

# Oil and natural gas extraction data

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Climate Mitigation Services  
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## Pertamina, Indonesia

www.pertamina.com Jakarta

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

### Production / Extraction data

Year

Crude Oil & NGL			Natural Gas			Background data	
Net production	Net production	Net production	Net production	Net production	Net production		
Thousand bbl /d	Million bbl /yr	Million bbl /yr	Million SCM/d	Billion cf/yr			

Permina created in 1958, Pertamina in 1968



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- 77 2011
- 78 2012
- 79 2013
- 80 2014
- 81 2015
- 82 2016
- 83 2017
- 84 2018

Indonesia		Pertamina		Indonesia		Pertamina	
million bbl /yr	million bbl /yr	gross production	net production	Bcf/yr	Bcf/yr	Bcf/yr	Bcf/yr
119	61	78	8	8	4	51%	4
139	71	83	8	8	4	51%	4
153	78	91	9	9	5	51%	5
155	79	96	10	10	5	51%	5
168	86	101	10	10	5	51%	5
165	84	104	10	10	5	51%	5
171	87		13	13	7	51%	7
178	91		15	15	8	51%	8
169	86		18	18	9	51%	9
185	94		22	22	11	51%	11
220	112		24	24	12	51%	12
271	138	101	42	42	21	51%	21
854	312	108	44	44	23	51%	23
892	326	121	44	44	23	51%	23
1,081	395	146	44	44	22	51%	22
1,339	489	186	28	28	14	51%	14
1,375	502	202	40	40	20	51%	20
1,307	477	222	82	82	42	51%	42
1,504	549	312	126	126	64	51%	64
1,686	615	interpolated	258	258	132	51%	132
1,635	597	interpolated	390	390	199	51%	199
1,591	581	interpolated	522	522	266	51%	266
1,647	601	51%	654	654	333	51%	333
1,700	621	51%	663	663	338	51%	338
1,419	518	51%	674	674	344	51%	344
1,437	525	51%	769	769	392	51%	392
1,487	543	51%	1,036	1,036	528	51%	528
1,369	500	51%	1,141	1,141	582	51%	582
1,420	518	51%	1,187	1,187	605	51%	605
1,373	501	OGJ10C	1,268	1,268	647	51%	647
1,372	501	OGJ10C	1,385	1,385	706	51%	706
1,481	541	OGJ10C	1,457	1,457	743	51%	743
1,539	562	OGJ10C	1,644	1,644	838	51%	838
1,668	609	OGJ10C	1,856	1,856	947	51%	947
1,579	576	OGJ10C	1,954	1,954	997	51%	997
1,589	580	OGJ10C	2,013	2,013	1,027	51%	1,027
1,590	580	OGJ10C	2,252	2,252	1,149	51%	1,149
1,579	576	OGJ10C	2,285	2,285	1,165	51%	1,165
1,627	594	OGJ10C	2,432	2,432	1,240	51%	1,240
1,605	586	OGJ10C	2,422	2,422	1,235	51%	1,235
1,605	586	OGJ10C	2,318	2,318	1,182	51%	1,182
1,559	569	OGJ10C	2,669	2,669	1,361	51%	1,361
1,518	554	OGJ10C	2,482	2,482	1,266	51%	1,266
1,422	519	OGJ10C	2,256	2,256	1,150	51%	1,150
1,329	485	OGJ10C	2,422	2,422	226	51%	226
1,233	450	Pertamina AnnRpt	2,529	2,529	335	51%	335
1,169	427	Pertamina AnnRpt	2,443	2,443	395	51%	395
1,091	398	Pertamina AnnRpt	2,406	2,406	411	51%	411
1,025	374	Pertamina AnnRpt	2,510	2,510	405	51%	405
976	356	Pertamina AnnRpt	2,559	2,559	406	51%	406
1,016	371	Pertamina AnnRpt	2,618	2,618	427	51%	427
1,000	365	Pertamina AnnRpt	2,732	2,732	502	51%	502
1,016	371	Pertamina AnnRpt	3,047	3,047	533	51%	533
983	359	Pertamina AnnRpt 2013	2,892	2,892	559	51%	559
955	349	Pertamina AnnRpt 2013	2,748	2,748	563	51%	563
922	337	Pertamina AnnRpt 2013	2,748	2,748	558	51%	558
270	Pertamina AR 2018	1,613	589	589	51%	589	
278	Pertamina AR 2018	1,902	694	694	51%	694	
312	Pertamina AR 2018	1,961	716	716	51%	716	
342	Pertamina AR 2018	2,035	743	743	51%	743	
393	Pertamina AR 2018	3,059	1,117	1,117	51%	1,117	

all Indonesia gas attributed to Pertamina from 1960 to 1987

Oil & Gas Journal 1988-2002

Pertamina AnnRpts 2003-2008



Pertamina operating regions

Pertamina Annual Report 2013, page 7.

