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Biofuels Policy in Argentina

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Abstract: Argentine biofuels policy was initially established in 2006 with Law 26.093, creating a B5 and E5 mandate beginning January 2010. The framework provides incentives for those producing biofuels for the domestic market only; there are no incentives established for the export market. However, significant shareholder restrictions were included in this law resulting in no producers officially seeking the fiscal incentives provided by the law. Ostensibly, all production was slated for export markets, which had no tax incentives but no shareholder restrictions either.

Concurrently the sugarcane industry lobbied for a separate ethanol law that would address the unique circumstances of that industry, successfully establishing Law 26.334 in 2008 and thus separating biodiesel and ethanol formally in the legislative process. Subsequent regulations establish the companies allowed to participate in the industry and their shares.

The biodiesel situation was rectified with a one year renewable agreement signed between biodiesel producers and the government in early 2010 providing for the B5 requirement; this was increased to a B7 in July 2010, also ending at the end of the year but with option to automatically renew.

Keywords: Energy, biofuels, biodiesel, ethanol, Argentina, policy

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INTRODUCTION

Argentina has a large and sophisticated agricultural sector. It is among the world's largest producers of corn and wheat, among many crops, and is the third largest producer of soy after the United States and Brazil. Additionally, because of its large size (Argentina is the eighth largest in the world) and comparatively low population of 40 million inhabitants, much of its agricultural production is exported. For example, it is the largest exporter of soy oil and has a large and sophisticated crushing complex with installed capacity of over 150,000 tons a day of soy. Hence, biofuel policy in Argentina is heavily focused on the agricultural component.

Following the country's currency devaluation in 2001-2002 -- in which the Argentine peso went from being tied at parity to the U.S. dollar to an unlinking and precipitous fall to a current 3.7 pesos per dollar -- commodities experienced a boom cycle and the Argentine farm sector benefitted greatly, exporting commodities in hard currency.

Much of these earnings were kept outside of Argentina, and the country's biofuels policy has been influenced by a desire to find a way to bring that capital back into the country as investment in biofuels.

Argentine biofuels policy combines a desire to find ways for the agricultural sector to expand industrially into renewable energy in the twenty first century and keeping it in the hands of small and medium enterprises. The existing petroleum industry, as well as the large soy oil crushing complex, is kept at bay as regards domestic production. While the petroleum industry has not invested in biofuels plants to date, soy crushers have invested heavily in biodiesel production for export markets (mostly Europe, the largest consumer).

Because of this preference to develop smaller biodiesel production facilities that are geographically diverse, Argentine policy differentiates between those producing biofuels for domestic consumption and those that export. In effect, investors much choose one or the other because participation in both segments is not an option.

The overall intent of the biofuels policy of Argentina, then, was initially to allow a new sector to reap its rewards without fear of being co-opted by large multinationals. Hence the requirement that any biofuel production facility that focuses on domestic production must be majority-owned by Argentine capital, or by government entities such as provinces or municipalities. Unfortunately, given Argentina's weak track record, virtually all investment to date has gone towards producing biofuels for the export market, which has considerably fewer restrictions.



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Biofuels Legislation in Argentina

The Overall framework

The first biofuels-related legislation was published in April 2006 after almost two years of debate in the Argentine Congress and is referred to as Biofuels Law #26.093. While ostensibly addressing biodiesel, ethanol and biogas, in fact it is clear that the focus of the law is on biodiesel. This was due to the fact that Argentina, as the world's largest soy oil exporter and third largest soy producer overall, knew it had an opportunity and advantage in this sector. Additionally, like in Europe, over half of transportation vehicles operate with diesel engines.

Publication of the law led to a flurry of investment in biodiesel plants – primarily from the large, international vegetable oils crushers that have operated in Argentina for decades and already have significant infrastructure, logistics and international trade knowhow, to say nothing of a large capital base that could be used to cover the cost of building large facilities adjacent to their crushing complexes, which are typically located on the Paraná River in Santa Fe province which leads to the River Plate (*Rio de la Plata*) along the shores of the city of Buenos Aires, and from there onto the South Atlantic Ocean, and giving them excellent logistical advantages to export production.

Once the country's legislative branch issued Biofuels Law #26.093, the executive branch commenced work on regulating it, i.e., providing the specifics on how this law would be applied. The regulation, known as Decree 109/2007, was not published until February 2007. Subsequently, Resolution 1296/2008, which outlines the fire safety requirements, wasn't published by the executive branch until November 2008.

The delays from the Argentine executive branch to provide a framework on critical issues such as shareholder restrictions, safety requirements, and market parameters caused not a little conflict once published, as no less than two dozen biodiesel plants had at least begun construction and many were already producing biodiesel, and they now had to conform to new standards.

