

Perspectives on the electricity sector

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June 29 2015

Energy & Natural Resources, Argentina

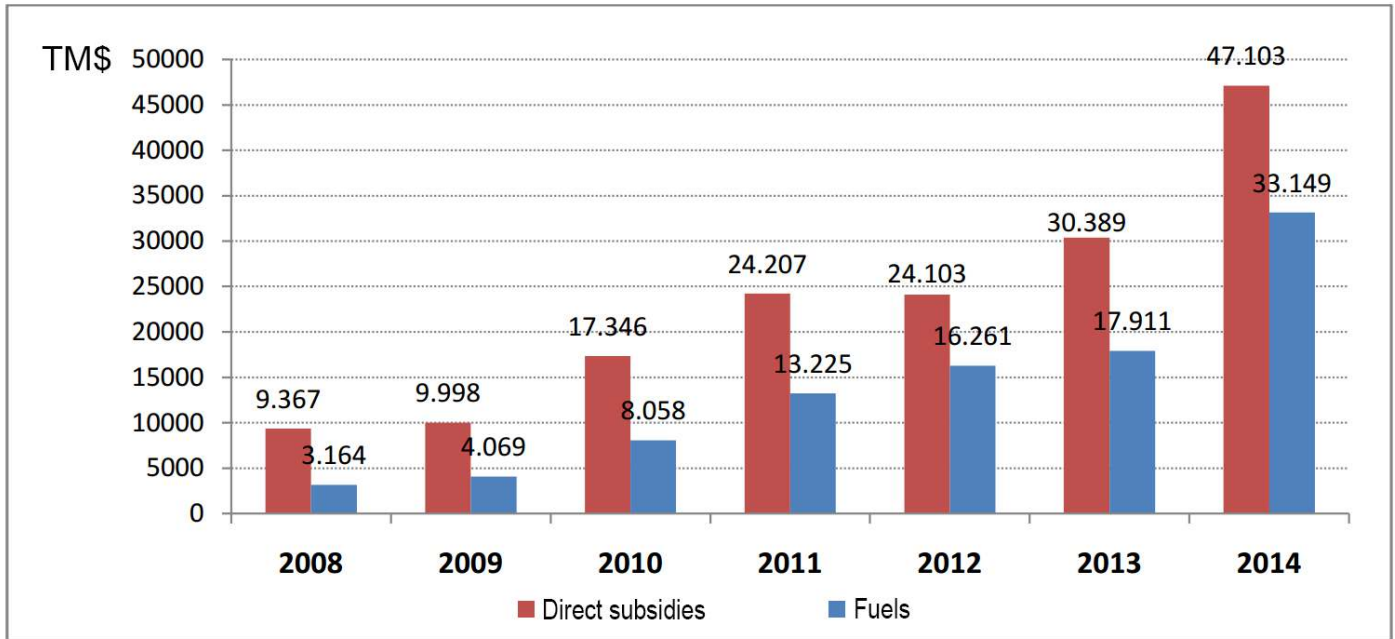
- ⦿ Introduction
- ⦿ **Future perspectives and investment opportunities**
- ⦿ **Comment**

Introduction

The Argentine electricity sector is divided into three different segments – generation, transport and distribution – which are carried out by companies and state-owned enterprises. Electricity generation is regulated as an open market, while transport and distribution are regulated as public services which are granted to companies through concession agreements.