Billion m <sup>3</sup> /yr	million m <sup>3</sup> /d
19.9	54.5

Oil & Gas Journal	Oil & Gas Journal	
Mb	Bcf	
		1,847 OGJ100
		1,805 OGJ100
		2,159 OGJ100
		2,466 OGJ100
		1,706 OGJ100
		1,881 OGJ100
		2,863 OGJ100
		3,006 OGJ100
		3,049 OGJ100
		2,336 OGJ100
		2,399 OGJ100
		2,493 OGJ100
		2,619 OGJ100
		2,619 OGJ100
		226 Discontinuity not explained

OGJ: no data  
OGJ: no data  
OGJ: no data

Pertamina AnnRpt 2013	Oil & Gas Journal	Oil & Gas Journal
Mb	Bcf	
98.6	588.7	
101.6	694.3	
114.0	717.7	
124.7	742.9	

<b>Total</b>	na	na	14,099	na	na	28,856
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Pertamina Energy Intelligence	
Oil, million bbl /yr	Gas, Bcf
2000	1,698
2001	1,672
2002	
2003	250
2004	300

See Excel file for BP data 1970-2018

**US Energy Information Administration, International Energy Statistics**

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

	Indonesia		Indonesia		Indonesia		Indonesia		Indonesia	
	Crude oil, condensate, & NGPL k bbl per day	million bbl per yr	Prod Marketed Gas Bcf per year	Dry natural gas Bcf per year	Vented & Flared Bcf per year	gross %	Reinjected Bcf per year	Gross Prod'n Bcf per year		
1980	1,647.0	601	NA	654	235	-	NA	NA		
1981	1,700.0	621	NA	663	222	-	NA	NA		
1982	1,419.0	518	NA	674	187	-	NA	NA		
1983	1,437.0	525	NA	769	151	-	NA	NA		
1984	1,487.0	543	NA	1,036	135	-	NA	NA		
1985	1,369.0	500	NA	1,141	118	-	NA	NA		
1986	1,420.0	518	NA	1,187	108	-	NA	NA		
1987	1,373.0	501	NA	1,268	131	-	NA	NA		
1988	1,372.0	501	NA	1,385	152	-	NA	NA		
1989	1,481.0	541	NA	1,457	162	-	NA	NA		
1990	1,539.0	562	1,644	1,602	166	7.7%	349	2,159		
1991	1,668.0	609	1,856	1,814	203	8.2%	403	2,462		
1992	1,579.0	576	1,954	1,914	217	8.4%	412	2,583		
1993	1,589.0	580	2,013	1,973	231	8.7%	417	2,661		
1994	1,590.2	580	2,252	2,206	177	6.0%	513	2,942		
1995	1,578.7	576	2,285	2,238	177	5.9%	544	3,005		
1996	1,627.5	594	2,432	2,383	177	5.6%	551	3,160		
1997	1,604.8	586	2,422	2,371	173	5.5%	536	3,132		
1998	1,605.4	586	2,318	2,269	177	5.9%	485	2,980		
1999	1,559.1	569	2,669	2,506	170	5.5%	229	3,068		
2000	1,518.4	554	2,482	2,237	162	5.6%	256	2,901		
2001	1,421.6	519	2,256	1,888	170	6.0%	382	2,808		
2002	1,329.0	485	2,422	2,063	148	4.9%	472	3,042		
2003	1,233.0	450	2,529	2,190	166	5.3%	461	3,155		
2004	1,168.6	427	2,443	2,028	155	5.1%	432	3,030		
2005	1,090.7	398	2,406	2,001	155	5.2%	422	2,984		
2006	1,025.2	374	2,510	2,199	113	3.8%	332	2,955		
2007	976.0	356	2,559	2,422	98	3.5%	147	2,804		
2008	1,016.5	371	2,618	2,472	113	3.9%	152	2,883		
2009	1,000.0	365	2,732	2,557	172	5.6%	155	3,059		
2010	1,015.7	371	3,047	2,917	109	3.2%	174	3,406		
2011	983.3	359	2,892	2,693	178	5.5%	185	3,255		
2012	955.5	349	2,748	2,619	230	7.1%	192	3,230		
2013	922.5	337	2,606	2,594	237	7.4%	156	3,216		
2014	886.7	324	2,594	2,594	230	7.3%	145	3,159		
2015	847.1	309	2,571	2,571	244	7.8%	145	3,143		
2016	929.6	339	2,533	-	-	-	-	NA		
2017	894.7	327	2,546	-	-	-	-	NA		
2018	872.2	318	2,748	-	-	-	-	NA		

