



# SECTION 6

## Oil transportation

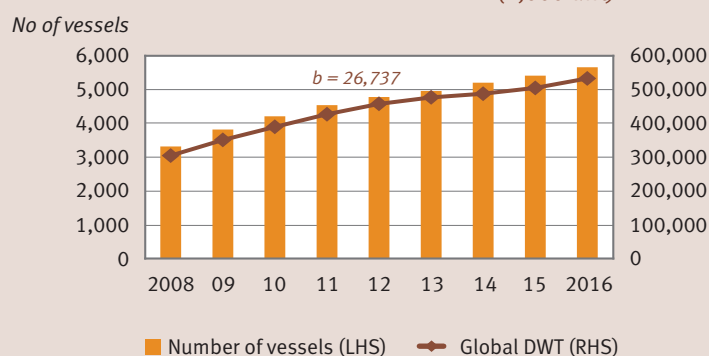


## Recent developments in tanker fleet and spot freight rates

In recent years, the trend towards rising oil production levels in exporting countries, together with increasing demand and refining capacities in oil importing countries, has resulted in a global increase of vessels for oil transportation in order to meet growing demand. From a purely economic point of view, demand for tankers is mainly determined by the dynamics of the fundamentals of supply and demand across various geographic regions. Since 2008 the number of all combined tankers has increased continuously as highlighted in the graph below. In 2016 the total number of vessels amounted to 5,607 compared to 5,359 vessels in 2015. In the period from 2008 to 2016, the total number of tankers increased by 71 per cent. In terms of deadweight tonnages (dwt), in 2016 global combined vessels could theoretically and safely carry and transport about 528m t of oil per day compared to 500m t in 2015. In the period from 2008 to 2016, total number of dwt increased by 75 per cent. A simple linear regression model on the continuously increasing carriage capacity of tankers over time yields a slope coefficient of  $b = 26,737$  1,000 dwt per year.

### Global tanker fleet development

(1,000 dwt)



### Coefficient of simple linear regression model<sup>1</sup>

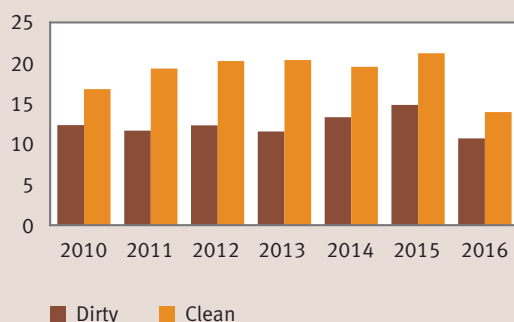
2008–2016 26,737\*

1. Slope coefficient of simple linear regression model with global dwt as a dependent variable and the year as an independent variable.

\* Statistically significant at  $\alpha = 0.05$  level.

In general, the oil tanker market differentiates between two categories. First, dirty tankers mainly carry crude oil and residual fuel oil, and are typically very big vessels with relatively low dollar-per-ton transportation costs. Second, clean tankers are meant to transport refined products and are normally smaller vessels – and, hence, have higher dollar-per-ton transportation costs. On a global scale, and considering the major transportation routes, the average transportation costs in 2016 for clean tankers was about 30 per cent more than for dirty tankers as implied by the graph below.

### Average tanker spot freight rates (\$/t)



### Descriptive statistics Difference between dirty and clean tankers spot freight rates (\$/t)

	Average	Std Dev	Min	Max
<b>Difference</b>	6.4	2.0	3.3	8.8

The table above presents some descriptive statistics on the differences between dirty and clean tanker spot freight rates for the period 2010–2016. On average, clean tanker spot freight rates were \$6.4/t more expensive than dirty tanker rates, with a standard deviation of \$2/t, while the maximum difference amounted to almost as much as \$9/t.

## Oil transportation

Table 6.1

### Tanker fleet in OPEC Members

(1,000 dwt)

	2012		2013		2014		2015		2016	
	number	dwt	number	dwt	number	dwt	number	dwt	number	dwt
Algeria	1	160	1	160	1	160	1	160	1	160
Angola	31	2,363	31	2,363	27	2,498	27	2,498	26	2,085
Ecuador	14	957	18	1,231	20	1,457	9	638	9	638
Gabon	1	0.4	1.0	0.4	1.0	0.4	1.0	0.4	1.0	0.4
IR Iran	47	10,994	47	10,994	46	10,982	46	10,982	47	10,982
Iraq	4	53	4	50	4	53	4	53	4	53
Kuwait	21	3,404	19	3,547	26	4,825	26	4,825	25	4,703
Libya	5	548	5	548	5	548	5	548	5	548
Nigeria	2	409	2	409	2	409	2	409	–	–
Qatar	6	528	6	528	5	397	5	397	5	397
Saudi Arabia	20	5,051	23	6,004	23	6,004	23	6,004	23	6,004
United Arab Emirates	13	660	13	660	19	1,139	19	1,139	19	1,139
Venezuela	19	1,452	22	2,066	26	3,346	26	3,346	26	3,346
<b>OPEC</b>	<b>184</b>	<b>26,579</b>	<b>192</b>	<b>28,560</b>	<b>205</b>	<b>31,819</b>	<b>194</b>	<b>31,000</b>	<b>191</b>	<b>30,057</b>
Total world	4,734	453,168	4,912	472,169	5,153	482,975	5,359	499,922	5,607	527,651
<i>OPEC percentage</i>		5.9		6.0		6.6		6.2		5.7

**Notes:**

Figures as at year-end.

