

THE ENERGY
REGULATION
AND MARKETS
REVIEW

SIXTH EDITION

Editor
David L. Schwartz

THE LAWREVIEWS

THE ENERGY REGULATION AND MARKETS REVIEW

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This article was first published in The Energy Regulation and Markets Review, -
Edition 6

(published in July 2017 – editor David L Schwartz)

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Published in the United Kingdom
by Law Business Research Ltd, London
87 Lancaster Road, London, W11 1QQ, UK
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Enquiries concerning editorial content should be directed
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ISBN 978-1-910813-66-9

Printed in Great Britain by
Encompass Print Solutions, Derbyshire
Tel: 0844 2480 112

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ACKNOWLEDGEMENTS

The publisher acknowledges and thanks the following law firms for their learned assistance throughout the preparation of this book:

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ANDERSON MÖRI & TOMOTSUNE

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PREFACE

In our sixth year of writing and publishing *The Energy Regulation and Markets Review*, we have seen dramatic changes in global energy policies. Notwithstanding President Trump's announcement that the United States will withdraw from the Paris Agreement, and the referendum in the United Kingdom to leave the European Union, there have been continued efforts to reduce greenhouse gases (GHGs) by the signatories to the Paris Agreement. There is still a significant need to invest in infrastructure, and we have seen significant investment throughout the supply chains in the oil, gas and power sectors globally. The Fukushima nuclear incident continues to impact energy policy, and we continue to see extensive liberalisation of the energy sector.

I CLIMATE CHANGE DEVELOPMENTS

With respect to climate change efforts, the Paris Agreement went into effect on 4 November 2016, and thus far, 148 countries have ratified the Agreement. President Trump has recently announced that the United States would be withdrawing from the Paris Agreement, but we continue to see significant carbon reduction efforts, such as increased development of renewable resources, as well as energy efficiency and demand reduction measures, globally, including in the United States.

In Europe, the European Union adopted 'A Framework Strategy for a Resilient Energy Union with a Forward-Looking Climate Change Policy', and it is expected that there will be a large amount of European secondary legislation to increase the amount of renewable resources. While the United Kingdom voted to exit the European Union, the United Kingdom continues to invest heavily in offshore and onshore renewable projects, and has been particularly active in the battery storage sector to round out intermittent renewable production, offset demand and arbitrage energy prices. President Macron has stated his intent to have France fulfil its goals of closing all coal fired power plants within five years and doubling the capacity of wind and solar renewable generation. Denmark continues to seek to have renewable energy meet all of its electricity demands by 2050. The Netherlands has a goal of reducing GHGs by at least 25 per cent by 2020, and is closing at least two coal-fired power plants. Germany undertook significant steps to increase reliance on renewable energy resources.

China released a plan to have 15 per cent of its energy supplied by non-fossil fuels, 20 per cent from natural gas and no more than 58 per cent from coal by 2020. Korea's goal is to cut GHGs by 37 per cent by 2030. India announced a goal to have at least 40 per cent of its installed electric capacity powered by non-fossil fuels. Japan and Australia are working to improve energy efficiency and conservation and to increase reliance on renewable

energy supply. The United Arab Emirates continues its efforts to reduce its carbon footprint, announcing a goal of having 25 per cent of its capacity from renewables by 2030, and 75 per cent by 2050. Australia is adding significant new renewable resources. Even the United States is seeing significant investment in renewable energy development. While the Trump Administration is seeking to reverse the Obama Administration's Clean Power Plan, individual states are moving forward to achieve reduced reliance on fossil fuels and greater reliance on renewable energy, including California and New York, which are seeking a 50 per cent renewable portfolio standard goal by 2030, and Hawaii, which is seeking 100 per cent reliance on renewables by 2045.

II INFRASTRUCTURE DEVELOPMENT

For many countries, reliable energy supply is the primary concern, regardless of fuel source. Rural electrification and system reliability remain priorities in Indonesia, Mozambique, Angola, parts of Nigeria and Central and West Africa and we are seeing significant efforts to pursue electric generation projects in those regions. Iran is seeking approximately US\$200 billion in investments for its oil and gas industries over a five-year period, and Iraq is seeking approximately US\$18 billion in foreign investments over a three-year period. Turkey is aggressively diversifying its energy industry and building infrastructure, including the TANAP pipeline from the Caspian Sea to Europe, and is pursuing shale gas opportunities. Malaysia is constructing a 2,000MW coal plant to meet its growing energy demands. South Africa has taken steps to add 863MW of coal generation, and is seeking to add over 3,000MW of natural gas-fired generation. Denmark has a new North Sea Agreement to secure future exploration and production of hydrocarbons from the North Sea, and Cyprus, Mozambique, Lebanon and Mexico are establishing mechanisms to license offshore oil and gas exploration and production.