Updated June 2019  
Crude oil, condensate, & NGPL

Updated June 2019

1990-2015 totals	59,332	4,547	5.9%	8,648	77,182
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**OPERATIONAL PERFORMANCE HIGHLIGHTS**

**UPSTREAM PERFORMANCE**

Description	Unit	2018	2017	2016	2015	2014
Oil Production	MBOPD	393	342	312	278	270
Gas Production	MMSCFD	3,059	2,035	1,961	1,902	1,613
Oil and Gas Production	MBOEPD	921	693	650	607	549
Additional Reserves Proven (P1)	MMBOE	426	314	227	79	282

**REFINERY PERFORMANCE AND DEVELOPMENT**

Description	Unit	2018	2017	2016	2015	2014
Crude Oil, Gas, and Intermediate Product Refinery	MMBBL	337	324	328	306	314
Fuel Production	MMBBL	279	263	266	241	241
Non-fuel Production	MMBBL	29	29	26	23	22

**MARKETING PERFORMANCE**

Description	Unit	2018	2017	2016	2015	2014
Fuel Sales	Million Kilo Liter	70	67	65	62	65
Non-Fuel Sales	Million Kilo Liter	16	16	15	14	14
Gas Sales Volume	BBTU	1,122,623*	823,769	708,684	705,729	701,724
Gas Transportation Volume	BSCF	777*	502	522	531	508

\*including PGN

National Oil & Gas / Indonesia		
BP Stat Rev 2018	BP Stat Rev 2018	
Crude oil & NGL	Natural Gas	
Mb	Bcf	
501	1,402	1988
541	1,479	1989
562	1,573	1990
609	1,727	1991
576	1,825	1992
580	1,902	1993
580	2,167	1994
576	2,176	1995
577	2,287	1996
568	2,354	1997
555	2,315	1998
514	2,510	1999
531	2,489	2000
506	2,424	2001
471	2,669	2002
429	2,795	2003
412	2,666	2004
400	2,693	2005
371	2,663	2006
355	2,563	2007
367	2,635	2008
363	2,756	2009
366	3,072	2010
348	2,920	2011
335	2,758	2012
322	2,741	2013
309	2,698	2014
306	2,690	2015
320	2,644	2016
306	2,573	2017
295	2,584	2018

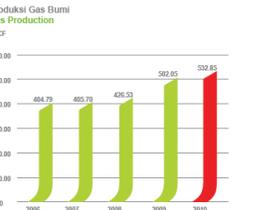
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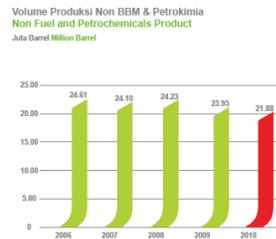
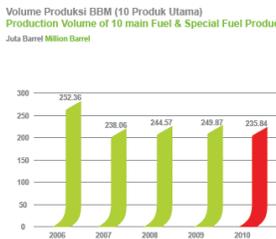
**Reserves & production: Oil & Condensate**



**Reserves & production: Natural Gas**



**Products, non-fuel, and petrochemical production**



Pertamina Annual Report 2010, page 6.



