

Oil and natural gas extraction data

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Climate Mitigation Services
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Rosneft, Russia

yellow column indicates original reported units
75.16% State-owned entity

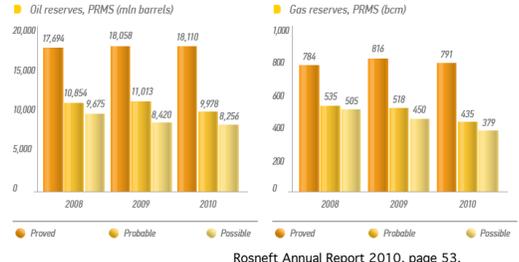
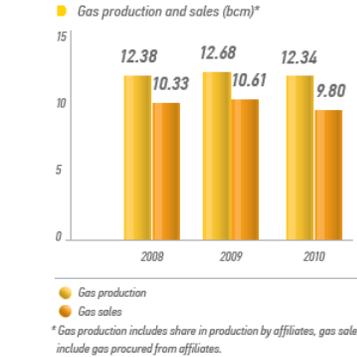
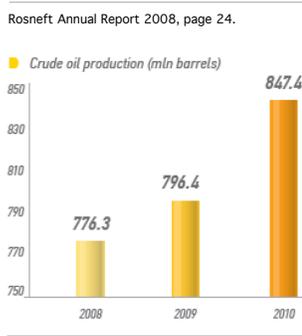
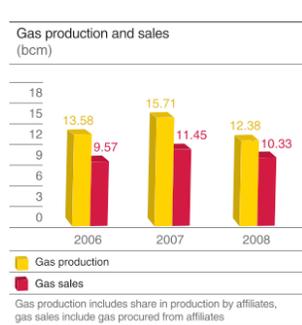
www.rosneft.ru/english/ Moscow (formed in 1993 from USSR Ministry of Oil Industry)

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 tonnes/yr	Million cf/d	Million SCM/d	Billion cf/yr		
	Rosneft	1993		Rosneft	1993		

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Reserves	Crude Oil million bbl	Natural Gas billion m ³
Proven	18,110	791
Probable	9,978	435
Possible	8,256	379

1 SCM = 35.315 cf
1 tonne = 7.330 bbl

Year	Mt	Million bbl / yr	1990-2003	1990-2003	1990-2003
1990	18.0	132			
1991	16.7	122			
1992	15.2	111			
1993	14.0	103			
1994	12.9	95			
1995	12.8	94			
1996	12.5	92			
1997	12.1	89			
1998	11.9	87			
1999	12.6	92			
2000	13.4	98			
2001	15.1	111			
2002	16.1	118			
2003	20.1	147			
2004	157.7	158			
2005	535.2	535			
2006	582.7	583			
2007	740.0	740			
2008	776.3	776			
2009	796.4	796			
2010	847.4	847			
2011	118.7	870			
2012	122.0	894			
2013	189.2	1,387			
2014	204.9	1,502			
2015	202.8	1,487			
2016	210.0	1,539			
2017	225.5	1,653			
2018	230.2	1,687			

Year	OGJ100	OGJ100	1990-2003	1990-2003	Bcf/yr
1990					
1991					
1992					
1993					
1994					
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1997					
1998					
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2014					
2015					
2016					
2017					
2018					

estimated on basis of average gas/oil ratio 1998-2010 applied to 1990-1997

Ave. gas/oil ratio	weighted	simple annual
874		
1,394		
1,933		
1,988		
2,022		
1,956		
2,136		
1,952		
2,060		
858		
823		
749		
563		
562		
514		
520		
648		
973		

th bbl / day	million bbl	El data
269	###	El data
299	###	El data

Total	na	16,946	na	18,853
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APPENDIX 3: DYNAMICS OF ROSNEFT OIL PRODUCTION, 1990 – 2005
(UNIT: MILLION TONS)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Rosneft	18	16.7	15.2	14	12.9	12.8	12.5	12.1	11.9	12.6	13.4	15.1	16.1	20.1	21.6	24.4
Including:																
Purneftegaz	11.7	10.8	9.8	9.4	8.4	8.4	8.3	8.2	8.1	8.9	9.6	9.9	9.8	9.6	9.4	
Sakhalinm-orneftegas	1.9	1.8	1.6	1.5	1.5	1.4	1.6	1.5	1.4	1.4	1.4	1.5	1.6	1.8	1.8	
Yuganskneftegas	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	51.2

Poussenkova, 2007, Rosneft NOC, Baker Institute.

