great significance among the various economic sectors, given its big role in the provision of basic services that are necessary for Citizens, Non-Citizens in addition to other economic activities. Therefore, the Emirate of Abu Dhabi pays attention to the development of this sector.

“Water and Electricity” sector saw a remarkable growth after establishing the Abu Dhabi Water and Electricity Authority (ADWEA) in March 1998, a public supervisory body responsible for implementing government policy regarding water and electricity sector in the Emirate.

(ADWEA) is serving about 2.5 million inhabitants in the Emirate of Abu Dhabi, living over approximately 67,340 square kilometers, and equivalent to 87 percent of the total area of the United Arab Emirates. In 2013, the total electricity production for the Emirate of Abu Dhabi, except Fujairah stations, was equivalent to 10,917 MW, while the total capacity of water desalination was approximately 916 million gallons per day.

### Electricity generation

In 2013, the total electricity production by companies was 51,937 GWH, an increase of 104 percent during the whole period since 2005, of which about 2,698 GWH being transferred to Northern Emirates, as shown in table (1.1). Electricity consumption in Abu Dhabi Emirate also increased by 94 percent during the aforesaid period reaching a total consumption of 49,267 GWH in 2013, including internal electrical consumption by power stations and technical losses through the network.

**Table 1.1: Electrical power statistics**

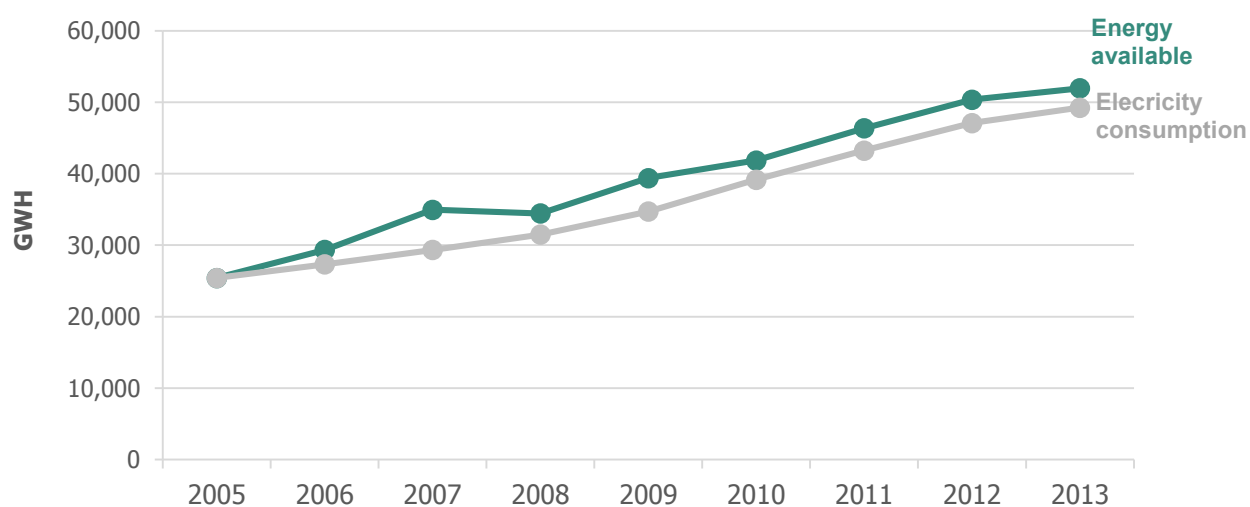
(MWH)

Item	2005	2010	2011	2012	2013
Total electricity production by companies	25,423,723	41,712,189	46,314,248	50,378,419	51,936,813
Net electricity transferred from EMAL & TAKREER	139	146,594	52,655	2,828	27,982
<b>Total</b>	<b>25,423,862</b>	<b>41,858,783</b>	<b>46,366,903</b>	<b>50,381,247</b>	<b>51,964,795</b>
Electricity exports to northern emirates	-	2,685,643	3,115,984	3,264,421	2,698,226
Electricity consumption in the emirate of AD *	25,423,862	39,173,140	43,250,919	47,116,826	49,266,569
Electrical consumption per capita	18.50	19.91	20.01	20.18	20.08
Electricity planned capacity (MW)	7,242	9,247	10,875	10,867	10,917

