

COUNTRY ANALYSIS BRIEFS

Colombia

Last Updated: June 2012

Background

Colombia has seen a dramatic increase in hydrocarbons production in recent years following a period of steady decline.

The enactment of a series of regulatory reforms to make the oil and natural gas sector more attractive to foreign investors served as an incentive for rising production. In addition, the government has implemented a partial privatization of state oil company Ecopetrol in an attempt to revive its upstream oil industry. The security situation in the country also has improved over the last decade, with fewer attacks against oil and natural gas infrastructure in recent years. Expanded oil production will require further investment in transport infrastructure and refining capacity.

In 2009, Colombia consumed 1.3 quadrillion Btus of total energy. Oil constituted the largest part of this amount, followed by hydroelectricity, natural gas, and coal. The country relies upon hydropower for the bulk of its electricity needs, so it is able to export most of the coal that it produces. Natural gas consumption in Colombia has also risen over the last decade.



Oil

Colombia's oil production has increased since 2008 due to increasing exploration and development.

Overview

According to *The Oil and Gas Journal (OGJ)*, Colombia had about 2 billion barrels of proven crude oil reserves in 2012, up from 1.9 billion barrels in 2011. Colombia's increasing reserves are a result of the exploration of several new blocks that were auctioned in the last bidding round in 2010. Much of Colombia's crude oil production occurs in the Andes foothills and the eastern Amazonian jungles. Meta department, in central Colombia, is also an important production area, predominately of heavy crude oil, and its Llanos basin contains the Rubiales

oilfield, the largest producing oil field in the country.

Sector Organization

The key governmental body involved in Colombia's energy sector is the Ministry of Mines and Energy, which is responsible for overall policy making and supervision. All hydrocarbon reserves are owned by the state. Control is exercised in the oil and gas sectors through national companies Ecopetrol and Ecogas. Ecopetrol is the largest and primary oil and gas producer in Colombia, producing 60 percent of total oil production. It possesses legal existence, administrative and decision-making autonomy, and its own capital. It is responsible for exploring, extracting, processing, transporting, and marketing of Colombia's hydrocarbon resources.

Colombia's government has taken measures to make the investment climate more attractive to foreign oil companies. Upstream sector initiatives include allowing foreign oil companies to own 100 percent stakes in oil ventures and compete with Ecopetrol; establishing a lower, sliding-scale royalty rate on oil projects; and lengthening the time for exploration licenses. The government plans to sell shares of Ecopetrol to private investors, reducing its share to roughly 80 percent. These reforms have sparked a renewed interest in Colombia's upstream sector, with record levels of exploratory and development drilling underway. According to the Colombian central bank, the oil sector received \$2.86 billion in foreign direct investment (FDI) in 2010.

In June 2010, Colombia's National Hydrocarbons Agency (ANH) conducted a bidding round, which included 228 exploratory blocks. The round featured both known hydrocarbon-rich areas as well as frontier regions in offshore blocks in the Caribbean Sea and the Pacific Ocean. However, the ANH only awarded 76 total licenses in well-established areas in the round. A new bidding round was opened in February 2012, which focused on the exploration and development of nonconventional gas sources. One-third of the 110 blocks offered are believed to contain shale or coal bed methane gas. To attract investment, the government decreed a 40-percent discount on royalties from nonconventional gas at the end of 2011. The auction will also include 13 mostly deepwater offshore blocks with crude oil and natural gas indications.

