



مركز الإحصاء
STATISTICS CENTRE



Energy and Water Statistics 2014

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Introduction

This report presents statistics of energy and water in the Emirate of Abu Dhabi for the year 2014, 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 2.7 million inhabitants in the Emirate of Abu Dhabi, living over approximately 67,340 square kilometers, and equivalent to 87 % of the total area of the United Arab Emirates. In 2014, the total electricity production for the Emirate of Abu Dhabi, except Fujairah stations, was equivalent to 12,571 MW, while the total capacity of water desalination was approximately 916 million gallons per day.

Electricity generation

In 2014, the total electricity production by companies was 58,343 GWH, an increase of 129 % during the whole period since 2005, of which about 5,513 GWH being transferred to Northern Emirates, as shown in table (1.1). Electricity consumption in Abu Dhabi Emirate also increased by 108 % during the aforesaid period reaching a total consumption of 52,841 GWH in 2014, including internal electrical consumption by power stations and technical losses through the network.

Table 1.1: Electrical power statistics

(MWH)

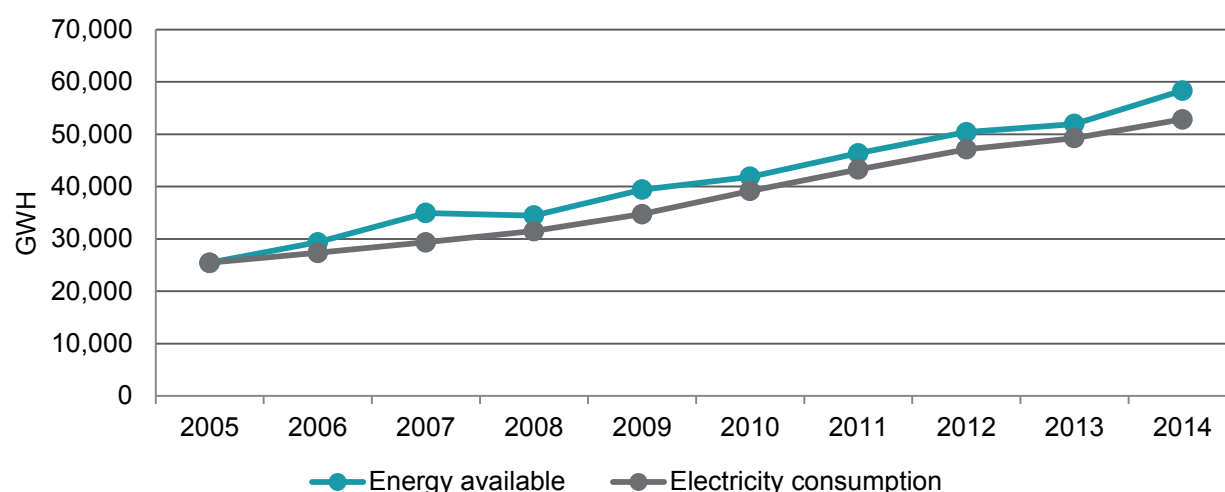
Item	2005	2010	2011	2012	2013	2014
Total electricity production by companies	25,423,723	41,712,189	46,314,248	50,378,419	51,936,813	58,342,545
Net electricity transferred from EMAL & TAKREER	139	146,594	52,655	2,828	27,982	11,802
Total	25,423,862	41,858,783	46,366,903	50,381,247	51,964,795	58,354,347
Electricity exports to northern emirates	-	2,685,643	3,115,984	3,264,421	2,698,226	5,513,310
Electricity consumption in the emirate of AD *	25,423,862	39,173,140	43,250,919	47,116,826	49,266,569	52,841,037
Electrical consumption per capita**	18.50	18.70	20.01	20.35	19.77	19.89
Electricity planned capacity (MW)	7,242	9,247	10,875	10,867	10,917	12,571

Source: Abu Dhabi Water and Electricity Company

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

** Data per capita has been updated as a result of updates on population estimates in the Emirate of Abu Dhabi 2006- 2014

