# Colombia's Energy Renaissance

A Working Paper of the Americas Society/Council of the Americas Energy Action Group

# Colombia's Energy Renaissance

**A Working Paper of the Americas Society/Council of the Americas Energy Action Group**

Americas Society / Council of the Americas

Written by Lisa Viscidi
Published by Americas Society and Council of the Americas
Washington DC
December 2010

FOREWORD 4

INTRODUCTION 6

OIL AND GAS: A NEW ENERGY FRAMEWORK 6

INVESTMENT DOLLARS FLOW INTO ENERGY 9

SUCCESS BEGETS NEW CHALLENGES 13

ELECTRICITY: STEADY GROWTH 15

PROMOTING CLEAN ENERGY SECURITY 17

RECOMMENDATIONS 20

## FOREWORD

As part of our focus on hemispheric energy issues, the Americas Society and Council of the Americas Energy Action Group hosted a roundtable on energy in Bogotá, Colombia, on June 17, 2010. The meeting brought together leading public and private sector representatives for a conversation on key energy issues in Colombia, including the oil and gas regulatory framework, electricity sector, political climate, and environmental challenges. This paper explores the topics discussed at the roundtable and makes recommendations drawn in part from that session.

The ideas elaborated here tell an important story with lessons not just for Colombia but for the entire hemisphere. While not perfect, in many ways Colombia could be considered a model for energy management in the region. Under President Álvaro Uribe, Colombia implemented economic reforms that led to increased growth and attracted foreign investors. An overall improvement in Colombia's security situation during Uribe's presidency also restored investor confidence. Changes to the investment framework for oil and gas have resulted in greater investment in a sector that was on the decline just a decade ago and now boasts growing reserves and production. In the electricity sector, a mix of public and private companies is effectively meeting demand.

Challenges remain, of course. Infrastructure development has not kept pace with investments and is constraining oil and gas production, for example, and environmental and social issues have accompanied the expansion of drilling into new areas. Still, Colombia's energy sector—and Colombia itself—has come a long way over the past decade. The task for new President Juan Manuel Santos is to maintain these achievements while continuing to improve the security situation, promote infrastructure development, and effectively balance the environmental and social challenges that come with development. These are no small undertakings, but they are essential if Colombia is going to build on its success. The Santos Administration has given every indication that it is up to the job.

This paper is the third Energy Action Group working paper and part of a series that includes *Energy and Climate Change in Brazil* and *Energy in Peru: Opportunities and Challenges*. I would like to thank Lisa Viscidi, the New York Bureau Chief for Energy Intelligence Group and the author of this paper. I would also like to thank Nicole Spencer, who leads the work of the Energy Action Group. Special thanks, as well, to the Energy Action Group sponsors, whose support made both the round-table and the publication of this paper possible.

**Eric Farnsworth**
**Vice President**
**Americas Society and Council of the Americas**
**Washington DC**

## INTRODUCTION

Colombia has revived its once flailing energy sector over the course of the last decade, developing into one of Latin America's foremost destinations for investment in the oil and gas sector and securing a steady supply of electricity for its growing population. This transformation was aided by the country's political, economic, and legal stability as well as an effective balance of the roles of private firms and public institutions. Colombia's energy renaissance can provide lessons for other Latin American countries, many of which face the same problems of stagnant investment and declining output that once plagued the Andean nation. As energy output increases, the country can make an increasingly important contribution to meeting the region's growing demand for oil, gas, and electricity.

**Colombia has revived its once flailing energy sector over the course of the last decade, developing into one of Latin America's foremost destinations for investment in the oil and gas sector and securing a steady supply of electricity for its growing population.**

However, the rapid expansion of the energy sector also brings challenges, such as infrastructure bottlenecks, social tensions, and environmental threats, all of which must be addressed by the government in conjunction with the private sector. This paper explores Colombia's path in developing its energy industry—both oil and gas and power generation—many aspects of which could serve as a model for other countries in the hemisphere. The paper also discusses the obstacles hindering further development and offers recommendations for Colombia that should also be considered for the hemisphere at large.

## OIL AND GAS: A NEW ENERGY FRAMEWORK

Colombia was a significant oil exporter in the 1990s and attracted investment from major oil companies like Exxon Mobil, BP, and Occidental Petroleum. However, at the end of the decade production started to decline due to a lack of major new discoveries, and output fell from a peak of over 800,000 barrels per day (b/d) in

1999 to nearly 550,000 b/d in 2004.[1] In addition to the geological setbacks, a deteriorating security climate made carrying out everyday operations more costly and dangerous. Exploration and production activity, often concentrated in remote areas where the state had a limited presence, was marred by pipeline bombings, extortion, and kidnappings.

At the height of this difficult time, President Álvaro Uribe came to office in 2002, pledging to take a tough stance against illegal armed groups and revive economic activity, in large part by encouraging foreign investment. During his two terms in office, Uribe managed to seriously weaken armed guerrillas, driving them out of urban areas, and regain state control over most territory, while dismantling the paramilitary structure through a large-scale demobilization program. His efforts led to an impressive decline in the number of murders, kidnappings, and attacks on infrastructure, thus dramatically improving security and stability for the people of Colombia.

On the economic front, Uribe stimulated the growth of domestic and foreign businesses through tax incentives and put investors at ease by emphasizing regulatory stability. International trade mushroomed, as the government signed a host of free trade agreements with countries such as Chile and Canada, among others.

