

Oil and natural gas extraction data

Richard Heede
Climate Mitigation Services
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Sonangol, Angola

www.sonangol.co.ao Luanda

yellow column indicates original reported units
100% State-owned enterprise

Production / Extraction data

Year	Crude Oil & NGL			Natural Gas			Background data
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Net production	Net production	Net production	Net production	Net production	Net production
Thousand bbl /d	Million bbl /yr	Million bbl /yr	Bcf/yr	Bcf/yr	Bcf/yr
		Sonangol			Sonangol

Establishment of Sonangol U.E.E. in 1976



Sonangol Operators and Partners / upstream / oil companies

- 15 1950
- 16 1951
- 17 1952
- 18 1953
- 19 1954
- 20 1955
- 21 1956
- 22 1957
- 23 1958
- 24 1959
- 25 1960
- 26 1961
- 27 1962
- 28 1963
- 29 1964
- 30 1965
- 31 1966
- 32 1967
- 33 1968
- 34 1969
- 35 1970
- 36 1971
- 37 1972
- 38 1973
- 39 1974
- 40 1975
- 41 1976
- 42 1977
- 43 1978
- 44 1979
- 45 1980
- 46 1981
- 47 1982
- 48 1983
- 49 1984
- 50 1985
- 51 1986
- 52 1987
- 53 1988
- 54 1989
- 55 1990
- 56 1991
- 57 1992
- 58 1993
- 59 1994
- 60 1995
- 61 1996
- 62 1997
- 63 1998
- 64 1999
- 65 2000
- 66 2001
- 67 2002
- 68 2003
- 69 2004
- 70 2005
- 71 2006
- 72 2007
- 73 2008
- 74 2009
- 75 2010
- 76 2011
- 77 2012
- 78 2013
- 79 2014
- 80 2015
- 81 2016
- 82 2017
- 83 2018
- 84
- 85

Angola	Est. Sonangol	%
million bbl /yr	million bbl /yr	
0.4	0	10%
0.5	0	10%
0.8	0	10%
3.4	0	10%
5.8	1	10%
6.5	1	10%
4.7	0	10%
4.5	0	10%
3.9	0	10%
3.4	0	10%
17	2	10%
112	4	10%
93	3	10%
140	5	10%
162	6	10%
169	6	10%
165	6	10%
108	10	26%
194	36	51%
71	24	51%
131	24	51%
147	27	51%
150	28	51%
130	24	51%
122	23	51%
177	33	51%
208	39	51%
231	43	51%
282	52	51%
360	67	51%
452	84	51%
455	85	51%
475	88	51%
500	93	51%
526	98	51%
509	95	51%
536	100	51%
646	120	51%
709	132	51%
714	133	51%
735	137	51%
745	139	51%
746	139	51%
742	138	51%
896	167	51%
903	168	51%
1,055	196	51%
1,250	233	51%
1,420	264	51%
1,748	325	51%
1,961	365	51%
1,887	351	51%
1,919	357	51%
1,766	329	51%
1,797	335	51%
1,815	338	51%
1,757	327	51%
1,829	340	51%
1,798	335	51%
1,708	318	51%
1,656	308	51%

Angola	Angola	Est. Sonangol	%
gross gas prod'n	net gas prod'n	Bcf/yr	
14	1	0	10%
29	2	0	10%
33	2	0	10%
31	2	0	10%
36	2	0	10%
38	2	0	10%
35	2	0	10%
22	2	1	26%
interpolated	4	2	51%
interpolated	6	3	51%
interpolated	7	4	51%
Dry gas	9	5	51%
Dry gas	9	4	51%
Dry gas	10	5	51%
Dry gas	12	6	51%
Dry gas	12	6	51%
Dry gas	13	7	51%
Dry gas	14	7	51%
Dry gas	16	8	51%
Dry gas	18	9	51%
Dry gas	15	8	51%
Dry gas	19	10	51%
Dry gas	20	10	51%
Dry gas	20	10	51%
Dry gas	18	9	51%
Dry gas	20	10	51%
Dry gas	20	10	51%
Dry gas	23	12	51%
Dry gas	24	12	51%
Dry gas	29	15	51%
Dry gas	24	12	51%
Dry gas	24	12	51%
Dry gas	26	13	51%
Dry gas	27	14	51%
Dry gas	33	17	51%
Dry gas	26	13	51%
Dry gas	27	14	51%
Dry gas	60	31	51%
Dry gas	110	56	51%