Source: Abu Dhabi Water and Electricity Company

\*Consumption includes internal electrical consumption by power stations & technical losses through the network

**Figure (1): Total Electricity power production\***



Source: Abu Dhabi Water and Electricity Company

\*Consumption includes internal electrical consumption by power stations & technical losses through the network

## Fuel consumption of the water and electricity activity

The demand for electricity and water production increases due to population and economic growth, leading to more fuel burn that is associated with the production of electricity. Power plants use different types of fuel to generate electricity, such as natural gas, crude oil, gas oil (diesel), and fuel oil. Due to economic and environmental considerations, natural gas is the main fuel used in power generation in the Emirate of Abu Dhabi, constituting 99.85 percent of the total fuel types used. In 2013, total fuel consumption in power plants increased by 2.5 percent than 2012, reaching a total of 588,794 Billion BTU, as shown in table (1.2).

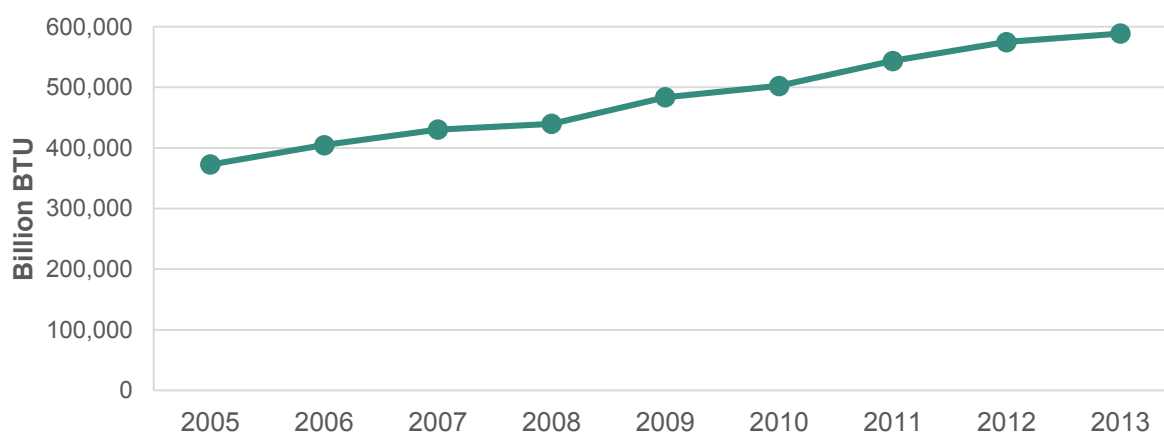
**Table 1.2: Fuel Consumption of the water and electricity activity**

(Billion BTU)

Item	2005	2010	2011	2012	2013
<b>Total</b>	<b>372,818</b>	<b>502,487</b>	<b>543,643</b>	<b>574,709</b>	<b>588,794</b>
Natural gas	370,973	467,126	528,114	574,499	<b>587,905</b>
Crude oil	1,287	21,918	6,062	0	<b>0</b>
Gas oil	557	13,439	9,467	210	<b>889</b>
Fuel oil	1	4	0	0	<b>0</b>

Source: Abu Dhabi Water and Electricity Company

**Figure (2): Fuel Consumption of the water and electricity activity**



Source: Abu Dhabi Water and Electricity Company

## Electricity generated by solar energy

By the end of 2013, electricity production from solar energy reached about 47,823 MWH out of which 91 percent was transmitted to the distribution network in Abu Dhabi Emirate and 9 percent was consumed internally by Masdar city.