In the oil and gas sector, the government sought to revive investment by restructuring the regulatory framework and revising the fiscal take to reflect Colombia's less competitive geology. Royalties were cut from a flat 20 percent to a sliding scale of 8 to 25 percent, depending on production levels. Overall, the state's share of revenue through royalties and taxes was reduced to 50 to 55 percent from a previous 70 percent.

As part of Uribe's decision to overhaul the regulatory model with an eye to attracting private investment, the National Hydrocarbons Agency (Agencia Nacional de Hidrocarburos-ANH), an independent oil and gas regulator, was created in 2003. The ANH auctions exploration licenses to interested oil companies and gathers

[1] Energy Intelligence Group, "Colombia Looks Offshore to Pump More," *Petroleum Intelligence Weekly*, April 18, 2005.

seismic data, which it sells to companies participating in the bid rounds. The ANH has driven the push to expand the territory under concession in a bid to encourage exploration in untapped regions, such as the eastern Llanos Basin and offshore Caribbean, and increase production from traditional areas. Meanwhile, state oil company Ecopetrol, formerly also the state oil regulator, was made to compete with private companies and began floating shares on the Colombian stock exchange in November 2007. While in the past Ecopetrol had a stake in all upstream projects, under the new contract terms introduced in 2003, private partners can have 100 percent ownership of fields with less than 60 million barrels of reserves.

This model—which was based on a similar move in Brazil to partly privatize its state oil company, Petrobras—helped to improve transparency and competition in the bidding process. As an independent oil and gas regulator, the ANH sets standards and rules for licensing rounds that apply equally to both state and private companies, while also providing geological information to all participating companies. This levels the playing field among bidders. The new, more competitive model also helped transform Ecopetrol into a more efficient and profit-driven company.

The new framework, with revised fiscal terms, an independent regulator, and a semi-private state oil company, was a resounding success. The number of exploration contracts awarded doubled between 2004 and 2009, and in 2010, 95 blocks—a 50 percent increase over the previous year—were licensed in the "Open Bid Round," which was dominated by Ecopetrol and small, Colombia-focused independents, such as Pacific Rubiales, Gran Tierra, and Petrominerales.[2] These smaller companies have been drawn by the country's attractive regulatory framework—despite the lack of large oil discoveries—and have managed to increase Colombia's total oil production by tapping many small fields. Several major international oil companies are also still operating in Colombia, but their portion of total production is shrinking. The

**Smaller companies have been drawn by the country's attractive regulatory framework and have managed to increase Colombia's total oil production by tapping many small fields.**

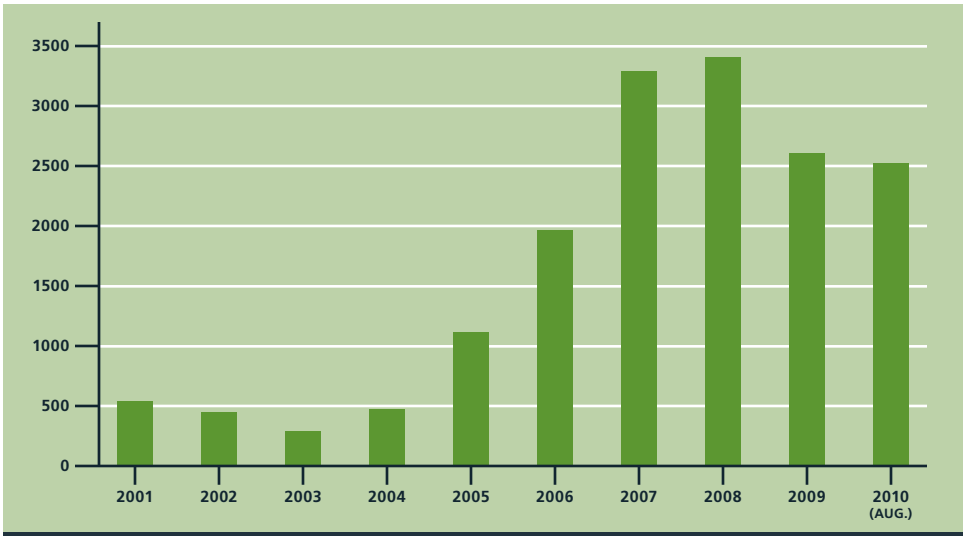
[2] Agencia Nacional de Hidrocarburos, "Cifras y Estadísticas a 2010," http://anh.gov.co/es/index.php?id=8; Energy Intelligence Group, "Santos Aims to Sustain Growth in Colombia," *Petroleum Intelligence Weekly*, June 28, 2010.

mostly small fields that have been discovered in Colombia in recent years often do not offer the scale of production and reserves that attracts large international oil companies. Nevertheless, by offering attractive fiscal and regulatory terms, the government has succeeded in raising total output by drawing in small companies, which are raising production incrementally, while targeting major companies for areas that promise larger volumes, such as the offshore Caribbean and eastern Llanos region near the Venezuelan border.

**Colombia's stable and effective regulatory framework has paved the way for a substantial increase in investment.**

## INVESTMENT DOLLARS FLOW INTO ENERGY

Colombia's stable and effective regulatory framework has paved the way for a substantial increase in investment, from both domestic and international sources, aided by the country's relatively advanced market structure. Some 150 oil companies are now operating in the country, and investment in the sector is expected to climb to around $4 billion in 2010 from around $400 million per year at the start of Uribe's presidency in 2002.[3]




**Foreign Investment in the Oil and Gas Sector (Million USD)**

Source: Bank of the Republic of Colombia (Banco de la República de Colombia)

[3] Armando Zamora (Director General, National Hydrocarbons Agency), interview with author, February 27, 2010.