III NUCLEAR POWER GENERATION

Six years after the Fukushima disaster, Japan has shut down 45 out of its 48 nuclear power stations pending new detailed safety reviews. Germany continues its phase out all nuclear generation, and has agreed to assume the responsibility for nuclear waste management following shut-down, decommissioning and dismantlement by existing owners. France is seeking a reduction of nuclear power generation to 50 per cent of total electricity production within five years. Switzerland and Korea are planning to limit the life of their nuclear generation units. On the other hand, Turkey is continuing with development of the Akkuyu nuclear power plant, and the United Arab Emirates is still proceeding with construction of the Barakah nuclear power plant, both of which are expected to be operational in 2020. The United Kingdom continues to push forward with the Hinckley Point C new nuclear facility. South Africa is facing substantial resistance to its efforts to develop 9,600MW of new nuclear generation capacity. In the United States, the early retirement of certain nuclear plants has been driven by cost and power market considerations, rather than safety concerns. Some nuclear owners in the United States have sought state subsidies in New York, Illinois, Ohio and Pennsylvania, among others, in order to avert premature retirements. Illinois and New York have implemented legislative and regulatory payment programmes for nuclear facilities in those states, but they are currently being challenged in federal district court on constitutional grounds.

IV LIBERALISATION OF THE ENERGY SECTOR

We have seen significant energy sector regulatory reforms in many countries. Australia is continuing to move toward retail choice, and is seeking to implement a new energy market operator and market rule change committee. Italy is seeking to develop more competitive retail markets. Spain has been engaged in regulatory reforms to reduce its ‘tariff deficit’ and re-establish the correlation between costs and rates. Portugal continues to work on liberalising its electricity and gas markets. Japan is actively working on developing competitive retail electric and gas markets and is seeking to unbundle electric transmission and gas transportation sectors to improve competition. And we are seeing continued efforts to partially privatise state-owned energy companies in the United Arab Emirates, Turkey, Brazil and Colombia.

I would like to thank all the authors for their thoughtful consideration of the myriad of interesting, yet challenging, issues that they have identified in their chapters in this sixth edition of *The Energy Regulation and Markets Review*.

David L Schwartz

Latham & Watkins LLP

Washington, DC

June 2017

COLOMBIA

*Jose V Zapata and Daniel Fajardo*¹

I OVERVIEW

In past decades, the energy sector in Colombia has been one of the main pillars of development and growth of the country's economy while contributing significantly to the national budget, which is devoted to infrastructure and social development, as result of the collection of royalties, taxes and dividends.

The country is now a target of international investment, holding a high investment rating and low perceived risk, also having extensive trade relations and an attractive business environment.² Furthermore, with the ongoing implementation of the peace process with the Armed Revolutionary Forces of Colombia (FARC) ending an armed conflict of over 50 years, Colombia has become even more attractive to foreign investors.³

As result of the issuance of the Colombian Constitution in 1991, the Colombian electricity sector has been transformed from a sector with total governmental ownership into a clearly separate sector in terms of the roles of service providers or utilities and regulation, policymakers and control and oversight agencies. Since then, the electricity sector has existed on three main levels. First the Minister of Mines and Energy (MME), which governs policy and establishes the long-term plans for the whole sector. Second, the Energy and Gas Regulation Commission (CREG), which sets out the rules and roles of each of the participating agents, while also focusing on quality and price for the end user. And third, the Superintendence of Public Utilities (SSPD) an inspection, monitoring and surveillance body that oversees operators and guarantees supply to the end user.

The main power source used in Colombia is hydropower, which represents 70 per cent of the installed capacity, followed by thermal power stations operating with coal and gas with a share of 21 per cent. The remaining energy is obtained and supported by other sources such as cogeneration, with a share of 0.46 per cent; and wind, which only adds 0.14 per cent.⁴

In terms of connectivity, the Colombian electricity sector is divided as follows. On the one hand, the National Interconnected System (SIN), which comprises generation plants, the interconnection network, the regional and interregional transmission networks and

1 Jose V Zapata is a partner and Daniel Fajardo is an associate at Holland & Knight.

2 Colombia's official investment portal – PROCOLOMBIA. Why invest in Colombia. Available at: www.investincolombia.com.co/why-colombia.html#attractive-business-environment. Accessed on 3 May 2017.

