

Oil & NGL extraction data

Richard Heede
Climate Mitigation Services
File started: 11 January 2005
Last modified: June 2019

Copyright Climate Accountability Institute

Total S.A., France

www.total.com Paris

yellow column indicates original reported units Investor-owned

Production / Extraction data

Year	Crude Oil & NGL							
	Company 1	Company 2	Company 3	Total	Company 1	Company 2	Company 3	Total
	Million tonnes/yr	Thousand bbl /d	Million tonnes/yr	Thousand bbl /d	Million tonnes/yr	Million bbl /yr	Million bbl /yr	Million bbl /yr
	Total Group	Total Group	Elf Aquitaine		CFP-Total	CFP-Total	Elf Aquitaine	Sum

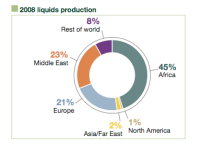
Compagnie Française des Pétroles, now Total, was established in March 1924

18 1920 named PetroFina in 1922
 19 1921 CFP inherits Deutsche Bank's interests in Turkish Petroleum Co as war reparations, provides access to oil fields in Mesopotamia
 20 1922
 21 1923 CFP makes discovery in Iraq (Lirkuk, Baba Gurgur field, substantial reserves (no data)
 22 1924 Gulbenkian, Anglo-Persian et al 31Jul28 "Red Line" Agreement
 23 1925 CFP enters the oil exploration business (Cherifienne des Petroles) in Morocco
 24 1926
 25 1927 See also Total history in Beltran (2010)
 26 1928
 27 1929
 28 1930 French gov't raises its stake in CFP from 25 to 35 percent
 29 1931
 30 1932 CFP's refinery in Normandy inaugurated in 1933; capacity 900,00 tonnes/yr
 31 1933 CFP pipeline from Kirkuk to Haifa receives 4 million tonnes of crude
 32 1934
 33 1935 Acquires 23.75 percent equity in newly formed Petroleum Dev. Qatar
 34 1936 Acquires 23.75 percent equity in newly formed Petroleum Dev. Oman
 35 1937 PetroFina moves to new HQ in Brussels
 36 1938 CRPM discovers gas in SW France (becomes Elf Aquitaine later); no data; Trucal Coast Petr. Dev. formed (later United Arab Emirates)
 37 1939 Normandy refinery assets burned
 38 1940
 39 1941
 40 1942
 41 1943
 42 1944
 43 1945 Bureau de Recherches de Pétrole, RAP, and BRP are forerunners of Elf Aquitaine
 44 1946
 45 1947
 46 1948
 47 1949
 48 1950
 49 1951
 50 1952 30-inch pipeline from Kirkuk to Banias (Syria) is commissioned: "springboard for CFP expansion"
 51 1953
 52 1954 CFP acquires 6% interest in the Iranian Oil Consortium (NIOC)
 53 1955
 54 1956 Algeria: CFP (49%) and SN Replal (51%) discover Hassi Messaoud oil field and Hassi R'Mel gas field
 55 1957 American PetroFina takes over American Liberty Oil Co., Lacq gas processing plant commissioned
 56 1958 Abu Dhabi: ADMA discovers Umm Shaif oil field offshore Das Island, brought on stream in 1962
 57 1959 Production starts at Hassi Messaoud in Algeria
 58 1960 Elf Aquitaine, SPAEF discovers N'Tchengue oil field in Gabon
 59 1961
 60 1962 CFP, Algeria: world's first gas liquefaction plant built, uses Hassi R'Mel gas.
 61 1963 CFP-Total, ADMA discover Zakum oil field in Abu Dhabi
 62 1964 Elf Aquitaine, RAP take joint interest in TOSCO
 63 1965
 64 1966 PetroFina: North Sea gas fields discovered; Elf discovers Douleb oil in Tunisia
 65 1967
 66 1968
 67 1969
 68 1970 Ekofisk oil field discovered in N