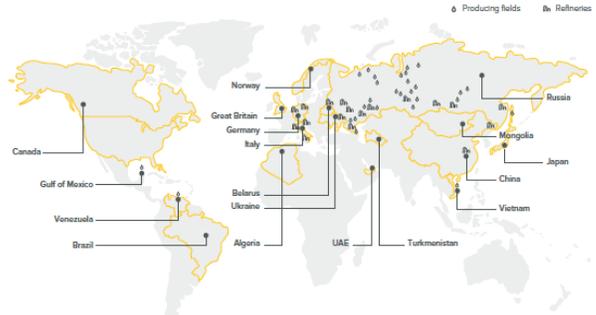


Rosneft: International Partnership on the Russian Shelf

APPENDIX 1: ROSNEFT (BEFORE YUGANSKNEFTEGAS ACQUISITION) AMONG ITS PEERS

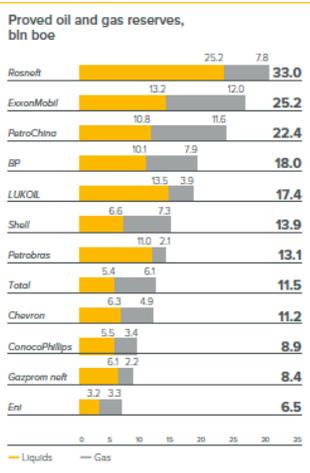
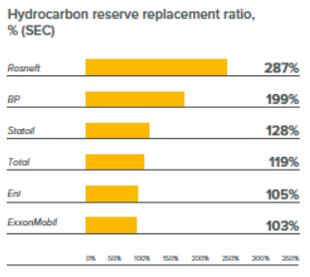
Company	Proved Reserves (2002), SPE*	Oil Production**		Oil Exports**		Oil Refining (2003)**	Gas Output (2004)***	Number of Fuel Stations	Lifting Costs (2002)#	Drilling (2003)##		Number of Oil Wells (Dec 2004)	
		2004	2003	2003	% of Oil Output					Devel.	Expl.	Total	Idle
YUKOS	13.7	85.7	80.7	30.3	35.3%	31.5	3.4	1100	1.52	1,180.90	43.1	17,366	4,540
LUKOIL	15.3	84.1	78.8	31.8	37.8%	35.2	5	1400	2.59	1,073.40	125.3	26,502	4,741
TNK-BP	9.4	70.3	61.5	29.1	41.3%	14.6	8	2100	2.49	399.2	21.9	25,749	10,366
Surgut	6.6	59.6	54	20.8	34.8%	15.9	14.3	300	2.96	2,777.50	244.1	16,719	1,985
Sibneft	4.6	34	31	10.1	29.7%	14.3	1.9	1000	1.75	687.8	50.6	8,099	4,643
Tatneft	6	25	24	11.5	46.0%	6.4	0.7	400	4.17	602.5	48.2	21,682	3,904
Slavneft	1.6	22	18	8.1	36.8%	12.4	0.9	600	2.22	251.8	N/a	3,987	761
Rosneft	2.9	21.6	19.5	7.4	34.2%	9.3	9.3	600	3.02	483.2	39.1	8,529	573
Rank	7	8	7	7	7	7	2	5-6	7	6	7	7	1
Bashneft	N/a	12	12	3.8	31.6%	-	0.3	N/a	N/a	333.9	70.9	18,600	3,202

* billion barrels
** million tons
*** billion cubic meters
\$ per barrel
kilometers



Geography of Operations, Rosneft AnnRpt 2013, page 10.

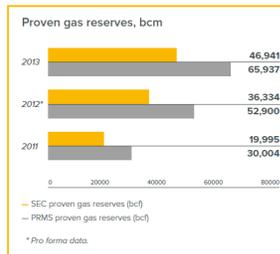
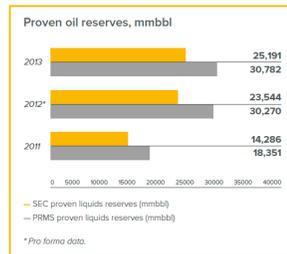
Poussenkova, Appendix 1.



Rosneft AnnRpt 2013, page 11.