3 PricewaterhouseCoopers. Doing Business in Colombia 2016. Available at: www.pwc.com/co/es/publicaciones/doing-business-colombia-2016.pdf. Accessed on 3 May 2017.

4 Colombian Mining and Energy Planning Unit (UPME). Generation variables and Colombian electric market monthly report December 2016. Available at www.siel.gov.co/portals/0/generacion/2016/Segui_variables_dic_2016.pdf. Accessed on 3 May 2017.

distribution networks, all connected to each other. On the other hand, the Non-Interconnected Zones, where electric service is not provided by the national network but by independent small scale systems.

II REGULATION

i Regulators

The Colombian Constitution, issued in 1991, conferred legislative power to Congress and granted regulatory power to the national government, which in turn exercises such power through the regulatory entities that serve the energy sector via decrees and resolutions.

Specifically, the determination of policies and issuance of regulation is undertaken by several government entities, as follows:

On the one hand, the MME is the government entity responsible for formulating, adopting, directing and coordinating the policies, plans and programmes of the mining and energy sector in Colombia as well as the supervision of the electricity sector. The MME regulates generation, interconnection, transmission and distribution activities and is in charge of generation and transmission programmes.

On the other hand, the administration and issuance of particular regulation in the electricity sector is dealt with by the following technical entities:

a CREG, a special administrative body created in 1994, is in charge of the regulation and promotion of competition between the entities involved in the electricity sector and the regulation of electricity and gas utilities. Pursuant to Laws 142 and 143 of 1994, the following specific functions are assigned to CREG:

- promoting market fair competition;
- setting out the conditions for deregulation of the electricity sector regarding a competitive market;
- determining and approving interconnection and usage charges and tariffs for the transmission and distribution of electricity;
- defining the regulated and unregulated market end user markets;
- setting out the regulations for the operation, planning and coordination of the national transmission system; and
- issuing the technical regulation with respect to quality, reliability and security of electricity;

b the Energy Mining Planning Unit (UPME) is a special administrative unit attached to the MME in charge of planning the energy mining sector in coordination with other agents in the sector and supporting the MME in achieving its goals and objectives;

c the Institute for Planning and Promotion of Energy Solutions for Non-Interconnected Areas is responsible for the promotion, development and implementation of energy efficient, viable and sustainable solutions that meet the needs of on interconnected zones; and

d the SSPD is a government agency that oversees public utilities companies that operate within the Colombian territory. Among other functions, the SSPD is in charge of:

- supervising the quality and efficiency of all public service companies;
- taking over public utilities companies when the companies are financially non-viable or when the service rendered is at risk; and

- imposing sanctions to the companies subject to surveillance, and in particular with respect to electricity companies as result of a violation of the code of operations of the electricity sector.

In addition to the abovementioned entities, the following entities provide consultation and technical assistance in the electricity sector:

- a* The National Operation Council, responsible for determining the technical standards for the efficient operation and integration of the SIN; and
- b* the Commercialisation Advisory Board, created by CREG as an advisory entity for the monitoring and review of the commercial aspects of the wholesale energy market (MEM).

The Superintendence of Industry and Commerce (SIC) is the authority in charge of investigating and sanctioning commercial restrictive practices, as well as authorising the mergers of companies operating within a single sector and market.

ii Regulated activities

Environmental permits

From an environmental perspective, the development of works and activities related to electricity or nuclear energy require a prior licence or environmental permit to be granted by the National Environmental Licensing Authority (ANLA) or regional entities, depending on the sector, type of project and area where it is developed.

Furthermore, the main regulation in relation to environmental authorisations is Decree 1076 of 2015, which, among others, defines the environmental authority in charge of granting the environmental licence, depending on the type of project and the installed capacity (MW) of the specific project.⁵

Pursuant to Decree 1076 of 2015, an environmental licence is the authorisation granted by the competent environmental authority for the execution of a project, work or activity, which can cause serious deterioration of natural resources or the environment or introduce significant modifications to the landscape. Environmental licences include all permits, authorisations and concessions for the use of renewable natural resources throughout the duration of the project, work or activity, and any requisites for the initiation of the work, project or activity subject to an environmental licence.