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

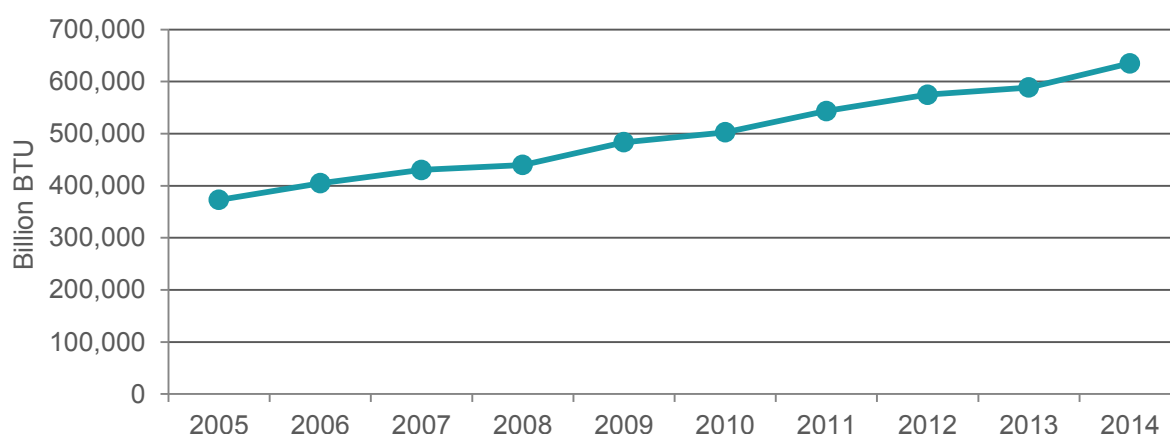
The demand for electricity and water production increases due to population and economic growth, leading to more fuel burn that is associated with the production of electricity. Power plants use different types of fuel to generate electricity, such as natural gas, crude oil, gas oil (diesel), and fuel oil. Due to economic and environmental considerations, natural gas is the main fuel used in power generation in the Emirate of Abu Dhabi, constituting 99.83 % of the total fuel types used. In 2014, total fuel consumption in power plants increased by 7.8 % than 2013, reaching a total of 643,974 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	2014
Total	372,818	502,487	543,643	574,709	588,794	634,974
Natural gas	370,973	467,126	528,114	574,499	587,905	633,862
Crude oil	1,287	21,918	6,062	0	0	0.9
Gas oil	557	13,439	9,467	210	889	1,110
Fuel oil	1	4	-	-	-	-

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 2014, electricity production from solar energy reached about 262,667 MWH , marking a growth of 449% compared with 2013. This increase is due to the commencement of operation of the Shams solar power station in late 2013, while 2014 was a full year of operations. out of which 88 % was transmitted to the distribution network in Abu Dhabi Emirate and 12 % was consumed internally by Masdar city.

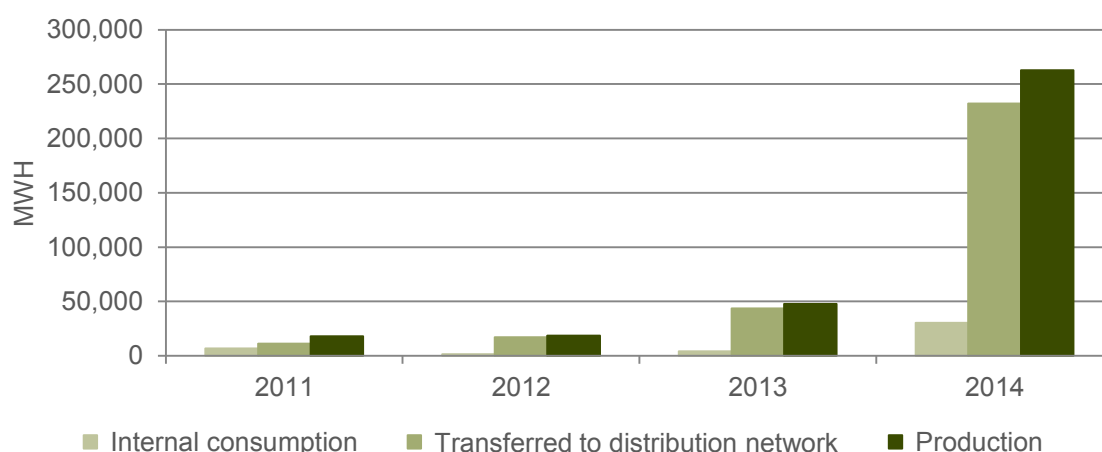
Table 1.3: Electricity Generation and Consumption from Solar Energy