million tonnes	million bbl /yr	CFP to Total
4.0	29	29

1971	equity oil ~40%	1,086.5	0.63	396.6	397	397
1972	million tonnes/yr	1,241.2		453.6		454
1973	32.1			235.6		236
1974	35.2			257.7		258
1975	29.4			215.3		215
1976	30.5			223.5		224
1977	28.9			211.7		212
1978	29.0			212.8		213
1979	28.6			209.6		210
1980	25.5			186.9		187
1981	15.1			110.7		111
1982	13.7			100.4		100
1983	11.9			87.2		87
1984	12.4			90.9		91
1985	13.5			99.0		125.3
1986	14.9			109.2		125.3
1987	14.2			104.1		214.4
1988				121.7		235.5
1989				140.9		249.7
1990				153.3		189.0
1991				171.6		203.0
1992				167.9		209.0
1993				157.0		226.0
1994				226.7		251.1
1995				239.4		278.9
1996				186.2		285.0
1997				194.2		290.0
1998				548.2		548
1999				535.8		536
2000				524.5		523
2001				530.7		531
2002				580.0		580
2003				606.3		606
2004				618.7		641
2005				591.7		622
2006				549.7		589
2007				550.8		593
2008				586.6		587
2009				552.6		608
2010				489.1		599
2011				447.5		447
2012				445.3		445
2013				426.0		426
2014						377
2015						452
2016						464
2017						491
2018						572
2019						519



Total Fact Book 2008, page 49

Year	thousand bbl /day	thousand bbl /day	thousand bbl /day	thousand bbl /day
1999	1,433			
2000	1,454			
2001	"technical prod"			
2002				
2003				
2004	1,757			
2005	1,704			
2006	1,614			
2007	1,624			
2008	1,607			
2009	1,667			
2010	1,640			
2011	1,226	910	316	25.8%
2012	1,220	912	308	25.2%
2013	1,167	842	325	27.8%
2014	1,034	834	200	19.3%
2015	1,237	1,018	219	17.7%
2016	1,271			
2017	1,346			
2018	1,566			

Q4 & 2017 Results; get details from AnnRpt.

Total	na	na	1,368	1	12,328	8,172	2,882	27,356
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Natural Gas extraction data

Richard Heede
Climate Mitigation Services
File started: 11 January 2005
Last modified: June 2019

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Total S.A., France

www.total.com Paris

yellow column indicates original reported units

Investor-owned

Production / Extraction data

Year	Natural Gas							
	Company 1	Company 2	Company 3	Total	Company 1	Company 2	Company 3	Total
	Billion SCM/yr	Million cf/d	Million SCM/yr	Million cf/d	Billion cf/yr	Billion cf/yr	Billion cf/yr	Billion cf/yr
	Total Group		Elf Aquitaine		CFP - Total	PetroFina	Elf Aquitaine	Sum

- 18 1920
- 19 1921
- 20 1922
- 21 1923
- 22 1924
- 23 1925
- 24 1926
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- 28 1930
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- 97 1999
- 98 2000
- 99 2001
- 100 2002
- 101 2003
- 102 2004
- 103 2005
- 104 2006
- 105 2007
- 106 2008
- 107 2009
- 108 2010
- 109 2011
- 110 2012
- 111 2013
- 112 2014
- 113 2015
- 114 2016
- 115 2017
- 116 2018



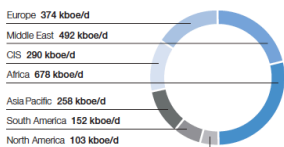
Baba Gurgur 45-meter gusher 15Oct27 near Kirkuk. www.total.com



Exploration in Gabon in the 1930s. Courtesy www.total.com
SNPA discovers Lacq gas field in France in 1951.

Production

Hydrocarbon production	2015	2014	2013	2012	2011
Combined production (kboe/d)	2,347	2,146	2,299	2,300	2,346
Liquids (kbt/d)	1,237	1,034	1,167	1,220	1,226
Gas (Mcf/d)	6,054	6,063	6,184	5,880	6,098



Total Annual Report 2015, page 2.

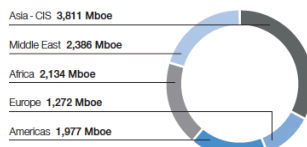
In 2015, hydrocarbon production was 2,347 kboe/d, an increase of 9.4% compared to 2014, due to the following:

- +6% for project start ups and ramp ups, notably CLOV, West Franklin Phase 2, Eldfisk II and Termokarstovoyas;
- +6% due to portfolio changes, mainly the extension of the ADCO concession in the United Arab Emirates, partially offset by asset sales in the North Sea, Nigeria and Azerbaijan;
- 4% for productions stop in Yemen and Libya;
- +1% for positive price effect and performance partially offset by natural field decline.

kboe/d in 2013, stable result of:
- from new projects; offset by lower maintenance; - from new projects; offset by lower maintenance; - from new projects; offset by lower maintenance;

Reserves

As of December 31,	2015	2014	2013	2011	2010
Hydrocarbon reserves (Mboe)	11,580	11,523	11,526	11,368	11,423
Liquids (Mb)	5,605	5,303	5,413	5,686	5,784
Gas (Bcf)	32,206	33,690	33,026	30,877	30,717



Total Annual Report 2015, page 2.