Pursuant to the ILO Convention 169 and Colombian regulations, should ethnic communities be located within the area of influence of the project, a prior consultation process with such communities must be undertaken prior the issuance of the environmental licence. Prior consultation suspends the proceeding with respect to the environmental licence.

Electricity: regulated activities

It is of outmost importance to note that, pursuant to the Colombian Constitution, electricity generation, interconnection, transmission and commercialisation activities are considered public utilities to be provided under Colombia's authority and supervision and governed by the constitutional principles of free economic activity, free private initiative, free competition and private ownership.

⁵ Article 2.2.2.3.2.1, Decree No. 1076 of 2015.

The primary electricity regulation is contained in Laws 142 and 143 of 1994, which were enacted in a context of severe energy insufficiency and outages. Until 1995, electricity services were provided by the state through the company Interconexión Eléctrica SA (ISA) and other government-owned entities, with minor participation of the private sector. The power sector was reformed to introduce market economy principles, assigning the state the role of regulator. ISA was spun off into two companies: ISA the transmission company with system and market operating functions, and Isagen, a new company for electricity generation.

Law 142 regulates all aspects related to energy as a public utility, and Law 143 sets out the legal regime applicable to the generation, interconnection, transmission and commercialisation as well as the Wholesale Electricity Market, which came into operation in July 1995. Furthermore, Law 143 of 1994 states that all the activities that involve the supply chain of electricity, from generation to commercialisation, are intended to satisfy primary collective needs on a permanent basis and thus considered as mandatory public utilities, essential in nature.

In relation to projects, free private initiative is the general rule and thus, private and public-private partnerships may get involved in the generation, transmission, distribution and commercialisation of electricity without requiring a concession. In other words, this means that Colombia will only get involved in the development of electricity generation projects when no private entity is willing to assume such activity.⁶

iii Ownership and market access restrictions

First and foremost, in Colombia, there are no limitations or prohibitions for foreign participation or investment in the electricity sector. The only sectors in which foreign investment is prohibited are national security and defence and processing and disposal of toxic, hazardous or radioactive waste, as specified by Article 6 of Decree 2080 of 2000, further amended by Decree 2466 of 2007.

Nevertheless, pursuant to Article 471 of the Code of Commerce, foreign companies willing to undertake permanent business in the country are required to constitute a branch with local address in Colombia. Moreover, according to Law 142 of 1994, enterprises providing public utilities, such as companies participating in the electric sector, must be constituted as public utilities companies.

Regarding the electricity sector, as of the issuance of Laws 142 and 143 of 1994, generation, transmission, distribution and commercialisation of energy are considered as segregated activities. Furthermore, Article 74 of Law 143 of 1994 expressly prohibits companies involved in the electricity sector to engage in more than one activity except for commercialisation, which can be developed along with other activities of the electricity sector.

In addition, CREG regulations have set out specific restrictions as follows:

- a* electricity generators are not allowed to have an equity participation of more than 25 per cent in distribution companies;
- b* no company can have market participation above 25 per cent in the generation activity;⁷ and
- c* no company is allowed to directly or indirectly own more than 25 per cent of the equity of a company involved in commercialisation of electricity.⁸

6 See Article 56 of Law 143 of 1994.

7 See CREG Resolution 60 of 2007.

8 See CREG Resolution 24 of 2009.

iv Transfers of control and assignments

With respect to mergers and acquisitions, it is important to note that all companies involved in the electricity sector are subject to the general competition and antitrust regime provided for in Law 1340 of 2009.

Pursuant to Article 9 of Law 1340 of 2009 and Resolution 10930 of 2015 issued by the SIC, certain mergers, consolidations or integrations require either to be approved or to be notified to the SIC.

Mergers require notice to the SIC when they meet the following conditions:

- a* whenever the transaction creates any form of integration. Any transaction to acquire 'control' over assets or shares of other companies leading to the creation or reinforcement of market power constitutes a merger;
- b* the parties of the transaction in Colombia jointly or individually have, in the year prior to the transaction, a level of total assets or operational income equal or above to 60,000 minimum monthly Colombian legal wages (approximately US\$14,754,000);
- c* whenever the companies involved in the transaction are dedicated to the same activity or participate in the same vertical value chain; and
- d* whenever at the time of notice companies have
 - 20 per cent or less market participation; or
 - 20 per cent or less participation in the same vertical value chain.

Notice must be submitted as a pre-completion requirement of the transaction. However, this filing does not constitute a merger clearance by any means. Mergers will require approval of the SIC when they meet the first three conditions abovementioned and the market participation of the companies individually or jointly equals or exceeds 20 per cent of the relevant market under Colombian jurisdiction.