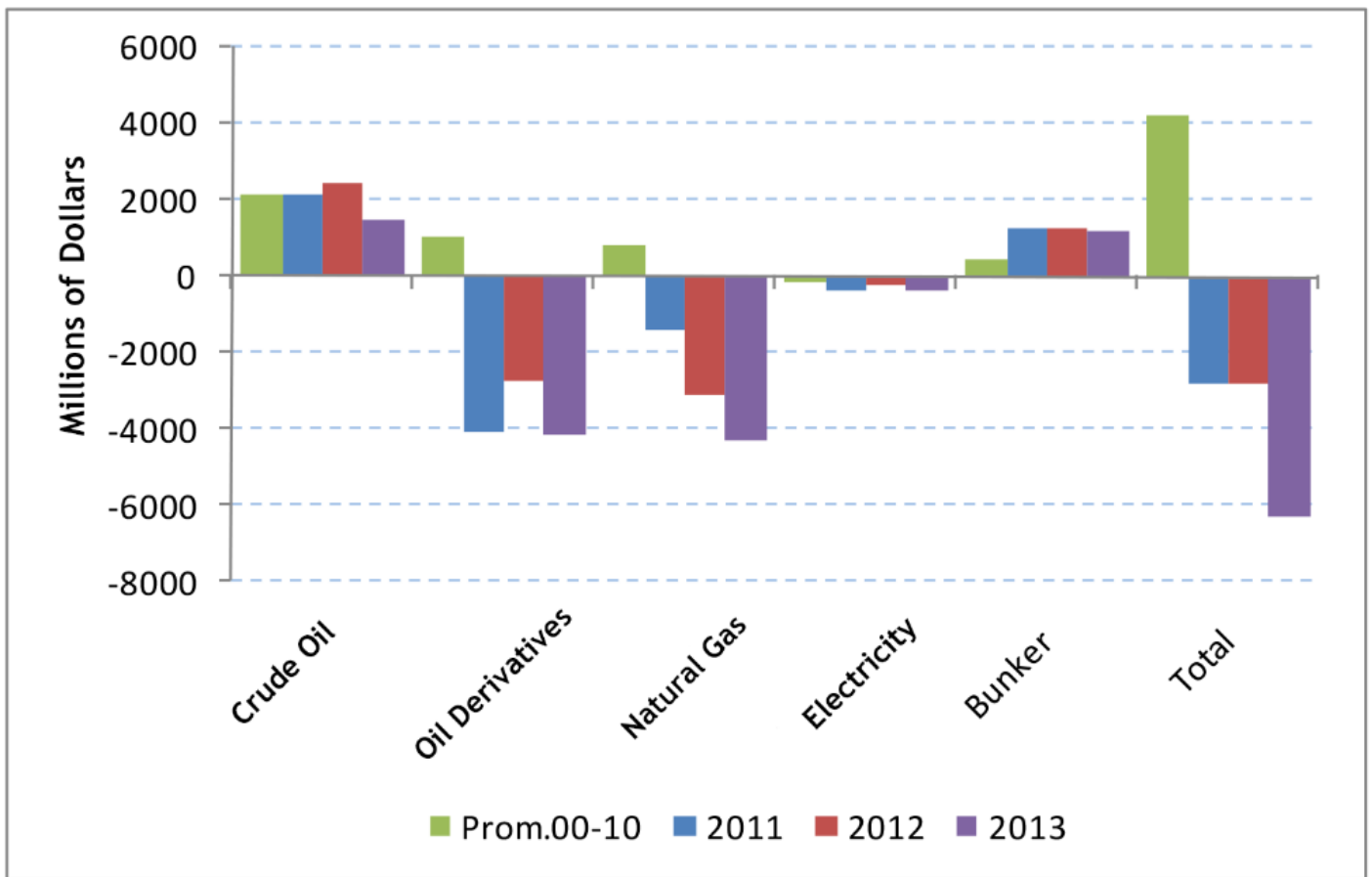
In 2001 Argentina suffered a major economic crisis and devalued its currency. In order to address the crisis, the national government made several changes to the electricity regulatory framework to prevent price and tariff increases and to satisfy the domestic market. The regulation of free market prices and price cap tariffs that had been in force since the 1990s was replaced by a system of regulated prices, in which subsidies play a leading role in covering operational and maintenance costs for generation, transport and distribution (for further information please see Chart 1 below).

Chart 1 – subsidies for the electricity sector



Investment in the sector decreased due to the freezing of prices and tariffs, while increasing demand resulted in the loss of energy self-sufficiency. Since 2011 the import of electricity and fuels for generation has increased and has had a negative impact on the Argentine trade balance (for further information please see Chart 2 below).