(MWH)

Item	2011	2012	2013*	2014*
Electricity internal consumption	6,695	1,455	4,069	30,439
Electricity transferred to distribution network	11,291	17,131	43,754	232,228
Electricity production	17,986	18,586	47,823	262,667

Source: Abu Dhabi Future Energy Company – Masdar

*Date in 2013 & 2014 include Shams solar power station

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 52,841 GHW in 2014. Abu Dhabi region consumed the largest share 62 %, followed by Al Ain 20 % and Al Gharbia 19 %.

The commercial sector consumed 30.4 % of the total, as shown in table (1.5), followed by Domestic sector 29.4 % and government sector 24.7 %. Some large industrial establishment contribute in providing the network with their excess of electricity. As they have their own power plants e.g. TAKREER, Emal and some other oil production companies.

Table 1.4: Electricity consumption by region

(MWH)

Region	2005	2010	2011	2012	2013	2014
Total consumption*	25,423,862	39,173,140	43,250,919	47,116,826	49,266,569	52,841,037
Abu Dhabi	16,158,411	24,850,010	26,897,768	29,237,489	30,560,312	32,575,456
Al Ain	6,849,131	9,081,380	9,341,749	9,816,642	9,736,976	10,390,745
Al Gharbia	2,416,320	5,241,750	7,011,402	8,062,695	8,969,281	9,874,836

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	2007	2012	2013	2014
Total	100	100	100	100
Domestic	45.3	30.5	29.9	29.4
Commercial	29.2	29.8	30.0	30.2
Government	17.4	23.9	24.1	24.7
Agriculture	7.1	6.1	5.6	5.4
Industry	0.2	9.3	9.7	10.0
Other Sectors	0.8	0.3	0.7	0.4

Source: Abu Dhabi Distribution Company, Al Ain Distribution Company

Table 1.6: Percentage of electricity consumption by region and sector - 2014
(%)

Sector	Abu Dhabi	Al Ain	Al Gharbia
Domestic	63.7	29.7	6.6
Commercial	83.7	13.0	3.3
Government	48.3	15.9	35.8
Agriculture	8.5	65.4	26.2
Industry	69.0	9.5	21.5
Other Sectors	83.9	6.2	9.9

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 1,151.2 MCM in 2014, an increase of 55.1 %, compared with 2005, and an increase of 35. % compared with 2013.

Table 1.7: Production of desalinated water

(Million cubic meters)

Item	2005	2010	2011	2012	2013	2014
Total of available desalinated water	742.1	962.8	999.1	1,084.7	1,112.3	1,151.2
Production	636.9	834.5	854.6	883.4	900.3	923.8
Supply from Al - Fujairah station	105.2	128.3	144.6	201.3	211.9	227.4

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 1,127.7 MCM in 2014, with a daily average consumption of 3.09 MCM and a daily per capita average consumption of 1.16 cubic meters. By region, Abu Dhabi region came first consuming In domestic consumption in the emirate about 54.7 % of the total water consumed followed by Al Ain and Al Gharbia regions with 33.6% and 11.7% respectively.

