

# COUNTRY ANALYSIS BRIEFS

## Peru

Last Updated: April 2011

### Background

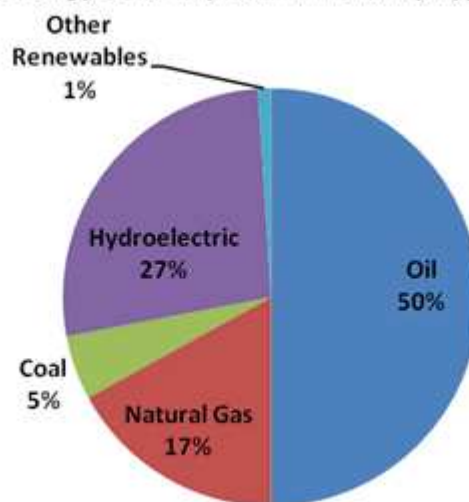
**Peru is a net oil importer and natural gas exporter.**

Peru's rapid economic growth in recent years has led to an increase in energy demand, especially in the industrial sector. Peru has the potential to be a significant producer of both natural gas and petroleum due to its untapped reserves; however, lack of investment has limited Peru's oil production, and made it an importer of both crude oil and petroleum products. The Peruvian government has enacted a series of policies to attract foreign investment and increase energy security by promoting the use of domestic natural gas and hydroelectric resources. These policies have included a conversion program for transportation fuel from diesel to natural gas, and an energy efficiency program for the residential sector. Increases in the production of natural gas from the Camisea gas fields and the first natural gas liquefaction plant in South America at Pampa Melchorita have enabled Peru to become a natural gas exporter despite increases in domestic consumption.



In 2008, Peru consumed 0.7 quadrillion Btu of total energy. Oil constituted the largest part of total energy consumption, followed by hydroelectricity. Most of Peru's electricity comes from hydroelectric generation, with a smaller share of its electric power from coal. Due to Peru's abundant resources, natural gas and hydroelectricity are expected to dominate the energy future of Peru. According to the Economist Intelligence Unit, energy consumption in Peru is expected to rise more than one third by 2020, due to economic and population growth.

Total Energy Consumption in Peru, by Type, 2008



Source: EIA

## Oil

***Peru's total oil production has increased in recent years despite a decline in crude oil production, as a result of a large increase in natural gas liquids.***

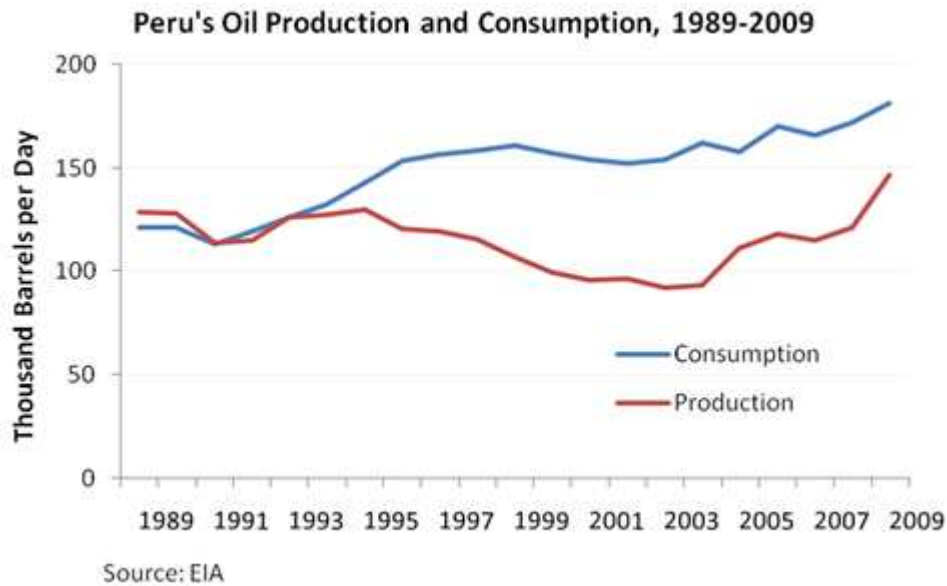
According to Oil and Gas Journal, Peru had 533 million barrels of proven crude oil reserves in January, 2011, although the government claims that up to 6 billion barrels may be recoverable. Peru's total oil production increased by over 50 percent from 2000 to 2010. The country produced an estimated 158,328 barrels per day (bbl/d) of oil in 2010, up from 99,565 bbl/d in 2000. Because Peru produces mostly heavy crude, it exports the majority of its crude oil due a lack of upgraded refineries. With petroleum consumption reaching 181,000 bbl/d in 2009, Peru is a net oil importer with crude oil imports of 99,500 bbl/d in 2009. Almost half of Peru's crude oil imports come from Ecuador. Although Peru's existing oilfields are in decline, unexplored offshore reserves of crude oil and natural gas liquids hold potential for increased oil production. Petroleum consumption in Peru is forecast by the Economist Intelligence Unit to increase at an average annual rate of only 2 percent from 2010 to 2020, mostly because of the substitution of natural gas in the transportation and industrial sectors.