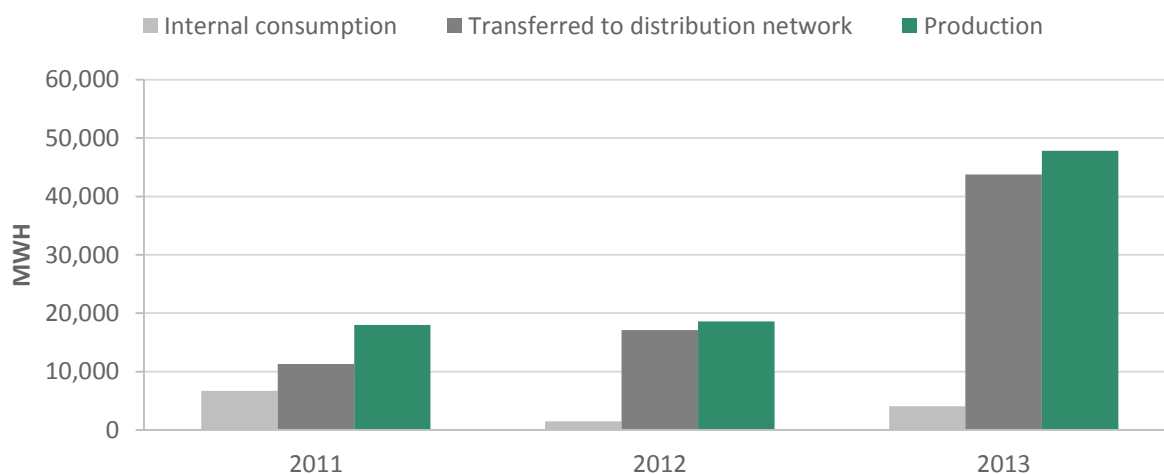
**Table 1.3: Electricity Generation and Consumption from Solar Energy**

(MWH)

Item	2011	2012	2013
Electricity internal consumption	6,695	1,455	4,069
Electricity transferred to distribution network	11,291	17,131	43,754
<b>Electricity production</b>	<b>17,986</b>	<b>18,586</b>	<b>47,823</b>

Source: Abu Dhabi Future Energy Company – Masdar

**Figure (3): Production and internal consumption of solar energy plants**



Source: Abu Dhabi Future Energy Company – Masdar

## Electricity consumption

The data presented in the table (1.4) shows that electricity consumption in Abu Dhabi Emirate reached 49,267 GHW in 2013. Abu Dhabi region consumed the largest share 62 percent, followed by Al Ain 20 percent and Al Gharbia 18 percent.

The commercial sector consumed 30.0 percent of the total, as shown in table (1.5), followed by Domestic sector 29.9 percent and government sector 24.1 percent. It is worth mentioning that some large industrial facilities contributes in providing the network with their excess of electricity, as these in industrial facilities have their own power plants. TAKREER, Emal and some oil production companies, for example.

**Table 1.4: Electricity consumption by region**

(MWH)

Region	2005	2010	2011	2012	2013
<b>Total consumption*</b>	<b>25,423,862</b>	<b>39,173,140</b>	<b>43,250,919</b>	<b>47,116,826</b>	<b>49,266,569</b>
Abu Dhabi	16,158,411	24,850,010	26,897,768	29,237,489	30,560,312
Al Ain	6,849,131	9,081,380	9,341,749	9,816,642	9,736,976
Al Gharbia	2,416,320	5,241,750	7,011,402	8,062,695	8,969,281

Source: Abu Dhabi Distribution Company and Al Ain Distribution Company

\*Consumption includes internal electrical consumption by power stations and technical losses through the network

**Table 1.5: Percentage of electricity consumption by sector**

(%)