International investors, such as hedge funds, banks, sovereign wealth funds, and pension funds, are also investing in the oil and gas and power sectors. In addition, Inter-American Development Bank, International Financial Corporation of the World Bank, and Andean Development Corporation (Corporación Andina de Fomento) have all played a role in infrastructure finance.

Domestic capital is also increasingly flowing into the energy sector. Despite Colombia's relatively small local stock market, the number of energy companies that list shares in Colombia is growing and now includes local firms Pacific Rubiales and Canacol, which both listed first on the Toronto Stock Exchange. Colombian regulators are in the process of integrating the country's stock exchange with those of Peru and Chile, which would increase investment in those markets and stimulate trading among the countries. Colombian energy companies are also utilizing the domestic fixed income market. Last year, oil pipeline operator Oleoducto de Los Llanos Orientales, a special purpose vehicle owned 65 percent by Ecopetrol and 35 percent by Pacific Rubiales, sold $260 million in local bonds to finance construction of its Rubiales oil pipeline.[4]

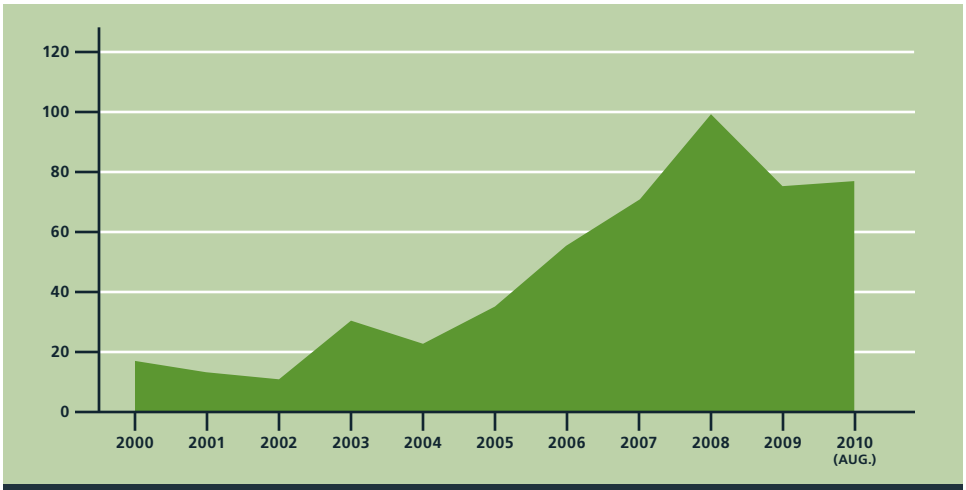
**Despite Colombia's relatively small local stock market, the number of energy companies that list shares in Colombia is growing and now includes local firms Pacific Rubiales and Canacol, which both listed first on the Toronto Stock Exchange.**

Domestic pension funds represent some of the largest investors in Colombia's oil and gas sector. Pension funds hold about $40 billion of capital for investment and are growing at around 15 percent annually. Such funds, for example, hold equity in Ecopetrol and Pacific Rubiales and have stakes in large infrastructure investment funds.

Local and international investors are also joining forces to finance large investment projects. Brookfield Asset Management has committed $400 million to fund infrastructure investments in Colombia, and Ashmore has teamed up with Colombian investment bank Inverlink to manage a $500 million equity fund that will invest in energy, transportation, and telecommunications.[5]

[4] Pacific Rubiales Energy Corporation, "Pacific Rubiales Announces ODL's Successful Issuance of COP500 Billion (US$260 Million) in Inflation-Linked Bonds on the Local Market," news release, October 2, 2009.

[5] Brookfield Asset Management, "Brookfield Announces US$400 Million Colombia Infrastructure Fund," news release, September 9, 2009; International Finance Corporation, "Colombia Infrastructure Fund Ashmore I FCP, Summary of Proposed Investment," http://www.ifc.org/ifcext/spiwebsite1.nsf/1ca07340e47a35cd85256efb00700cee/AF741F8CC635B058852576BA000E32F0.

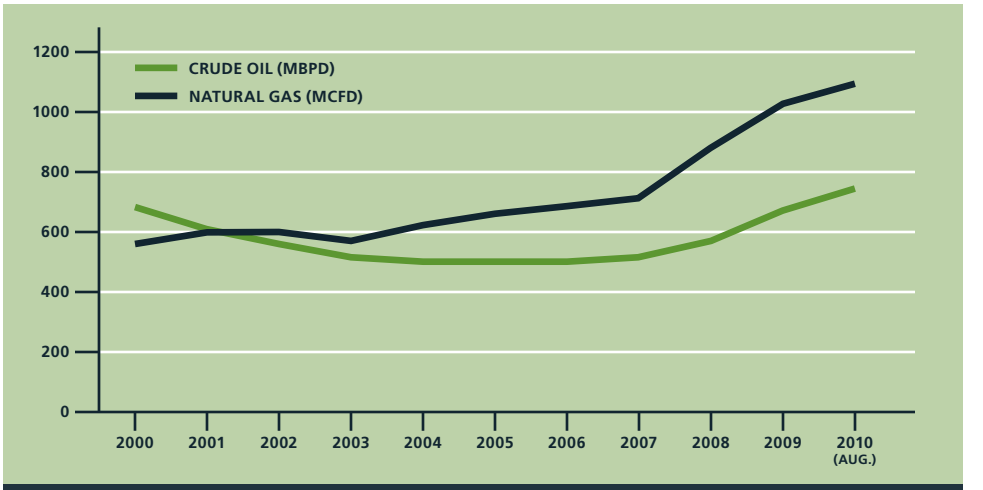



**Number of Wells Drilled Annually**

Source: National Hydrocarbons Agency (Colombia)