Approval has to be submitted as a pre-completion requirement of the transaction; the SIC's clearance is therefore a mandatory condition in order to proceed with completion of the transaction.

In addition to the above, Article 34 of Law 142 of 1994 mandates that companies involved in public utilities must avoid unjustified privileges and discriminatory acts and must refrain from undertaking any act or transaction that has the capacity, purpose or effect of generating unfair trade or restricting competition or abuse of dominant position. The SSPD is the entity in charge of monitoring compliance of the aforementioned obligation and imposing sanctions.

II TRANSMISSION/TRANSPORTATION AND DISTRIBUTION SERVICES

i Vertical integration and unbundling

As indicated above, the electricity Law 143 of 1994 and CREG regulation establish unbundling rules restricting horizontal and vertical integration of utility companies that provide electricity services. Integration rules indicate the following:

- a* utility companies incorporated before Laws 142 and 143 of 1994 can develop more than one activity under separate accounts for each business, and
- b* utility companies constituted after the enactment of Laws 142 and 143 of 1994 can only undertake, at the same time, complementary activities such as generation-retailing

or distribution retailing, and are prohibited to simultaneously perform activities of generation transmission, generation-distribution, transmission-distribution and transmission-retailing.

With respect to horizontal integrations, according to Resolution 128 of 1996 of the CREG, a single company may not own more than 25 per cent of country's generation, retailing and distribution activities.

ii Transmission/transportation and distribution access

The electric power system consists of an interconnected grid – the SIN – that supplies about 95 per cent of the overall demand. The remaining demand ('non interconnected zones') is typically supplied by local small electricity generation plants that operate on fossil fuels (gasoline and diesel).

The SIN has a total length of 24,981.73 kilometres comprised as follows:

- a* the SIN;
- b* the Regional Transmission System; and
- c* the Local Distribution System.

The National Transmission System is a multi-owner network that has the unique characteristics of a natural monopoly, with ISA holding the largest share.⁹

The grid system supply, provided by the National Transmission System, enables the coordination of the generators while reducing the amount of backup generating capacity and reserves. Pursuant to applicable regulations, transmission is defined as the transportation of electricity at a tension level equal or greater than 220kv. Networks operating at less than 220kV are part of the distribution activity, the main function of which is to transport the electric energy to the end user. Moreover, the electric distribution system is integrated by networks, substations that operate at voltages lower than 220kV and do not belong to the National Transmission System.

With respect to third party participation, it is important to note that the National Transmission System operates on an open market basis, and thus transmission operators must provide open access to customers on a non-discriminatory basis, while receiving regulated revenues through the use of transmission system charges. These charges are regulated by CREG, paid by electricity consumers and further collected by retailers.

In addition to the above, Colombia is interconnected with both Ecuador and Venezuela, which has fostered the energy security standards while allowing these electricity markets to operate in a coordinated manner.

iii Rates

Pursuant to Article 23 of Law 143 of 1994, CREG:

c) Defines the methodology for the calculation of rates for access and use of electric grids as well as the rates for services related to connection and coordination which are carried out by regional dispatch centres and the national dispatch centre.

⁹ The state owns about 62 per cent of Isagen's shares and private investors own 31 per cent.

d) Approves the rates to be paid in relation to access and use of electric grids as well as the rates for services related to connection and coordination which are carried out by regional dispatch centres and the national dispatch centre.

Further, Article 88, numeral 1 of Law 142 of 1994 provides that:

Companies should adhere to the formulas that CREG periodically defines to fix their rates, except in the exceptional cases listed below. According to cost studies, the regulatory commission may establish maximum and minimum tariff caps which are mandatory for companies; while it may also define methodologies for determining rates and whether it is appropriate to apply the regime of regulated or supervised rates.

In relation to the regime of regulated and supervised rates, Article 11 of Law 143 of 1994 establishes a regulated liberty regime according to which rates for generation, interconnection, transmission, distribution and commercialisation of electricity within the national territory is set and limited by the criteria and methodology of CREG.

While each company negotiates its own rate, as mentioned above, rates are capped at the maximum rate established by CREG. Generally speaking, for affixing rates to be charged for utilities, CREG establishes the methodology and procedure for the calculation of the rate including costs associated to such rate. Thus, resolutions that set rates include the costs assumed by the provider of such service as well as the methodology used for regulating such cost.