Exploration and Production

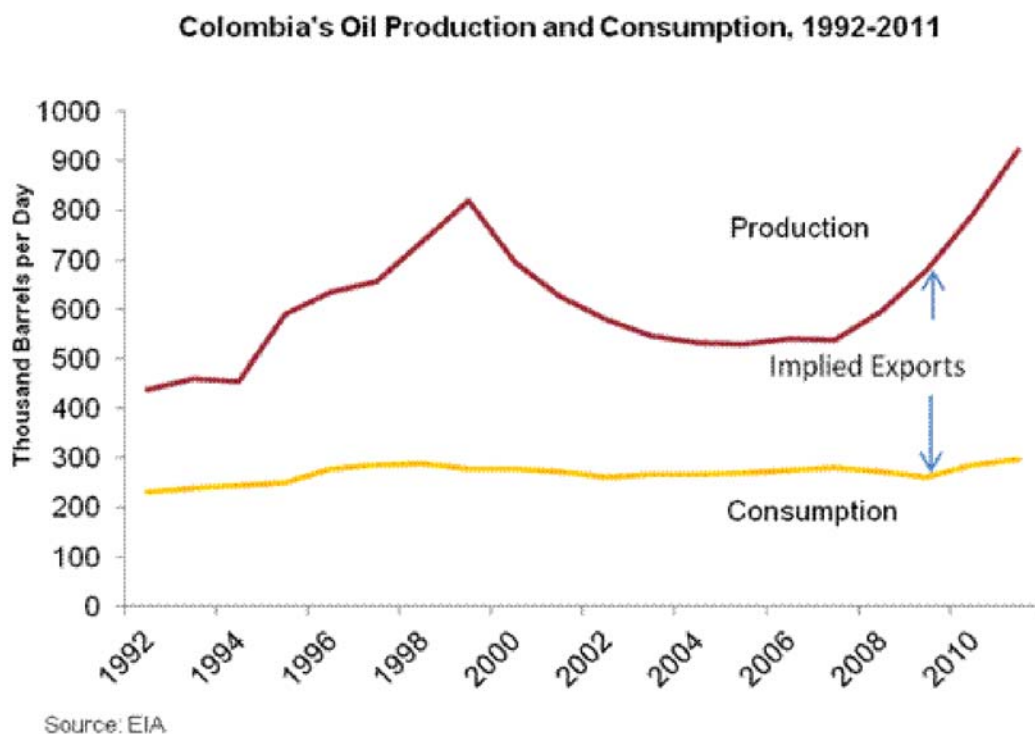
Colombia produced 923,000 barrels per day (bbl/d) of oil in 2011, up 35 percent from the 595,000 bbl/d produced in 2008. This rising production trend is continuing. Most recently, the Ministry of Mines and Energy reported that Colombian production reached 951,000 barrels per day in March 2012, and that production is expected to reach 1 million bbl/d by the end of 2012 and 1.5 bbl/d by 2020. Colombia consumed 298,000 bbl/d in 2011, allowing the country to export most its oil production.

Prior to 2008, Colombia's oil production had been largely flat for many years, following a period of steady decline that started in 1999, when Colombia's oil production peaked at 830,000 bbl/d. The principle cause of the fall in oil production was natural declines at existing oil fields and a lack of sizable new reserve discoveries. However, a combination of changes to the regulatory framework and an improved security situation has contributed to increasing investment in the country by international oil companies. Pipelines and other energy infrastructure are still the targets of attacks by anti-government guerrillas, but the number and severity of these attacks is lower than in the past. According to the Colombian government, there were about 31 attacks against pipelines in 2010, and 84 attacks in 2011, a significant increase, but it did not affect export levels. This is compared with hundreds of such incidents that occurred per year in the early 2000s.

As a result of these improvements, Colombia reversed the decline in its oil production in 2008 and is now experiencing rapid growth. EIA forecasts that Colombia's oil production will increase in the next two years: in the May 2012 edition of the [Short Term Energy Outlook](#), EIA projected that Colombian oil production will rise to 970,000 bbl/d in 2012 and will exceed one million bbl/d in 2013.

The largest producing oil field in the country is the Rubiales heavy oil field, located in Meta department, and operated by partners Pacific Rubiales and Ecopetrol. Low levels of production began at Rubiales in the late 1980s, but increasing investment and the completion of a new

pipeline have allowed production rates to rise in recent years. Gross production at Rubiales exceeded 124,000 bbl/d in 2010, up from 37,000 bbl/d in 2008. Other large oil fields include Cano Limon, Castilla, and Cupiagua. Cano Limon is operated by Occidental, which discovered the field in 1983. The Cusiana/Cupaigua complex has recently experienced a comeback to over 100,000 bbl/d of production after years of steep declines to less than 50,000 bbl/d.



Oil Exports

The United States is the top destination for Colombia's oil exports. In 2011, Colombia exported 422,000 bbl/d of crude oil and refined products to the United States. In 2010, the U.S. was Colombia's top oil export destination, followed by China, and Japan. China has recently expressed interest in financing new infrastructure projects in Colombia to facilitate the transport of oil to the Pacific coast for export. In May 2012, it was reported that preliminary agreements were signed for China Development Bank to finance a 600,000 bbl/d pipeline to transport Colombian and Venezuelan oil to the south Colombian Pacific coast.

