## Oil and natural gas extraction data

### Petrólleos de Venezuela S.A., Venezuela (PDVSA)

**Website:** www.pdvsa.com/en  
**Location:** Caracas  
**Status:** State-owned entity, 100%

### Production / Extraction data

<table>
<thead>
<tr>
<th>Year (1950-2010)</th>
<th>Crude Oil &amp; NGL</th>
<th>Natural Gas</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Thousand bbl/d</td>
<td>Million bbl/yr</td>
</tr>
<tr>
<td>PDVSA 1960-2010</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sum</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
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<th>Crude Oil &amp; NGL</th>
<th>Natural Gas</th>
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<td></td>
<td></td>
</tr>
<tr>
<td>Sum</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Attributes (%)

<table>
<thead>
<tr>
<th>Year (1950-2010)</th>
<th>Crude Oil &amp; NGL</th>
<th>Natural Gas</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Thousand bbl/d</td>
<td>Million bbl/yr</td>
</tr>
<tr>
<td>PDVSA 1960-2010</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sum</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### PDVSA

- Nationalized 1975: 100%  
- Original: 10%  
- Interpolated: 10%

### Venezuela

- Nationalized 1975: 100%  
- Original: 10%  
- Interpolated: 10%

### Venezuela

- Nationalized 1975: 100%  
- Original: 10%  
- Interpolated: 10%

### Assumptions:

- PDV production equal to Venezuela as a whole.

### Note:

- Assumes PDV production equal to Venezuela as a whole.

### PDVSA establishment Jan. 1976

- Original: 10%
- Interpolated: 10%

### Nationalized 1975

- Original: 10%
- Interpolated: 10%

### OilGasOxy_Shell.xls

- Million bbl /yr
- Billion of bbl /yr

### Veneuela

- Nationalized 1975: 100%  
- Original: 10%  
- Interpolated: 10%

### OilGasOxy_Shell.xls

- Million bbl /yr
- Billion of bbl /yr

### Author:

Richard Heede  
**Climate Mitigation Services**

**File started:** 11 January 2003  
**Last modified:** April 2013

### Copyright

Climate Mitigation Services
### Alternate production estimate for 2008

<table>
<thead>
<tr>
<th>Year</th>
<th>Oil</th>
<th>Natural gas</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>2,275</td>
<td>830</td>
</tr>
</tbody>
</table>

Source: Hurst & Thaler, 2012, Introduction, Table 1.1, page 24, in Victor et al., 2012, Oil and Governance.

Table 1.1 is based on information from Wood Mackenzie’s Pathfinder Database; [www.woodmacresearch.com](http://www.woodmacresearch.com).

### US Energy Information Administration, International Energy Statistics

<table>
<thead>
<tr>
<th>Year</th>
<th>Venezuela</th>
<th>Venezuela</th>
<th>Venezuela</th>
<th>Venezuela</th>
<th>Venezuela</th>
<th>Venezuela</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990</td>
<td>2,228</td>
<td>813</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>79</td>
</tr>
<tr>
<td>1991</td>
<td>2,157</td>
<td>787</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
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</tr>
<tr>
<td>1992</td>
<td>1,955</td>
<td>714</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>64</td>
</tr>
<tr>
<td>1993</td>
<td>1,858</td>
<td>678</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>61</td>
</tr>
<tr>
<td>1994</td>
<td>1,855</td>
<td>677</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>60</td>
</tr>
<tr>
<td>1995</td>
<td>1,740</td>
<td>635</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
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<tr>
<td>1996</td>
<td>1,884</td>
<td>688</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
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<tr>
<td>1997</td>
<td>1,846</td>
<td>674</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>39</td>
</tr>
<tr>
<td>1998</td>
<td>2,001</td>
<td>730</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>127</td>
</tr>
<tr>
<td>1999</td>
<td>2,157</td>
<td>787</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>127</td>
</tr>
<tr>
<td>2000</td>
<td>2,075</td>
<td>743</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>92</td>
</tr>
<tr>
<td>2001</td>
<td>2,251</td>
<td>822</td>
<td>1,475</td>
<td>865</td>
<td>468</td>
<td>122</td>
</tr>
<tr>
<td>2002</td>
<td>2,001</td>
<td>730</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>92</td>
</tr>
<tr>
<td>2003</td>
<td>1,942</td>
<td>910</td>
<td>1,495</td>
<td>926</td>
<td>447</td>
<td>122</td>
</tr>
<tr>
<td>2004</td>
<td>2,157</td>
<td>830</td>
<td>1,000</td>
<td>990</td>
<td>418</td>
<td>117</td>
</tr>
<tr>
<td>2005</td>
<td>2,157</td>
<td>830</td>
<td>1,000</td>
<td>990</td>
<td>418</td>
<td>117</td>
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<td>1,000</td>
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<td>418</td>
<td>117</td>
</tr>
<tr>
<td>2007</td>
<td>2,157</td>
<td>830</td>
<td>1,000</td>
<td>990</td>
<td>418</td>
<td>117</td>
</tr>
<tr>
<td>2008</td>
<td>2,157</td>
<td>830</td>
<td>1,000</td>
<td>990</td>
<td>418</td>
<td>117</td>
</tr>
</tbody>
</table>