Total S.A.'s coal production, minor, not entered on Coal.xls

	(get production history)	
	Million tonnes/yr	Million tonnes/yr
1987	4.1	4.1
1988	3.7	3.7

Year	Total Group	Total Group
	Billion m³/yr	million cf/day
1972	47.7	
1973		
1974	0.2	
1975	0.3	
1976	0.5	
1977	1.2	
1978	3.0	
1979	4.9	
1980	5.6	
1981	5.9	
1982	5.4	
1983	5.8	18.3
1984	6.0	20.6
1985	5.7	21.9
1986	5.4	20.2

Year	Elf Aquitaine
	Billion SCM/yr
1983	18.3
1984	20.6
1985	21.9
1986	20.2



Year	Operated	Equity affiliates	% Equity affiliates
	Mcfpd	Mcfpd	Percent
2009	5,318		
2010	6,429		
2011	6,098	4,715	1,383 22.7%
2012	5,880	4,245	1,635 27.8%
2013	6,184	4,229	1,955 31.6%
2014	6,063	4,075	1,988 32.8%
2015	6,054	4,226	1,828 30.2%
2016	6,447		
2017	6,662		
2018	6,599		

Q4 & 2017 Results; get details from AnnRpt.

Year	Total Group	Total Group	Total Group	Total Group	Total Group	Total Group	Total Group
	Bcf/yr	Bcf/yr	Bcf/yr	Bcf/yr	Bcf/yr	Bcf/yr	Bcf/yr
1974	17.4						17
1975	11.8	interpolated					12
1976	6.1						6
1977	12.0						12
1978	18.4						18
1979	42.6						43
1980	106.8						107
1981	171.6						172
1982	196.1						196
1983	206.8						207
1984	191.8						192
1985	203.5						203
1986	212.1						212
1987	201.1						201
1988	190.7						190
1989	208.3	132.7	607.4				209
1990	229.5	151.3	550.9				230
1991	237.4	199.6	558.0				238
1992	272.3	209.7	505.0				272
1993	326.7	217.0	439.0				327
1994	349.3	221.9	449.0				350
1995	353.0	218.1	467.0				354
1996	424.9	211.7	494.6				426
1997	435.4	204.0	494.6				437
1998	506.3	210.7	510.0				507
1999	543.1	208.9	489.5				544
2000	1,134.1						1,134
2001	1,158.9						1,159
2002	1,375.4						1,376
2003	1,482.3						1,483
2004	1,654.2						1,655
2005	1,746.9						1,747
2006	1,786.3						1,787
2007	1,744.7						1,745
2008	1,706.0						1,707
2009	1,766.2						1,767
2010	1,765.5						1,766
2011							1,765
2012							1,764
2013							1,763
2014							1,762
2015							1,761
2016							1,760
2017							1,759
2018							1,758