Such favorable investment conditions have allowed Colombia to expand production and boost exports of oil and gas. Oil output has soared to an average of nearly 700,000 b/d in the first half of 2010 and is expected to reach 1 million b/d by 2015, according to government estimates. Gas production reached nearly 1.1 billion cubic feet per day in 2010, up from about 600 million cubic feet per day during the first half of the decade. Drilling activity has also picked up; the number of exploration wells drilled rose from less than 20 in 2002 to 99 in 2008 before dipping to 75 a year later.[6] Drilling was expected to accelerate again in 2010.

[6] ANH, "Cifras y Estadísticas a 2010"; Energy Intelligence Group, "Colombia Optimistic Ahead of Upstream Bid Round," *Oil Daily*, March 1, 2010.




**Average Annual Production of Crude Oil and Natural Gas**

Source: National Hydrocarbons Agency (Colombia)

Rising output, coupled with relatively flat domestic demand, has allowed Colombia to boost exports of energy resources, most of which are exported to markets within the Western Hemisphere. Oil exports, destined mainly for the United States, should rise to 700,000 b/d by 2015 from some 500,000 b/d currently, according to government estimates.[7] Since January 2008, Ecopetrol has also been exporting up to 300 million cubic meters per day of gas to Venezuela through a transnational pipeline, despite political tensions between the two countries.[8]

**Rising output, coupled with relatively flat domestic demand, has allowed Colombia to boost exports of energy resources, most of which are exported to markets within the Western Hemisphere.**

7 Energy Intelligence Group, "Colombia Optimistic Ahead of Upstream Bid Round."
8 US Energy Information Administration, "Colombia," *Country Analysis Briefs*, updated March 2010, http://www.eia.doe.gov/cabs/Colombia/NaturalGas.html.

## SUCCESS BEGETS NEW CHALLENGES

The oil boom has also generated a number of challenges that Colombia must face as it seeks to augment supply to meet domestic demand while ramping up exports. Early signs of so-called Dutch Disease have appeared; the sharp inflow of foreign currency into the oil and mining sectors has contributed to the appreciation of the Colombian peso, hurting exports of non-oil products. The government is exploring ways to stem the peso's appreciation, for example, through the creation of a sovereign wealth fund. Deficient infrastructure is also among the main barriers to expanding oil output, and pipeline construction has lagged behind the rise in production from new areas of the country. Incremental production centers on small fields in the Llanos Basin, where production is insufficient to warrant a pipeline, as well as heavy oil fields in the remote eastern Llanos Basin, which require special pipelines. Lacking pipelines, oil companies must transport oil in trucks or forego production. The National Planning Department (Departamento Nacional de Planeación) estimates that around 30,000 b/d is not produced because of the lack of transport.[9]

**The expansion of acreage available for oil exploration has extended drilling activity into more remote areas that are often populated by indigenous or other communities or located in environmentally sensitive areas.**

The expansion of acreage available for oil exploration has also extended drilling activity into more remote areas that are often populated by indigenous or other communities or located in environmentally sensitive areas. Colombia's most recent upstream bid round, launched in February 2010, offered licenses for exploratory blocks covering 130,000 acres, including in the Putumayo Basin in southwestern Colombia near Ecuador, and in the northeastern provinces of Norte de Santander and Boyaca on the Venezuelan border, home to large indigenous populations.

Local communities often oppose energy projects on their lands for a variety of reasons, including spiritual beliefs about protecting natural resources or concerns that oil-related activity will attract criminal or violent groups to their territory.

[9] National Planning Department of Colombia, interview with author, June 17, 2010.

Indigenous peoples, such as the U'wa, who oppose Ecopetrol's plans to develop the Gibraltar natural gas field near their reserve in the province of Norte de Santander, say that they cannot stand up to oil companies without government protection. Unlike in Peru, where indigenous groups staged large-scale protests that led to a review of government energy policy, most of Colombia's indigenous groups are too isolated for similar efforts to be effective. The government requires companies to consult with local communities that will be affected by oil and gas projects. However, the process for consultations remains somewhat unclear and often divides people within the local communities.

Colombia also faces important environmental concerns as oil companies increasingly expand drilling activity in ecologically sensitive areas. Oil operations are moving into largely uninhabited forests once off limits because of the presence of armed rebel groups. The Uribe government established stricter environmental regulations while also simplifying the once-cumbersome process for attaining environmental licenses. However, oil company executives continue to note inefficiency in the environmental licensing process, high costs for compliance, and regulations blocking access to key reserves.