Sector	2009	2010	2011	2012	2013
<b>Total</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>
Domestic	37.7	35.9	30.7	30.5	29.9
Commercial	31.7	32.1	28.8	29.8	30.0
Government	16.2	16.1	25.1*	23.9	24.1
Agriculture	9.2	8.2	7.0	6.1	5.6
Industry	3.7	7.2	8.0	9.3	9.7
Other Sectors	1.4	0.6	0.4	0.3	0.7

Source: Abu Dhabi Distribution Company, Al Ain Distribution Company

\*Note: New meters were installed from 2008 and the cumulative reading of those meter were billed in 2011 for Al Gharbia (Al Marfa)



**Table 1.6: Percentage of electricity consumption by region and sector - 2013**  
(%)

Sector	Abu Dhabi	Al Ain	Al Gharbia
Domestic	63.1	29.6	7.3
Commercial	83.4	13.0	3.6
Government	50.0	17.9	32.1
Agriculture	7.2	66.7	26.1
Industry	70.7	9.6	19.7
Other Sectors	51.5	41.1	7.4

Source: Abu Dhabi Distribution Company, Al Ain Distribution Company

### Production of desalinated water

Table (1.7) shows the production of desalinated water in Abu Dhabi Emirate, which reached 1,112.3 MCM in 2013, an increase of 49.9 percent, compared with 2005, and an increase of 2.5 percent compared with 2012.

**Table 1.7: Production of desalinated water**

(Million cubic meters)

Item	2005	2010	2011	2012	2013
<b>Total of available desalinated water</b>	<b>742.1</b>	<b>962.8</b>	<b>999.1</b>	<b>1084.7</b>	<b>1112.3</b>
Production	636.9	834.5	854.6	883.4	900.4
Supply from Al - Fujairah station	105.2	128.3	144.6	201.3	211.9

Source: Abu Dhabi Water and Electricity Company

### Consumption of desalinated water

Table (1.8) shows the annual consumption of desalinated water in Abu Dhabi Emirate reaching about 1,082.5 MCM in 2013, with a daily average consumption of 2.97 MCM and a daily per capita average consumption of 1.21 cubic meters. By region, Abu Dhabi region came first consuming about 60.7 percent of the total water consumed followed by Al Ain and Al Gharbia regions with 27.1 and 12.2 percent respectively.

**Table 1.8: Consumption of desalinated water**

(Million cubic meters)

Year	Annual consumption	Average daily consumption
2005	667.1	1.83
2010	872.9	2.39
2011	961.5	2.63
2012	1,059.2	2.89
2013	1,082.5	2.97

Source: Abu Dhabi Water and Electricity Company, Statistics Centre -Abu Dhabi

**Table 1.9: Percentage of desalinated water consumption by region sector – 2013**

Sector	Abu Dhabi	Al Ain	Al Gharbia
Domestic	52.7	33.0	14.3
Commercial	75.9	11.7	12.4
Government	56.9	28.1	15.0
Agriculture	19.2	78.1	2.7
Industry	82.5	10.1	7.4
Other Sectors	61.3	32.6	6.1

Source: Abu Dhabi Distribution Company, Al Ain Distribution Company

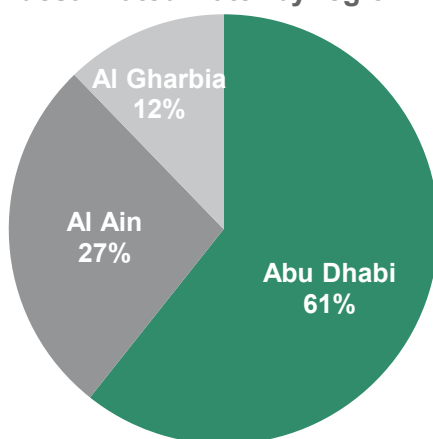
**Table 1.10: Consumption of desalinated water by region**

(Million cubic meters)

Region	2005	2010	2011	2012	2013
<b>Total consumption</b>	<b>667.0</b>	<b>873.0</b>	<b>961.5</b>	<b>1,059.2</b>	<b>1,082.5</b>
Abu Dhabi	413.9	529.0	592.6	653.1	656.9
Al Ain	161.2	232.2	259.1	286.4	293.2
Al Gharbia	92.0	111.7	109.9	119.8	132.4