Table 6.2

### World tanker fleet by year of build and categories

(1,000 dwt)

Tanker size	up to 2001		2002–06		2007–11		2012–16		Total	
	no	dwt	no	dwt	no	dwt	no	dwt	no	dwt
GP 16.5–24.9	170	2,815	143	2,431	340	5,417	92	1,721	744	12,384
MR 25.0–44.9	293	11,193	368	14,500	359	14,401	296	12,782	1,315	52,876
LR1 45.0–79.9	155	7,918	367	21,060	589	33,282	304	16,297	1,414	78,557
LR2 80.0–159.9	278	33,243	375	44,879	471	57,573	277	35,702	1,401	171,397
VLCC 160.0–319.9	134	38,966	176	49,398	266	75,946	158	48,127	734	212,437
<b>Total world</b>	<b>1,029</b>	<b>94,136</b>	<b>1,428</b>	<b>132,268</b>	<b>2,024</b>	<b>186,618</b>	<b>1,126</b>	<b>114,630</b>	<b>5,607</b>	<b>527,651</b>

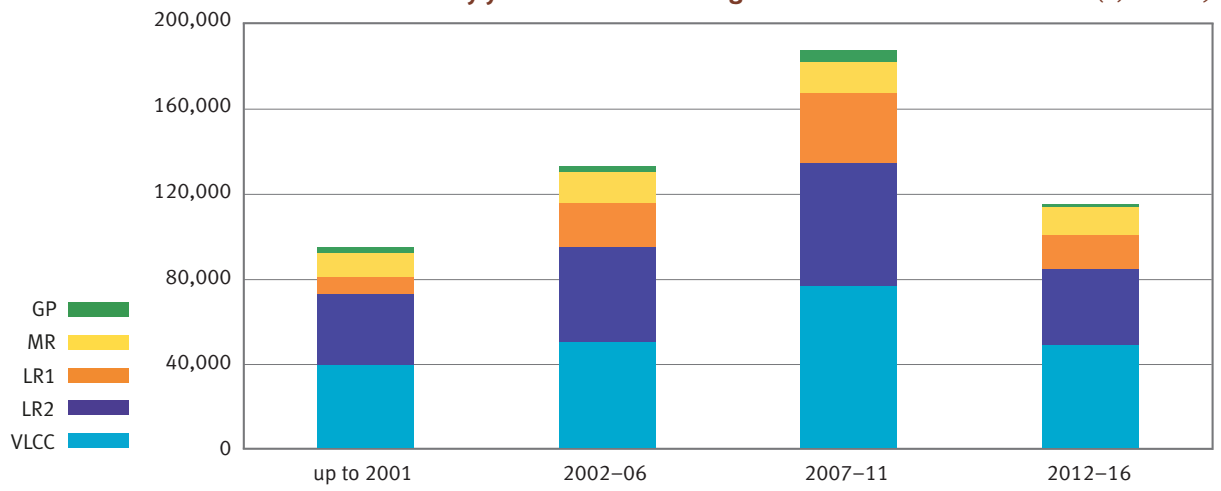
**Notes:**

Figures as at year-end. Data is adjusted to take in account different categories of vessels. Data includes clean, dirty and chemical tankers.

GP = general purpose carrier; MR = medium range carrier; LR1 = large range 1 carrier; LR2 = large range 2 carrier; VLCC = very large crude carrier.

Graph 6.1  
World tanker fleet by year of build and categories

(1,000 dwt)



Graph 6.2  
World tanker fleet by year of build and categories

(number of vessels)

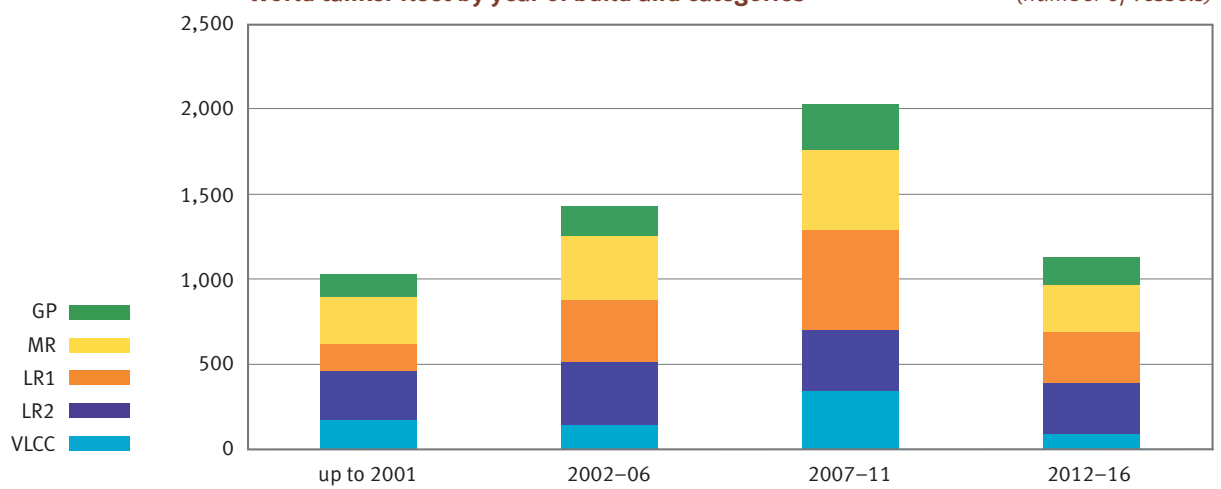


Table 6.3  
LPG carrier fleet in OPEC Members

(1,000 cu m)

	2012		2013		2014		2015		2016	
	no	capacity	no	capacity	no	capacity	no	capacity	no	capacity
Algeria	8	324	8	324	8	324	8	324	9	386
Angola	5	51	5	51	6	48	6	54	5	39
Ecuador	5	110	5	145	5	145	2	109	2	109
Gabon	–	–	–	–	–	–	–	–	–	–
IR Iran	1	12	1	12	1	12	1	12	1	12
Iraq	–	–	–	–	–	–	–	–	–	–
Kuwait	4	321	4	321	4	215	4	215	4	316
Libya	2	8	2	8	2	8	2	8	2	8
Nigeria	2	157	2	157	–	–	–	–	–	–
Qatar	4	328	4	328	4	328	4	328	4	328
Saudi Arabia	–	–	–	–	–	–	–	–	–	–
United Arab Emirates	1	3	1	3	1	9	1	9	1	9
Venezuela	2	24	2	24	–	–	–	–	–	–
<b>OPEC</b>	<b>34</b>	<b>1,338</b>	<b>34</b>	<b>1,373</b>	<b>31</b>	<b>1,089</b>	<b>28</b>	<b>1,059</b>	<b>28</b>	<b>1,207</b>
Total world	1,203	19,625	1,216	19,945	1,248	21,316	1,273	22,373	1,338	25,899
<i>OPEC percentage</i>		6.8		6.9		5.1		4.7		4.7

Notes:  
Figures as at year-end.