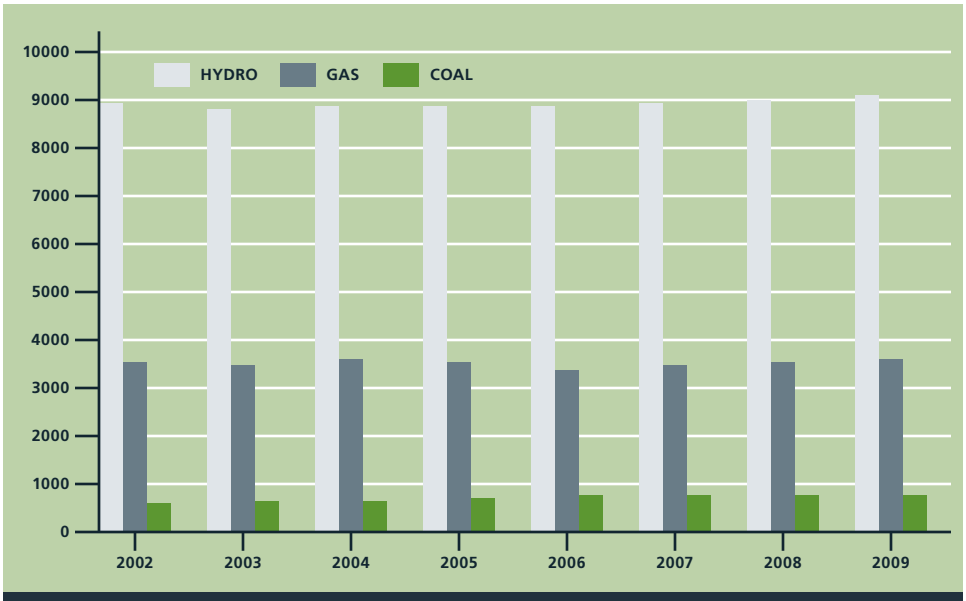
The expansion of Colombia's exploration program into offshore areas has also aggravated an international territorial dispute. The government of Nicaragua contends that two exploration blocks in the Caribbean awarded in 2010 to Ecopetrol overlap with territory it is claiming in a maritime dispute brought before the International Criminal Court in The Hague. Nicaragua hopes to offer those blocks as part of its own incipient oil exploration program but appears unlikely to win the dispute.

**Similar to the oil and gas sector, Colombia's electricity sector has benefited from political and economic stability as well as market-oriented reforms.**

## ELECTRICITY: STEADY GROWTH

Similar to the oil and gas sector, Colombia's electricity sector has benefited from political and economic stability as well as market-oriented reforms. The industry was deregulated in the mid-1990s amid a wave of privatization that swept across the energy sectors of many South American countries, including Bolivia and Ecuador. The state monopoly over power generation, transmission, and distribution was broken, and in 1993 the Regulatory Commission for Energy and Gas (Comisión de Regulación de Energía y Gas), which oversees both public and private energy firms and defines tariff structures, was established. This transformation took place shortly after a devastating nationwide blackout in 1991, which was triggered by a drought related to the El Niño weather phenomenon, exposed weaknesses in the power grid.

**Colombia's regulatory framework for the power sector combines market-led growth with government planning and oversight.**




Installed Capacity - Electricity (MW)

Source: Unit for Mining and Energy Planning, Ministry of Mines and Energy of Colombia

Today, Colombia has a mix of partly state-controlled companies operating alongside private firms. Power generation and distribution are provided by several public and private utilities. Two of the country's largest energy companies are state controlled but also list shares, similar to Ecopetrol. A partially privatized company, state-controlled transmission line operator ISA went public in 2000, listing shares on the Colombian stock exchange. ISAGEN, Colombia's state power generation company, also floats shares on the Colombian stock exchange. ISAGEN owns and operates five power plants with total installed capacity of 2,132 megawatts (MW), or 16 percent of the national grid's total capacity.[10] The Uribe government was considering a further privatization of the company and proposed selling its 57.66 percent stake for an estimated $1.5 billion in order to finance the state deficit. Uribe later delayed the decision, leaving it for the administration of the new president, Juan Manuel Santos. Several major international energy firms, including US-based AES and Spain's Endesa, also have operations in Colombia.

Colombia's regulatory framework for the power sector combines market-led growth with government planning and oversight. The state continues to play a role in energy planning to ensure electricity supply for the growing population; through the Unit for Mining and Energy Planning (Unidad de Planeación Minero Energética) of the Ministry of Mines and Energy (Ministerio de Minas y Energía), the state compiles long-term energy supply and demand projections and crafts the National Energy Plan. But the electricity framework is largely market driven, and providers can either build new power plants independently or compete in government-run spot market auctions to provide the cheapest fuel source. Distributors can buy power from generators on the spot market or through long-term contracts.

**Favorable investment conditions have helped electricity generation keep up with demand and avoid any major blackouts since 1991.**

Colombia's electricity market is becoming more sophisticated. In 2010, the first energy exchange was launched. The stock exchange Bolsa de Valores de Colombia formed a joint venture with Compañía de Expertos en Mercados, a subsidiary of

[10] ISAGEN, "Producción de Energía," http://www.isagen.com.co/metaInst.jsp?rsc=infoIn_produccionEnergia&tituloPag=ISAGEN,%20Producci%F3n%20de%20energ%EDa&idNodo=17.

ISA that operates and administers the electricity market, to build a commodities derivative market listing electricity futures.