EIA Angola crude 1970-1980
thousand bbl /day
112
93
140
162
169
165
108
194
131
147
150

Oil & Gas Journal	OGJ100 estimate	OGJ100	
Crude oil million bbl	% this project of OG	Natural gas Bcf	%
194	50%	20	51%
187	51%	20	51%
199	50%	20	47%
235	51%	20	51%
254	52%	20	51%
261	51%	20	51%
268	51%	20	51%
278	50%	20	51%
271	51%	20	50%
250	55%	20	47%
326	51%	22	51%
319	53%	26	46%
360	55%	26	53%
452	51%	29	41%
515	51%	28	44%
619	53%	41	37%
691	53%	59	21%
653	54%	64	19%
653	55%	76	17%
614	51%	34	40%
641	51%	48	29%
641	51%	48	35%
610	51%	48	27%
650		48	
628		68	
596		109	

Total	14,189	7,080	1,037	523
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A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
88	Alternate production estimate for 2008														
89															
90	Thousand bbl /d		Million bbl /yr				Million cf/d		Bcf/yr						
91	2008		270		99		-		-		(zero)				

Source: Hults, & Thurber, 2012, Introduction, Table 1.1, page 24, in Victor et al, eds, 2012, Oil and Governance.
 Table 1.1 is based on information from Wood Mackenzie's Pathfinder Database; www.woodmacresearch.com

US Energy Information Administration, International Energy Statistics

www.eia.gov/emeu/international/energy.html

	Angola		Updated Oct 2014	Angola		Angola		Angola		Angola		Vented & Flared of gross gas prod'n %
	Crude oil, condensate, & NGPL k bbl per day	million bbl per yr		Gross NatGas Prod Bcf per year	Prod Market Gas Bcf per year	Reinjected NatGas Bcf per year	Vented & Flared Bcf per year	Dry NatGas Prod Bcf per year				
1980	150.0	55	NA	NA	-	55.0	9.2					
1981	130.0	47	NA	NA	-	53.0	8.8					
1982	122.0	45	NA	NA	-	43.0	10.0					
1983	177.0	65	NA	NA	-	38.0	12.0					
1984	208.0	76	NA	NA	-	41.0	12.0					
1985	231.0	84	NA	NA	-	41.0	13.0					
1986	282.0	103	NA	NA	-	49.0	14.0					
1987	360.0	131	NA	NA	-	48.0	16.0					
1988	452.0	165	NA	NA	-	61.0	18.0					
1989	455.0	166	NA	NA	-	51.0	15.0					
1990	475.0	173	92.0	19.0	28.0	45.0	19.0	49%				
1991	500.0	183	83.0	20.0	16.0	47.0	20.0	57%				
1992	526.0	192	65.0	20.1	-	45.2	20.1	69%				
1993	509.0	186	105.9	25.1	30.7	50.1	19.8	47%				
1994	536.4	196	98.9	23.7	28.3	47.0	18.4	48%				
1995	646.2	236	183.6	25.1	26.5	132.1	19.8	72%				
1996	708.8	259	204.8	25.1	42.0	137.7	19.8	67%				
1997	713.8	261	219.7	25.4	53.3	140.9	20.1	64%				
1998	735.1	268	233.1	25.8	61.8	145.5	20.5	62%				
1999	744.9	272	257.8	25.1	80.9	151.9	19.8	59%				
2000	746.4	272	254.3	25.4	80.5	148.3	20.1	58%				
2001	742.4	271	250.7	24.0	78.4	148.3	18.7	59%				
2002	896.4	327	296.6	27.5	116.5	152.6	21.9	51%				
2003	902.5	329	243.7	24.7	12.4	206.6	23.0	85%				
2004	1,054.7	385	275.5	28.3	28.3	219.0	26.5	79%				
2005	1,249.5	456	300.2	33.5	42.4	229.5	23.0	76%				
2006	1,420.3	518	332.0	29.3	73.1	229.5	24.0	69%				
2007	1,748.0	638	381.8	35.7	88.3	257.8	29.3	68%				
2008	1,960.7	716	354.9	29.3	81.2	244.4	24.0	69%				
2009	1,886.8	689	356.7	31.9	80.9	243.9	24.4	68%				
2010	1,918.5	700	364.5	32.3	83.4	248.7	25.9	68%				
2011	1,765.6	644	379.0	33.6	91.8	253.7	26.6	67%				
2012	1,797.0	656	383.1	33.9	92.8	256.4	26.8	67%				
2013	1,814.7	662	380.0	na	91.1	247.2	32.7	65%				
2014	1,756.6	641	369.0	na	89.4	247.0	25.8	67%				
2015	1,829.0	668	372.3		90.2	247.1	27.3	66%				
2016	1,797.9	656	NA		-	-	60.5					
2017	1,707.5	623	NA		-	-	109.6					
2018	1,656.3	605					109.6	assumed equal to 2017				