**Crude oil, condensate, & NGLs**

2003 update April 2011

**Cross National Proven Bcf per year**

**Regional NatGas Bcf per year**

** verted & Flared of gross gas prod**

**Bcf per year**

**%**

### Gross production

<table>
<thead>
<tr>
<th>Year</th>
<th>Bcf per year</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>1,493</td>
</tr>
<tr>
<td>2001</td>
<td>1,467</td>
</tr>
</tbody>
</table>

### Energy intelligence

<table>
<thead>
<tr>
<th>Year</th>
<th>Bcf per year</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>1,493</td>
</tr>
<tr>
<td>2001</td>
<td>1,467</td>
</tr>
</tbody>
</table>

### Flaring of gross production

<table>
<thead>
<tr>
<th>Year</th>
<th>Flaring, 1990-2011</th>
<th>Flaring, 1990-2011 #</th>
<th>Cross prod 1990</th>
<th>Cross prod 1990 #</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>24,654.6%</td>
<td>83%</td>
<td>15,444.4</td>
<td>15,444.4</td>
</tr>
<tr>
<td>2001</td>
<td>24,654.6%</td>
<td>83%</td>
<td>15,444.4</td>
<td>15,444.4</td>
</tr>
</tbody>
</table>

### Flaring of net production

<table>
<thead>
<tr>
<th>Year</th>
<th>Flaring, 1990-2011</th>
<th>Flaring, 1990-2011 #</th>
<th>Cross prod 1990</th>
<th>Cross prod 1990 #</th>
</tr>
</thead>
<tbody>
<tr>
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<td>15,444.4</td>
<td>15,444.4</td>
</tr>
</tbody>
</table>

### Reserves of Gas Natural (en millardos de pies cúbicos)

<table>
<thead>
<tr>
<th>Year</th>
<th>Reserves produced</th>
<th>Reserves not produced</th>
<th>Total reserves</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>113 717</td>
<td>113 717</td>
<td>113 717</td>
</tr>
<tr>
<td>2001</td>
<td>113 717</td>
<td>113 717</td>
<td>113 717</td>
</tr>
</tbody>
</table>

### OilGasOxy_Shell.xls

<table>
<thead>
<tr>
<th>Year</th>
<th>Flaring, 1990-2011</th>
<th>Flaring, 1990-2011 #</th>
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<td>83%</td>
<td>15,444.4</td>
<td>15,444.4</td>
</tr>
</tbody>
</table>

### Figure A12: Prices, Costs and Production Ratios, 2005-2006

<table>
<thead>
<tr>
<th>Year</th>
<th>Bcf per year</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>1,493</td>
</tr>
<tr>
<td>2001</td>
<td>1,467</td>
</tr>
</tbody>
</table>
### Table 2: Operating Data

<table>
<thead>
<tr>
<th>Year</th>
<th>Liquids, mbbl/d</th>
<th>% of Column 4</th>
<th>Gas, Mcf/d</th>
<th>% of Column 5</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>1996</td>
<td>3,151</td>
<td>1,150</td>
<td>3,798</td>
<td>1,386</td>
<td>87%</td>
</tr>
<tr>
<td>1997</td>
<td>3,424</td>
<td>1,250</td>
<td>3,930</td>
<td>1,434</td>
<td>112%</td>
</tr>
<tr>
<td>1998</td>
<td>3,440</td>
<td>1,259</td>
<td>3,963</td>
<td>1,447</td>
<td>116%</td>
</tr>
<tr>
<td>1999</td>
<td>3,127</td>
<td>1,141</td>
<td>3,766</td>
<td>1,375</td>
<td>71%</td>
</tr>
<tr>
<td>2000</td>
<td>3,252</td>
<td>1,187</td>
<td>3,979</td>
<td>1,452</td>
<td>75%</td>
</tr>
<tr>
<td>2001</td>
<td>3,267</td>
<td>1,192</td>
<td>4,093</td>
<td>1,494</td>
<td>70%</td>
</tr>
<tr>
<td>2002</td>
<td>2,832</td>
<td>1,034</td>
<td>3,672</td>
<td>1,340</td>
<td>65%</td>
</tr>
<tr>
<td>2003</td>
<td>2,592</td>
<td>847</td>
<td>3,432</td>
<td>1,253</td>
<td>60%</td>
</tr>
</tbody>
</table>