Furthermore, Article 87 No. 9 of Law 142 of 1994 provides that rates fixed by CREG are valid for five years and thus have to be adjusted every five years. The current rates are those set by way of Resolution 097 of 2008 issued by CREG. While it is evident that such Resolution 097 of 2008 was issued more than five years ago, it should be noted that a modification and adjustment proposal has already been drafted and has not yet been approved.

iv Security and technology restrictions

The main concern in terms of security of the electricity sector in Colombia is related to physical security of the oil and energetic infrastructure. For several decades, infrastructure was a common target for guerrilla groups related to the armed conflict within the country. Attacks to pipelines as well as energy towers were frequent; they implied serious damages, paralysis of some parts of the system and impacted production levels gravely, affecting vulnerable populations. A decrease and eventual halt in attacks to oil and energy infrastructure is expected as a result of the implementation of the peace process with FARC, and as a result of possible negotiations with the National Liberation Army.

While recent developments in terms of peace have substantially diminished attacks to oil platforms, pipelines and energy towers, in 2014, before the negotiation and subsequent implementation of the peace process with FARC, the Colombian government created a task force for the protection of infrastructure including pipelines, energy towers, oil platforms and infrastructure in general, which was named COPEI. Among the various outcomes of the implementation of such task force were the creation of a special operation centre and the distribution of a daily report including possible threats and events.

IV ENERGY MARKETS

i Development of energy markets

The Colombian energy market is based on a competitive market model that is basically open to access through the MEM. The MEM is a market in which generators, transmitters and wholesale energy consumers and unregulated users participate with the main purpose of trading energy blocks through the SIN.

The MEM is divided into long-term and short-term transactions, depending on the needs of those participating in the MEM and the terms for such negotiations. For example, long-term participants opt for bilateral agreements while short term agreements usually refer to next-day purchases between all of the generators of the market, which are subject to explicit regulations. These kind of transactions usually cover the spot market.

Oversight of the MEM is led by the superintendence of public utilities, which created the Oversight Committee of the MEM in 2006.

A substantial amount of electricity that is generated in Colombia is traded through the MEM via wholesale transactions, as all of the generation companies are obliged to participate in the MEM with all of their generation plants and units that are connected to the SIN.

Retail companies that sell directly to end users are also required to carry out their electricity transactions through the MEM.

i Contracts for sale of energy

As explained above, the MEM is divided into long-term and short-term transactions. While long-term transactions usually involve bilateral agreements, short-term transactions (referred to as 'on spot transactions') usually involve negotiations of daily price offers along with hourly availability. The prices at which electricity is offered reflect the variable costs of generation as well as opportunity costs.

Firm energy obligation (OEF) auctions

Allocation of OEF between the different generators and investors is effectuated through dynamic auctions. OEFs are the resulting links from the auctions, according to which generators must generate a daily amount of electricity, as long as the obligation is in force. When the stock market price exceeds the price of shortage, the OEF price is determined by descending clock auctions.¹⁰ The purpose of such auctions is to allocate firm energy obligations (between the generators and investors), thus ensuring reliability in long-term firm energy supply at efficient prices.¹¹ Auctions are held three years prior to the date when the firm energy is required. The time between the announcement of the auction date and the end of the obligation term consists of three stages: (1) the prequalifying period; (2) the planning period; and (3) the obligation effectiveness period, the total of which varies from one to 20 years.¹²

10 Article 2, CREG Resolution 071/2006.

11 CREG. Características generales del Mercado Mayorista Transacciones en el MEM: Subasta de OEF. Available at: www.creg.gov.co/cxc/secciones/mercado_mayorista/subasta.htm. Accessed 5 May 2017.

12 CREG. Subasta para la asignación de OEF Generalidades y etapas de la subasta. Available at: www.creg.gov.co/cxc/secciones/subasta_asignacion/generalidades.htm#notas. Accessed 5 May 2017.