Chart 2 – Argentine energy trade balance



Source: National Institute of Statistics and Census (In Spanish “INDEC)

To address the fall in private investment due to frozen tariffs, the executive branch launched the following initiatives:

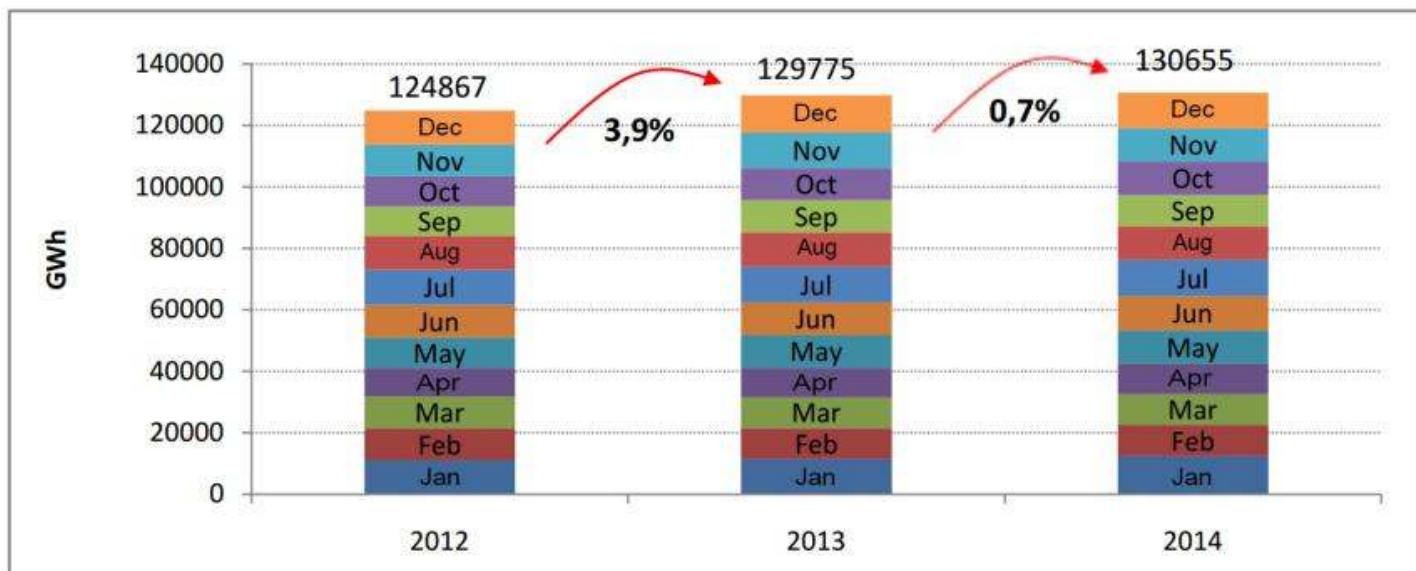
- promotional schemes for new energy by setting higher prices than those regulated for new energy produced. This includes a specific programme for renewable energy. The new prices are paid not by customers, but by public funds;
- the installation of numerous thermal plants near points of peak demand;
- the execution of public works with public funds to improve the generation, transport and distribution of electricity;
- the provision of more favourable tax treatment for imported machinery and equipment devoted to the energy sector; and
- the introduction of charges to be paid by electricity customers for the establishment of trust funds for large energy investments.

The Argentine electricity sector is characterised by:

- increasing demand (for further information please see Chart 3 below);
- frozen prices and tariffs;
- the leading role of subsidies; and
- an energy matrix that is highly dependent on hydrocarbon fuels (for further information please see Chart 4 below).