Source: Abu Dhabi Water and Electricity Company

**Figure (4): Consumption of desalinated water by region - 2013**



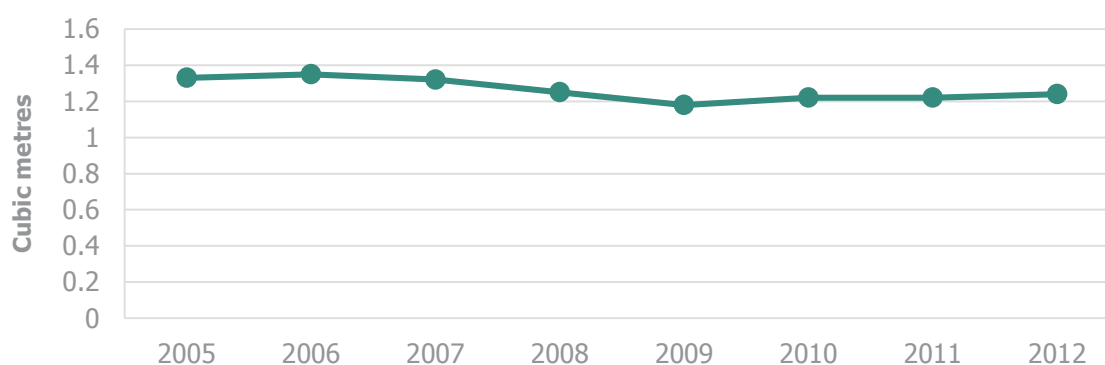
Source: Statistics Center – Abu Dhabi

**Table 1.11: Percentage of desalinated water consumption by sector (%)**

Sector	2008	2010	2011	2012	2013
Domestic	68.4	55.2	54.3	51.8	51.9
Commercial	9.6	15.5	15.7	13.7	14.0
Government	16.9	22.4	22.2	26.5	26.2
Agriculture	3.4	4.0	3.2	5.4	5.2
Industry	0.7	1.5	1.9	1.7	1.8
Other Sectors	1.1	1.4	2.7	1.0	0.9

Source: Abu Dhabi Distribution Company, Al Ain Distribution Company

**Figure (5): Per capita average daily consumption of desalinated water**



Source: Statistics Center – Abu Dhabi

## Oil and gas statistics

Oil and gas sector is deemed to be an important pillar in the economy of Abu Dhabi as it forms a huge share of its GDP. In 2013, Abu Dhabi produced 996,928 thousand barrels of crude oil, of which 920,687 thousand barrels were exported. The average prices of crude oil decreased by 2.7 percent compared with 2012 reaching an average of 109.2 \$/Barrel as shown in tables (2.1) and (2.2).

### Crude oil production and exports

Exports of crude oil constituted about 92.4 percent of 2013 total production as shown in table (2.1). In 2013, the total production increased by 48,728 thousand barrels, an increase of 5.1 percent compared with 2012.