Operating highlights	2013	2012	Change, %	2011
PRMS proven oil reserves (mmt)	4,161	2,513	65.6%	2,519
SEC proven oil reserves (mmt)	3,398	1,999	70.0%	1,960
PRMS proven gas reserves (bcm)	1,867	992	88.2%	850
SEC proven gas reserves (bcm)	1,329	753	76.5%	566
PRMS reserves life (years)	24	25	-4.0%	25
Oil, gas condensate and liquids production (mmt) ²	206.9*	122.0	69.6%	118.7
Gas production (bcm)	42.1*	16.4	156.7%	12.8
Oil export (mmt)	97.3	66.4	46.5%	63.9
Oil refining (mmt)	90.1	61.6	46.3%	57.9
Oil refining and petrochemicals (mmt)	87.1	59.6	46.2%	55.9
Oil product exports (mmt)	50.6	33.7	50.1%	30.9
Oil product retail sales (mmt)	10.2	6.8	50.0%	6.5

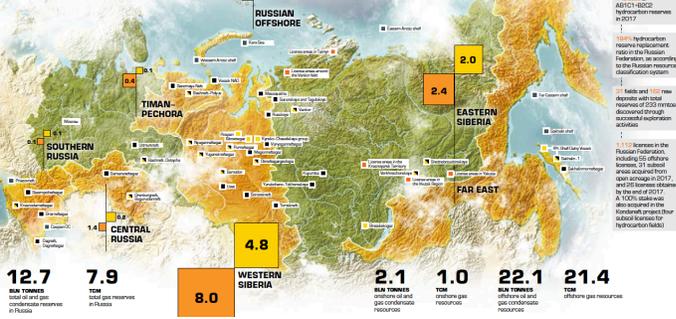
Rosneft AnnRpt 2013, page 14.



* Pro forma data.

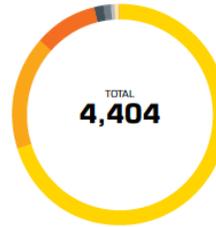
4.1. ROSNEFT'S EXPLORATION AND RESERVE REPLACEMENT

The Company achieved a record high exploration success rate of 85% in 2017, conducting exploration in all major oil regions with the exception of Western Siberia, Central Russia, Timan-Pechora, and Southern Russia.



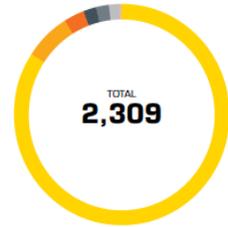
Rosneft AnnRpt 2017, page 114-115.

Breakdown of Proved Hydrocarbon Reserves (Oil, Gas Condensate, LH) under PRMS Standards, mmt



- 3,091 Western Siberia
- 725.4 Central Russia
- 422.7 Eastern Siberia
- 56.0 Timan-Pechora
- 53.5 Foreign assets
- 24.3 Southern Russia
- 22.8 Offshore
- 7.9 Far East

Breakdown of Proved Marketable Gas Reserves under PRMS Standards, bcm



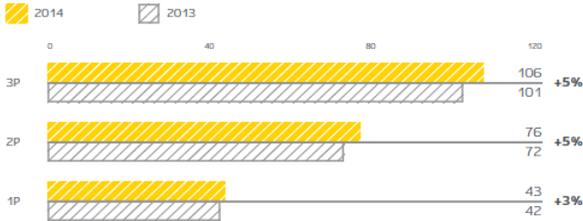
- 1,948.7 Western Siberia
- 161.3 Eastern Siberia
- 68.9 Central Russia
- 43.5 Southern Russia
- 42.6 Offshore
- 40.6 Foreign assets
- 2.0 Timan-Pechora
- 1.5 Far East

Rosneft AnnRpt 2017, page 117.

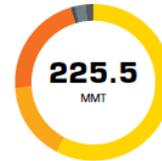
PRODUCTION OF OIL, GAS CONDENSATE AND LIQUIDS, MMT



PRMS: OIL AND GAS RESERVES, BLN BOE



Oil, Gas Condensate, and Liquid Hydrocarbons Production, mmt



- 130.3 Western Siberia
- 36.8 Eastern Siberia and the Far East
- 48.0 Central Russia
- 2.0 Southern Russia (including the Krasnodar Territory and Priazovneft)
- 5.2 Timan-Pechora
- 3.2 Foreign assets

Rosneft AnnRpt 2017, page 121.



Igor Sechin reports to Vladimir Putin on Rosneft's performance in 2014

Rosneft AnnRpt 2014, page 79.

ROSNEFT'S RESOURCE BASE AND PRODUCTION



- LEGEND**
- Oil assets, hydrocarbon and liquid production
 - Oil and gas condensate reserves by the region, bn boe
 - Oil projects, gas production
 - Gas reserves by the region, bcm
 - Offshore assets

IN 2014 SUCCESSFUL EIA OPERATIONS DISCOVERED 64 NEW ACCUMULATIONS IN THE EXISTING FIELDS AND 5 NEW FIELDS, INCLUDING 2 OFFSHORE FIELDS. THE TOTAL DISCOVERED RESERVES AMOUNT TO 0.586 BILY OF OIL EQUIVALENT.