Table 6.4  
World LPG carrier fleet by size

(1,000 cu m)

	2012		2013		2014		2015		2016	
	no	capacity	no	capacity	no	capacity	no	capacity	no	capacity
up to 19,999	927	3,854	936	3,956	950	4,096	959	4,163	976	4,330
20,000–39,999	116	3,338	118	3,394	123	3,552	131	3,797	140	4,040
40,000–59,999	20	1,184	20	1,184	20	1,184	20	1,184	23	1,365
60,000–99,999	140	11,249	142	11,411	155	12,484	163	13,229	199	16,164
100,000 and over	–	–	–	–	–	–	–	–	–	–
<b>Total world</b>	<b>1,203</b>	<b>19,625</b>	<b>1,216</b>	<b>19,945</b>	<b>1,248</b>	<b>21,316</b>	<b>1,273</b>	<b>22,373</b>	<b>1,338</b>	<b>25,899</b>

Notes:  
Figures as at year-end.

Table 6.5

**World combined carrier fleet by size***(1,000 dwt)*

	2012		2013		2014		2015		2016	
	no	dwt	no	dwt	no	dwt	no	dwt	no	dwt
10,000–39,999	2	42	2	42	1	28	1	28	1	28
40,000–49,999	3	135	2	87	2	87	2	87	2	87
50,000–59,999	–	–	–	–	–	–	–	–	–	–
60,000–69,999	1	66	–	–	–	–	–	–	–	–
70,000–79,999	3	225	–	–	6	435	6	435	6	435
80,000–99,999	4	333	–	–	–	–	–	–	2	161
100,000–119,999	10	1,098	10	1,098	10	1,098	10	1,098	8	879
120,000–129,999	2	241	2	241	2	241	2	241	2	241
130,000–319,999	5	1,599	5	1,599	5	1,599	–	–	–	–
<b>Total world</b>	<b>30</b>	<b>3,739</b>	<b>21</b>	<b>3,066</b>	<b>26</b>	<b>3,490</b>	<b>21</b>	<b>1,890</b>	<b>21</b>	<b>1,831</b>

**Notes:**

Figures as at year-end.

Table 6.6

**Average spot freight rates by vessel category**

(% of Worldscale)

	Tanker size (1,000 dwt)	2012	2013	2014	2015	2016
GP	16.5–24.9	152	146	145	155	105
MR	25.0–44.9	157	146	144	155	135
LR1	45.0–79.9	105	94	110	118	98
LR2	80.0–159.9	65	54	69	75	67
VLCC	160.0–319.9	49	42	52	66	53

**Notes:**

Average spot freight rates are the average of all spot freight rates by tanker size reported each month in the spot market. GP = general purpose carrier; MR = medium range carrier; LR1 = large range 1 carrier; LR2 = large range 2 carrier; VLCC = very large crude carrier.

Graph 6.3

**Average spot freight rates by vessel category**

(% of Worldscale)

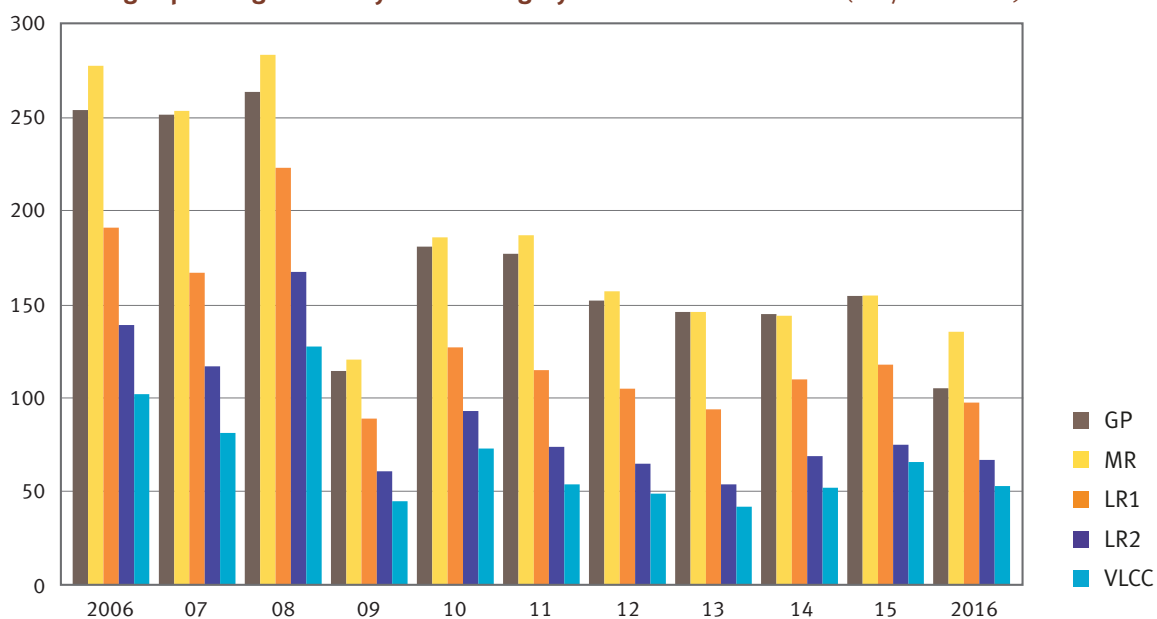




Table 6.7  
Dirty tanker spot freight rates

(% of Worldscale and \$/t)