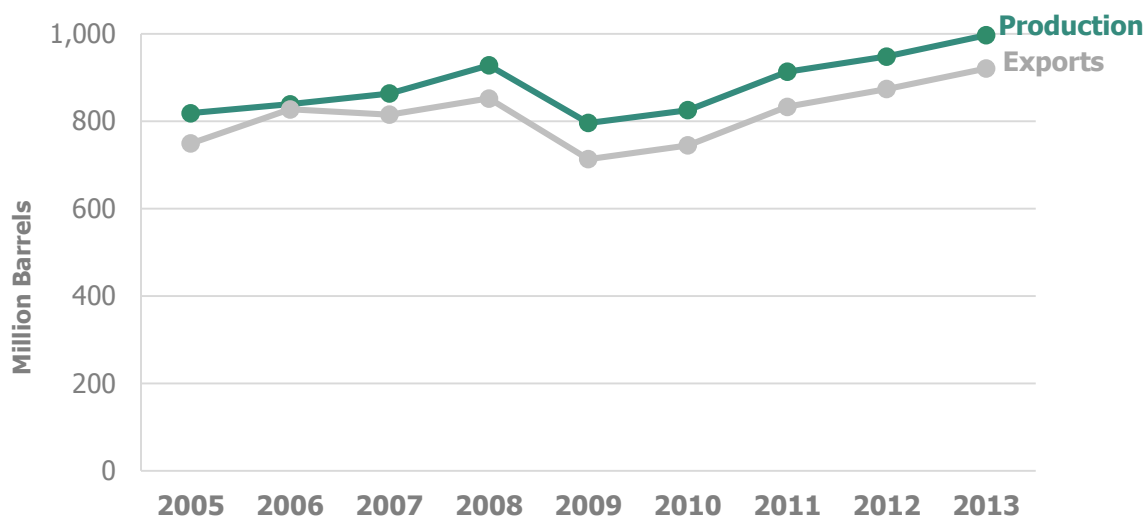
**Table 2.1: Crude oil production and exports**

(Thousand barrels)

Year	Production		Exports	
	Daily average	Annual production	Daily average	Annual exports
2005	242,2	818,330	2,052	749,080
2010	2,261	825,291	2,040	744,525
2011	2,502	913,191	2,282	833,070
2012	2,591	948,200	2,387	873,515
2013	2,731	996,928	2,522	920,687

Source: Abu Dhabi National Oil Company - ADNOC

**Figure (8): Production and exports of crude oil**



Source: Abu Dhabi National Oil Company - ADNOC

### Crude oil prices

Figure (9) shows the average crude oil prices decreasing from 112.1 US\$ in 2012 to 109.2 US\$ in 2013. Table (2.2) shows that the prices of all types of crude oil decreased by the range of 2.5 and 3.1 percent. The crude oil produced from Murban recorded the highest price at USD 110.1 per Barrel.

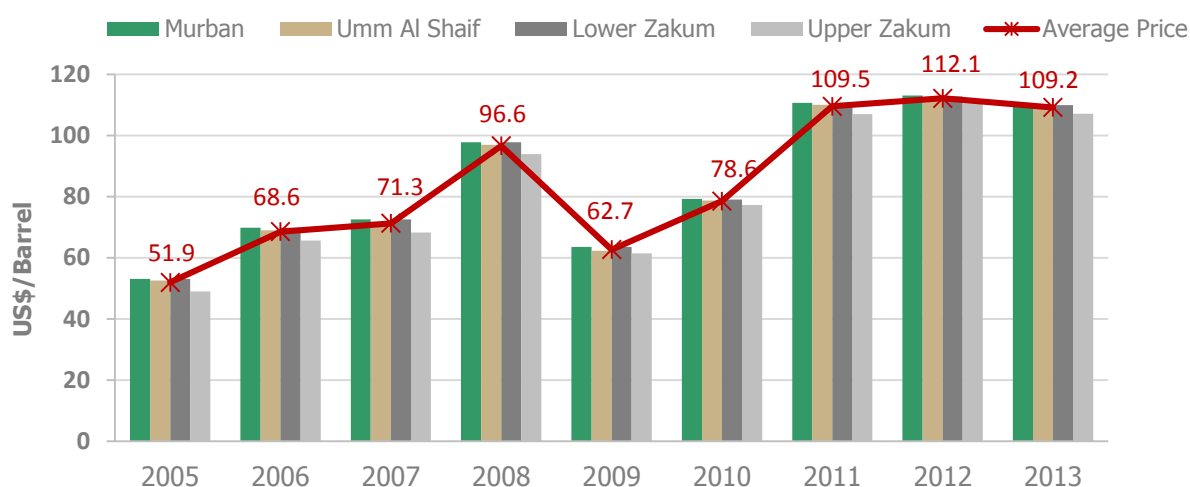
**Table 2.2: Crude oil prices by type**

(US\$/Barrel)