Pipelines

Colombia has six major oil pipelines, four of which connect production fields to the Caribbean export terminal at Covenas. These include the 500-mile Ocesa pipeline, which has the capacity to transport 650,000 bbl/d from the Cusiana/Cupiagua area; the 460-mile, 220,000 bbl/d-capacity Cano Limon pipeline; and the smaller Alto Magdalena and Colombia Oil pipelines. The Llanos Orientales pipeline came online in late 2009, linking the Rubiales field to the Ocesa pipeline, with 340,000 bbl/d peak capacity. The sixth pipeline, the TransAndino, has a capacity of 190,000 bbl/d and transports crude from Colombia's Orito field in the Putumayo basin to Colombia's Pacific port at Tumaco. In November 2010 Ecopetrol announced that it is partnering with an international consortium to develop the Oleoducto Bicentenario pipeline. This \$4.2 billion project, currently under construction, will have a peak capacity of 450,000 bbl/d and is scheduled for completion of its first phase in December 2012.

Downstream

According to *OGJ*, Colombia had 290,850 bbl/d of crude oil refining capacity in 2012 at five refineries, all owned by Ecopetrol. The 205,000 bbl/d Barrancabermeja-Santander facility and the 80,000 bbl/d Cartagena refinery process most of the country's capacity. Ecopetrol assumed complete ownership of the Cartagena plant after purchasing the stake formerly held by

Glencore.

Although Colombia is a net oil exporter, it must import some refined products, especially diesel fuel, as domestic demand outstrips refining capacity. As a result, Ecopetrol has begun efforts to expand refining capacity in the country. The \$3.8-billion expansion of the Cartagena refinery opened in April 2012 at capacity of 220,000 bbl/d. Ecopetrol is also embarking on an expansion plan at the Barrancabermeja plant, which will increase its capacity to 300,000 bbl/d and improve the refinery's ability to process heavier crude oils. Currently under construction, the expansion is expected to go online in 2016.

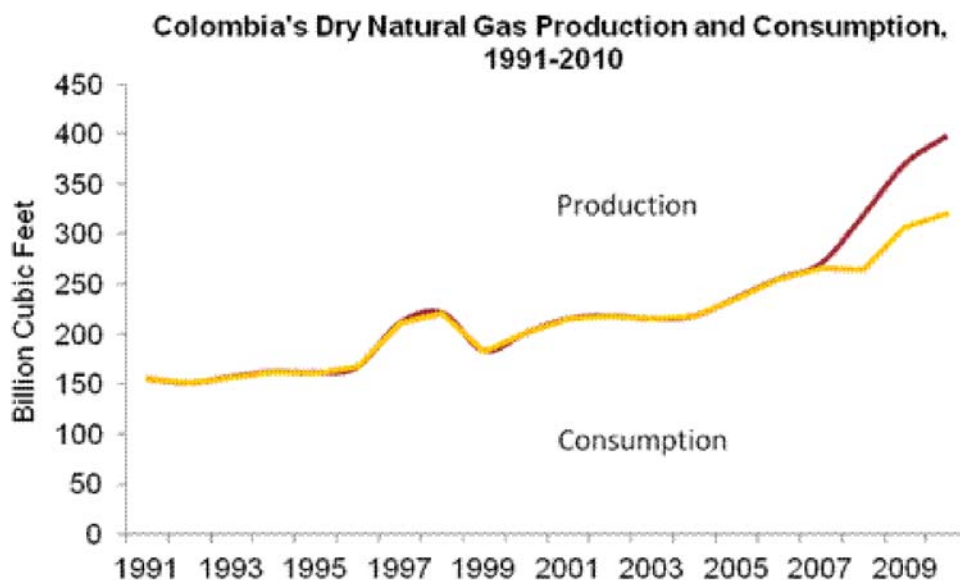
Natural Gas

Overview

According to the *Oil and Gas Journal*, Colombia had proven natural gas reserves of 4.7 trillion cubic feet (Tcf) in 2012, up from 4 Tcf in 2011. The bulk of Colombia's natural gas reserves are located in the Llanos basin, although the Guajira basin accounts for the majority of current production. Natural gas production, like oil production, has been rising substantially in the last few years owing to increasing international investment in exploration and development, rising domestic consumption, and new export opportunities.

Exploration and Production

Colombia produced 398 billion cubic feet (Bcf) of dry natural gas in 2010, while consuming 321 Bcf. About 57 percent of the country's total gross natural gas production of 1,124 Bcf was reinjected to aid in enhanced oil recovery. In 2007, natural gas production began to exceed consumption, allowing for exports.