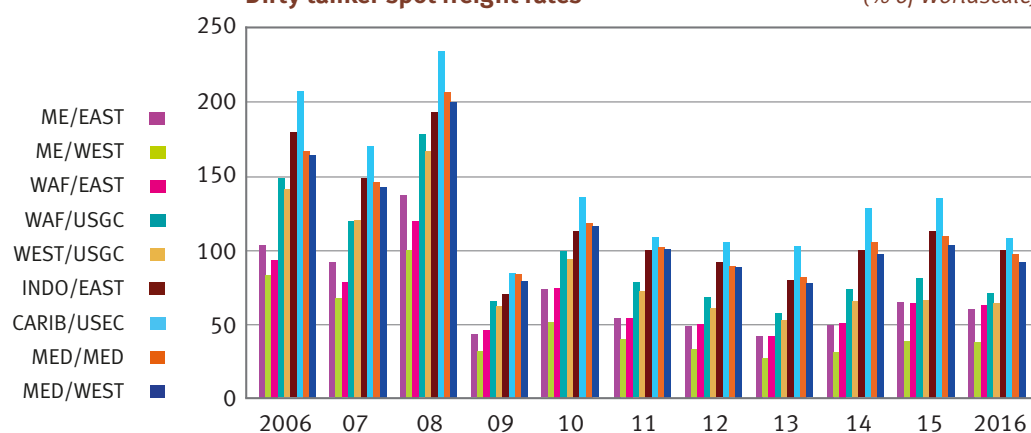
	2012		2013		2014		2015		2016	
	%	\$/t	%	\$/t	%	\$/t	%	\$/t	%	\$/t
ME/EAST	48	7.5	41	7.1	49	7.9	64	10.3	60	10.8
ME/WEST	33	14.2	26	12.4	30	11.8	38	13.4	37	7.6
WAF/EAST	49	19.3	41	17.7	50	20.1	63	25.0	62	17.7
WAF/USGC	67	16.7	57	15.4	73	18.6	81	20.3	70	12.6
WEST/USGC	60	12.6	52	11.8	65	14.2	66	14.3	64	11.6
INDO/EAST	91	13.7	79	13.0	99	15.2	112	16.8	99	11.4
CAR/USEC	105	10.2	102	10.8	127	12.8	134	13.3	107	8.6
MED/MED	88	5.6	81	5.4	104	6.8	108	7.1	97	6.1
MED/WEST	88	10.9	77	10.2	97	12.3	102	12.8	91	9.8

Notes:

ME = Middle East; EAST = Far East; WEST = North-West Europe; WAF = West Africa; USGC = US Gulf Coast; INDO = Indonesia; CAR = Caribbean; USEC = US East Coast; MED = Mediterranean.

Graph 6.4  
Dirty tanker spot freight rates

(% of Worldscale)



Graph 6.5  
Dirty tanker spot freight costs

(\$/t)

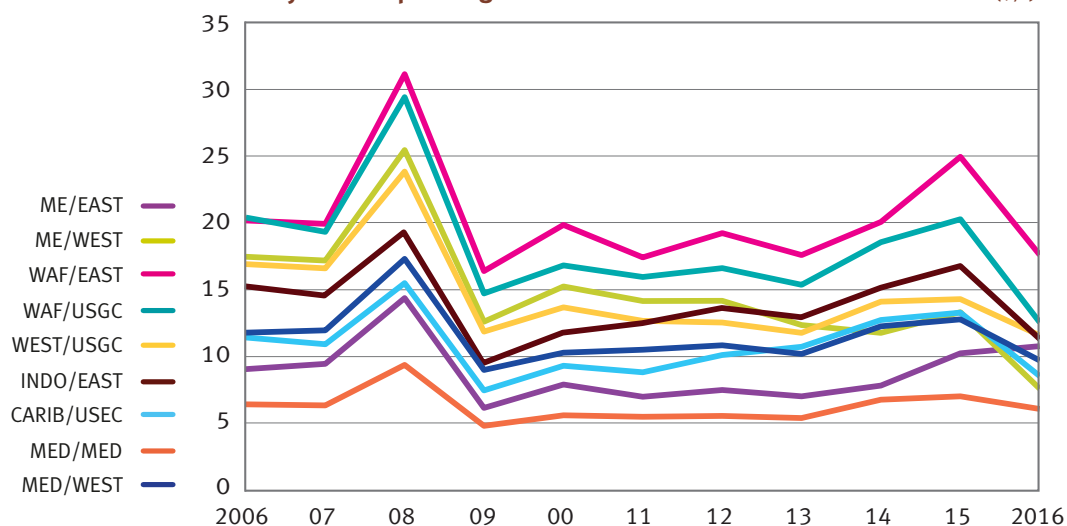


Table 6.8

**Clean tanker spot freight rates**

(% of *Worldscale* and \$/t)

	2012		2013		2014		2015		2016	
	%	\$/t	%	\$/t	%	\$/t	%	\$/t	%	\$/t
ME/EAST	117	31.6	103	30.4	111	30.8	118	31.9	100	19.5
SING/EAST	130	17.3	126	18.3	112	15.3	132	17.5	124	12.2
WEST/USEC	134	21.2	125	21.6	124	20.4	139	22.7	105	14.5
MED/MED	153	9.5	145	9.3	149	9.4	162	10.4	136	7.9
MED/WEST	162	21.6	155	22.2	159	21.8	172	23.5	146	15.5