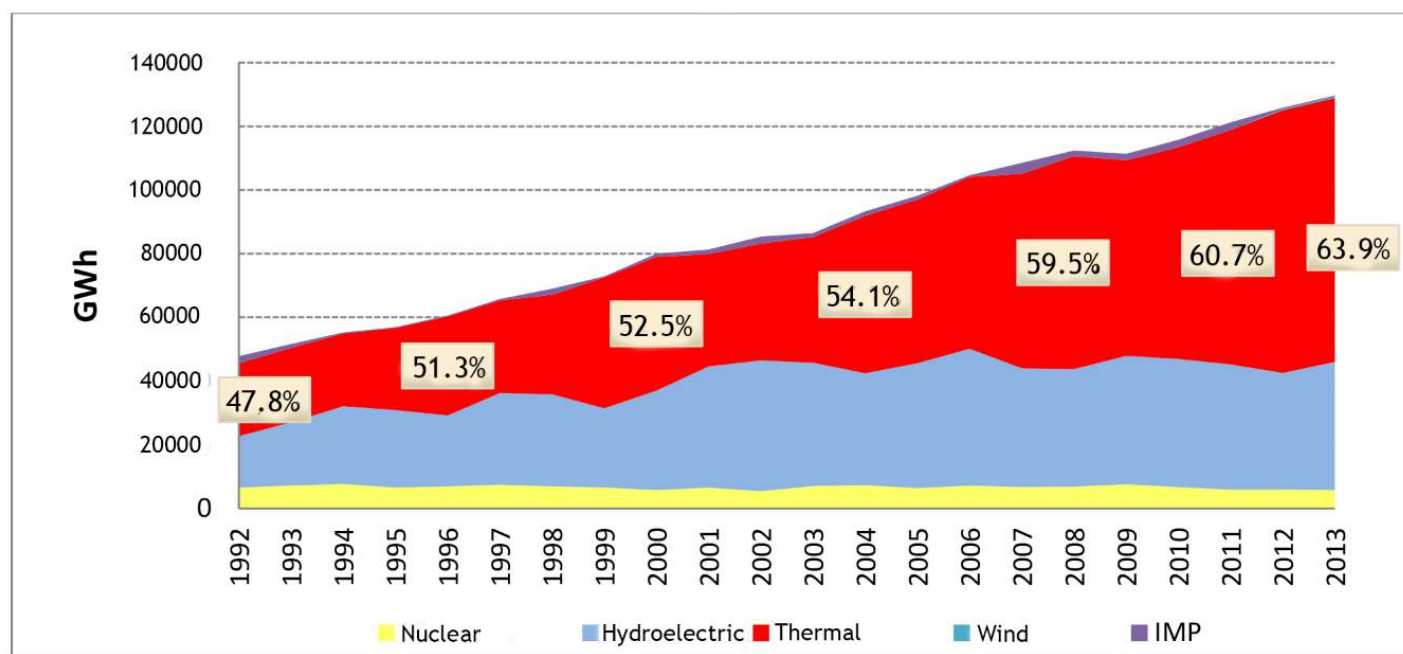
Ninety-eight per cent of existing local demand is satisfied by local generation, which requires fuel imports. The remaining 2% is covered by imports.

Chart 3 – net electricity production to supply domestic demand



Source: CAMMESA (Wholesale Electric Market Management Company)

Chart 4 – evolution of power generation according to source



Source: CAMMESA (Wholesale Electric Market Management Company)

Future perspectives and investment opportunities

In October 2015 Argentina will hold presidential elections. According to experts, a number of problems affecting the electricity sector should be included in the next government's agenda.

Updating prices and tariffs and redefining the role of subsidies

Between 2001 and 2015, power tariffs decreased by 73% in real terms according to the consumer price index. Residential consumers pay only 30% of their power bills; the remaining costs are covered by public

funds. As a result, the Argentine economy is conditioned by energy imports and subsidies for fuel and power. A goal for the next government will be to manage the energy deficit and reduce the impact of subsidies on the public budget.