Bilateral contracts

The bilateral contracts market is primarily a financial market, as its function is to reduce exposure of the generator and end user to short-term price volatility. Such contracts are freely agreed commitments acquired by generators and commercialisation companies to sell and buy electricity. Energy is delivered through the spot market by the generator indicated in the contract, or by another generator as determined by the ideal dispatch (see below). The only requirement in such agreements is that the contract specifies the amount of energy that will be used on an hourly basis. Aside from that requirement, there are no restrictions on the electricity that a generator or commercialisation company may specify in the contracts, or the time frame covered by such agreements. Energy purchases made through such contracts, intended for regulated users, are governed by rules that guarantee competition among generators, while the prices and conditions on such contracts intended for non-regulated users are freely negotiated and agreed by the parties.¹³

Spot market

In the spot market the transmission network is neutral, thus implying that the generator makes its price offer for each day and its availability declaration for each hour, without considering the state of the transmission network. The resources that will be dispatched in order to comply with the hour-by-hour demand are selected according to the most economic offers. This dispatch is known as the ideal dispatch, as it diverges from the real dispatch, which considers the restrictions that may affect the transmission network. The ideal dispatch is determined once finalised by the National Dispatch Centre. It considers real demand and availability, not taking into account physical and technical restrictions imposed by the transmission network. Price offers presented by the generators must reflect the variable costs of generation and opportunity costs. The spot price is the price of the last resource used to comply the total energy demand every hour, which establishes the price at which all inframarginal resources in the same hour will be remunerated. The part of the energy demand from commercialisation companies not covered by bilateral contracts must be paid at this spot price.¹⁴

V RENEWABLE ENERGY AND CONSERVATION

i Development of renewable energy

Most of the developments in terms of renewable energy have been a result of the issuance of Law 1715 of 2014, which aims, *inter alia*, to promote the development and use of unconventional sources of energy, mainly renewable energy, in the national energy system, as a means to achieve sustainable development, reduce greenhouse gas emissions, ensure the country's energy supply and promote efficient energy management. This law establishes the legal framework and instruments required to take advantage of unconventional sources of energy and renewable energy, while promoting investment, research and development of clean technologies for energy production, energy efficiency and demand response.

13 CREG. Características generales del Mercado Mayorista Transacciones en el MEM: Contratos bilaterales. Available at: www.creg.gov.co/cxc/secciones/mercado_mayorista/contratos.htm. Accessed 5 May 2017.

14 CREG. Características generales del Mercado Mayorista. Transacciones en el MEM: Bolsa de energía. Available at: www.creg.gov.co/cxc/secciones/mercado_mayorista/bolsa.htm. Accessed 5 May 2017.

The law defines unconventional sources of energy as environmentally sustainable energy resources that are globally recognised but in Colombia are not widely used or are not widely marketed, such as nuclear or atomic energy, unconventional sources of renewable energy and those determined by UPME. Further, it defines as unconventional sources of renewable energy as sources of energy that meet the above characteristics and are also renewable energy resources, such as biomass, small hydroelectric, wind, geothermal, solar, sea and solid waste that is not susceptible of being reused and recycled and which UPME has deemed to be environmentally sustainable.

Law 1715 of 2014 classifies activities related to the production and use of non-conventional energy sources (mainly non-renewable energy) as matters of public utility and social interest, with the purpose of facilitating certain requirements, processes and access to benefits in urban planning, territorial planning, environmental planning, economic development and the right to compulsory expropriation, etc. It also assigns competencies to entities such as the ANLA and regional autonomous corporations to establish rapid evaluation cycles for projects related to non-conventional sources of energy, and for matters pertaining to this law.

This Law is especially relevant as it authorises small and large-scale energy self-generators to surrender their surplus to the distribution and transport network, in accordance with the regulations of CREG, and the allocation of energy credits to small-scale energy self-generators using non-conventional sources of renewable energy. Such credits may be negotiated with third parties, in accordance with the regulations issued by CREG. The fund for non-conventional renewable energies and the efficient management of energy (FENOGE) has also been established to finance programmes and projects in this area.

Law 1715 of 2014 sets out important fiscal, customs and accounting incentives for companies investing in projects of non-conventional sources of energy.

In fiscal matters, it offers an annual reduction in the income tax, for five years after the taxable year in which it makes the investment: 50 per cent of the total value of the investment made, without exceeding 50 per cent of the net income of the taxpayer determined before subtracting the value of the investment.

For these purposes, the taxpayer must obtain a certification of environmental benefit issued by the Ministry of Environment and Sustainable Development. In addition, national or imported equipment, elements, machinery and services that are intended for the pre-investment and investment for the production and use of energy from unconventional sources and for the measurement and evaluation of potential resources will be excluded from the VAT. For these purposes, a certification from the Ministry of the Environment must be provided stating the equipment and services that will benefit from this award, according to the list established by the UPME.

With respect to custom incentives, Law 1715 provides that those who import machinery, equipment, materials and supplies destined exclusively for pre-investment and investment in projects from non-conventional sources of energy are entitled to obtain an exemption with respect to tariff duties.