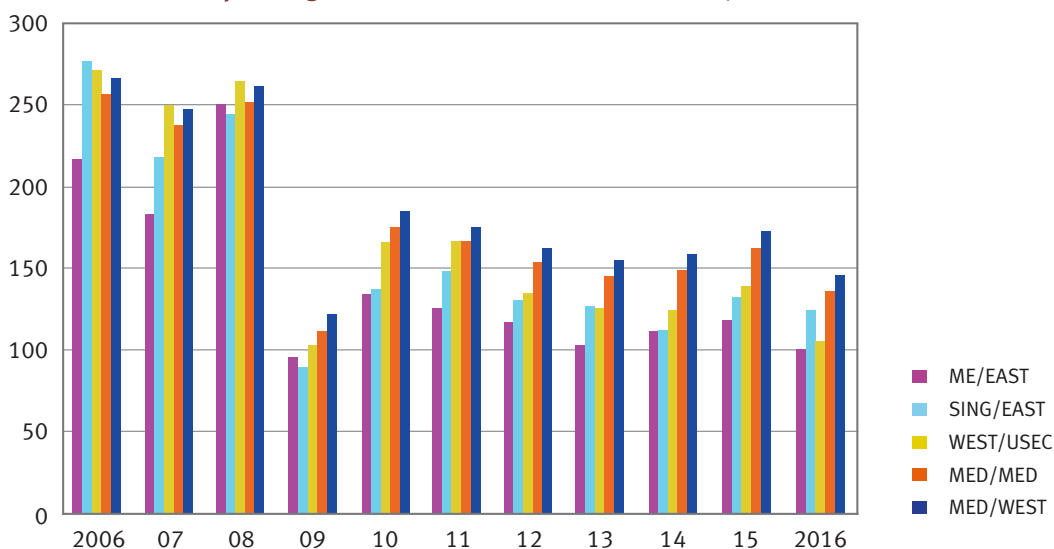
**Notes:**

ME = Middle East; EAST = Far East; SING = Singapore; WEST = North-West Europe; USEC = US East Coast, MED = Mediterranean.

Graph 6.6

**Clean tanker spot freight rates**

(% of *Worldscale*)



Graph 6.7

**Clean tanker spot freight costs**

(\$/t)

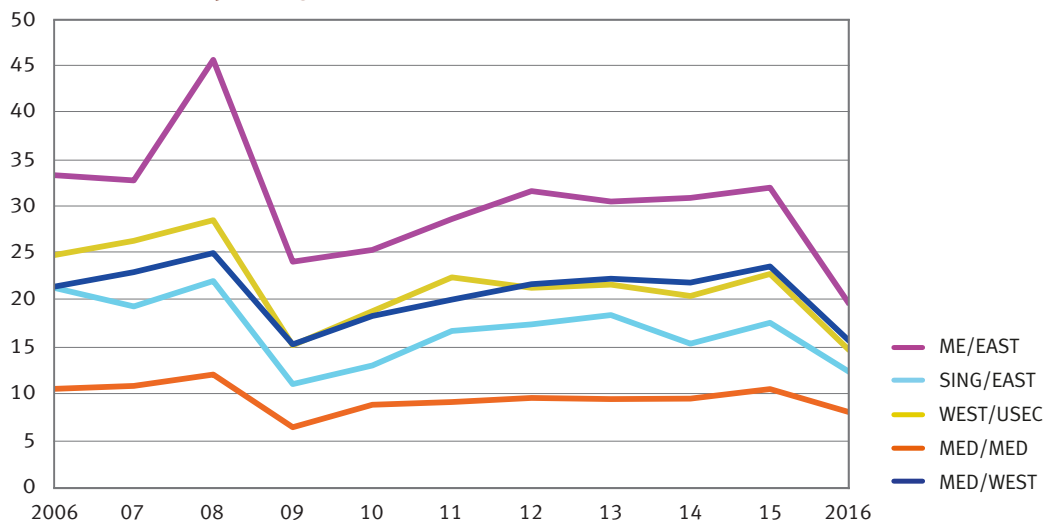


Table 6.9  
Main crude oil pipelines in OPEC Members, 2016

Connection from/to	Owner or operator	Length (miles)	Diameter (inches)
<b>Algeria</b>			
Haoud El Hamra/Arzew (2)	Sonatrach/TRC	498, 511	28, 34
Haoud El Hamra/Bejaia	Sonatrach/TRC	415	24
Haoud El Hamra/Skikda	Sonatrach/TRC	400	34
In Amenas/La Skhirra (Tunisia)	Sonatrach/TRC	165	24
<b>Angola</b>			
Block 0: Banzala platform "A"/GS-Mike platform	Chevron	14	12
Block 0: East Kokongo/Malongo terminal	Chevron	65	24
Block 0: GS-M platform/GS-N platform	Chevron	11	20
Block 0: GS-N platform/Malongo terminal	Chevron	35	30
Block 0: PPP/Mal tank farm	Chevron	45	18
Block 0: South Nemba/East Kokongo	Chevron	22	18
Block 0: South Sanha/East Kokongo	Chevron	16	12
Block 0: North N'Dola/East Kokongo	Chevron	13	12
Block 14: Tombua Landana CPT/East Kokongo	Chevron	27	18
Block 14: Lianzi DC-A/BBLT	Chevron	43	13
Block 15/06: PLET M2/PLET M1	Eni	15	8
Block 15: FLET Production Line/FLET Production Line (4)	Esso	4 x 13	4 x 12
Block 15: Kizomba C1/ Kizomba A SHR	Esso	24	10
Block 15: Kizomba MV1 (North)/Kizomba B SHR	Esso	13	10
Block 17: FLET P10/SSU Zinia	Total	34	10
Block 17: P20/FPSO Girassol	Total	17	8
Block 17: P50/FPSO Girassol	Total	11	8
Block 17: P60/FPSO Girassol	Total	11	8
Block 17: P70/FPSO Girassol	Total	26	8
Block 17: P80/FPSO Girassol	Total	40	8
Block 18: Greater Plutonio Project (2)	BP	20, 22	2 x 12
Block 2/85: Bagre B/Bagre F	Snl P & P	13	16
Block 2: Essungo/Quinfuquena terminal	Snl P & P	22	18
Block 2: Lombo East/Essungo	Snl P & P	76	16
Block 3: IPSF1/PLAP2	Snl P & P	13	10
Block 3: Lombo East/PALP2	Snl P & P	14	16
Block 3: PACF1/PALP1	Snl P & P	15	12
Block 3: PAMF1/PALP 2	Snl P & P	23	16
Block 31: PSVM Project (3)	BP	19, 33, 35	11, 2 x 13
<b>Ecuador</b>			
Lago Agrio/Esmeraldas	Oleoducto Trans-ecuatoriano SOTE (State)	311	26/20/26
Lago Agrio/Esmeraldas	Oleoducto de crudos pesados OCP (Private)	303	24, 2 x 32, 34, 36
<b>Gabon</b>			
Konzi/Cap Lopez	—	42	10
Mandaros/Tchengue	—	58	16/20