## Sector Organization

Oil production in Peru is run by foreign consortiums, with the state-owned Petroperu overseeing all exploration and production contracts, as well as operating several refineries. Over 80 percent of Peru's oil output currently comes from four companies: Occidental Petroleum, Pluspetrol, Petrobras, and Peru's Petrotech. However, due to an intense promotional campaign carried out by Petroperu in recent years, over 50 oil companies are now operating in Peruvian oil exploration. There are presently 86 license contracts in force in the country, 19 for production and 67 for exploration. As a result of the 2010 bidding round, 2011 should see an additional 14 licenses awarded.

## Exploration and Production

Slightly less than half of Peru's proven oil reserves are offshore, with the majority of the onshore portion in the Amazon region of eastern Peru. There has been a huge increase in oil exploration of this region, so that almost half of the Peruvian Amazon is now covered by oil exploration blocks. Peru's highest court put a temporary halt to oil exploration in the Amazon region in 2009 due to environmental concerns over oil spills and drilling construction, but exploration has continued. U.S.-based BPZ Energy launched commercial production last December at the offshore Corvina field in northwest Peru, and holds two license contracts in the nearby Tumbes basin. Colombia's Ecopetrol won bids last October for 5 exploration blocks in the Huallaga and Marañon river basins, and formed a consortium with Spain's Repsol acting as operator.



### Pipelines

Peru has only one crude oil pipeline, the 621-mile (1,000 kilometer) Norperuano, which includes two branches that run from the Ucayali and Marañon basins in the northeastern jungle of the country to the export terminal at Bayovar on the Pacific coast. The pipeline is owned by state-run Petroperu, which has been installing additional loops in order to allow transport of extra heavy crude from more distant exploration blocks in the Amazon region. The pipeline has a maximum capacity of 250,000 bbl/day.

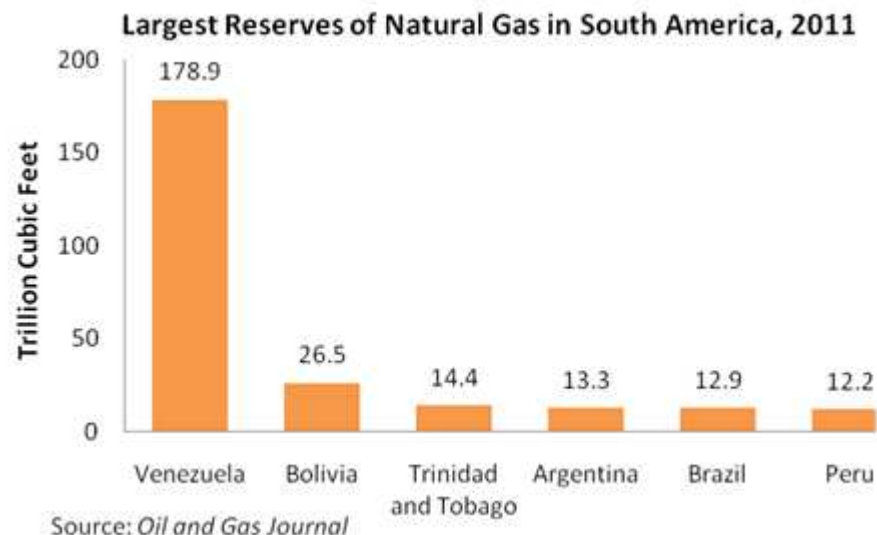
### Downstream Activities

Peru obtains most of its petroleum products through domestic refining. According to Oil and Gas Journal, Peru has six oil refineries with a combined crude distillation capacity of 198,950 bbl/d. Repsol YPF, headquartered in Spain, runs the largest refinery in the country, La Pampilla, located in the capital of Lima. La Pampilla maintains thermal and catalytic operations, and has asphalt production capacity. Talara, Peru's second-largest refinery, is state-owned by Petroperu at Piura, and has recently been upgraded with a \$1 billion investment, and now has catalytic cracking capacity. Three of the country's four other refineries are controlled by Petroperu, with a very small refinery owned by Maple Gas Corp. in Pucallpa. All four of these other refineries have only distillation capacity.