Type of crude	2005	2010	2011	2012	2013
Murban	53.1	79.2	110.6	113.0	110.1
Umm Al Shaif	52.5	78.7	110.0	112.3	109.5
Lower Zakum	53.1	79.0	110.4	112.7	109.9
Upper Zakum	49.0	77.3	107.0	110.5	107.1

Source: Abu Dhabi National Oil Company - ADNOC

**Figure (9): Average prices of crude oil**



Source: Abu Dhabi National Oil Company – ADNOC, Statistics Center – Abu Dhabi

### Petroleum products

Abu Dhabi's production of petroleum products increased by 4.2 percent in 2013 compared with 2012. Table (2.3) shows the production of refined petroleum products.

Exports of refined petroleum products in 2013 formed 46.5 percent of the total production, whereas domestic sales accounted for about 51.1 percent of the total production as shown in table (2.5).

**Table 2.3: Production of refined petroleum products**

(Thousand Metric Tons)

Product Type	2005	2010	2011	2012	2013
<b>Total</b>	<b>17,461</b>	<b>19,223</b>	<b>20,702</b>	<b>20,658</b>	<b>21,516</b>
LPG	521.4	579.2	540.2	452.7	591.0
Unleaded gasoline	2,439.1	2,284.3	2,537.2	2,800.0	3,056.0
Naphtha	3,803.6	4,813.4	5,070.7	5,136.8	4,912.3
Jet Fuel / Kerosene	5,266.6	5,684.0	6,422.1	6,920.9	6,866.0
Gas Oil /diesel	4,367.2	4,775.1	5,024.4	4,441.9	4,476.8
Heavy fuel Oil / S.R.Residue	1,022.2	1,047.8	1,066.8	859.8	1,564.0
Sulfur	41.1	38.9	40.9	46.3	50.0

Source: Abu Dhabi National Oil Company – ADNOC, TAKREER

**Table 2.4: Domestic sales of refined petroleum products**

(Million imperial gallons)

Product type	Abu Dhabi Emirate			Other Emirates		
	2011	2012	3201	2011	2012	2013
<b>Total</b>	<b>8,111</b>	<b>8,307</b>	<b>8,589</b>	<b>2,141</b>	<b>2,103</b>	<b>2,396</b>
LPG	149	167	168	-	-	-
Unleaded gasoline	2,586	2,801	3,027	-	-	-
Jet fuel / Kerosene	1,965	2,121	2,139	582	591	847
Gas oil / diesel	3,377	3,181	3,242	492	688	404
Heavy fuel Oil / S.R.Residue	32	27	13	1,067	824	1,145
Marine Bunker	2	9	-	-	-	-

Source: Abu Dhabi National Oil Company – ADNOC, TAKREER

**Table 2.5: Production and domestic sales of refined petroleum products**

(Thousand metric tons)

Item	2005	2010	2011	2012	2013
<b>Production</b>					
Quantity	18,034	19,223	20,702	20,658	21,516
Daily average	49.4	52.7	56.7	56.4	58.95
<b>Domestic sales</b>					
Quantity	3,473	10,091	10,252	10,410	10,985
Daily average	9.5	27.7	28.1	28.4	30.1
<b>Exports</b>					
Quantity	11,049	8,288	10,002	10,006	10,003
Daily average	30.3	22.7	27.4	27.3	27.41
<b>Refining capacity</b> (Thousand barrels/daily)	<b>480</b>	<b>505</b>	<b>505</b>	<b>505</b>	<b>505</b>

Source: Abu Dhabi National Oil Company – ADNOC

**Table 2.6: Export of refined petroleum products**

(Thousand metric tons)