Since Biofuels Law #26.093 clearly focused on biodiesel, the Argentine sugar industry successfully lobbied to have a separate law that focused on bioethanol, which was published in December 2007 as Bioethanol Law #26.334. The regulations for this law were published by the executive branch in November 2008 and specify how the government will approve and select ethanol projects that are focused on the internal market (Resolution 1293/2008); how the government establishes the internal price of ethanol (Resolution 1294/2008); and what the quality and technical requirements are for ethanol (Resolution 1295/2008). It is important to note that the wording of the ethanol law and regulations clearly favor sugarcane-based ethanol to the detriment of corn, sorghum, as well as any feedstock that could be labeled as second or third generation.



Biofuels Law #26.093/2006

Published by the Argentine legislative branch in April 2006, Biofuels Law #26.093 has not had the effect it claims to seek: while meant to promote the development of a biofuels industry for the internal consumption market, the law has actually had the opposite effect, driving investment into production for export markets or even to other countries – most often Brazil.

The key aspect of the law is a call for a B5 biodiesel and E5 ethanol requirement beginning January 2010, which legislatively creates demand for an estimated 670 million liters (220 million gallons) of biodiesel beginning that year and 250 million liters (some 70 million gallons) of ethanol (see articles 7 and 8 of the law).

Biofuels producers who choose to sell into the domestic market have access to incentives which keep them from being able to export their production. As currently written, the law does not allow a biodiesel producer to export *and* sell domestically.

Those biofuels producers choosing to export production have no shareholder restrictions, no tax incentives nor benefits of any kind. As a matter of fact, the law does not address exports and provides no incentives to develop this segment. Additionally, biodiesel exports paid a 5% export tax (known as a “*retención*”), which was quadrupled by President Cristina Fernandez de Kirchner to 20% in March 2008.

Those choosing to sell into the B5 or E5 domestic market beginning in 2010 have a more complex scenario. On the one hand, producers are enticed with fiscal benefits such as the choice of reimbursement of VAT (valued-added taxes) or accelerated depreciation on capital investments; additionally, the government guarantees that the entirety of a biofuel producer’s output will be purchased over the course of the Biofuel Law’s term, 15 years. The attractiveness of these incentives are, however, tempered by the fact that in the subsequent regulation (article 4 of Decree 109/2007), it states that these incentives will be reviewed annually to see if they can be included in the budget, hence making clear they are not guaranteed.

Additionally, there are shareholder restrictions on projects geared towards the domestic market. Article 13 stipulates that a controlling interest in the biofuel facility must be held by either the federal government, a province, municipality, or personas “dedicated primarily to agricultural production”, which is subsequently defined in Decree 109/2007.

Article 4(r) of the Biofuels Law also indicates that the government will stipulate the price under which biofuels will be sold. However, as of the date of this study neither the price (nor a formula or mechanism) has been published, making it impossible for any investor to calculate a return on investment or cash flow for a biofuels production facility geared towards the domestic market.

Hence, to date, not a single plant has been built with a view to supplying the internal market. Virtually all biodiesel plants in Argentina are focused on export markets.



Biodiesel Legislation

Decree 109/2007 regulating Law 26.093

Decree 109/2007 was published in February 2007 by the Argentine executive branch and provides the specific ground rules for the biofuels industry's development.

The decree establishes an Application Authority ("*Autoridad de Aplicación*") charged with overseeing the development and compliance of the industry comprised of a variety of government departments that include Agriculture, Commerce, Economy, and Environment, among others² (see article 3).

The decree provides greater insight into the ideals behind the law. It is meant to favor small and medium enterprises over large corporations, and provides greater details as to the specific incentives and benefits awarded to those who apply to supply the internal market beginning in 2010. Interested investors must register with the Application Authority seeking approval to be able to sell their entire production exclusively into the domestic market.³

It provides geographic incentives as well, favoring regions that need greater industrial development [see article 18(c)].

Article 12 of the decree addresses the issue of pricing and returns on investments. The Application Authority will publish monthly the price of biofuels for the industry, calculating it in such a manner as to ensure a "reasonable return" for producers.⁴

It also creates a new sub-market known as Self-consumption ("*Autoconsumo*") geared towards those agricultural concerns interested in producing biofuels for their own use and which are not allowed to commercialize and surplus production (see article 16).

Article 19 explains the shareholder restrictions that apply to those that produce for the domestic market; article 19(h) also makes clear that this production must be sold domestically, and that if there are any excess volumes of biofuels available, the Application Authority may allow these to be sold to "other markets" but states that these volumes will not benefit from any of the tax incentives provided under Biofuels Law 26.093.

Biogas is discussed very briefly in article 14, simply stating that the Application Authority will define the terms and conditions under which biogas will be able to be integrated into the gas distribution network, ensuring proper safety measures and addressing environmental concerns.

² Although in practice it is controlled by the Secretary of Energy's office.

³ While not specified in legislature, the government seeks to have about 15 biodiesel plants geographically distributed throughout the country, with an average capacity of about 40-50 million liters each.

⁴ To date this price has not been published, although it is expected to operate under a formula not unlike the one used to establish the price of ethanol, which is discussed in Resolution 1294/2008.