The political and academic consensus is that the adjustment of tariffs and reduction of subsidy programmes must be implemented gradually. This is consistent with previous tariff adjustments implemented between 1945 and 1994, which in general were never higher than 30%, as shown in Chart 5.(1)

Chart 5 – tariff deflation between 1945 and 2015

Period	Years	Deflation	First year adjustment	Total correction after first year adjustment
1945 to 1952	7	51.3%	17.4%	16.5%
1953 to 1957	4	30.7%	18.1%	40.9%
1960 to 1961	1	9.2%	5.4%	53.3%
1963 to 1964	1	18.1%	12.3%	55.7%
1967 to 1970	3	20.2%	4.4%	17.4%
1973 to 1975	2	42.6%	6.4%	8.6%
1981 to 1984	3	49.2%	21.8%	22.5%
1986 to 1989	3	14.1%	30.0%	182.8%
1990 to 1994	4	23.7%	2.7%	8.7%
2001 to 2015	14	73.0%	?	?

Increase in power offer and diversification of power matrix

In the last decade, electricity consumption in Argentina has grown at an average of 4% per year. Investment in the generation sector is required to meet rising demand.

From 2003 to 2014 11,590 megawatts electrical (MWe) were incorporated into the power sector, of which 70% were from thermal plants near points of peak demand that have caused an increase in fuel demand that must be satisfied by imported fuels due to the decline in local production. The federal government pays high

import costs, with only a small percentage of these costs transferred to residential users.

The power matrix must be diversified for environmental as well as economic reasons. To reduce dependence on liquid fuels, Argentina issued National Law 26,190/ 2006, which established GENREN – the national promotion scheme for the use of renewable energy sources for the production of electricity. GENREN was created to attract private investment, diversify the Argentine energy matrix and achieve 8% of electricity production from renewable sources by 2016. **(2)**

Act 26,190 declared that activities related to renewable energy generation are of national interest and gave rise to different promotion measures, including:

- a 10-year goal of generating at least 8% of national electrical power through renewable energy sources;
- an investment promotion programme for the construction of new works to produce renewables to be used in the spot market or to supply public services; and
- compensation for this type of energy generation to be paid with public funds.

Argentina has favourable natural conditions for the development of renewable energy. The GENREN programme was the first step in that regard, and provincial governments and even some municipal authorities are encouraging the development of new projects. For example, San Juan Province has strongly encouraged the development of solar energy projects for the past few years. The province has initiated projects and long-term research and intends to manufacture solar panels in situ.

With respect to wind power generation, Argentina has the highest potential in the region, particularly in Patagonia and other mountainous areas and along the coast in Buenos Aires Province. Notwithstanding this, by the end of 2013 Argentina had only 218 MWe of global installed wind power capacity, making this a large untapped resource.

Argentina is also supporting investment in nuclear energy and related industries through the Argentine Nuclear Plan. At present, Argentina has three nuclear reactors managed by state-owned company Nucleoeléctrica Argentina SA, which in 2013 supplied 4.4% of the electricity consumed nationwide. The planning and implementation of nuclear energy projects are handled by the National Atomic Energy Commission.

Under the Argentine Nuclear Plan, Atucha II – the third Argentine nuclear plant – became fully operational in 2014. It was entirely built by Argentine labour. With this project, Argentina has returned to the select group of 11 countries that can produce enriched uranium with its own technology. Due to the political focus on the development of nuclear energy in Argentina, at present there are 129 Argentine companies certified as nuclear companies, 25 companies certified to build nuclear works and 104 companies certified as providers of such works.

The major projects to develop nuclear energy in Argentina include the following:

- The operational life of the Embalse nuclear plant will be extended for another 25 years and its capacity will be increased by 7 %.
- A prototype for a medium power nuclear reactor called CAREM25 will be constructed. This is a small, locally designed power reactor prototype with 25 MWe that will be the first nuclear power station entirely designed and built in the country. This type of reactor has great potential for the supply of electricity in remote areas of large urban centres or in manufacturing centres with high energy consumption. At least 70% of CAREM25's components and related services are to be provided by qualified Argentine companies under international quality standards. **(3)**

- A fourth nuclear plant will be built. Argentina and China signed a cooperation agreement to participate in the construction of a new nuclear plant featuring a light water reactor and enriched uranium. The agreement provides that Argentina will be the architect-engineer of the project. It calls for the parties to strive for the use of maximum local content in the new unit in terms of materials and services. This will be achieved through the transfer of technology to Argentine companies, including the manufacture of components and fuel fabrication. The agreement also guarantees the supply of enriched uranium and fuel assemblies throughout the life of the plant. The parties are also considering the establishment of a joint strategic partnership for the purpose of developing and building nuclear reactors in Latin America so that Argentina becomes a regional technology platform, supplying countries with nuclear technology that incorporate Chinese goods and services. The estimated cost of the reactor is \$7 billion.