Type of Product	2005	2010	2011	2012	2013
<b>Total</b>	<b>7,391</b>	<b>8,288</b>	<b>10,002</b>	<b>10,006</b>	<b>10,003</b>
Naphtha	3,608	4,269	5,209	5,137	4,833
Jet Fuel / Kerosene	2,815	3,219	3,806	4,207	3,789
Gad oil / Diesel	725	679	987	572	964
Fuel oil	242	121	-	89*	417

Source: Abu Dhabi National Oil Company – ADNOC

\* Export prices of S.R residue only

## Natural Gas

GASCO and ADGAS, two subsidiary companies of ADNOC, are engaged in the extraction of natural gas which has several uses in the Emirate. From natural gas, liquefied fuels and products such as propane, butane and pentane are produced, with most of them being exported. Part of fuels produced as electricity to be used in the industry of steel, aluminum and cement. Some of the natural gas is injected back into oil wells in order to increase their production and stabilize their oil reserves.

**Table 2.7: Natural gas production**

(Million cubic feet)

Year	2005	2010	2011	2012	2013
<b>Production</b>					
Annual	2,069,550	2,174,057	2,305,798	2,791,815	2,756,207
Daily	5,670	5,956	6,317	7,628	7,551

Source: Abu Dhabi National Oil Company – ADNOC



**Table 2.8: Production and exports of liquefied natural gas products by product type**

(Thousand metric tons)

Product type	2005		2010		2011		2012		2013	
	Production	Exports	Production	Exports	Production	Exports	Production	Exports	Production	Exports
<b>Total</b>	<b>14,566</b>	<b>14,404</b>	<b>17,759</b>	<b>16,765</b>	<b>19,295</b>	<b>18,995</b>	<b>19,656</b>	<b>19,274</b>	<b>20,003</b>	<b>16,818</b>
LNG	5,647	5,434	6,091	5,857	5,888	5,759	5,760	5,601	5,531	5,441
Propane	3,422	3,444	3,679	3,613	4,509	4,423	4,734	4,643	4,885	3,672
Butane	3,450	3,455	3,489	3,336	4,171	4,037	4,317	4,239	4,447	3,375
Pentane (plus)	2,047	2,071	2,427	2,342	2,772	2,822	2,888	2,835	3,024	2,143
Others (Sulfur)	-	-	2,072	1,616	1,956	1,954	1,958	1,956	2,117	2,187

Source: Abu Dhabi National Oil Company -ADNOC

## Explanatory Notes

### Data sources

Data are obtained from Abu Dhabi National Oil Company – ADNOC, Abu Dhabi Water and Electricity Authority – ADWEA, Abu Dhabi Future Energy Company – Masdar, Abu Dhabi Water and Electricity Company, Abu Dhabi Distribution Company, Al Ain Distribution Company and TAKREER. The data are processed and passed to Statistic Centre – Abu Dhabi for further editing and compilation.

### Abbreviations used

\$	United States Dollars
AD	Abu Dhabi Emirate
ADNOC	Abu Dhabi National Oil Company
ADWEA	Abu Dhabi Water and Electricity Authority
BTU	British Thermal Unit
EMAL	Emirates Aluminum
GWH	Gigawatt per Hour
LNG	Liquefied Natural Gas
LPG	Liquefied Petroleum Gas
MWH	Megawatt per Hour
na	Not Available
TAKREER	Abu Dhabi Oil Refining Company

### Notes on tables

Value of (percent) in all tables is based on unrounded numbers.

Due to rounding, totals may not equal the sum of component parts.

Unless otherwise indicated, all tables in this publication relate to the Emirate of Abu Dhabi. However, when mentioned in table titles or within table cells "Abu Dhabi " refers only to the Region of Abu Dhabi and not the whole Emirate.

## **More information and next release**

For more information about energy & environment and other official statistics, please visit the statistics link on the SCAD website at <http://www.scad.ae>

The next release is expected in November 2015 for 2014 data.

## **References**

Energy statistics manual.



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