Table 6.9  
**Main crude oil pipelines in OPEC Members, 2016**

Connection from/to	Owner or operator	Length (miles)	Diameter (inches)
<b>IR Iran</b>			
Ahwaz/Ray	NIOC	934	30/26
Ahwaz/Abadan (2)	NIOC	121, 137	12/20, 24
Cheshmeh Khosh/Ahwaz	NIOC	154	18
Darkhoin/Abadan	NIOC	60	16
Esfahan/Ray	NIOC	225	24
Gachsaran/Shiraz	NIOC	228	10
Genaveh/Kharg	NIOC	47	30/42/52
Goreh/Genaveh	NIOC	33	26/30/42
Marun/Esfahan	NIOC	440	30/32
Naftshahr/Kermanshah	NIOC	231	8
Neka/Ray	NIOC	320	30/32
Omidieh/Abadan	NIOC	103	12
Ray/Tabriz	NIOC	607	16
Tang-e-Fani/Kermanshah	NIOC	241	10–16
<b>Iraq</b>			
(IT1) Station/Al-Fat'ha (Tigris river crossing)	North Oil Company	46	40
(IT1) Station/North Refinery Company	Oil Pipeline Company	52	26
(IT1A) Station/Iraqi-Turkish border	North Oil Company	139	46
(K3) Station/Iraqi-Syrian border (2)	North Oil Company	2 x 98	32, 30
Ahdeb/PS2	SOC	131	24
Ahdeb/Wassit P P (2)	OPC	42, 45	16, 10
Al-Fat'ha (Tigris River crossing)/(IT1A) Station	North Oil Company	29	40
Badra/PS2 (Section 1)	MOC	103	24
Badra/PS2 (Section 2)	SOC	59	28
East Baghdad/Daura refinery	OPC	44	16
Burzgan Terminal/FAO	Petrochina & CNOOC	181	28
Neft-Khana/Daura refinery	OPC	81	12
PS1/Basrah terminal	SOC	130	48
PS2/Tuba (warehouse)	SOC	124	36
West Al-Fat'ha/(IT1A) Station (3)	North Oil Company	3 x 27	20, 28, 34
West Al-Fat'ha/(K3) Station	North Oil Company	84	12
ZB1/Al-Umaya terminal	SOC	125	42
ZB1/Basrah terminal	SOC	100	42
<b>Kuwait</b>			
Kadma/Doha P S	KOC	14	20
KADMA/MF-CR181R	KOC	48	30
MF-CPHMAA/CALM 21	KOC	14	56
MF-CR125L/MF-CR125R	KOC	34	16
MF-GC27L/R/MF-TWK	KOC	24	24
MF-GC28L/R/MF-TWK	KOC	28	24

Table 6.9  
Main crude oil pipelines in OPEC Members, 2016

Connection from/to	Owner or operator	Length (miles)	Diameter (inches)
<b>Kuwait (cont'd)</b>			
MF-NPP MS/CALM 20	KOC	14	56
MF-PointA/MF-CR119R	KOC	73	48
MF-Ratqa1/SC-130	KOC	22	36
MF-T18/MF-TWK	KOC	22	20
MF-TB1/2/MF-CR088R	KOC	16	36
Point-A/KADMA	KOC	24	30
Wafra/MF/TB1	KGOC/KOC	24	16
<b>Libya</b>			
El-Sharara/Az-Zawiyah	Akakus	451	30
El-Sharara/Mellitah	Mellitah Oil & Gas	451	30
Sarir/Tobruk	Arabian Oil	318	34
Hamada/Az-Zawiyah	Arabian Oil	240	18
Amal/Ras Lanuf (2)	Harouge	2 x 169	36/30
Zaggut/Es-Sider	Waha Oil	166	24
Intesar/Zueitina	Zueitina	136	40
Messla/Amal	Arabian Oil	128	42
Samah/Dahra	Waha Oil	114	32
Nasser/Al-Brayqah	Sirte	107	36
Gialo/Waha	Waha Oil	94	30
Ora-Beda gathering/Aseida gathering	Harouge	84	24
Bu-Attifel/Intesar	Mellitah Oil & Gas	82	30
Zella/Hofra	Zueitina	70	20
Magid/Nafoora	Arabian Oil	65	14
Sabah/Zella	Zueitina	56	16
Raguba/'Nasser – Al-Brayqah' Line	Sirte	55	20
Aseida gathering/Ras Lanuf	Harouge	55	30
Dor Marada/Ora	Harouge	51	10
Rimal/Bu-Attifel	Mellitah Oil & Gas	47	12
El-Feel/El-Sharara	Mellitah Oil & Gas	47	24
Bahi gathering/Es-Sider (2)	Waha Oil	2 x 44	30
Dahra/Bahi gathering	Waha Oil	43	30
Faregh/Gialo	Waha Oil	40	12
Waha/Samah	Waha Oil	40	24
Hofra/Aseida gathering	Harouge	35	24
Nafoora/Amal	Arabian Oil	32	32
Waha/Zaggut	Waha Oil	27	24
Zaggut/Samah	Waha Oil	22	24