Investment on transport and distribution facilities

From 2003 to 2014 Argentina enlarged its power grid by more than 5,500 kilometres. This has provided an opportunity for industrial development in areas located far from the main consumption centres and has also allowed for the development of energy resources (eg, solar parks in San Juan Province and wind and hydropower in Patagonia), which was previously impossible due to a lack of connections and infrastructure.

The National Energy Plan includes the construction of 500, 220 and 132 kilovolt lines to improve existing electricity connections and of 11,971 MWe hydroelectric projects that are planned to be built from 2014 to 2019.

Investment is also needed in the renewal and extension of distribution infrastructure to guarantee supply on the warmest days of the year. At present, supply companies in Buenos Aires and surrounding areas are carrying out investment plans to guarantee electrical power supply. These works have a budget of over \$21 million, which will be paid by consumers through special charges. Provincial infrastructure will also receive public investment of \$400 million to improve and guarantee energy.

Comment

Investment is required in the entire electricity sector to satisfy rising demand, which has been growing at an average of 4% annually over the last decade. To address the drop in private investment, the government has launched special schemes to increase generation and improve transport and distribution facilities.

One of the major challenges of the next government will be dealing with the fiscal deficit, which currently represents 4.9% of gross domestic product (GDP).**(4)** In this sense, all eyes are on the energy sector and how subsidies for electricity and natural gas public services will be handled in the future, considering that they represent 3.6% of Argentina's GDP.

To reduce the impact of subsidies on the public budget, an update of prices and tariffs and policies encouraging private investment for the execution of generation projects to diversify the energy matrix and reduce the imports of fuels for thermal generation are expected.

The most relevant projects that will be developed until 2019 are public initiatives to increase hydroelectric and nuclear generation. Developing renewable or clean energy generation projects is one of the alternatives for investment with the highest potential.

The opportunities to invest are extended to the transport and distribution sectors to improve existing facilities, especially for the delivery of energy from future generation projects into the system.

For further information on this topic please contact Federico Godoy or Carolina Calcagno at Beretta Godoy by telephone (+54 11 4326 7386) or email (godoy@berettagodoy.com or calcagno@berettagodoy.com). The Beretta Godoy website can be accessed at www.berettagodoy.com.

Endnotes

(1) Economic analysis by Fernando Navajas and Alberto Porto (1989) from the *Fundación de Investigaciones Económicas Latinoamericanas*: colectivoeconomico.org/2015/02/10/como-sera-este-fin-de-ciclo-de-los-precios-de-la-energia.

(2) The state energy company Enarsa called for tenders for the construction, operation and maintenance of this type of power generation. The successful companies will enter into an electricity supply agreement for a term of 15 years with promotional prices that are paid with public funds. Under the GENREN scheme, Enarsa was awarded projects for a total of 895 MWe, distributed accordingly:

- 754 MWe of wind power with an average price of \$126.9 per MWe hours.
- 110.4 MWe of biofuel thermal generation with an average price of \$287.6 per MWe hours.
- 10.6 MWe hours of small hydroelectric plants with an average price of \$162.4 per MWe hours.
- 20 MWe of solar power with an average price of \$571.6 per MWe hours.

(3) The development of the Carem25 project was declared as a public interest through Executive Order (1107/2006).

(4) Economic report drafted by the *Instituto para el Desarrollo Social Argentino*. For further information please see www.cronista.com/economiapolitica/Revelan-que-el-deficit-fiscal-es-equivalente-al-porcentaje-del-PBI-destinado-a-subsidios-20150315-0014.html.

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