*Mares & Altamirano, 2007, data appendix.*

**Note:**
- MHPD, unless otherwise indicated.
- 87% change.

---

**PDVSA Environmental Education Video**

2nd Quarter 2005: 3.312 million bbl/day

pdvsa.com: Exploration and Production

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**Monaldi (2001), p. 33.**

**Monaldi (2001), page 33.**

**Mares & Altamirano, 2007, data appendix.**

**Liquids, k bbl/day**

**Gas, Mcf/d**

**% clmn “I”**

**Gas, Bcf**

**% clmn “P”**

---

**PDVSA Oil Fiscal Revenues: 1950-1998**

**PDVSA environmental education video**
PDVSA

Cell: L9

Comment: Rick Heede:
Petróleos de Venezuela S.A., the state-owned corporation of the Bolivarian Republic of Venezuela, is responsible for the efficient, profitable, and dependable exploration, production, refining, transport and commerce of hydrocarbons. This company is deeply committed to environmental protection and its main objectives are to foster the harmonic development of the country, to guarantee sovereignty of national resources, to increase endogenous development and to serve and benefit the Venezuelan people, who correspond to their share of the country's national wealth. The Venezuelan State is PDVSA's sole stockholder under the provisions of the Constitution of the Bolivarian Republic of Venezuela and represents the economic and political sovereignty exerted by the Venezuelan people over oil, their major energy resource. Therefore, its actions must follow the Ministry of Energy and Petroleum's guidelines, plans and strategies, as well as the norms issued by the National Development Plans for the hydrocarbon sector. The state corporation, created in 1975 by the Organic Law that Reserves the Industry and Commerce in Hydrocarbons to the State (LOREICH), relies on workers committed to the defense of energy sovereignty and the duty of adding the greatest possible value to oil resources, led by principles of unity, command, teamwork, the spirit of collaboration and efficient use of resources. www.pdvsa.com (Dec'11).

Cell: P9

Comment: Rick Heede:

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 net production. Crude production includes natural gas liquids (NGL) and condensates, unless noted.

Cell: K12

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, held 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: H15

Comment: Rick Heede:
“On September 15th 1986, Petróleos de Venezuela acquired Citgo in Tulsa, United States. This is the most important investment for PDVSA’s hydrocarbon commercialization strategy in the United States. Citgo has more than 1,000 branded retail outlets and almost 20% market share regarding gasoline sales in the USA.” www.pdvsa.com/en/pdvsa_historia_2_1.html

Cell: H22

Comment: Rick Heede:
See cell note G27 (Corporacion Venezolana del Petroleo) for details on the 10 percent attribution 1960-1976. The assumed royalty rate of 10 percent may be revised. We use Oil & Gas Journal production data for PDSVA for 1987 to 2007, and PDVSA data for 2008-2010.

Cell: P23

Comment: Rick Heede:
CMS has not investigated the detailed production capacity and quantities and years. If Oil & Gas Journal data is accurate, the PDV produces far more gas than all of Venezuela, presumably due to production outside of Venezuela. CMS has thus, conservatively we hope, NOT applied the average production factor of PdV relative to Venezuela (see box around cell 559 summarizing gas production 1987-2004). This creates an obvious discontinuity at 1986/1987. PdV's actual production may have been considerably higher prior to 1987, but we know it was not zero. Further research or data from PdV will help improve the accuracy of our calculations.

Bear in mind also that gross production is very much higher than net marketed production in Venezuela, as in many other countries with undeveloped gas delivery infrastructure. As shown in cells M36-M38 for 1968-1970, Venezuela’s gross production was ~1,700 Bcf/yr and marketed production averaged ~340 Bcf/yr over those years. Much of this gas was probably re-injected in order to maintain oil well productivity, or used in refineries, or vented, or flared. None of this gross over net production has been included in CMS’ accounts of carbon dioxide emissions, since we lack detail on the disposition of these large quantities of natural gas.