Table 1.8: Consumption of desalinated water

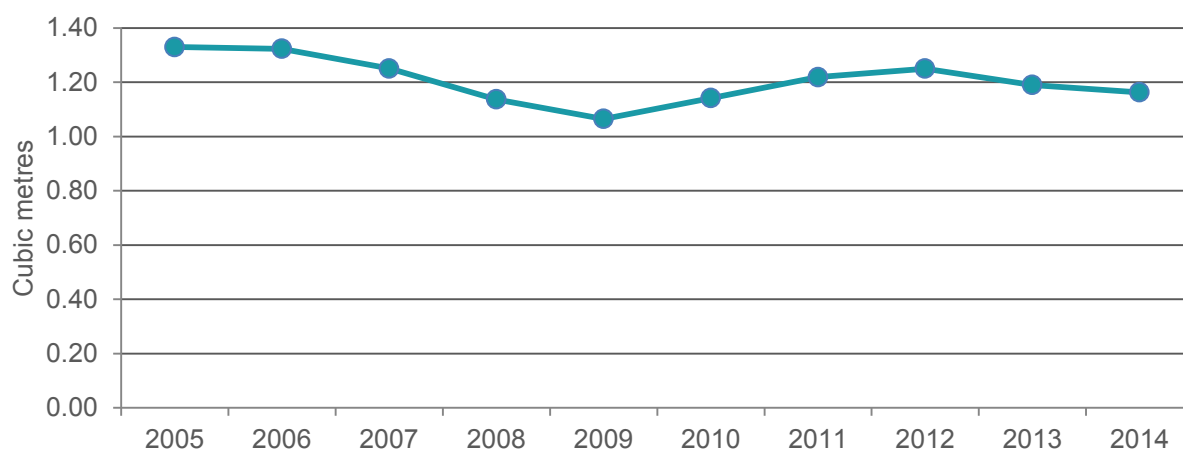
(Million cubic meters)

Year	Annual consumption	Average daily consumption	Average daily consumption per capita*
2005	667.1	1.83	1.33
2010	873.0	2.39	1.14
2011	961.5	2.63	1.22
2012	1,059.2	2.89	1.25
2013	1,082.5	2.97	1.19
2014	1,127.7	3.09	1.16

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

* Data per capita has been updated as a result of updates on population estimates in the Emirate of Abu Dhabi 2006- 2014

Figure 4: Per capita average daily consumption of desalinated water*



Source: Statistics Center – Abu Dhabi

* Data per capita has been updated as a result of updates on population estimates in the Emirate of Abu Dhabi 2006- 2014

Table 1.9: Percentage of desalinated water consumption by region sector – 2014

(%)

Sector	Abu Dhabi	Al Ain	Al Gharbia
Domestic	54.7	33.6	11.7
Commercial	79.0	11.3	9.7
Government	60.9	22.7	16.5
Agriculture	26.2	70.6	3.3
Industry	80.9	12.7	6.4
Other Sectors	47.0	44.7	8.4

Source: Abu Dhabi Distribution Company, Al Ain Distribution Company

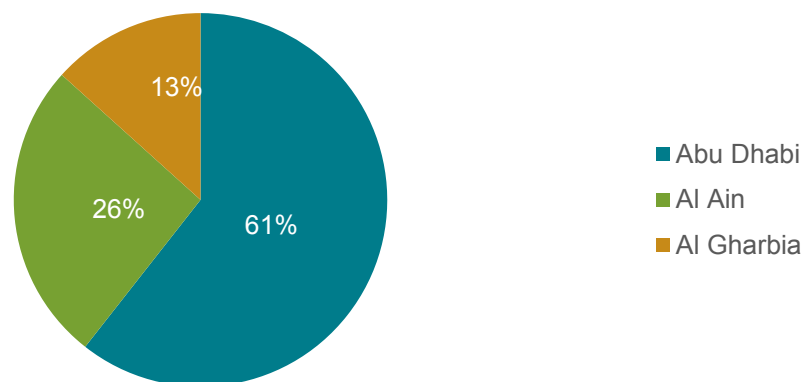
Table 1.10: Consumption of desalinated water by region

(Million cubic meters)

Region	2005	2010	2011	2012	2013	2014
Total consumption	667.0	873.0	961.5	1,059.2	1,082.5	1,127.7
Abu Dhabi	413.9	529.0	592.6	653.1	656.9	683.2
Al Ain	161.2	232.2	259.1	286.4	293.2	294.1
Al Gharbia	92.0	111.7	109.9	119.8	132.4	150.3