2.1.6. Production by region

	2013			2012			2011		
	Liquids kbo/d	Natural gas Mcf/d	Total kbo/d	Liquids kbo/d	Natural gas Mcf/d	Total kbo/d	Liquids kbo/d	Natural gas Mcf/d	Total kbo/d
Africa	531	699	670	574	705	713	517	715	659
Algeria	5	82	21	6	90	23	16	94	33
Angola	175	62	186	172	44	179	128	39	135
Cameron	-	-	-	-	-	-	2	1	3
Gabon	55	16	59	54	19	57	55	17	58
Libya	50	-	50	62	-	62	20	-	20
Nigeria	158	511	261	173	521	279	179	534	287
The Congo, Republic of	88	28	93	107	31	113	117	30	123
North America	28	256	73	25	246	69	27	227	67
Canada ⁽¹⁾	13	-	13	12	-	12	11	-	11
United States	15	256	60	13	246	57	16	227	56
South America	54	627	166	59	682	182	71	648	188
Argentina	13	366	78	12	394	83	14	397	86
Bolivia	4	129	28	3	124	27	3	118	25
Colombia	-	-	-	1	23	6	5	27	11
Trinidad & Tobago	2	52	12	4	70	16	4	47	12
Venezuela	35	80	48	36	71	50	45	59	54
Asia-Pacific	30	1,170	235	27	1,089	221	27	1,160	231
Australia	-	25	4	-	29	5	-	25	4
Brunei	2	59	13	2	64	12	2	56	13
China	-	46	8	-	7	1	-	-	-
Indonesia	17	605	131	16	605	132	18	757	158
Myanmar	-	129	16	-	127	16	-	119	15
Thailand	11	306	63	6	267	55	7	203	41
CIS	32	1,046	227	27	909	195	22	525	119
Azerbaijan	5	82	20	4	64	16	4	57	14
Russia	27	964	207	23	845	179	18	468	105
Europe	168	1,231	392	197	1,259	427	245	1,453	512
France	1	45	9	2	58	13	5	69	18
The Netherlands	1	106	35	1	184	33	1	214	38
Norway	136	575	243	156	622	275	172	619	287
United Kingdom	30	416	105	35	395	106	67	551	169
Middle East	324	1,155	536	311	990	493	317	1,370	570
United Arab Emirates	247	71	260	233	70	246	226	72	240
Iran	-	-	-	-	-	-	-	-	-
Iraq	7	1	7	6	-	6	-	-	-
Oman	24	66	37	24	61	37	24	62	36
Qatar	36	558	137	38	560	139	44	616	155
Syria	-	-	-	-	-	-	11	218	53
Yemen	10	459	95	10	299	65	12	402	86
Total production	1,167	6,184	2,299	1,220	5,880	2,300	1,226	6,098	2,346
Including share of equity affiliates	325	1,955	687	308	1,635	611	316	1,383	571
Algeria	-	-	-	-	-	-	10	3	10
Angola	-	16	3	-	-	-	-	-	-
Colombia	-	-	-	-	-	-	4	-	4
Venezuela	35	7	37	38	7	40	44	7	45
United Arab Emirates	240	61	253	226	61	237	219	62	231
Oman	23	66	35	23	60	34	22	62	34
Qatar	8	395	78	7	364	74	8	392	78
Russia	19	962	197	15	844	171	9	465	95
Yemen	-	458	84	-	299	55	-	402	74

(1) The Group's production in Canada consists of oilman only. All of the Group's oilman production is in Canada.

Total Annual Report 2013, page 13.

Hydrocarbon production	2017	2016
Combined production (kboed)	2,566	2,452
Liquids (kb/d)	1,346	1,271
Gas (Mcfd)	6,662	6,447

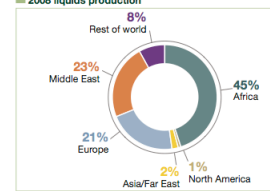
Total Fourth quarter and full-year 2017 results, Press Release

Liquids production

(In thousands of barrels per day)

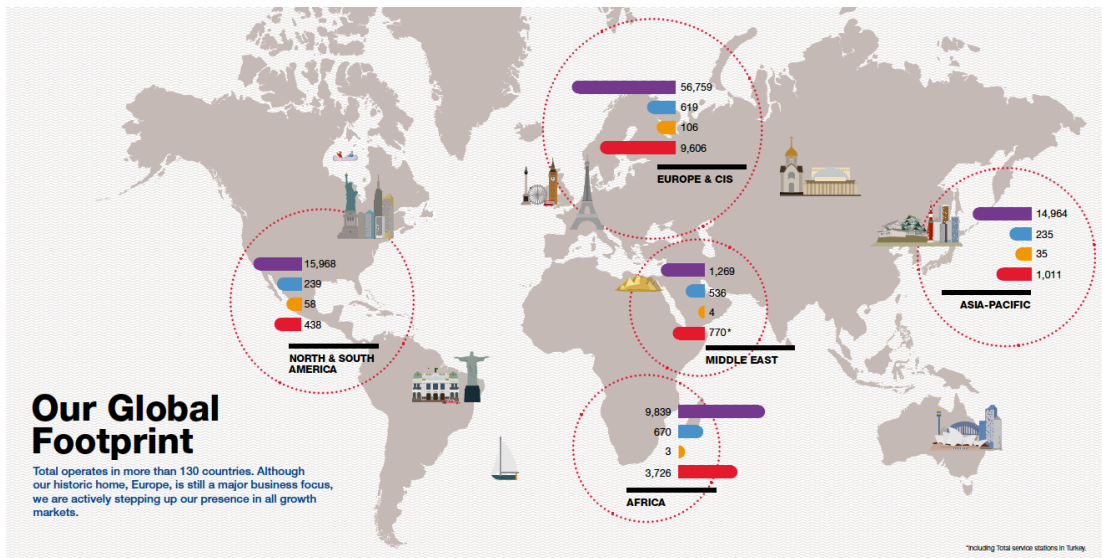
	2008	2007	2006	2005	2004
Africa	635	668	603	672	683
Algeria	32	32	35	38	42
Angola	200	198	108	144	159
Cameron	13	13	13	12	13
Gabon	73	78	82	94	99
Libya	74	87	84	84	62
Nigeria	158	176	188	200	231
Republic of Congo	85	74	93	91	87
North America	11	11	7	9	10
Canada	6	2	1	-	-
United States	3	12	6	9	16
South America	23	113	119	143	123
Argentina	14	14	11	11	11
Bolivia	3	3	3	3	3
Colombia	9	10	13	19	24
Trinidad & Tobago	6	9	9	12	-
Venezuela	-	82	83	98	90
Asia-Pacific	29	28	29	29	31
Brunei	21	20	20	20	22
Indonesia	2	2	3	3	3
Myanmar	-	-	-	-	-
Thailand	6	6	6	6	6
Commonwealth of Independent States	12	10	7	8	9
Azerbaijan	4	3	<1	-	-
Russia	8	7	7	8	9
Europe	303	325	305	300	428
France	6	6	6	7	9
The Netherlands	1	1	1	1	1
Norway	284	211	237	247	263
United Kingdom	91	117	121	135	151
Middle East	88	83	88	98	110
Iran	9	15	20	23	28
Qatar	44	33	29	31	31
Syria	15	15	16	22	30
U.A.E.	10	11	14	14	16
Yemen	10	9	9	8	7
Total consolidated production	1,109	1,246	1,219	1,349	1,411
Equity affiliates and non-consolidated subsidiaries					
Africa	19	23	25	24	37
Middle East	241	240	283	248	247
Rest of world	87	-	-	-	-
Total equity affiliates and non-consolidated subsidiaries	347	263	288	272	284
Worldwide production	1,456	1,509	1,506	1,621	1,695