Cell: D25

Comment: Rick Heede:

Cell: G77

Comment: Rick Heede:
Venezuelan President Romulo Betancourt’s administration established Corporacion Venezolana del Petroleo, CVP, in 1960 as a national oil company, and while the company later foundered it was absorbed by PDVSA upon nationalization. CMS allocates 10 of Venezuelan oil and gas production on the assumption that the state, through both concessions and the establishment of CVP, receives a percentage of national production by the IOCs from 1960 to 1976. As information on production attributable to the state of Venezuela becomes available we may revise this 10 percent royalty percentage. Betancourt’s oil minister Juan Pablo Perez Alfonso referred to oil as “el excremento del diablo” and predicted it would lead to the country’s ruin. Hults, 2012, p. 424.

Cell: D27

Comment: Rick Heede:

Cell: L32

Comment: Rick Heede:

Cell: L36

Comment: Rick Heede:

Cell: L39

Comment: Rick Heede:

Cell: D47

Comment: Rick Heede (Jan10):
PDVSA

Cell: K47
Comment: Rick Heede (Jan10):
Energy Information Administration International Energy Statistics Gross Natural Gas Production, 1990 - 2010, in Bcf per year. See page 2 for details

Cell: G54
Comment: Rick Heede:
Oil & Gas Journal OGJ100 crude oil production data, various years.

Cell: IS4
Comment: Rick Heede:

Cell: H66
Comment: Rick Heede:
PDVSA has invited investment and participation in Venezuela’s oil development, particularly in producing, upgrading and refining its heavy crude in the Faja del Orinoco region. These include association agreements (AAs) and operational service agreements (OSAs) with BP, Chevron, Statoil, Total, ConocoPhillips, and ExxonMobil. The details of these contracts and the royalties due PDVSA are not clear, and CMS does not make adjustments to the reported production attributed to PDVSA by the Oil & Gas Journal data or PDVSA’s own annual reports. See Hults (2012), Manzano & Monaldi (2008), and Monaldi (2001) for discussion.

Cell: N70
Comment: Rick Heede:
We do not know the reason for the anomalies in the 2003 and 2004 OGJ100 data for PDVSA.

Cell: G71
Comment: Rick Heede:
OGJ100 (Sep05) for 2004 = 1,127.9 million bbl.

Cell: I71
Comment: Rick Heede:

Cell: N71
Comment: Rick Heede:
OGJ100 data for 2004 show 638.8 Bcf; also shows 568.7 Bcf in 2003: note: previous OGJ data for 2003 showed 2,372.5 and in agreement with data series since 1986. The stark difference is presumably that 2004 is “after royalty.” (OGJ, 2005, note 5.)

Cell: P71
Comment: Rick Heede:

Cell: G72
Comment: Rick Heede (Jan10):
Oil & Gas Journal OGJ100, various years.

Cell: IS2
Comment: Rick Heede:
PDVSA website, caption to photo gallery at Exploration and Development: “At the finish the second quarter of 2005, PDVSA'S production oil average was located in 3 million 312 thousand daily barrels.” (equals 1,209 million bbl for the year.)

Cell: N72
Comment: Rick Heede (Jan10):

Cell: F75
Comment: Rick Heede:
PDVSA (2011) Estados Financieros Consolidados, page 83. See image at right. Original data in thousand bbl per day (cells D75-D77), converted to million bbl per year. CMS uses PDVSA data instead of the lower production data in OGJ, column G.

Cell: G75
Comment: Rick Heede:
OGJ100 6Sep2010 pg 67; OGJ 3 Oct 2011 pg 49

Cell: IS5
Comment: Rick Heede:
PDVSA production data for 2008-2010.

Cell: N75
Comment: Rick Heede:
OGJ100, 6Sep2010 pg 67.

Cell: E86
Comment: Rick Heede:
Wood Mackenzie estimates PDVSA’s “working interest” liquids production at 2,275 thousand bbl per day (830 million bbl) in 2008.

Cell: I86
Comment: Rick Heede:
Wood Mackenzie estimates PDVSA’s “working interest” natural gas production at 876 million cubic feet per day (320 Bcf) in 2008.

Cell: P115
Comment: Rick Heede:
Energy Intelligence Gas production data 2000 and 2001, 4,090 million cf per day and 4,019 million cf per day, respectively, which equals 1,493 Bcf and 1,467 Bcf per year.

06GasOxy_Shell.xls
Comment: Rick Heede:

Monaldi, Francisco (2001) Sunk Costs, Institutions, and Commitments: Foreign investment in the Venezuelan oil industry, Dept of Political Science, Stanford University;

www.stanford.edu/class/polisci313/papers/MonaldiFeb04.pdf

Comment: Rick Heede:

Photo caption: “At the finish the second quarter of 2005, PDVSA’s production oil average was located in 3 million 312 thousand daily barrels.”