Pertamina Board of Directors, Pertamina Annual Report 2010, page 59. Karen Agustawan, Director & CEO

**OPERATIONAL PERFORMANCE HIGHLIGHTS**  
**IKHTISAR KINERJA OPERASI**

Deskripsi	Satuan	2006	2007	2008	2009	2010	Units		
Minyak Mentah	Temuan Cadangan Minyak dan Kondensat	MMBO	34.74	38.90	75.40	61.43*	62.80*	MMBO	Discoveries of Oil and Condensate Reserves
	Produksi Minyak Mentah	MMBO	48.00	52.27	54.98	64.40	70.01	MMBO	Crude Oil Production
Gas Bumi	Temuan Cadangan Gas Bumi	BSCFG	134.14	507.30	484.5	1,393.79*	1,844.5*	BSCFG	Discoveries of Gas Reserves
	Produksi Gas Bumi	BSCF	404.79	405.70	426.53	502.05	532.85	BSCF	Gas Production

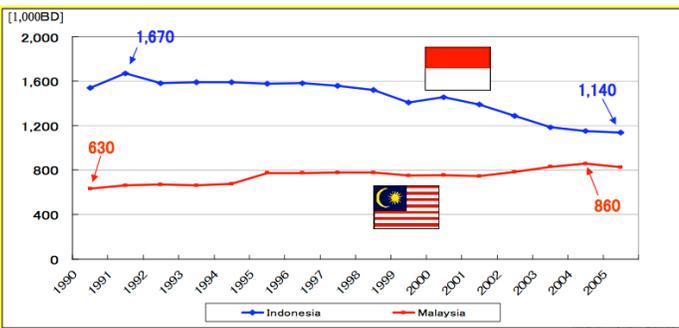
**Operating regions**



Pertamina website



Hertzmark, page 6.



Wako, Yoshiaki, 2007



Existing (solid) and proposed (dashed) pipelines. Hertzmark, 2007, p. 54

Item	Indonesia	Pertamina
Oil Reserves (bn bbl)	5.1	0.98 (19%)
Oil Output (bn bbl)	1025	48 (4.7%)
Gas Reserves (tcf)	94	8.8 (9.4%)
Gas Output (tcf/y)	3	0.31 (10.3%)
LNG Sales (Mmt/y)		24
Refining Capacity (kbd)	1055	128.5 (12.2%)
Refinery Output (kbd)	999.8	114.1 (11.4%)

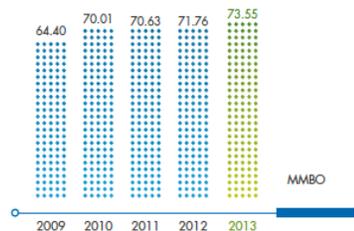
Hertzmark, 2007, "Pertamina's Evolution," Baker Institute NOC series.

Item	Indonesia	Pertamina
Proven oil reserves (bn. Bbl.)	5.1	0.98
Oil & Condensate Production (kbd)	1025, of which Chevron 507 Total CNOOC 82 Others 355	48 (Pertamina alone) 133 (including JVs)
Proven gas reserves (tcf)	94	8.8
Gas Production (tcf)	3.0	0.32 (Pertamina alone) 0.40 (including JVs)
LNG Sales (m tonnes)		24 - 5.6 million from Arun, 18.4 million from Bontang

Hertzmark, 2007b, page 22.

Hertzmark offers an excellent account of Pertamina's history, declining production, political and technical challenges.

Produksi Minyak Mentah  
Crude Oil Production



Produksi Gas Bumi  
Gas Production



Pertamina Annual Report 2013, page 8

Natural Gas		
Indonesian prod'n	Pertamina prod'n	% Pert.
Bcf/yr	Bcf/yr	Percent
3,000	400	13.3%

Crude oil		
Indonesian prod'n	Pertamina prod'n	% Pertamina
thousand bbl /day	thousand bbl /day	Percent
1,025	133	13.0%

Calculated from Hertzmark, 2007b, page 22 (reproduced above).