Source: EIA

Chevron is the largest natural gas producer in the country, producing on average 642 Mcf gross natural gas daily and supplying about 65 percent of the country's needs. In partnership with Ecopetrol, the company operates the offshore-Caribbean Chuchupa field in the Guajira basin, the largest non-associated natural gas field in the country. The company also operates the nearby onshore Ballena and Riohacha fields. The two biggest natural gas fields in the country, the Cupiaga and Cusiana fields in the Llanos basin, in central Colombia, were acquired from BP by Ecopetrol and Talisman Energy in 2010. Almost all of the gas produced from these fields is re-injected.

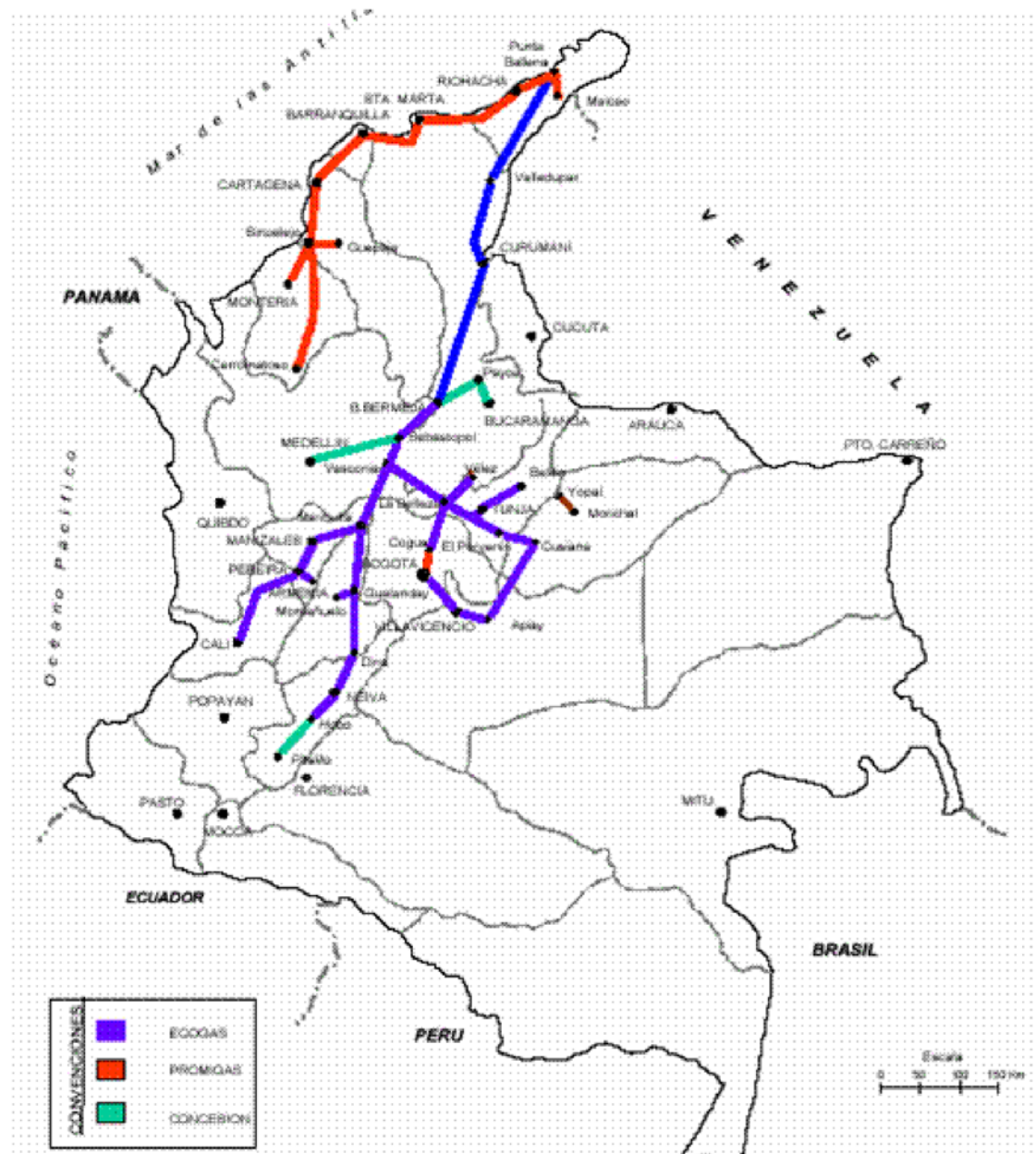
The Colombian government published a decree in March 2011 outlining a plan to increase domestic natural gas production, including production from unconventional gas fields. Policies

Colombia is self-sufficient in natural gas and recently began exporting to neighboring Venezuela.

aimed at increasing domestic natural gas consumption and exports, combined with increased demand from the power sector due to weather-related hydroelectricity shortages, have made expanding natural gas production a priority for the government.