(1) Primarily attributable to TOTAL's share of CEPSA's production in Algeria.
 (2) Primarily attributable to TOTAL's share of production from concessions in the U.A.E.
 (3) Essentially TOTAL's share of Petrocedero's production in Venezuela.



50 / TOTAL - FACTBOOK 2008

Total S.A. Factbook 2008, page 50.



Key Figures

130+
TOTAL HOST COUNTRIES

98,799
EMPLOYEES
On 12/31/2013 (consolidated scope)

2,299 kboe/d
OF OIL AND GAS PRODUCTION
(kboe/d: thousands of barrels of oil equivalent per day)

206
REFINING AND CHEMICAL SITES

15,551
SERVICE STATIONS (including the AS24 and TotalEng networks)

\$28B
IN ORGANIC CAPITAL EXPENDITURE

Total at a Glance 2013.

Cell: G9

Comment: Rick Heede:

Total.com (www.total.com/en/about-total/group-presentation/group-history-940553.html)

"France has no oil, but it does have one of the world's leading oil companies. How did the former Compagnie française des pétroles, now Total, born on 28 March 1924, become a major operator on the global oil scene?

Looking back, it is an impressive feat since the Group has had to contend with the vicissitudes of history - crises, wars, nationalizations by producing countries, technological changes - since its inception. Total has developed since that time and has expanded its presence throughout the world. Since 1999, the company has strengthened itself by merging with PetroFina and, at the beginning of 2000, with Elf Aquitaine, so as to join the small club of oil and natural gas majors.

The Illustrated History of Total invites you to discover the saga of Total, which began in the Iraqi sands in the 1920s and to retrace the steps of a company nimble enough to adapt to its environment by going international, diversifying and staying innovative: the conquest of new fields, expansion of the global marketing network and the creation of a major chemical production business. Oil may be a highly strategic form of energy, a heavy industry involving huge capital expenditure and critical technology developments, but the Illustrated History of Total also aims to tell the story of the men and women who built patiently and boldly the company as we know it today."

History (wikipedia, en.wikipedia.org/wiki/Total_S.A.)

The company was founded after World War I after the French Prime Minister Raymond Poincaré rejected the idea of forming a partnership with Royal Dutch Shell in favour of creating an entirely French oil company. At Poincaré's behest, Col. Ernest Mercier enlisted the support of ninety banks and companies to found Total on 28 March 1924, as the Compagnie française des pétroles (CFP), literally the "French Petroleum Company". Petroleum was seen as vital in the case of a new war with Germany. However, the company was from the start a private sector company (it was listed on the Paris Stock Exchange for the first time in 1929). CFP took up the 23.75% share of Deutsche Bank in the Turkish Petroleum Company (renamed the Iraq Petroleum Company), awarded to France as compensation for war damages caused by Germany during World War I by the San Remo conference. In 1991 the company name became simply Total. After Total's takeover of Petrofina in 1999, it became known as Total Fina. Afterwards it also acquired Elf Aquitaine. First named TotalFinaElf after the merger in 2000, it was later renamed back to Total in May 2003.