Favorable investment conditions have helped electricity generation keep up with demand and avoid any major blackouts since 1991. Electricity generation has risen from 47,000 gigawatt hours (GWh) in 2003 to 56,000 GWh in 2009. The energy ministry expects power demand to grow by an average of 3.7 percent annually between 2010 and 2020, while total installed power generation capacity is to expand to 17,800 MW by 2017, up from 13,456 MW today.[11] In addition, Colombia exported 1,077 GWh of electricity to Ecuador last year and is spearheading a plan to link electrical transmission lines to export 300 MW to Panama, bringing power to the Central American grid.[12]

## PROMOTING CLEAN ENERGY SECURITY

Despite such achievements, certain bottlenecks threaten the security of future supply. Infrastructure is one concern; electricity transmission lines still do not reach some geographically isolated areas of the country. The interconnected grid supplies power for about 96 percent of the population, leaving some 1.8 million people with only patchy access to electricity.[13] Even in the national grid, Colombia faces supply concerns due to fluctuations in hydroelectric power generation, which varies substantially between the rainy and dry seasons, requiring the use of back-up fuels, such as coal or natural gas.

Following the 1991 blackout, the government sought to expand the use of natural gas for power generation in order to diversify the country's energy matrix, but growth has been hampered by a vicious cycle of market uncertainty, lack of infrastructure, and a dearth of new gas discoveries. Hydroelectricity,

**Electricity transmission lines still do not reach some geographically isolated areas of the country. The interconnected grid supplies power for about 96 percent of the population, leaving some 1.8 million people with only patchy access to electricity.**

[11] Unidad de Planeación Minero Energética, Ministerio de Minas y Energía de Colombia, "Proyección de Demanda de Energía Eléctrica y Potencia Máxima," revised March 2010, 4; Moody's Investors Service, "Credit Opinion: AES Chivor & Cia. S.C.A. E.S.P.," August 3, 2009.

[12] Andrés Taboada (Director of Energy, Ministry of Mines and Energy of Colombia), interview with author, June 15, 2010.

[13] Astrid Martínez (former Chief Executive, Empresa de Energía de Bogotá), interview with author, June 16, 2010.

because of its low cost, is the favored fuel when available. This preference leaves gas distributors with a volatile market, which in turn discourages investment in gas exploration and production. Most of the increase in gas production is from one large field—the Chevron-operated Ballena field—and no major commercial discoveries have been made recently despite the government's claims that the offshore Caribbean holds large gas reserves. Proven natural gas reserves edged up to 4.58 trillion cubic feet (Tcf) in 2009 from 4.38 Tcf a year earlier.[14] Companies with small gas fields have found production unprofitable due to unstable markets and low prices. Without a secure domestic market, companies lack incentives to expand the pipeline network. The most recent auction, in 2008, resulted in contracts for seven hydroelectric plants, one coal plant, and only one liquid fuel plant that can also use gas.

Supply concerns could therefore limit capacity to significantly expand thermoelectric generation. In late 2009, gas demand rose as a drought caused by El Niño led to a drop in hydroelectric generation. The government was forced to ration the use of natural gas and replace it with liquid fuels, which emit higher levels of carbon dioxide. The government is considering revising the country's regulatory framework to provide incentives for the development of unconventional gas reserves, such as coal bed methane, shale gas, and tight gas, but extraction methods for unconventional gas are generally more destructive to the environment than those for conventional gas.

Yet, the alternatives to natural gas as back-up fuel are not without their drawbacks. Coal is an abundant domestic resource—Colombia has the second largest coal reserves in Latin America—but burning coal also emits higher levels of carbon dioxide than most other energy sources. Renewable energy sources, including wind, solar, geothermal, and small hydro, are generally very costly and require large government subsidies to be competitive with other energy sources. The government has opted not to subsidize renewable fuels, and Colombia has only one small 20 MW wind farm developed by Empresas Públicas de Medellín.

[14] Julio César Vera (Director of Hydrocarbons, Ministry of Mines and Energy of Colombia), interview with author, May 10, 2010.

Thus far, Colombia has maintained an impressively clean energy matrix even as demand for electricity continues to grow. Both the growth of energy-related emissions and the ratio of energy-related emissions to gross domestic product in Colombia are the lowest in Latin America and the Caribbean—a region with very low energy-derived carbon emissions by global standards, according to a World Bank study.[15] Colombia generates over half of its power supply from hydroelectric energy—67 percent of installed capacity is hydroelectric, and hydroelectric dams contribute up to 85 percent of total electricity output.[16] In addition, the use of ethanol, biodiesel, and natural gas to fuel many vehicles has helped limit emissions in the transport sector.

**Colombia has maintained an impressively clean energy matrix even as demand for electricity continues to grow.**

As a developing country, Colombia is eligible to sell carbon credits under the Clean Development Mechanism (CDM) of the Kyoto Protocol. As part of its plan to develop a national climate change policy—which will include proposals to promote greater participation in the carbon market—the government intends to finance energy efficiency and renewable energy projects, and develop CDM-registered greenhouse-gas reduction projects, including small-scale hydroelectric power plants and wind farms as well as projects to replace coal with biomass and sugarcane residue for power generation.

However, under the current system, the process for obtaining CDM approval is arduous and often constrained by bureaucratic hurdles. Many companies are unaware of their eligibility or do not know how to obtain credits. In addition, investors applying for CDM credits must keep those funds on their books as liabilities until the credits are approved, which can take years. The funding obtained from carbon credits is generally too small to make renewable energy projects profitable without other investment incentives from the government, but it does provide an extra boost for projects that are approved. Partly as a result of the uncertainty, Colombia has only 65 CDM projects, or 7 percent of total CDM projects in Latin America, a region that hosts less than a fifth of total global projects.[17]

[15] Augusto de la Torre, Pablo Fajnzylber, and John Nash, *Low Carbon, High Growth: Latin American Responses to Climate Change* (Washington DC: The International Bank for Reconstruction and Development/The World Bank, 2009), 27.