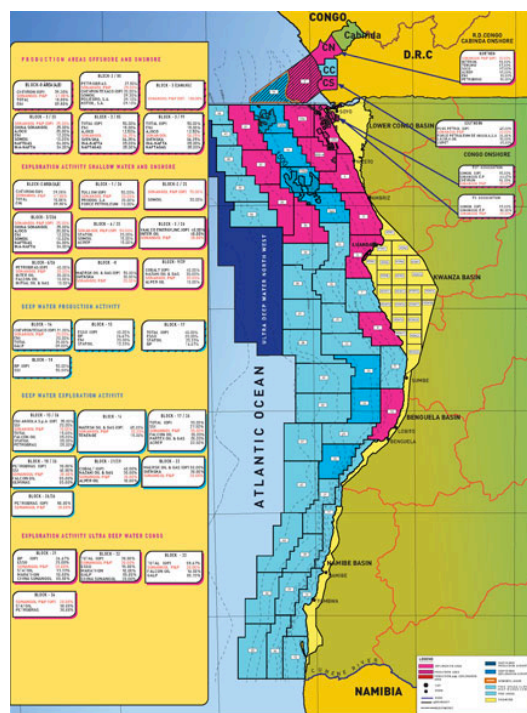
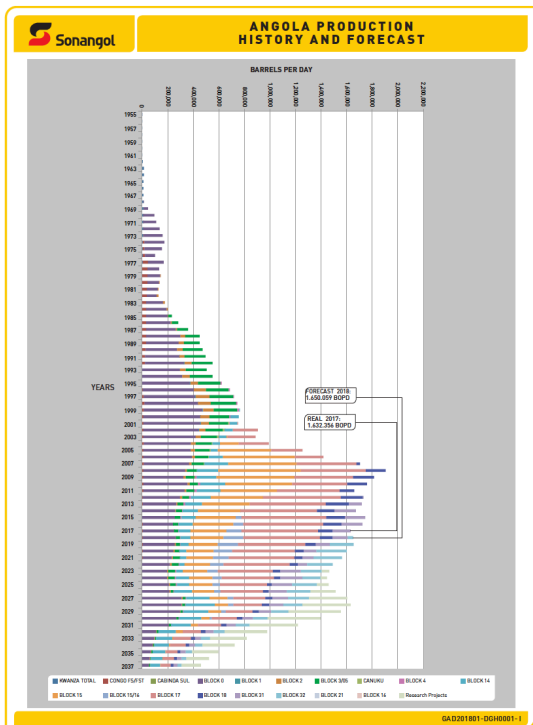
Updated June 2019
Crude oil, condensate, & NGPL

Updated June 2019

Updated June 2019

Updated June 2019
(dry gas, EIA stat to 2017)

1990-2011 totals	5,717	624	1,317	3,781	511	66%
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Sonangol Concessions map, 2013.

To bring an end to the wasteful flaring of gas and to also enable the local production of industrial chemicals, a gas condensate facility to produce liquefied petroleum gas (LPG) is scheduled to come online in 2015.
 No data on gas production or flaring

Cell: H9**Comment:** Rick Heede:

www.sonangol.co.ao

1976: Establishment of Sonangol U.E.E.