Finally, as an accounting incentive, companies participating in generation activities with non-conventional energy sources can enjoy the accelerated depreciation benefit, at a depreciation rate of no more than 20 per cent per annum, applicable to machinery, equipment and civil works necessary for pre-investment, investment and operation of such sources, provided that they have been acquired or constructed exclusively for that purpose, and after the validity of this law.

For its full implementation, Law 1715 requires regulation in different governmental entities affected by the measures of the law. Thus, to date, the following aspects have already been regulated, according to the information published by the Ministry of Mines and Energy on its website www.minminas.gov.co:

- a* Resolution 1312 of 11 August 2016 of the Ministry of Environment and Sustainable Development, which adopted the terms of reference for the preparation of the environmental impact study in projects for the use of wind energy sources and other aspects;
- b* Resolution 1283 of 8 August 2016 of the Ministry of the Environment and Sustainable Development, which establishes the procedure and the requirements of the certification of environmental benefit to obtain the tax benefits granted by law;
- c* Resolution UPME 045 of 2016, which establishes the procedures and requirements for issuing certification and endorsing projects from non-conventional energy sources in order to obtain the benefit of VAT exclusion and exemption from the tariff levy; and
- d* Decree 2143 of 2015 issued by the Ministry of Mines and Energy in relation to the definition of the guidelines for the application of incentives established in Chapter III of the law.

ii Energy efficiency and conservation

The energy efficiency area of the MME developed the Programme for the Rational Use of Energy and the Use of Renewable Sources of Energy, which aims for energy efficiency and establishes targets for unconventional renewable energies in the SIN, as stated in Law 697 of 2001.

The most recent regulatory advance can also be found in Law 1715 of 2014 which, among other things, orders the MME, together with the Ministry of Environment and Sustainable Development and the Ministry of Finance, to jointly develop an action plan for the development of technical regulations with respect to renewable energies; consumer information on the energy efficiency of processes; facilities, services, products and manufactured products; and information; as well as to promote campaigns on the use of renewable energy sources.

In addition to the above, Law 1715 provides that the national government and public administrations should establish energy efficiency objectives in public buildings and plans and actions of efficient energy management.

iii Technological developments

In addition to the tax and customs incentives created by way of regulation issued in response to Law 1715 of 2014, and certain programmes to provide electricity and the use of unconventional renewable resources in remote areas, no significant regulatory additional developments have been made in the areas of renewable energy and conservation.

VI THE YEAR IN REVIEW

In the Colombian energy sector, 2016 will be memorable for two events in particular. On the one hand, the partial privatisation of Isagen, and on the other, the energy shortages as result of dry weather caused by El Niño.

One of the most significant events of 2016, not only in the energy sector but also in the country's economy, was perhaps the sale of 57.6 per cent of the state-owned shares

in Isagen to Brookfield Asset Management for 6.5 trillion pesos (US\$2 billion). This money is to be used by the government to fund a highway building programme known as the '4G' plan. In addition, in March 2016, Empresas Públicas de Medellín, a company owned by the municipality of Medellín that provides electricity, gas, water, sanitation and telecommunications services, and Empresa de Energía de Bogotá, decided to sell their stakes in Isagen (13.1 per cent and 2.5 per cent respectively) to Brookfield Asset Management.

In terms of electricity, the high temperatures and lack of precipitation resulting from El Niño have dried off the rivers that power the nation's grid. In fact, as result of El Niño, Colombia has had to import energy imports from Ecuador and to temporarily increase thermal generation. Furthermore, unpopular measures such as an increase in energy rates and sanctions regarding high consumption were imposed by the government, whereby high-consuming end users were fined as a result of excessive consumption.

VII CONCLUSIONS AND OUTLOOK

The Colombian electricity sector has come a long way since its power outages during the 1990s. Privatisation, promotion of investment as well as implementation of regulations have made the Colombian electricity sector into an attractive and competitive market in the region.

However, the rapid expansion of the electricity sector and the ongoing dependence on resource-driven sources of energy such as hydroelectric power still have the capacity to force the system into a halt, as El Niño showed in early 2016.

The main objectives and challenges of the Colombian electricity sector that will position the Colombian market include:

- a* attracting greater investment in the electricity sector;
- b* promoting unconventional renewable resources, aiming to achieve self-sustainable and permanent energetic sources;
- c* advancing regional electric integration; and
- d* increasing the installed capacity and effective generation and reliability.

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