## 22 ▶ Ikhtisar Kinerja Operasional

Operational Performance Highlights

Other information

Keterangan	Satuan	2016	2015	2014	2013	2012	Description
Minyak Mentah	MMBO	99.91	94.17	129.39	102.04	108.70	Discoveries of Oil and Condensate Reserves*
Gas Bumi	BSCF	986.45	876.84	973.18	783.73	964.10	Crude Oil Production
Panas Bumi, Produksi Uap Setara Listrik	GWh	3,042.83	2,831.40	2,962.85	2,216.83	2,216.83	Discoveries of Natural Gas Reserves*
Pengolahan Kilang	Juta Million Barrel	327.79	305.95	314.42	314.03	308.12	Natural Gas Production
Distribusi & Pemasaran	Juta Million MT	64.61	61.63	65.17	65.37	64.88	Pertamina Owned Operations
	Juta Million MT	9.48	9.00	8.62	7.73	7.23	Geothermal, Steam Production Equivalent to Electricity
	Juta Million KL	112.60	95.28	99.12	91.84	88.89	JOA (Joint Operating Agreement)
	Juta Million Barrel	15.26	27.17	37.73	42.40	29.94	Total Steam Production Equivalent to Electricity
	Juta Million Barrel	204.74	208.55	234.56	228.81	226.47	Crude Oil, Gas and Intermediate Processing
	Juta Million MMBTU	605.81	633.85	632.63	655.23	640.21	Refinery

Pertamina Annual Report 2016, page 22-23



Pertamina Annual Report 2018, page 8-9.

**Cell:** H9

**Comment:** Rick Heede:

PN Permina was established by the Govt of Indonesia in Dec1957. PN Permina and PN Pertamina merge and become PN Pertamina in 1968. Annual Rpt 2007, page 6.

"The history of Pertamina EP is interconnected with the lengthy history of oil and gas quest around the archipelago which was started in early 19th century. Between 1871 to 1885 was early quest era until oil discovery in Dutch-occupied Indonesia. Following first drilling in 1883 at Telaga Tiga, Pangkalan Berandan, South Sumatra, Royal Dutch Company was established in Pangkalan Berandan in 1885. Since then, the exploitation of oil in the archipelago began.

During the East Asia war, oil production experienced a distortion. During Japan occupation, efforts were limited to rehabilitation of damaged fields and wells as the impact of war.

Oil production was discontinued during the war for independence. When it was over and the nation started to run more organized governance, control over oil business became less clear. Numerous small companies spurted to take advantage of oil fortune thus causing disputes. To subdue the disputes, control over oil was given to the Army.

To anticipate it, the government established a national oil company on 10 December 1957 namely PT Perusahaan Minyak Nasional, PERMINA. In 1968, PERMINA merged with PERTAMIN and changed its name to PERTAMINA. To strengthen the new company, the government issued Law No. 8 in 1971, that positioned PERTAMINA as state-owned oil and gas company. The law obliged all oil companies interested in running their business in Indonesia to cooperate with PERTAMINA. This resulted in PERTAMINA to act as a regulator for partners who were under Cooperation Contract mechanism in PERTAMINA working areas. On the other hand, PERTAMINA also acted as operator who managed its own working areas.

Parallel to the dynamic shifts of the global and national oil and gas industry, the government issued Oil and Gas Law No. 22 /2001. Due to the law enactment, PERTAMINA status was changed into a State-Owned Enterprise and renamed as PT Pertamina (Persero). Consequently, the Company's role became an operator under Cooperation Contract with BPMIGAS as the government's representative. The law also urged PT Pertamina (Persero) to establish separate business subsidiaries so that the business of exploration, exploitation and production of oil and gas become more manageable.

It was on such ground that Pertamina EP was established on 13 September 2005. Then on 17 September 2005 PT Pertamina (Persero) signed a Production Sharing Contract (PSC) with BPMIGAS, governing all oil and gas mining areas accordingly. Eventually, majority of those areas became Pertamina EP's working areas. At the same time, Pertamina EP also signed a Production Sharing Contract with BPMIGAS valid since 17 September 2005.

Therefore, Pertamina EP's working areas are those previously managed by PT Pertamina (Persero), including those previously managed by PT Pertamina (Persero) through Technical Assistance Contract (TAC) and Joint Operating Body Enhanced Oil Recovery (JOB EOR)." [www.pertamina-ep.com/en/about-pep/our-history](http://www.pertamina-ep.com/en/about-pep/our-history) (May 2012).

Also see: Hertzmark, Donald (2007b) "Pertamina: Indonesia's State-Owned Oil Company, Baker Institute for Public Policy, March, 60 pp.

Mitchell, John V. (2008) Resource Depletion, Dependence and Development: Indonesia, Working paper, Chatham House, London, 41 pp.

**Cell:** M9

**Comment:** Rick Heede:

100 percent government-owned. The Ministry of State Owned Enterprises in the shareholder. 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 74.