1983: Institution of the first international subsidiary, Sonangol Limited in London, England.

1991: Attribution of the first oil concession in deep waters on block 16.

1992: Establishment of subsidiary Sonangol P&P as an oil company.

1999: Sonangol U.E.E. becomes Sonangol E.P.

2003: Sonangol begins operating as an oil company with the grant of offshore block 3.

On the threshold of Angola's Independence, a working group was set up in the oil industry both to support the industry and to mobilize Angolans working in the business. The main objective was the strategic preparation of the oil industry after the proclamation of independence.

From the nationalization of ANGOL in 1976, two companies were formed: Sonangol U.E.E. and Direcção Nacional de Petróleos. ANGOL Sociedade de Lubrificantes e Combustíveis Sarl, which was founded in 1953 as a subsidiary of the Portuguese company SACOR, marketed and distributed fuels, lubricants and liquefied gas in Angola.

Decree 52/76 instituted Sonangol as a state owned company whose mission was the management of hydrocarbon resource exploration in Angola. Despite having the government as the sole shareholder, Sonangol has always been governed as a private company and is under strict performance standards to ensure efficiency and productivity.

After the incorporation of Sonangol, a management committee was established to create the necessary infrastructures for the company to start developing its business activities. The management committee was later converted into a board of directors.

In the aftermath of the independence several oil companies abandoned Angola for one reason or another, leaving behind its infrastructures and former employees. To this end, Sonangol bought the premises of Texaco, Fina and Shell and through an agreement acquired those of Mobil. In this process Sonangol also absorbed former employees of oil companies that once operated in Angola.

Focusing on diversifying its business activities, Sonangol has developed joint-ventures and established companies that promote both the social development of Angola and the expansion of Sonangol. Prioritizing the management of hydrocarbons, environmental protection and industrial safety, Sonangol has created a diversified business that is centered around oil. More than 30 subsidiaries and joint venture companies are now part of Sonangol Group

through its acquired experience, hard work and sustained development, Sonangol has gained prestige and built a solid reputation in the oil industry both in Angola and abroad. This is a direct result of great relationships with the oil companies which operate, or which have interests and investments, in Angola

Over the past three decades Sonangol has expanded into a group of integrated companies and in the process became Angola's leading distributor of refined products and promoter of social and human resources development.

Also see: Heller, Patrick R. P. (2012) "Angola's Sonangol: dexterous right hand of the state," in Victor et al, eds, Oil and Governance, pp. 836-886.

Soares de Oliveira, Ricardo (2007) Business Success, Angola-Style: Postcolonial Politics and the Rise of Sonangol, Journal of Modern African Studies, vol. 45, Issue 04, December 2007, pp 595-619.

Cell: M9**Comment:** Rick Heede:

World Bank, 2008b, page 607: "Despite having the government as the sole shareholder, Sonangol has always been governed as a private company. 100% of Shares Controlled by Government."

World Bank (2008b) A Citizen's Guide to National Oil Companies, Part B: Data Directory, World Bank, Washington, & Center for Energy Economics, Bureau of Economic Geology Jackson School of Geosciences University of Texas, Austin, 764 pp.

Also see: Heller, Patrick R. P. (2012) "Angola's Sonangol: dexterous right hand of the state," in Victor et al, eds, Oil and Governance, pp. 836-886.

Cell: F23**Comment:** Rick Heede:

Soares de Oliveira: "The Marxist period of the MPLA that would last until the end of the Cold War was not one of mere salvaging of the oil sector from the nadir of the 1975-76 conflict. In addition to creating the legal framework for oil investment in Angola – including the state's ownership of all hydro-carbon resources – Sonangol and its foreign partners managed to re-establish and, by 1983, surpass late colonial oil production levels. In order to eliminate 'possible agents and intermediaries in the marketing process', Sonangol created Sonangol Limited, a London office responsible for the direct trading of Angola's share of the oil (an estimated 40% of the total) and the first of several Sonangol subsidiaries to span the globe." At page 601.