[16] Taboada, interview.

[17] Capacity Development for the Clean Development Mechanism, "CDM Pipeline Overview," updated August 1, 2010, http://cd4cdm.org/.

## RECOMMENDATIONS

### *Colombia should continue to prioritize a stable regulatory framework*

Colombia should continue to provide regulatory and contractual stability to ensure investor confidence. The government should carefully consider any changes to the current tax and royalty regime as significantly increasing the state take could lead energy companies to rethink their investments. In addition, both the government and the private sector should support the independence of state regulators, and the government should maintain its limited role in energy production and marketing while continuing to enforce regulations for private firms. Stability and respect for independent institutions should be maintained under the new administration. The balance between private and state entities could be adopted by other countries in the Western Hemisphere. Most countries in the region have state oil companies but some lack independent regulators and a strong private sector presence. An effective state oil company like Ecopetrol can help guide energy policy, for example, by leading infrastructure development. Meanwhile, an independent regulator helps level the playing field and encourages private investment to complement state institutions. Colombia's model for this public-private balance in the energy sector should be embraced by others in the hemisphere.

### *Colombia should clarify regulations so it can expand regional energy integration in the electricity and oil and gas sectors*

The process of energy integration has stalled largely due to inconsistencies in the regulatory frameworks between Colombia and its neighbors, as well as political differences. With Ecuador, Colombia must create a stable formula for the price of electricity exports. Similarly, Colombia and Panama must smooth out differences over regulations and environmental issues. For example, if negotiations resume, the Colombia-Panama Free Trade Agreement could include a clause establishing the terms of electricity trade. Colombia would also have to establish a framework for exporting natural gas to Central America and the Caribbean. If bilateral

relations improve further, Colombia could also expand energy integration with Venezuela, for example, by resuming electricity exports through two existing cross-border transmission lines, which are currently dormant. In addition, the two countries could resume suspended talks over a crude oil pipeline that would transport Venezuelan oil to Colombia's Pacific coast for export.

### *The government should encourage investment in oil and gas pipelines and expand the power grid to bring electricity to all communities*

Regulations should clarify third-party access and tariffs for all pipelines, and tariffs should be appropriate to attract investment in building new pipelines. Ecopetrol should take the lead in expanding the pipeline network and building storage capacity for oil and natural gas. The government should also work to ensure access to electricity for all Colombians. Renewable energy projects, such as wind and solar power, are often more practical solutions to providing electricity for geographically isolated regions.

### *The state should protect the environment and local communities without stifling development of the oil and gas sector*

The government should continue to enforce environmental regulations to protect the country's fragile ecosystems. The process for granting environmental licenses has become more efficient in recent years, but some companies still face difficulty navigating the bureaucracy to obtain the necessary permits to work in the country. The permitting process could be further improved with more cooperation between different state institutions, such as the National Hydrocarbons Agency and the Ministries of Energy and Environment. The government should also work to facilitate collaboration between different ministries—such as the Ministries of Environment and Labor—and the private sector. The environment ministry must strike a balance between protecting the environment and promoting oil and gas development, which feeds the economic growth the new Santos Administration

has promised to deliver. Regulations governing oil company consultations with indigenous and other local groups also need to be clarified and enforced. The state should carry out a nationwide geographical survey to evaluate where environmentally and socially sensitive areas overlap with oil exploration contracts and then become more directly involved in defining conditions for negotiations.

### *The government should continue to focus on a long-term strategy for encouraging greater use of cleaner, reliable fuels, such as natural gas, in the energy matrix*

The government should continue to plan a long-term strategy for meeting the country's electricity demand. In addition, Colombia should develop more long-term contracts for power generation and rely less on the spot market. Long-term contracts would guarantee markets at a reliable rate for producers of natural gas and other electricity feedstocks. Given the more limited transportation options for natural gas—compared to more fungible crude oil—and the importance of natural gas in the energy matrix, the government should provide incentives for the production of natural gas, which is currently under the same regulatory regime as oil. The government could also provide price incentives for renewable energy, such as tax breaks or a carbon tax.

### *Colombia should capitalize on its clean energy matrix and take advantage of carbon financing*

Colombia should take advantage of international carbon credits through the Clean Development Mechanism to obtain funding for more carbon-reduction projects. To that end, the government should provide information and advice on how to navigate the complex system for attaining credits, help businesses identify carbon financing opportunities, and provide technical support during the project development and implementation phases. By promoting awareness and access to information about the CDM process, the government could eliminate some of the hurdles

that have prevented more widespread use of carbon credits. Support for carbon financing should be centralized under one government agency to streamline assistance. Colombia has the potential to develop many more projects that may be eligible for carbon credits, such as wind farms, energy efficiency projects, and biomass from palm oil or sugarcane. Its cross-border electricity initiatives may also be eligible for carbon credits.