### Natural Gas

**Peru is self-sufficient in natural gas and began exporting LNG in 2010.**

According to Oil and Gas Journal, Peru had proven natural gas reserves of 12.2 trillion cubic feet (Tcf) in 2011, the sixth largest reserves in South America. The country produced 255.6 billion cubic feet (Bcf) of dry natural gas in 2010, most of which was exported. In June, 2010 Peru began exporting gas from its LNG plant at Pampa Melchorita, which is capable of processing 215 Bcf per year. This was South America's first natural gas liquefaction plant. Peru's demand for natural gas has risen rapidly in recent years, from 56 Bcf in 2005 to 123 Bcf in 2009, driven by government incentives, economic growth, and new gas supplies. Construction of new gas-fired electricity plants also spurred demand; gas-fired power plants account for two-thirds of total gas consumption in Peru.

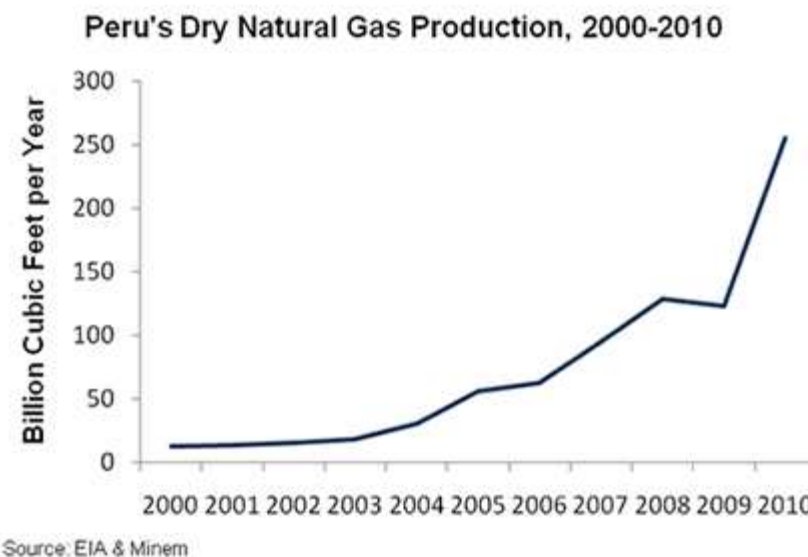


### Sector Organization

Petroperu negotiates, signs, and supervises license agreements for the exploration and production of natural gas in Peru, in accordance with the objectives, policies, and strategies of the Ministry of Energy and Mines (MINEM). The distribution of natural gas through pipelines within Peru is controlled by the private consortium Transportadora de Gas Peruano (TGP). The major gas companies operating in Peru are Pluspetrol, Hunt Oil, Repsol YPF, SK, Tecpetrol, and Sonatrach, with Pluspetrol of Argentina operating the wells at Camisea, and Hunt Oil of the U.S. operating the LNG plant at Pampa Melchorita.

### Exploration and Production

Peru's main gas reserve is the large Camisea project in southeast Peru. Since production began in 2004, its output has grown by an average of 37 percent per year. Another major gas field is being explored in southern Peru at Madre de Dios, with some experts predicting that this field could be as large as Camisea. Peru also produces natural gas in the largely offshore Talara basin in northwest Peru, and in December of last year, gas production began from a new exploration block in the Corvina offshore field. By December of 2010, Peru's natural gas production was in excess of 1 billion cubic feet per day, almost totally from the Camisea reserve.



### Pipelines

There are two pipelines carrying natural gas from the Camisea gas fields. The 336-mile (540 kilometer) Camisea pipeline terminates within the Paracas National Reservation (San Martín) at the Pisco terminal. It passes through the Malvinas plant where natural gas liquids (propane and

heavier liquids) are separated from natural gas. The pipeline has capacity of 450 million cubic feet per day. The second pipeline runs from Malvinas along the coast to Lima and Callao for distribution to residential and industrial consumers in the capital city. Liquefied petroleum gases (LPG) are exported through the Pisco terminal.

The construction of an additional natural gas pipeline from Camisea to supply Peru's capital of Lima and other regions is expected to begin in 2013, after several delays. Demand for natural gas has increased sharply in Peru since its main Camisea fields went onstream in mid-2004, while national pipeline infrastructure has lagged. The new pipeline is part of a commitment by TGP to boost domestic gas supplies to 920 million cubic feet per day by 2012. Other proposed plans include the Gasoducto Andino del Sur Gas Pipeline in southern Peru, which is moving closer to construction following intergovernmental talks between Peru and Brazil. In addition, negotiations are currently underway for both Peru and Bolivia to provide natural gas via pipeline to Chile.

### Downstream Activities

The pipeline consortium TGP pays royalties to the national government for the distribution rights of natural gas in Peru. Pluspetrol runs a gas fractionation plant at Pisco which produces propane, butane, diesel, and naphtha from the gas fields of Camisea, with half of these liquefied petroleum gases (LPG) being consumed domestically. The major expansion of Peru's natural gas production in 2010 has been followed by more infrastructure investment. In October of 2010, the Ministry of Energy and Mines (MINEM) and the regional government of Cusco signed an agreement for the construction of a new liquefied petroleum gas fractionation plant in Peru's southeastern Kepashiato district.