Chart of the major energy companies dubbed "Big Oil" sorted by latest published revenue As of 2010, Total had over 96,000 employees and operated in more than 130 countries [2] As recently as 1992, the French government still held 5% of the firm's shares, down from a peak of over thirty percent. In the time period between 1990 and 1994, foreign ownership of the firm increased from 23 per cent to 44 per cent. Qatar is reported to have a 3 percent stake."

Cell: K12

Comment: Rick Heede:

Total net worldwide crude oil plus natural gas liquids produced by each company or state-owned enterprise. Where data is available, we list gross production (before royalty production is netted out). More often, however, oil companies report production net of royalty production.

Crude production includes natural gas liquids (NGL) unless noted.

Cell: X12

Comment: Rick Heede:

Natural gas is typically reported as dry gas; natural gas liquids are reported under crude oil.

Carbon dioxide is normally removed from the gas flow at the production site (see "Vented Carbon Dioxide").

"SCM/d" = standard cubic meters per day, "cf/d" = cubic feet per day.

Net production typically excludes a number of diverted gas streams. Quantities and fractions vary; ExxonMobil's exclusions are probably typical of the industry: "Net production available for sale quantities are the volumes withdrawn from ... natural gas reserves, excluding royalties and volumes due to others when produced, and excluding gas purchased from others, gas consumed in producing operations, field processing plant losses, volumes used for gas lift, gas injections and cycling operations, quantities flared, and volume shrinkage due to the removal of condensate or natural gas liquids production."

ExxonMobil Corporation (2004) 2003 Financial and Operating Review, www.exxonmobil.com, p. 55.

Cell: H27

Comment: Rick Heede:

Beltran, Alain (2010) A Comparative History of National Oil Companies, P.I.E. Peter Lang, Brussels, 356 pp.

Cell: H32

Comment: Rick Heede:

Total history, CFP-Total: "first oil from Iraq arrives in Tripoli in July and in Haifa at the end of the same year. The two pipelines have an annual throughput of 4 million metric tons." The oil is transported to CFP's new refinery near Le Havre.

CMS assumes that all of the pipelined crude oil is produced by CFP-Total. That said, CMS does not have data on CFP-Total's worldwide oil production, of which its Kirkuk operations may be a small part.

Cell: O49

Comment: Rick Heede:

SNPA discovers Lacq gas field in France in 1951.

Cell: O55

Comment: Rick Heede:

Oil & Gas Journal OGI100 production data, billion cf (Bcf) per year, various years.

Cell: W62

Comment: Rick Heede:

Total coal production reported for 1988 only, including production in US (PA), Europe, Australia, "Far East," and "Southern Africa" in Total (1989) Annual Report, page unknown.

Cell: D68

Comment: Rick Heede:

Cell: E69

Comment: Rick Heede:

Total Group (1971-1972) reports in exquisite detail about the geographic permit areas in sq km, but precious little data on crude oil or natural gas produced. CMS has culled a few bits of quantitative data for 1971 and/or 1972.

While it raises questions about reliable reporting, we quote:

North America: "Your affiliate's output, originating mainly from operations in Canada, was 5,500 b/d of crude oil," and 12.1 million cfd of natural gas, i.e., an increase of respectively 19% and 7% as compared to 1971."

North Africa: "The Group's offtakes in Algerian crude oil reached 141,500 b/d in 1972."

Middle East: "Your Company's offtakes represented a volume of 1,094,500 b/d vs. 1,082,100 b/d in 1971."

Norway: "Ekofisk, ... from which your Company lifted its share of oil in two cargoes of 314,000 barrels."

CMS enters these data, even though mis-reported by Total.

Cell: R70

Comment: Rick Heede:

Total Group annual report 1972, pp. 13 & 15, shows Canadian natural gas production of 5,500 cf per day, and at the Leeuwarden gas field in the Netherlands "production reached 35.6 million cfd."

Cell: D71

Comment: Rick Heede:

Total annual reports 1977 and 1978 show operating data, "crude oil resources, own resources (as distinct from purchases), in kilotonnes per year" for 1973-1978. However, in the 1979 annual report it appears that Total's "own resources" does not mean "equity production," but includes some purchased oil, even though purchased oil is also reported as a separate line item.