Pipelines

There are some 2,000 miles of natural gas pipelines in Colombia. Empresa Colombiana de Gas (Ecogás) operates most of Colombia's natural gas pipeline network. The three main lines include the Ballena-Barrancabermeja, linking Chevron's Ballena field on the northeast coast to Barrancabermeja in central Colombia; the Barrancabermeja-Nevia-Bogota line, which integrates the Colombian capital into the transmission network, and the Mariquita-Cali line through the western Andean foothills.



Export Pipeline

In early 2008, the Trans-Caribbean Gas Pipeline, also known as the Antonio Ricaurte pipeline, came online, linking the Ballena field in northeastern Colombia with western Venezuela. Venezuela's PDVSA spent \$467 million to finance the pipeline. In November 2011, the presidents of both countries signed an agreement to extend the Ricaurte pipeline across Colombia to Panama and Ecuador. While initial contracted volumes for export from Colombia ranged from 80-150 million cubic feet per day (MMcf/d), actual exports to Venezuela have often exceeded these levels due to rising demand in Venezuela for natural gas for power generation

and re-injection. In December 2011, Chevron and Ecopetrol's export agreement with Veneuela's PDVSA was extended at a level of 150 MMcf/d.

Coal Bed Methane

Coal bed methane (CBM) is a gaseous hydrocarbon that occurs along with coal reserves. This unconventional source of natural gas is transported and used in the same way as conventional natural gas. Drummond has stated that its Colombian mines could contain up to 2.2 Tcf of CBM, and the company has signed contracts with Ecopetrol to extract CBM from both the La Loma and El Descanso mines. CBM has the potential to dramatically increase Colombia's proven natural gas reserves, facilitate greater domestic production, and potentially allow additional exports to neighboring countries.

Coal

Colombia was the fourth largest coal exporter in the world in 2010.

According to the Latin American Energy Organization, Colombia had 5,643 million short tons (MMst) of recoverable (mostly bituminous) coal reserves in 2010, the largest in South America. These deposits are concentrated in the Guajira peninsula bordering the Caribbean and in the Andean foothills. The majority of Colombia's coal production and export infrastructure is located on the Caribbean coast. Colombia's coal is relatively clean-burning, with a sulfur content of less than 1 percent. The country exports most of its production – in 2009 it was the fourth-largest coal exporter in the world after Australia, Indonesia, and Russia.