Source: Abu Dhabi Water and Electricity Company

Figure 5: Consumption of desalinated water by region - 2014



Source: Statistics Center – Abu Dhabi

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

Sector	2008	2010	2011	2012	2013	2014
Domestic	68.4	55.2	54.3	51.8	51.9	49.6
Commercial	9.6	15.5	15.7	13.7	14.0	14.7
Government	16.9	22.4	22.2	26.5	26.2	28.0
Agriculture	3.4	4.0	3.2	5.4	5.2	4.9
Industry	0.7	1.5	1.9	1.7	1.8	2.0
Other Sectors	1.1	1.4	2.7	1.0	0.9	0.7

Source: Abu Dhabi Distribution Company, Al Ain Distribution Company

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 2014, Abu Dhabi produced 1,002,179 thousand barrels of crude oil, of which 808,131 thousand barrels were exported. The average prices of crude oil decreased by 5.2 % compared with 2013 reaching an average of 103.49 \$/Barrel as shown in tables (2.1) and (2.2).

Crude oil production and exports

Exports of crude oil constituted about 80.6 % of 2014 total production as shown in table (2.1). In 2014, the total production increased by 5,251 thousand barrels, an increase of 0.5 % compared with 2013.

Table 2.1: Crude oil production and exports

(Thousand barrels)

Year	Production		Exports	
	Daily average	Annual production	Daily average	Annual exports
2005	2,242	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
2014	2,746	1,002,179	2,214	808,131

Source: Abu Dhabi National Oil Company - ADNOC

Figure 6: 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 109.2 US\$ in 2013 to 103.5 US\$ in 2014. Table (2.2) shows that the prices of all types of crude oil decreased by the range of 0.6 % and 9.8 %. The crude oil produced from Lower Zakum recorded the highest price at USD 109.2 per Barrel.

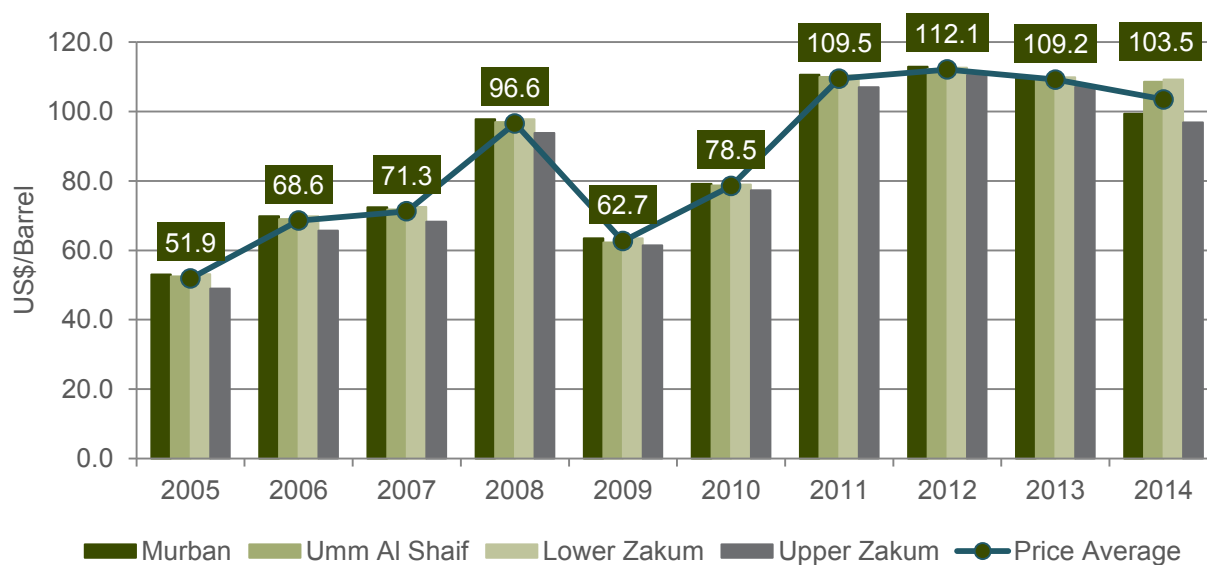
Table 2.2: Crude oil prices by type

(US\$/Barrel)