Rosneft AnnRpt 2014, pages 80-81.

Oil & Gas Journal OGI100	
Crude + NGLs	Natural Gas
million bbl	Bcf

868.6	452
963.8	579.1
1634.5	1486.7

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

The history of Rosneft is inseparably linked with that of the Russian oil industry. The Company's core enterprises were established in the Soviet era, when large-scale exploration and development of new oil & gas fields began. In the 1990s, many Russian fuel and energy companies, together with other related state-owned enterprises, were consolidated into vertically integrated companies on the model of the world's largest oil & gas corporations. These new companies were then sold, either fully or in part, to private investors. Management of those oil & gas assets which remained in state ownership became the responsibility of the state enterprise Rosneft.

Russian Government Decree Nr. 971 of September 29, 1995 established a new entity, Open Joint-Stock Company Rosneft Oil Company, which was the legal successor of the previously existing state enterprise. In 1998, Russia's economic crisis presented significant financial and operational challenges for Rosneft, including a production decline due to a severely depleted resource base, low capacity utilization at refineries, and a fall in retail sales. Highly depreciated equipment and outdated technology also put obstacles in the way of Company development.

Source: Rosneft Annual report 2010.

Wiki (25 January 2019): <https://en.wikipedia.org/wiki/Rosneft>

PJSC Rosneft Oil Company is a Russian integrated energy company headquartered in Moscow. It is specializing on exploration, extraction, production, refinement, transport, and sale of petroleum, natural gas, and petroleum products. The company is controlled by the Russian government through the Rosneftegaz holding company. Its name is a portmanteau of the Russian words *Rossiyskaya neft'* (Russian: Российская нефть - Russian oil).

Rosneft was founded in 1993 as a state enterprise and later incorporated in 1995, acquiring a number of state-controlled gas and oil assets. Rosneft became Russia's leading oil company after purchasing assets of former oil company Yukos at state-run auctions. After acquiring OJSC TNK-BP in 2013, then-one of the largest oil companies of Russia, Rosneft became the world's largest publicly-traded petroleum company.

Rosneft is the third largest company of Russia and the second-largest state-controlled company after Gazprom in Russia in terms of revenue (\$4,134 billion). Internationally, it is one of the largest oil companies, ranking 24 in terms of revenue. The company operates in more than twenty countries around the world.

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

Rosneft Annual Report 2008, page 22: "The Company is primarily engaged in exploration and production of hydrocarbons, production of petroleum products and petrochemicals, and marketing of outputs. Rosneft has been included in the Russian Government's List of Strategic Enterprises and Organizations. The state holds 75.16% in the Company (through OJSC ROSNEFTEGAZ), while approximately 15% of shares are in free-float."

Cell: D11**Comment:** Rick Heede:

Company website / history: "In the 1990s, many Russian fuel and energy companies, along with other related state-owned enterprises, were consolidated into vertically integrated companies based on the model of the world's largest corporations. These newly established companies were subsequently fully or partially sold to private investors. Oil and gas assets still owned by the state were managed by the state enterprise Rosneft. Russian Government Decree No. 971 of September 29, 1995 established Rosneft as it is today (Open Joint-Stock Company 'Rosneft Oil Company'). The Company took control of assets previously managed by the state enterprise of the same name."

Cell: D12**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: H12**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: E15**Comment:** Rick Heede:

www.rosneft.ru/english/company/history.html: Rosneft founded in 1993 (from USSR Ministry of Oil Industry). Caspian Sea, Sakhalin-5, Algeria, Colombia. Rosneft acquired Severnaya Neft (Northern Oil) company in 2003.

Cell: D54**Comment:** Rick Heede:

Poussenkova, Nina (2007) Rosneft as a Mirror of Russia's Revolution, Case Study Series: The Changing Role of National Oil Companies in International Energy Markets, Baker Institute for Public Policy, March, 87 pp. From Appendix, at page 84.

Cell: J59**Comment:** Rick Heede:

Since the gas/oil production ratio over the period 1998 to 2010 declined from 1,933 cf/bbl in 1998 to 514 cf/bbl in 2010, and the weighted average works out to 874 cf per bbl, we average the annual ratios over 13 years 1998-2010, or 1,394 cf per bbl. This is still conservative relative to the ratio in 1998.

Cell: C64**Comment:** Rick Heede:

Oil production data 1998 and 2004 from www.rosneft.ru (in million tonnes/yr). Expected oil production in 2015: 125 million tonnes

Cell: H64**Comment:** Rick Heede:

Gas production data 1998 and 2004 from www.rosneft.ru (in billion cubic meters/yr). Expected gas production in 2015: 50 billion cm.