## Oil transportation

Table 6.9  
Main crude oil pipelines in OPEC Members, 2016

Connection from/to	Owner or operator	Length (miles)	Diameter (inches)
<b>Nigeria</b>			
Escravos/Warri/Kaduna	NNPC/PPMC	421	24/16
Obriafu/Oben node	NNPC/PPMC	130	48
Drill Center 2/Drill Center North	MPNU	100	11
Ogoda/Brass	NAOC	62	24
Okoro 2/IMA terminal	AMNI	60	12
Tebidaba/Brass	NAOC	57	24
Bonny/Port Harcourt refinery	NNPC/PPMC	34	24
Brass Creek/Forcados	SPDC	34	24
Oso/Kit/tanker berth 2 & Oso SPM	MPN/MPNU	31, 37, 45	18, 36, 42
Rapele manifold/Forcados terminal	SPDC	31	28
Edop/Kit	MPN	30	24
Alakiri/Bonny	SPDC	21	24
Buguma Creek/Alakiri	SPDC	20	29
Idoho/Kit (2)	MPNU	19, 48	2 x 24
Forcados/CLP	SPDC	19	48
Ughelli PS/WRM LL	SPDC	19	20
Bonny terminal/offshore SBM (1 & 2)	SPDC	2 x 19	2 x 48
Bonny/CLP	SPDC	18	48
Forcados terminal/offshore SBM	SPDC	18	48
Brass manifold/Brass offshore terminal	NAOC	16	36
<b>Qatar</b>			
Mile 32/storage tank Mesaieed (3)	QP	3 x 60	16, 20, 24
Bul Hanine/Halule Island	QP	43	20
DP (1 & 2)/Halule Island (3)	Total	3 x 40	2 x 12, 20
GIP/PS3	QPD	41	10
Idd El Shargi/Halule Island (2)	OXY	20, 24	20, 12
Um Bab/Mile 32 (4)	QP	4 x 25	2 x 14, 16, 24
<b>Saudi Arabia</b>			
Abqaiq/Yanbu	Saudi Aramco	748	56
Shaybah/Abqaiq	Saudi Aramco	397	46
Hawtah/Hawtah stabilizer	Saudi Aramco	206	24
Safaniyah/Juaymah	Saudi Aramco	123	46/48
Ghawar/Abqaiq (3)	Saudi Aramco	2 x 110, 134	18/20/24/30/31, 46/48, 36/40/42
AY-1L KP 65.628/Rabigh	Saudi Aramco	90	36
Khurais/Riyadh	Saudi Aramco	88	26
Safiniyah/Khursaniyah (4)	Saudi Aramco	4 x 66	22, 30, 40/42, 40/42/48
Khursaniyah/Ras Tanura (4)	Saudi Aramco	53, 63, 65, 67	40/42/48, 22, 40/42, 30
Abqaiq/Qatif junction (5)	Saudi Aramco	2 x 44, 3 x 34	30/32, 46/48, 30, 40/42
Abqaiq Plants/Dhahrab (3)	Saudi Aramco	39, 2 x 38	14, 12/14
Berri/Ras Tanura	Saudi Aramco	37	40/42

Table 6.9  
Main crude oil pipelines in OPEC Members, 2016

Connection from/to	Owner or operator	Length (miles)	Diameter (inches)
<b>Saudi Arabia (cont'd)</b>			
KM 50/Qatif junction	Saudi Aramco	31	46/48
Neutral Zone: Wafra field/Mina Saud (3)	SAC	3 x 31	10, 16, 20
Aindar/Abqaiq plants (3)	Saudi Aramco	3 x 28 20/22, 24/26/28, 24/26/30/32	
Qatif junction/Ju'aymah terminal (3)	Saudi Aramco	3 x 24	48, 2 x 46/48
<b>United Arab Emirates</b>			
Habshan/Jebel Dhanna (3)	ADCO	22, 27, 49	32, 2 x 36
Habshan/Fujeirah (2)	ADCO	91.6, 145.6	2 x 48
Zakum/Das Island	ADMA-OPCO	57	30
Umm Shaif/Das Island	ADMA-OPCO	22	36
Upper Zakum/Zirku	ZADCO	36.74*2	42*2
<b>Venezuela</b>			
Bachaquero/PT Miranda (2)	PDVSA	2 x 66	30/31, 30/34
EPM-1/PT Oficina	PDVSA	91	36
La Victoria/Las Monas	PDVSA	27	16
Mata Larga/PT Silvestre	PDVSA	157	20
PT Miranda/Cardon	PDVSA	141	30
PT Oficina/TAEG	PDVSA	95	30
PT Oficina/Jose	PDVSA	97	42
PT Silvestre/El Palito	PDVSA	213	20
CATCT/ERB-II (3)	PDVSA	3 x 62.77	16/26/30
Pta de Palma/PT Miranda	PDVSA	42	24
Ule/Amuya	PDVSA	143	26
ZPS/JPS	PDVSA	123	36
CIJAA/PT Oficina	PDVSA	93	20
COPEM/PT Oficina	PDVSA	87.7	30
VELADERO/EPT-1	PDVSA	41.01	30
PTA (T-52) Sb/PT Oficina	PDVSA	36.1	16
CATCJ/QE-1 (Azagua)	PDVSA	37.29	20