Type of crude	2005	2010	2011	2012	2013	2014
Murban	53.1	79.2	110.6	113.0	110.1	99.3
Umm Al Shaif	52.5	78.7	110.0	112.3	109.5	108.6
Lower Zakum	53.1	79.0	110.4	112.7	109.9	109.2
Upper Zakum	49.0	77.3	107.0	110.5	107.1	96.9

Source: Abu Dhabi National Oil Company - ADNOC

Figure 7: 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 0.7 % in 2014 compared with 2013. Table (2.3) shows the production of refined petroleum products.

Exports of refined petroleum products in 2014 formed 40.0 % of the total production, whereas domestic sales accounted for about 49.2 % 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	2014
Total	17,986	19,223	20,702	20,658	21,516	21,657
LPG	488	579.2	540.2	452.7	591.0	618
Unleaded gasoline	1,429	2,284.3	2,537.2	2,800.0	3,056.0	2,371
Naphtha	4,669	4,813.4	5,070.7	5,136.8	4,912.3	5,048
Jet Fuel / Kerosene	5,494	5,684.0	6,422.1	6,920.9	6,866.0	6,162
Gas Oil /diesel	4,217	4,775.1	5,024.4	4,441.9	4,476.8	4,482
Heavy fuel Oil / S.R.Residue	1,689	1,047.8	1,066.8	859.8	1,564.0	2,927
Sulfur	-	38.9	40.9	46.3	50.0	49

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		
	2012	2013	2014	2012	2013	2014
Total	8,307	8,589	8,661	2,103	2,396	1,991
LPG	167	168	187	-	-	-
Unleaded gasoline	2,801	3,027	2,681	-	-	-
Jet fuel / Kerosene	2,121	2,139	2,572	591	847	675
Gas oil / diesel	3,181	3,242	3,220	688	404	344
Heavy fuel Oil / S.R.Residue	27	13	0	824	1,145	973
Marine Bunker	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	2014
Production						
Quantity	17,986	19,223	20,702	20,658	21,516	21,657
Daily average	49.3	52.7	56.7	56.4	58.95	59.33
Domestic sales						
Quantity	3,473	10,091	10,252	10,410	10,985	10,653
Daily average	9.5	27.7	28.1	28.4	30.1	29.18
Exports						
Quantity	11,035	8,288	10,002	10,006	10,003	8,658
Daily average	30.2	22.7	27.4	27.3	27.4	23.7
Refining capacity (Thousand barrels/daily)	480	505	505	505	505	505

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	2014
Total	11,035	8,288	10,002	10,006	10,003	8,658
Naphtha	4,628	4,269	5,209	5,137	4,833	4,850
Jet Fuel / Kerosene	3,968	3,219	3,806	4,207	3,789	2,523
Gad oil / Diesel	1,783	679	987	572	964	713
Fuel oil	656	121	-	89*	417	572

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	2014
Annual	2,069,550	2,174,057	2,305,798	2,791,815	2,756,207	2,799,202
Daily	5,670	5,956	6,317	7,628	7,551	7,669

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		2011		2012		2013		2014	
	Production	Exports	Production	Exports	Production	Exports	Production	Exports	Production	Exports
Total	14,566	14,404	19,295	18,995	19,656	19,274	20,003	16,818	21,754	19,821
LNG	5,647	5,434	5,888	5,759	5,760	5,601	5,531	5,441	6,050	5,856
Propane	3,422	3,444	4,509	4,423	4,734	4,643	4,885	3,672	5,146	4,509
Butane	3,450	3,455	4,171	4,037	4,317	4,239	4,447	3,375	4,627	4,089
Pentane (plus)	2,047	2,071	2,772	2,822	2,888	2,835	3,024	2,143	3,352	2,876
Others (Sulfur)	-	-	1,956	1,954	1,958	1,956	2,117	2,187	2,579	2,490

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 2016 for 2015 data.

References

Energy statistics manual.

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