Cell: I66**Comment:** Rick Heede:

Energy Intelligence, Top 100 data from Rosneft 2000-2001. 544 million cv per day in 2000 (198.6 Bcf, and 593 million cf in 2001 (216.4 Bcf).

Cell: J66**Comment:** Rick Heede:

Energy Intelligence, Top 100 data from Rosneft 2000-2001. 544 million cv per day in 2000 (198.6 Bcf, and 593 million cf in 2001 (216.4 Bcf).

Cell: O66**Comment:** Rick Heede:

Oil and gas production data from EI (2003) Top 100, p. 221.

Cell: D70**Comment:** Rick Heede:

We cite Rosneft production data from annual reports. Poussenkova cites slightly different data, e.g., 21.6 Mt (158.3 million bbl) in 2004 and 74.4 Mt (545.4 million bbl) in 2005.

Cell: E70**Comment:** Rick Heede:

We cite Rosneft production data from annual reports. Poussenkova cites slightly different data, e.g., 21.6 Mt (158.3 million bbl) in 2004 and 74.4 Mt (545.4 million bbl) in 2005.

Cell: D75**Comment:** Rick Heede:

AR 2010 pdf pg 54; 2008-2010; 2008 agrees with OGJ100.

Cell: E75**Comment:** Rick Heede:

AR 2010 pdf pg 54; 2008-2010; 2008 agrees with OGJ100.

Cell: H75**Comment:** Rick Heede:

AR 2010 pg 62 (pdf pg 57); consistent with 2008 value from OGJ100; not consistent with 2009 OGJ100 value of 554.4

Cell: D80

Comment: Rick Heede:

Rosneft website: "In 2014, crude and liquids production totaled 204.9 mmt. Daily crude and liquids production remained at the level of 4.2 mm bbl/day."
O&GJ O&GJ100 shows 2014 production of 1618.7 million bbl -- considerably higher than Rosneft reports.

Cell: H80

Comment: Rick Heede:

Rosneft website: "In 2014, gas production grew by 48.6% and reached over 56.7 bcm with the new assets added from the acquisition date.
OGJ data agrees: 2,002 Bcf.

Cell: D81

Comment: Rick Heede:

Rosneft Annual Report 2015, Operating Highlights, page 45.
Oil and condensate production, 2015: 202.8 mmt.
Gas production: 62.5 Bcm. CAI cannot find data on production in the US / Gulf of Mexico, although the regional map of assets and operations does show US production.

Cell: D82

Comment: Rick Heede:

Rosneft Annual Report 2016, page 46: Russian onshore, offshore, and international liquids (oil and condensate) production, Mt.

Cell: D83

Comment: Rick Heede:

Rosneft AnnRpt 2017, page 120-121: Rosneft's hydrocarbon production volumes in 2017 grew 6.2% year-on-year to 281.7 mtoe (5.72 mmboe per day). In 2017, the Company produced 225.5 mmt of liquid hydrocarbons (4.58 mmboe per day), an average daily production increase of 7.6%

Cell: H83

Comment: Rick Heede:

Rosneft AnnRpt 2017, page 153, in Bcm.
Page 152: In 2017, Rosneft's gas production both in Russia and abroad totaled 68.411 bcm, including 31.58 bcm of natural gas and 36.83 bcm of associated petroleum gas. 0.79 bcm of total gas production and 0.66 bcm of natural gas are produced by the Company's foreign projects in Vietnam, Venezuela, Egypt, and Canada, while its Russian production is responsible for 67.62 bcm.

Cell: D84

Comment: Rick Heede:

Rosneft Annual Report 2018, page 51: 230.2 Mt. Chiefly in Western Siberia 135 Mt); international 3.4 Mt. Reserves: Petroleum 4,377 Mt liquids; Gas: 2,420 Bcm, page 46.
https://www.rosneft.com/upload/site2/document_file/a_report_2018_eng.pdf

Cell: H84

Comment: Rick Heede:

Rosneft Annual Report 2018, page 86: 67.26 Bcm (roughly half natural gas and half associated gas). Chiefly in Western Siberia: 47.45 Bcm. Reserves: Gas: 2,420 Bcm, page 46.

Cell: E104

Comment: Rick Heede:

Poussenkova, Nina (2007) Rosneft as a Mirror of Russia's Revolution, Case Study Series: The Changing Role of National Oil Companies in International Energy Markets, Baker Institute for Public Policy, March, 87 pp.
Appendix, page 84.

Cell: AD84

Comment: Rick Heede:

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Cell: AD86

Comment: Rick Heede:

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