Table 6.10  
Main petroleum product pipelines in OPEC Members, 2016

Connection from/to	Owner or operator	Length (miles)	Diameter (inches)
<b>Algeria</b>			
Arzew/Oran	Naftal	19	8
Arzew/Sidi Bel Abbès (2)	Naftal	45, 45 (LPG)	12, 10
El Khroub/El Eulma	Naftal	64	16
Sidi Abdeli/Remchi	Naftal	14	8
Sidi Arcine/Blida (2)	Naftal	30, 24 (LPG)	2 x 10
Sidi Bel Abbès/Sidi Abdeli	Naftal	32	10
Sidi Bel Abbès/Tlemcen	Naftal	44 (LPG)	8
Skikda/Berrahal (2) <sup>1</sup>	Naftal	53, 53 (LPG)	12, 8
Skikda/El Khroub (3)	Naftal	65 <sup>1</sup> , 56, 57 (LPG)	16 <sup>1</sup> , 12, 10
<b>Angola</b>			
Lobito-Lusaka (Zambia) <sup>1</sup>	Sonangol	868	na
<b>Ecuador</b>			
Beaterio (Quito)/Ambato	EP Petroecuador	69	6
Esmeraldas/Santo Domingo	EP Petroecuador	101	16
Libertad/Barbasquilo	EP Petroecuador	104	6
Libertad/Pascuales	EP Petroecuador	78	10
Monteverde/Chorrillos	EP Petroecuador	77	10
Quito/Ambato	EP Petroecuador	69	6
Santo Domingo/Beaterio	EP Petroecuador	55	12
Santo Domingo/Pascuales	EP Petroecuador	170	10
Shushufindi/Beaterio	EP Petroecuador	187	6/4
<b>Gabon</b>			
–	–	–	–
<b>IR Iran</b>			
Abadan/Ahwaz	NIOC	94	12, 16
Ahwaz/Rey (2)	NIOC	510, 469	10/14/10, 16/20/16
Arak/Hamadan	NIOC	107	12
Arak/Rey	NIOC	160	10, 16
Esfahan/Rey (2)	NIOC	2 x 231	18, 24
Gazvin/Rasht	NIOC	109	6
Imam – Taghy/Torbat Haidar	NIOC	58	8
Mahshahr/Abadan	NIOC	63	16
Rey/Karadj	NIOC	36	8
Rey/Rasht	NIOC	195	14, 16, 18
Rey/Sary	NIOC	178	12, 16
Rey/Tabriz	NIOC	476	14
Rey/Mashhad	NIOC	523	20, 22
Shahrood/Gorgan	NIOC	103	8, 10
Shahrood/Mashhad	NIOC	275	8
Tabriz/Orumieh	NIOC	174	8, 10



Table 6.10  
Main petroleum product pipelines in OPEC Members, 2016

Connection from/to	Owner or operator	Length (miles)	Diameter (inches)
<b>Iraq</b>			
Baiji/Hamam Alil	OPC	167	16
Baiji/Kirkuk	OPC	86	12
Baiji/Mushahdah (2)	OPC	2 x 168	22, 8
Baiji/T1	OPC	242	16
Basrah refinery/Hartha & Najibia electric stations	OPC	30	8/12
Daura refinery/Baghdad int airport	OPC	28	8
Daura/Rusafa	OPC	51	10
Hamam Alil/Felfel	OPC	65	32
Huzairan depot/Cement Al Tamem	OPC	42	6
Karkh/Habania	OPC	156	(16 x 31)(12 x 125)
Khour Al- Zubair/Shuaiba (2)	OPC	2 x 45	10, 8/10
Mushahdah/Karkh	OPC	111	12
Mushahdah/Rusafa	OPC	52	12
Nasiriyah/Daura refinery	OPC	379	10
Nasiriyah/Kut	OPC	186	8
North Gas/Sallah Al-Dean refinery	OPC	86	8
Rusafa/Diala	OPC	25	8
Shuaiba/Abu – Phlooce	OPC	38	10/24
Shuaiba/Khour Al-Zubair	OPC	45	16/24
Shuaiba/Muftia	OPC	21	10
Shuaiba/Nasiriyah (2)	OPC	161, 164	14, 10
<b>Kuwait</b>			
Mina al Ahmadi refinery/Al-Zour/Doha	KNPC	52	2 x 18, 2 x 20
Mina al Ahmadi/Kafco	KNPC	25	12
Mina al Ahmadi refinery/al Ahmadi (2)	KNPC	12	8, 2 x 6
Mina al Ahmadi refinery/Subhan (2)	KNPC	2 x 12	12, 8
<b>Libya</b>			
Azzawya/Elwettia depot	Elbrega Co	56	16
Azzawya/Eljmail depot	Elbrega Co	40	16
Azzawya/Airport road depot (2)	Elbrega Co	2 x 34	16, 10
Azzawya/Janzour depot	Elbrega Co	21	8
<b>Nigeria</b>			
Atlas Cove/Moisimi	PPMC	30	16
Auchi/Benin	PPMC	66	12
Auchi/Suleja	PPMC	155	12
Benin/Ore	PPMC	71	14
Enugu/Auchi	PPMC	105	12
Ibadan/Ilorin	PPMC	106	6
Moisimi/Ibadan	PPMC	49	12
Ore/Moisimi	PPMC	94	12

## Oil transportation

Table 6.10  
Main petroleum product pipelines in OPEC Members, 2016

Connection from/to	Owner or operator	Length (miles)	Diameter (inches)
<b>Nigeria (cont'd)</b>			
Suleja/Kaduna	PPMC	93	12
Suleja/Minna	PPMC	50	8
Warri/Benin	PPMC	56	16
<b>Qatar</b>			
QP refinery, Mesaieed/Q-Jet, Doha	QP Refinery	33	16
QP refinery, Mesaieed/WOQOD, Doha (2)	QP Refinery	19, 26	6, 18
<b>Saudi Arabia</b>			
Dharan/Riyadh	Saudi Aramco	246	20
Riyadh/Qasim	Saudi Aramco	225	16
Yanbu/Madina	Saudi Aramco	93	14
Ras Tanura/Dhahran (3)	Saudi Aramco	66, 2 x 23	20, 2 x 12
Abqaiq/Alhasa	Saudi Aramco	40	8
<b>United Arab Emirates</b>			
Ruwais/Mussafah (3)	Takreer	3 x 204.6	16, 2 x 28
HEJP-ENOC/Dubai international airport	HEJP-ENOC	33.7	20 & 16
EIL Jebel Ali terminal/JIFF at DIA	EPPCO Aviation	36.4	10
<b>Venezuela</b>			
San Tomé/Puerto Ordaz	PDVSA	124	12
San Lorenzo/El Vigía	PDVSA	104	12
PT La Cruz/San Tomé	PDVSA	99	16
San Tomé/Maturín	PDVSA	99	8
Refinería El Palito/Planta Barquisimeto	PDVSA	95	12
Bajo Grande/San Lorenzo	PDVSA	70	12
Planta Carenero/Planta Guatire	PDVSA	45	16
Puerto Ordaz/Ciudad Bolívar	PDVSA	44	8
Refinería El Palito refinery/Planta Yagua	PDVSA	29	16

**Notes:**

1. Project underway.