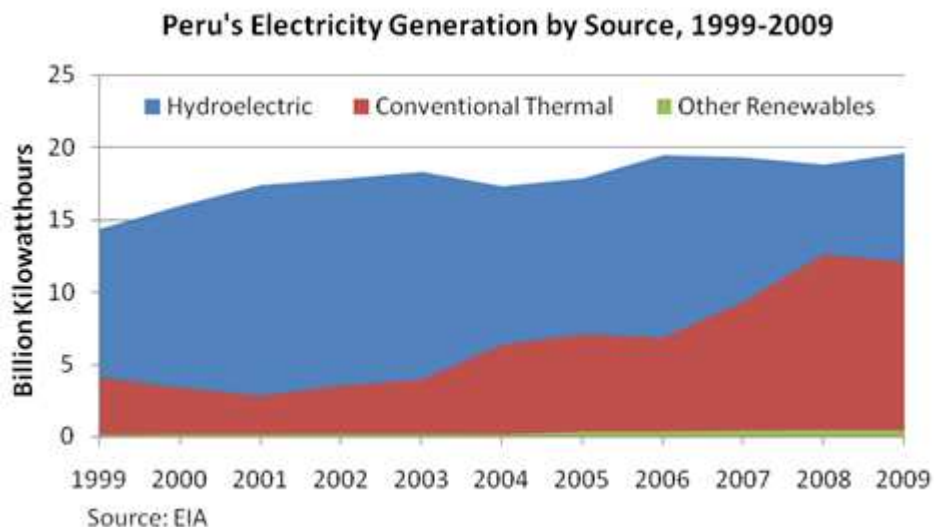
### Liquefied Natural Gas (LNG)

Peru began construction on its liquefied natural gas project, Peru LNG, in January, 2007 and it became operational in June, 2010. This plant at Pampa Melchorita is presently operating at its full capacity of 215 Bcf per year, with a second and possibly a third train being added within the next four to five years. In 2010, LNG cargoes were shipped to Canada, Europe, and Asia, but the majority of its exports are expected to go to an LNG terminal in Manzanillo, Mexico once it becomes operational in the last quarter of 2011.

## Electricity

***Peru is dependent upon hydropower for the bulk of its electricity generation.***

Peru had 7.2 gigawatts (GW) of installed electricity generating capacity in 2008, with 3.2 in hydroelectric generators. EIU expects total capacity to expand by around 70 percent between 2010 and 2020, due to investment in gas-fired and hydropower plants. Peru plans to begin exporting 6 GWh per year of electricity to Brazil, following a recent energy integration agreement. A transmission line connecting Peru and Ecuador was built in 2003, but has rarely been used because the two countries have been unable to agree on a price for electricity. Substantial private investment in gas-fired power plants has increased the share of electricity generated from natural gas following government incentives to decrease the impact of fluctuations in the hydropower supply. Plans to develop six new hydroelectric dams on the Marañon River, with a combined capacity of 10 GW, have faced local opposition. In addition, plans to export electricity to Chilean mines from gas-fired plants along the border have faced nationalist resistance due to territorial disputes.



Electricity consumption in Peru has increased from 15.8 Billion Kilowatthours (Bkwh) in 1998 to 29.3 in 2008, nearly doubling as a result of consistent GDP growth, urbanization, and improvements to the electricity infrastructure. The national grid, the Sistema Electrico Interconectado Nacional (SEIN), delivers 85 percent of the electricity generated in the country, with state-owned generators like ElectroPeru generating one-third of the nation's electricity, and managing distribution in the regions. According to the International Energy Agency, in 2009, 85.7 percent of Peru's population had access to electricity. The government plans to invest around \$2.2 billion to connect 8 million Peruvians to the electricity grid by 2018. Industry and mining account for roughly half of electricity consumption in Peru, and industry and mining electricity plants account for thirty percent of Peru's generating capacity.

## Links

### EIA Links

[Peru Country Energy Profile](#)

### U.S. Government

[CIA World Factbook, Peru](#)

[U.S. Census Bureau, U.S.-Peruvian Trade](#)

[U.S. State Department Consular Information Sheet, Peru](#)

### Foreign Government Agencies

[Peru Embassy in Washington, DC](#)

[Ministry of Energy and Mines](#)

[Petroperu](#)

[National Institute of Statistics](#)

## Sources

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Economist Intelligence Unit

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International Energy Agency

International Oil Daily

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Olade  
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Petroperu  
Platts  
U.S. Energy Information Administration  
U.S. Geological Survey  
World Energy Council  
World Gas Intelligence

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