In 1996 Elf made Angola's first ultra-deep water discovery, the Girassol field, and many followed soon afterwards. Angola quickly became the hotspot for companies from all over the world, including British Petroleum, Royal Dutch/Shell, ExxonMobil, Statoil, Norsk Hydro, Petrobras, Marathon, the Chinese companies CNOOC and Sinopec, and a myriad of other firms of all shapes and sizes purposely drawn into the Angolan 'chessboard' by Sonangol. At page 603.

Soares de Oliveira, Ricardo (2007) "Business Success, Angola-Style: Postcolonial Politics and the Rise of Sonangol," Journal of Modern African Studies, vol. 45:595-619.

Heller, 2012, page 846, mentions that ANGOL, the Portuguese oil company and predecessor to Sonangol, was nationalized by the newly independent Angola. Sonangol is a joint venture partner in the most important production projects, and in Block 0 "Sonangol owned 51 percent or the entity as of 1978, and its exploration and production subsidiary has controlled 41 percent stake (the largest of any of the equity partners) since the concession was renewed in the 2000s." Sonangol also has several production-sharing agreements (PSAs) in most deep offshore areas. Also, Heller, page 878, fn 8: "renegotiations with CABGOC and a broad reform of the country's petroleum regime gave Sonangol a 51 percent ownership stake in the operating fields, [and] vested it with the role of concessionaire in charge of the granting of rights over new acreage." Heller, Patrick R. P. (2012) "Angola's Sonangol: dexterous right hand of the state," in Victor et al, eds, Oil and Governance, pp. 836-886. At pages 857-858.

World Bank has no production data attributed to Sonagol. World Bank (2008b) A Citizen's Guide to National Oil Companies, Part B: Data Directory, World Bank, Washington, & Center for Energy Economics, Bureau of Economic Geology Jackson School of Geosciences University of Texas, Austin, 764 pp. At page 719.

Insofar as we do not have the required details of Sonagol's overall equity production totals from royalty concessions, joint ventures, and PSAs, CMS assumes a 51 percent interest in Angola's total oil production since June 1976. This fraction of oil production may be revised if Sonangol (or other sources) makes more detailed equity production data available.

Cell: E25**Comment:** Rick Heede:

US Bureau of Mines (1971) International Petroleum Annual 1969, p. 37, shows Angolan oil production for 1959-1969. Data for 1970-2004 converts EIA daily prod'n data to million bbl per year. Note: we use OGI data for 1992-2004.

Cell: I32**Comment:** Rick Heede:

Data for 1969-1976 from US Bureau of Mines, Minerals Yearbook. No Angolan data prior to 1969. Energy Information Administration International Energy Statistics Dry Natural Gas Production, 1980-1989, and Marketed Natural Gas Production, 1990-2010.

Cell: J33**Comment:** Rick Heede:

We attribute 51 percent of total dry or marketed Angolan natural gas production (as done for crude oil; see cell note at F23 for details) to Sonangol. Note that the Oil & Gas Journal OGI100 estimates for Sonangol 1992-2010 are significantly higher (see column N, and compare EIA data on page 2) -- indeed higher than total Angolan production of dry and/or marketed gas production -- and we consider the OGI estimates possibly in error. A very high proportion of Angolan gas is vented or flared (47 to 85 percent of gross gas production, according to EIA data) or re-injected. This 51 percent may underestimate Sonangol's equity, royalty, or equity production and may be revised if comprehensive data on Sonangol's share of Angolan production becomes available.

Cell: D34**Comment:** Rick Heede:

Heller, page 881, fn 20: "traditional tax and royalty concessions (excluding PSAs) generated 31 percent of production in 2007, 18 percent in 2008, and 17 percent in 2009." Heller, Patrick R. P. (2012) "Angola's Sonangol: dexterous right hand of the state," in Victor et al, eds, Oil and Governance, pp. 836-886.

Cell: I38**Comment:** Rick Heede:

U.S. Bureau of Mines Minerals Yearbook 1974, page 887, reports both gross and marketed production for 1972-1973.

Cell: B40**Comment:** Rick Heede:

By 1974 the production reached 172,000 bpd which was the maximum output for the colonial period. www.sonangol.co.ao / HISTORY OF THE OIL INDUSTRY IN ANGOLA

Cell: I40**Comment:** Rick Heede:

U.S. Bureau of Mines Minerals Yearbook 1976, page 887, reports both gross and marketed production for 1974-1976.