See also: Center for Energy Economics (2007) Commercial Frameworks for National Oil Companies: Working Paper, revised draft, University of Texas, Austin, 34 pp. Table 3.

**Cell:** E12

**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 net production.

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

**Cell:** I12

**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](http://www.exxonmobil.com), p. 55.

**Cell:** F20

**Comment:** Rick Heede:

We do not have sufficient information on Pertamina's (and its forerunner Permina, 1958-1968). While production areas were confiscated and production substantially nationalized, we do not have yearly equity production attributable to Pertamina and assume, for lack of specific equity production and/or joint venture and/or production-sharing agreements, that 51 percent of Indonesian oil production is attributable to Pertamina from 1958 to 1986. From 1987 we cite Oil & Gas Journal production estimates for Pertamina, followed by Pertamina production from annual reports 2003-2010.

Production operated by Royal Dutch Shell since oil was discovered and produced on Sumatra in 1884 (Royal Dutch was formed in 1890, and merged with British Shell Transport and Trading in 1907).

"In the 1950s, three government-owned upstream firms were established; the National Oil Mining Company (PT Permina) formed two entities to handle the confiscated Dutch north Borneo fields: the Indonesian Oil Mining Company (Pertamin) and the State Oil Compan (PN Permigan). In 1960, the Oil and Mining Law was ratified by parliament in 1961. The 1945 Indonesian Constitution had stated that "Land and water and the natural riches therein shall be controlled by the State and shall be exploited for the greatest welfare of the people." Under the new mining law, "oil and natural gas mining is only conducted by the State and the State company is authorized to engage in oil mining on behalf of the State." Hertzmark, 2007, page 7.

"Indonesia's contract terms were considered among the toughest in the world, with the government in most cases receiving 85 percent of oil produced once the foreign company recovered costs. The government's profit share for "old" production areas has increased to 90% in many cases while lower profit oil shares are now common in areas with speculative or higher cost reserves". Hertzmark, 2007, page 9.

**Cell:** I21

**Comment:** Rick Heede:

Through corporate mismanagement, political corruption, extensive subsidies and price controls accelerating domestic oil consumption, Indonesia became a net oil importer in 2004. Hertzmark, page 2.

**Cell:** E24

**Comment:** Rick Heede:

U.S. Bureau of Mines Minerals Yearbook 1960, page 487, Table 89, world production of crude petroleum.

**Cell:** H24

**Comment:** Rick Heede:

Hertzmark, Donald (2007) "Pertamina's Evolution: From King of the Hill to One of the Guys," in: The Changing Role of National Oil Companies in International Energy Markets, James Baker III Institute for Public Policy, Rice University, 2 March 2007.

**Cell:** K24

**Comment:** Rick Heede:

Hertzmark, Donald (2007) "Pertamina: Indonesia's State-Owned Oil Company, Baker Institute for Public Policy, March, 60 pp.

**Cell:** E25

**Comment:** Rick Heede:

US Bureau of Mines (1971) International Petroleum Encyclopedia, p. 37, shows oil production for 1959-1969, in million bbl per year.

**Cell:** H26

**Comment:** Rick Heede:

The World Bank reported Pertamina's oil production as 133,000 bbl per day (48.5 million bbl per year). Page 74: "In 2004 Pertamina reported 1.5 million barrels of proven oil reserves and 133 MB/D of oil production, representing 35% and 12% of Indonesia's reserves and production respectively. The oil upstream sector is dominated by international oil companies (Chevron, BP, ConocoPhillips, ExxonMobil, Total, PetroChina and CNOOC) operating pursuant to production sharing contracts (PSAs). Indonesia's two largest oil fields, operated by Chevron, are in decline."

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.

**Cell:** D34

**Comment:** Rick Heede:

Energy Information Administration International Energy Annual 2004, Table G.1 World Production of Crude Oil, NGPL, and Other Liquids, 1980-2004  
EIA, Crude Oil production (excluding NGL, and other liquids), for 1970-1980.

**Cell:** H35

**Comment:** Rick Heede:

Minerals Yearbook for 1971, p. 798, shows Indonesia's marketed natural gas production as well as gross production (marketed plus vented, flared, and re-injected natural gas) for 1969-1971:

1969: gross = 101 Bcf, marketed production = 42 Bcf;

1970: gross = 108 Bcf, marketed production = 44 Bcf;

1971: gross = 121 Bcf, marketed production = 44 Bcf (0.367 of gross).