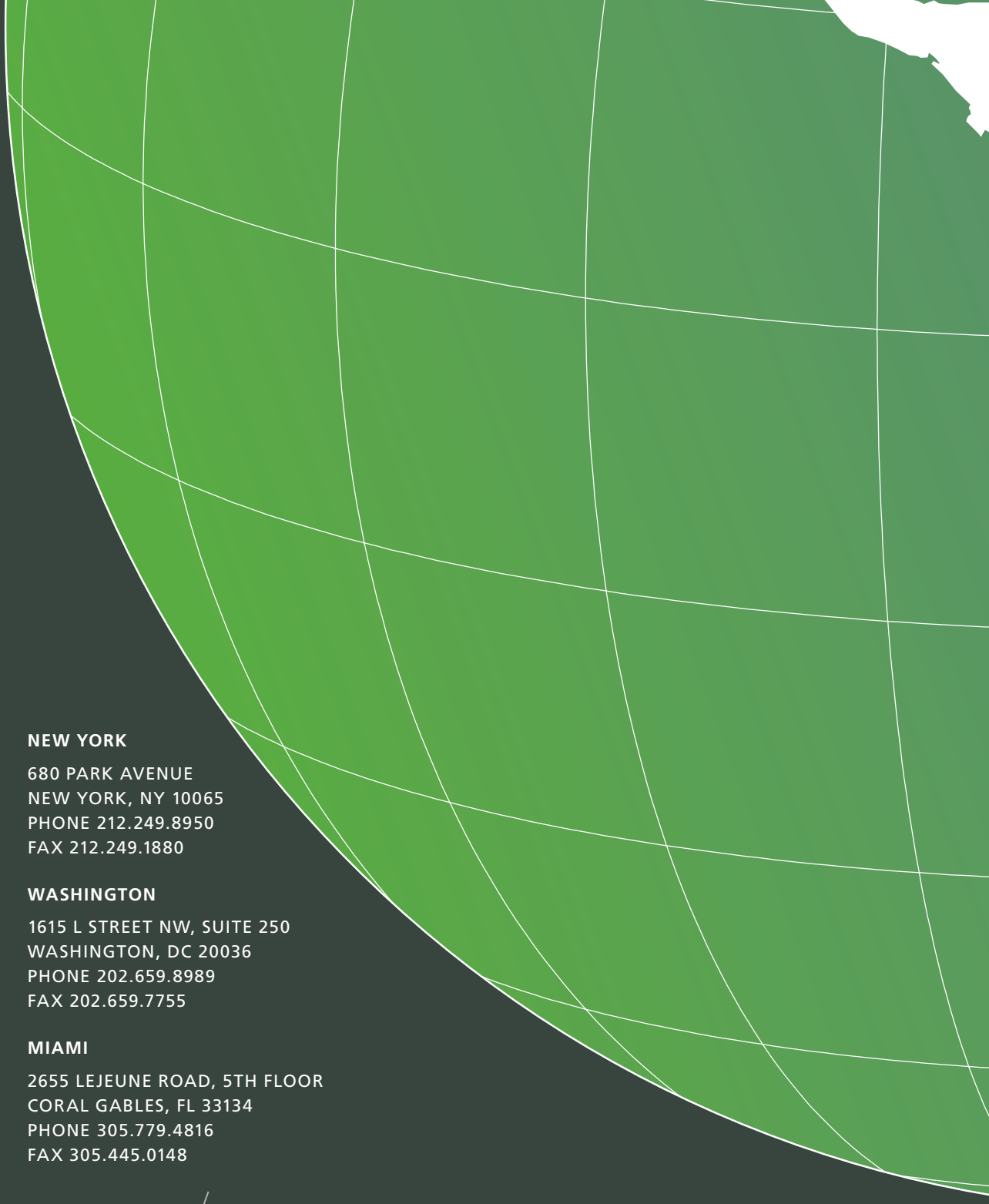
Colombia should also consider creating a voluntary carbon market on a national level. This would serve as an alternative exchange for projects that do not qualify for CDM credits, or for developers that want to avoid the protracted CDM approval process. While forcing companies to participate in a mandatory cap and trade system could hurt Colombia's global competitiveness, a voluntary carbon market would allow firms in Colombia to promote their green energy credentials by offsetting emissions with carbon credits. Such a voluntary carbon market could start with a pilot project in Colombia and eventually expand to the regional level with neighboring countries, such as Peru and Chile. The government could also create a mechanism for funding emissions-mitigation projects through low-interest loans. Finally, Colombia needs to finalize its national climate change strategy so it can outline plans for developing such initiatives.

**Americas Society** is the premier forum dedicated to education, debate, and dialogue in the Americas. Its mission is to foster an understanding of the contemporary political, social, and economic issues confronting Latin America, the Caribbean, and Canada, and to increase public awareness and appreciation of the diverse cultural heritage of the Americas and the importance of the inter-American relationship.

**Council of the Americas** is the premier international business organization whose members share a common commitment to economic and social development, open markets, the rule of law, and democracy throughout the Western Hemisphere.

**Energy Action Group (EAG)** The Americas Society and Council of the Americas EAG brings together the public and private sectors to develop strategic energy policies for the Americas. The EAG hosts forums in cities across the Americas and publishes working papers and recommendations on key energy and climate topics.

Americas Society and Council of the Americas are grateful to Chevron, Corporación Andina de Fomento, Edenor, Inter-American Development Bank, Sempra, and Shell for supporting the EAG.




**NEW YORK**

680 PARK AVENUE
NEW YORK, NY 10065
PHONE 212.249.8950
FAX 212.249.1880

**WASHINGTON**

1615 L STREET NW, SUITE 250
WASHINGTON, DC 20036
PHONE 202.659.8989
FAX 202.659.7755

**MIAMI**

2655 LEJEUNE ROAD, 5TH FLOOR
CORAL GABLES, FL 33134
PHONE 305.779.4816
FAX 305.445.0148


Americas Society / Council of the Americas

**Uniting opinion leaders to exchange ideas and create solutions to the challenges of the Americas today.**

**www.as-coa.org**