Cell: B42**Comment:** Rick Heede:

www.sonangol.co.ao / HISTORY OF THE OIL INDUSTRY IN ANGOLA.

In 1976, total production was around 100,000 bpd from three areas: Cabinda's Offshore, Kwanza's Onshore and Congo's Onshore.

The Gulf Oil Company had created the Cabinda Gulf Oil Company (CABGOC); Gulf Oil left Angola in November 1975 as the civil war raged but returned in March 1976, in part through the pressure from General Obasanjo of Nigeria (who hinted at retaliation against Gulf in Niger Delta). Texaco and Petrofina were also encouraged to return.

Sonangol was created in June 1976 "as the Angolan oil concessionaire, sector regulator, and tax gathering agent." Soares de Oliveira, Ricardo (2007) "Business Success, Angola-Style: Postcolonial Politics and the Rise of Sonangol," Journal of Modern African Studies, vol. 45:595-619. At page 600.

Note: Soares de Oliveira also reports that "CABGOC, the Chevron-led main oil producer in Angola since the 1960s until being recently overtaken by Exxon, is incorporated in Bermuda and does not publish an annual

Sonangol

report." At page 615, fn #6.

Cell: G42

Comment: Rick Heede:

We assume a 51 percent equity share in Angola's oil production from June 1976 through 2010. See cell note at F23 for details.

Cell: K42

Comment: Rick Heede:

51 percent of Angolan dry or marketed natural gas is attributed to Sonangol. See cell notes at J33 and F23 for details.

Cell: D46

Comment: Rick Heede (Jan10):

Energy Information Administration, International Energy Annual 2006 Table 2.2 World Crude Oil including Lease Condensate Production, 1980-2010 (Thousand Barrels per Day), for Angolan liquids production.

Cell: I46

Comment: Rick Heede (Jan10):

Energy Information Administration, International Energy Statistics, Dry Natural Gas Production 1980-1989 and production of marketed natural gas 1990-2010 for Angola.

Cell: N58

Comment: Rick Heede:

Oil & Gas Journal, OGJ100, various years.

Cell: B65

Comment: Rick Heede:

The first FPSO (Floating Production, Storage & Offloading) rig in Angola's offshore came on stream on December 1999, and was used for project Kuito on Block 14. Since August 2003, the world's largest FPSO came on stream on project Kizomba A on Block 15. Projects in Blocks 17 and 18 also required the use of an FPSO.
www.sonangol.co.ao / HISTORY OF THE OIL INDUSTRY IN ANGOLA

Cell: B74

Comment: Rick Heede:

To bring an end to the wasteful flaring of gas and to also enable the local production of industrial chemicals, a gas condensate facility to produce liquefied petroleum gas (LPG) is scheduled to come online in 2008.
www.sonangol.co.ao / HISTORY OF THE OIL INDUSTRY IN ANGOLA

Cell: L74

Comment: Rick Heede:

OGJ100 6Sep10 pg 69; updated 2008 reported value; OGJ 30Oct2011 pg 49; "estimated."

Cell: N74

Comment: Rick Heede:

OGJ100 6Sep10 pg 69;
OGJ 3 Oct 2011 pg 49;
"estimated"

Cell: L82

Comment: Rick Heede:

oil & Gas Journal OGJ100, September 2018, page 42. Shows oil and gas production by Sonangol, which exceeds the allocation of 51% of Angolan production to the company, in view of international operators working assets offshore, such as ExxonMobil.

Cell: I84

Comment: Rick Heede:

Cell: E91

Comment: Rick Heede:

Sonangol "working interest liquids production in 2008" at 270 thousand bbl per day.
Victor, Hults, & Thurber, 2012, Introduction, Table 1.1, page 24, in Victor et al, eds, 2012, Oil and Governance. Table 1.1 is based on information from Wood Mackenzie's Pathfinder Database; www.woodmacresearch.com

Cell: J91

Comment: Rick Heede:

Sonangol "working interest natural gas production in 2008" at 0 (zero) thousand cf per day. Victor, Hults, & Thurber, 2012.