CMS concludes that Total produces roughly 40 percent of the total oil reported in its operating data, hence CMS applies this factor to each year 1973-1978.

As a result, eg for 1974, CMS cites reported total resources of 86.595 million tonnes * 0.406 = 35.2 million tonnes. FOR comparison, that year's "own resources" equaled 70.8 million tonnes. Go figure.

Cell: Q72

Comment: Rick Heede:

Total annual report 1978 shows "natural gas marketed on a joint basis: CFP's share" for 1974-1978. CMS only cites data for 1974 here, since subsequent annual reports show higher (presumably through acquisitions or mergers, or better data) for 1975-1978.

Cell: Q73

Comment: Rick Heede:

Total annual report 1979 shows "natural gas volumes marketed on a joint basis, overall, billion cubic meters per year" for 1975-1979.

Cell: D77

Comment: Rick Heede:

Total's annual report 1980 reports both "equity oil" production on p. 11 and crude oil resources in the operating data on p. 30. In 1979, for example, equity oil / total resources = 28.6 million tonnes / 70.7 million tonnes = 0.406. CMS applies this fraction to Total's resources reported for 1973-1978; see above.

Cell: Q78

Comment: Rick Heede:

Total annual report 1984 shows marketed natural gas in million cubic meters per year 1980-1984. Gas production is not reported. However, gas production is reported for 1983 and 1984 in another table, p.13, "production by operating subsidiaries (deliveries on behalf of Company and associated third parties)" that far exceed marketed natural gas cited above. For example, in 1984, gas production is shown as 20.6 billion cubic meters, whereas natural gas (presumably referring to marketed gas) is shown as 6.01 billion cubic meters. CMS reports the somewhat less ambiguous "production by operating subsidiaries" for 1983 and 1984, but we do not adjust upwards the marketing data for 1974 to 1982

Cell: D79

Comment: Rick Heede:

Total annual report 1982, million tonnes of "equity oil" per year. CMS excludes 33.3 and 30.6 million tonnes of purchased oil in 1981 and 1982, respectively.

Cell: D81

Comment: Rick Heede:

Total annual report 1984, p. 13, million tonnes of "crude oil production by operating subsidiaries" per year.

Cell: Q81

Comment: Rick Heede:

Total annual report 1986, operating data shows natural gas (presumably but ambiguously referring to) marketed amounts in million SCM per year. These quantities do NOT include liquefied natural gas (LNG, in tonnes per year: 1986 = 0.654 million tonnes), nor natural gas liquids (1986 = 1.546 million tonnes).

Cell: R81

Comment: Rick Heede:

Total annual report 1984, p. 13, billion cubic meters per year.

Cell: D83

Comment: Rick Heede:

Total Group annual report for 1986, oil and gas exploratoin and production table, shows "production by operating subsidiaries" crude oil in million tonnes, for 1985 and 1986. CMS enters 1985 datum at 13.5 million tonnes of crude oil.

Cell: F83

Comment: Rick Heede:

Elf Aquitaine (1987, 1989) Annual Report, p. 11, shows "production accruing to Elf Aquitaine" in 1985 = 17.1 million tonnes; 1986 = 17.1 Mt; 1987 = 17.8 Mt; and 1988 = 21.2 Mt. CMS reports these data, even though Oil & Gas Journal apparently cites the larger quantities Elf Aquitaine reports as "Aggregate production of Elf Aquitaine operated fields" (27.5, 28.2, 29.3, and 31.7 million tonnes in 1985, 1986, 1987, and 1988, respectively).

Cell: S83

Comment: Rick Heede:

"Aggregate production of Elf Aquitaine operated fields" for 1985-1988 from Elf Aquitaine (1987, 1989) Annual Reports, p. 11.

Note: See same year: Oil. Aggregate production is higher than accrued to Elf Aquitaine. 1985 = 17.2 billion m3 (BCM), 1986 = 15.6 BCM, 1987 = 14.45 BCM, and 1988 = 15.80 BCM.

Cell: I85

Comment: Rick Heede:

Oil & Gas Journal OGI100 or Data Book, various years, Petrofina (Belgium), for 1987-1997.

Cell: V85

Comment: Rick Heede:

Oil & Gas Journal OGI100 or Data Book, various years, Petrofina (Belgium), for 1987-1997.

Cell: H86

Comment: Rick Heede:

Oil & Gas Journal OGI100 production data, million bbl per year, various years.

Cell: W86

Comment: Rick Heede:

Oil & Gas Journal Data Book 1990 estimates Elf Aquitaine natural gas production as 829 and 890 Bcf in 1988 and 1987, respectively; Elf Aquitaine Annual Rpt for 1989 shows 15.8 billion SCM/yr for 1988 (= 558 Bcf).