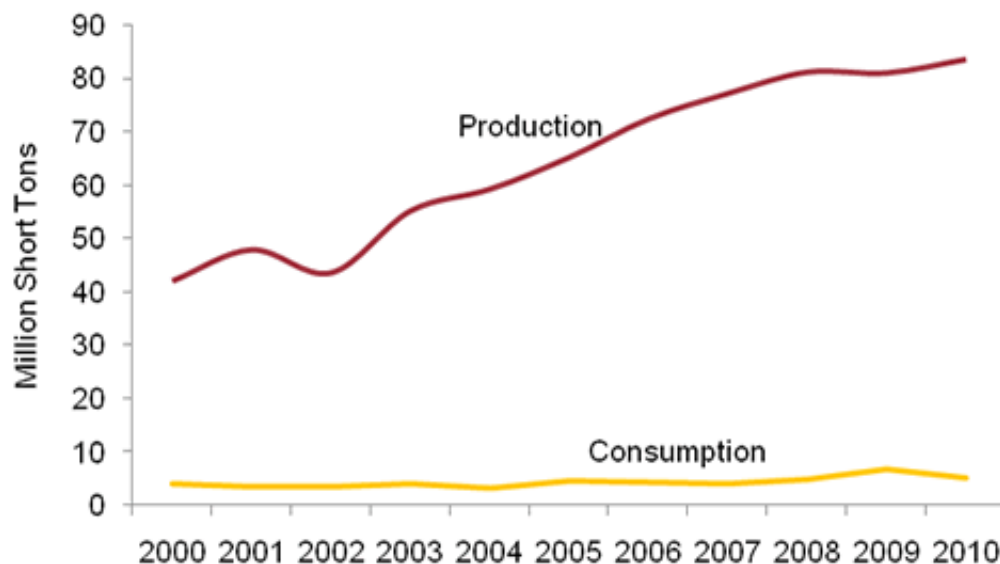
Production

Colombia produced 82 million short tons (MMst) of coal in 2010, while only consuming 5.6 MMst. According to the Ministry of Mines, the country's coal production rose to 94.6 MMst in 2011. Colombian coal production is exclusively carried out by private companies and has doubled since 2000. The country's 2010 production set a record for national production, and the government aspires to double it by 2019.

The largest coal producer in Colombia is the Carbones del Cerrejon consortium, composed of Anglo-American, BHP Billiton, and Xstrata. The consortium operates the Cerrejon Zona Norte (CZN) project, the largest coal mine in Latin America and the largest open-pit coal mine in the world. CZN is an integrated system of mine, railroad, and a Caribbean coast export terminal, and accounted for 38 percent of Colombia's production in 2011, or about 31 MMst.

US-based Drummond Company operates the second-largest coal mining operation in Colombia, La Loma, which is also an integrated mine-railway-port project, producing about 27 MMst in 2011, or 33 percent. In June 2011, Drummond entered into an 80-20 percent partnership with Japan's Itochu Corp., known as Drummond International, which now owns and operates its Colombia interests. Itochu's initial investment of \$1.5 billion will enable expansion of the project with the construction of a new export facility and the increase of export capacity to 40-45 MMst per year. The partnership is aiming to increase coal exports to Japan and other Asian countries.

Colombia's Coal Production and Consumption, 2000-2010

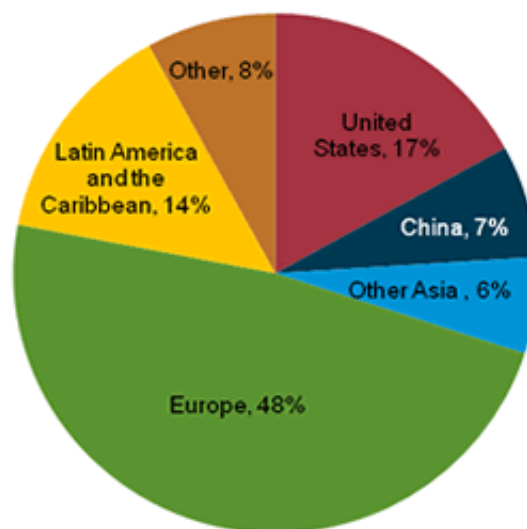


Source: U.S. Energy Information Administration

Exports

Colombia exported 76.4 MMst in 2010, mainly to Europe, other South American countries, and the United States. Coal exports are an important part of the Colombian economy. Coal is the country's second-largest export after oil and represented 15 percent of export earnings in 2010. The United States and Colombia have a major trading relationship in this sector and in 2010 Colombian coal represented 75 percent of U.S. coal imports, or 14.6 MMst. In 2011, the United States imported 9.5 MMst, or 73 percent, as U.S. coal imports declined.

Colombia's Coal Exports by Destination, 2010



Source: U.S. Energy Information Administration

Colombia recently began exporting sizable quantities of coal to Asian markets, especially China. According to Global Trade Information Services, Asia's share of Colombian coal exports grew from less than one percent in 2009 to 12.7 percent in 2010. A combination of higher prices in Asia, lower freight costs, and falling exports to the United States spurred this

expansion into Asian markets. In May 2012, talks were held in Beijing between the presidents of China and Colombia regarding China's interest in investing in Colombia's coal sector and the construction of a railroad to the Pacific coast to facilitate exports to Asia. Both the expansion of the Panama Canal (currently slated for completion by 2015) and Chinese-backed transportation infrastructure projects could generate greater exports of Colombian coal to Asia in the future.

Sources

BP
Chevron
Colombia Ministry of Mines and Energy
Colombia Reports
CIA World Factbook
Dow Jones
Drummond Co.
EcoPetrol
Global Refining and Fuels Report
Occidental
Oil and Gas Journal
OpenOil
Platts
Repsol
Reuters
Oil and Gas Journal
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