**Cell:** F39

Pertamina

**Comment:** Rick Heede:

Wikipedia on Pertamina, unreferenced: "By the end of 1973, it (Pertamina) directly produced 28.2% of Indonesia's oil, with agreements of Caltex and Stanvac to produce the rest (67.8% and 3.6%, respectively)." CMS comment: we attribute 51 percent of Indonesia's production to Pertamina. Assuming the wikipedia estimate is correct, Pertamina would also receive oil from joint ventures, production-sharing agreements, and so on.

**Cell:** H40

**Comment:** Rick Heede:

On this worksheet we report extractive data for each company or state-owned enterprise. Three columns under crude oil and natural gas allow for data reported in one of three formats (e.g., thousand barrels per day, or million barrels per year, or million tonnes per year).  
Note: the carbon content of the extracted resources is adjusted by a number of factors before emissions estimates are made. Most important is the subtraction of the fraction typically sequestered in petrochemicals and other non-combusted uses such as road oils, waxes, lubricants, greases, etc. See the worksheets on non-energy uses and factors for oil and natural gas in SumOil.xls and SumGas.xls

**Cell:** B43

**Comment:** Rick Heede:

After Mobil discovered the Arun gas field in Aceh (NW Sumatra), Mobil and Pertamina decided to export the gas as LNG to Japan and completed the facility in 1977. The Bontang LNG plant in Borneo was completed two years later, with its LNG also exported to Japan. Indonesia was the largest LNG exporter in the world by 1988. Hertzmark, 2007b, page 13.

**Cell:** D46

**Comment:** Rick Heede (Jan10):

Energy Information Administration International Energy Statistics World Crude Oil including Lease Condensate Production and NGPLs, 1980-2010 (Thousand Barrels per Day) for Indonesia. See page 2 for details.

**Cell:** I46

**Comment:** Rick Heede:

Energy Information Administration International Energy Statistics, World Dry Natural Gas Production, 1980-1989 (Billion Cubic Feet) for Indonesia. See page 2 for details. Data for 1990 to 2010 is for "Production of Marketed Gas."

**Cell:** F53

**Comment:** Rick Heede:

Oil & Gas Journal's OGJ100, various years.

**Cell:** M54

**Comment:** Rick Heede:

Hertzmark, Donald (2007b) "Pertamina: Indonesia's State-Owned Oil Company, Baker Institute for Public Policy, March, 60 pp.

**Cell:** B67

**Comment:** Rick Heede:

The effect of the 2001 Oil and Gas law on equity reporting by Pertamina is not clear, except that, as Hertzmark reports, prior to the law "all reserves and production of both oil and gas took place under the Pertamina banner." Hertzmark, 2007b, page 22. See also discussion on page 35.

**Cell:** F68

**Comment:** Rick Heede:

OGJ100 data "estimated." Large variance from EI or earlier OGJ100 reports is unexplained.

**Cell:** F69

**Comment:** Rick Heede (Jan10):

Pertamina (2008) Annual Rpt 2007, page 11, shows crude oil and natural gas production for 2003-2007; no mention of NGLs. This revises 2003 production (in the 2004 AnnRpt) from 18.2 to 48 million bbl.

**Cell:** F74

**Comment:** Rick Heede:

Pertamina AR 2010 pdf pg 4, shows production for 2006-2010, 2006 48.6 million bbl, 2007 52.27 million bbl.

**Cell:** J74

**Comment:** Rick Heede:

Pertamina AR 2010 pdf pg 4; also shows 2007 405.7 Bcf, 2006 404.79 Bcf.

**Cell:** D80

**Comment:** Rick Heede:

Pertamina Annual Report 2018, page 10. "Oil production 2014-2018, in thousand bpd. (Table reproduced below)  
<https://www.pertamina.com/Media/File/AR-Pertamina-2018-ENG-LR.pdf>

**Cell:** H80

**Comment:** Rick Heede:

Pertamina Annual Report 2018, page 10. "Gas production 2014-2018, in million cfpd. (Table reproduced below)  
<https://www.pertamina.com/Media/File/AR-Pertamina-2018-ENG-LR.pdf>

**Cell:** M92

**Comment:** Rick Heede:

Oil and gas data from EI (2003) Top 100, p. 200.