CMS cites company data. CMS also interpolates for 1989 (whereas OGJ reports 823 Bcf), in line with their previous years' estimates but higher than reported Elf Aquitaine data.

Cell: J87

Comment: Rick Heede:

Oil & Gas Journal reports Elf Aquitaine's oil production using "aggregate" rather than "production accruing to company." CMS reports the latter, which we interpret to mean equity production. We do not have Elf Aquitaine annual reports for 1989-1997 to correct OGJ's reporting. In 1988, for example, CMS uses 21.2 million tonnes (equals 155 million bbl), whereas OGJ cites 236 million bbl.

Cell: V91

Comment: Rick Heede:

Oil & Gas Journal databook 1996, page 20-21, "after royalty" reports 530.2 Bcf for PetroFina's gas production in 1993, but as 218.1 Bcf in the 1995 Data Book; CMS cites the latter, assumes typo in later edition.

Cell: D98

Comment: Rick Heede:

Oil and gas production for 2000-2001 from EI (2003) Top 100, p. 258.

Cell: Q98

Comment: Rick Heede:

Oil and gas production for 2000-2001 from EI (2003) Top 100, p. 258.

Cell: K102

Comment: Rick Heede:

CMS uses Total data from its Fact book 2008 for 2004-2008 production, "technical production" (which appears to translate as equity share of gross production; Oil & Gas Journal OGI100 cites Total's "entitlement production" instead.

Cell: X102

Comment: Rick Heede (jan10):

CMS cites Total's own data for "technical production" of natural gas (see data in columns "M" and "N") for 2004-2008. CMS cites Oil & Gas Journal's OGI100 and other sources (such as Elf Aquitaine) for 1970-2003.

Cell: D106

Comment: Rick Heede:

AR2010 shows 1456+347=1803 Liquids total production +share of equity and non-consolidated affiliates (Rhea)

Cell: H106

Comment: Rick Heede:

OGI100 6Sep2010 pg 67, increased earlier reported 2008 production

Cell: Q106

Comment: Rick Heede:

AR2010 reports 4837+298=5135 Total+share of equitea and non-consolidated affiliates

Cell: D107

Comment: Rick Heede:

AR2010 Liquids total production +share of equity and non-consolidated affiliates

Cell: Q107

Comment: Rick Heede:

AR2010 Total+share of equitea and non-consolidated affiliates

Cell: W107

Comment: Rick Heede:

OGI100 6Sep2010 pg 67

Cell: D109

Comment: Rick Heede:

Total SA Registration Document 2013, including the annual financial report. 392 pp. Key Figures, page 1, Operating and Market Data, liquids production in kb/d.

Cell: Q109

Comment: Rick Heede:

Total SA Registration Document 2013, including the annual financial report. 392 pp. Key Figures, page 1, Operating and Market Data, natural gas production in Mcf/d.

Cell: D112

Comment: Rick Heede:

Total SA 2015 Annual Report, page 2: hydrocarbon production, liquids, thousand bbl per day.

Cell: Q112

Comment: Rick Heede:

Total SA 2015 Annual Report, page 2: hydrocarbon production, natural gas, thousand cf per day.

Cell: D114

Comment: Rick Heede:

Total Fourth quarter and full-year 2017 results, Press Release, page 3.

For the full-year 2017, hydrocarbon production was 2,566 kboe/d, an increase of 5% compared to 2016, due to the following:

- +5% due to new start-ups and ramp-ups, notably Moho Nord, Kashagan, Edradour-Glenlivet and Angola LNG;
- +2% portfolio effect, mainly due to taking over the giant Al-Shaheen oil field concession in Qatar and acquiring an additional 75% interest in the Barnett shale in the United States, partially offset by the exit from the southern sector of the Republic of the Congo and asset sales in Norway;
- +1% related to improved security conditions in Libya and Nigeria;
- -3% due to natural field decline, the PSC price effect and OPEC quotas.

Cell: D116

Comment: Rick Heede:

Total SA Form 20-F for 2018, page 7, production of liquids in 2018: 1,566 kbpd, of which oil (including bitumen) was 1,378 kbpd, implying that NGL and condensate accounted for 188 kbpd.

Cell: Q116

Comment: Rick Heede:

Total SA Form 20-F for 2018, page 7, production of natural gas in 2018 of 6,599 million cfpd, or 2,409 Bcf.

Cell: AN117

Comment: Rick Heede:

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