Resolution 1296/2008 which specifies fire security requirements for biofuels production facilities

Resolution 1296/2008 was published in November 2008 along with a series of resolutions focused on ethanol. It uses as its base Decree #10.877 of September 1960, a resolution which regulates fire security for any combustible fuel installation.

It begins by establishing three categories of biofuels plants but addressing only biodiesel facilities (article 3).

- Category I plants are those with production capacities of less than 30 cubic meters/day (30,000 liters; 7,900 gallons).
- Category II plants are those with production capacities between 30 m³ and 60 cubic meters/day (60,000 liters; 15,900 gallons).
- Category III plants are those with production capacities larger than 60 m³.

Storage capacity is also categorized:

- Category I facilities are those with biofuels storage capacity below 300 cubic meters (300,000 liters; 79,000 gallons).
- Category II facilities are between 300 m³ and 600 cubic meters (600,000 liters; 160,000 gallons).
- Category III facilities have storage facilities above 600 m³.

Articles 4 through 11 address general requirements for buildings. Articles 12 through 25 address tanks and contention measures. Articles 26 through 30 address drainage and tubing. Articles 31 through 35 address electrical installation requirements. Articles 36 through 40 address loading and unloading requirements, while articles 41 through 51 address specific fire control measures.

The third chapter of Resolution 1296/2008 includes articles 52 through 159 and classifies areas within the biofuels production facilities:

- Zone I is the operational area, flammable storage facilities and flammable loading/unloading docks;
- Zone II comprises biofuels storage facilities and biofuel loading facilities'
- Zone III comprises auxiliary installations.

Resolution 6/2010, biodiesel quality specifications

Resolution 6/2010 was published in early February 2010 and charts the quality parameters for the B5 market.



ESPECIFICACIONES DEL BIODIESEL B100 PARA B5

Parámetro	Unidad	Límites		Método de ensayo
		Mínimo	Máximo	
Grupo I				
Contenido de Esteres	% m/m	96,5	-	EN 14103
Esteres metílicos del ácido linolénico	% m/m	-	12,0	EN 14103
Densidad a 15° C	kg/m ³	860	900	ASTM D-1298
Viscosidad cinemática a 40° C	cSt	3,5	5,0	ASTM D-445
Punto de Inflamación	°C	120	-	ASTM D-93
Azufre	% m/m	-	0,0010	ASTM D-5453
Contenido de Agua	% m/m	-	0,05	ASTM D-4928
Glicerina Libre	% m/m	-	0,020	ASTM D-6584
Glicerina Total	% m/m	-	0,250	ASTM D-6584
Índice de Acidez	mg KOH/g	-	0,50	ASTM D-664
Estabilidad a la Oxidación a 110° C	horas	6,0	-	EN 14112
Índice de Iodo	g I ₂ /100g		Informar	EN 14111
Punto de enturbiamiento	°C		Informar	ASTM D-2500
Cenizas Sulfatadas	% m/m	-	0,020	ISO 3987
Grupo II				
Metales Grupo I (Na+K)	mg/kg	-	5	EN 14538
Metales Grupo II (Ca+Mg)	mg/kg	-	5	EN 14538
Contaminación Total	mg/kg	-	24	EN 12662
Residuo Carbonoso	% m/m	-	0,050	ASTM D-4530
Cenizas Sulfatadas	% m/m	-	0,020	ISO 3987
Corrosión a la lámina de Cobre, 3 horas a 50° C	Grado	-	1	ASTM D-130
Fósforo	% m/m	-	0,001	ASTM D-4951/ICP
Número de Cetano		45	-	ASTM D-613
Cold Soak Filterability	Segundos		Informar	ASTM D-6751-08

Resolution 7/2010, establishing B5 market participants and price formula

Resolution 7/2010 was published in early February 2010. It states that Law 26.093 and Resolution 109/2007 allow the Application Authority to sign agreements with biofuels producers to ensure



compliance of the B5 target, indicating that such an agreement was reached and signed on January 20, 2010. This agreement is in effect from the date of Resolution 7/2010 until December 31, 2010, with option to automatically extend for another period.

Article 3 of the Resolution states that blenders are required to acquire at the biodiesel producers' installations their monthly quota of biodiesel; this quota will be given to each of the blenders by the Application Authority at the beginning of each month and based on their average diesel fuel use in the preceding twelve months; Article 4 states that this will be equal to 5% of their average, which blenders are required to blend ensuring a minimum of 5% in their total diesel mix.

Article 5 establishes a rolling monthly reporting requirement for blenders to report the amount of biodiesel they expect to need in the following three months; Article 6 establishes a reporting requirement to inform the amount of biodiesel actually acquired in the preceding month.

The Resolution then attaches a copy of the agreement reached with 19 biodiesel producers with signatures and comprised of 17 clauses. It ends December 31, 2010, with option to extend, establishing a minimum monthly volume to be supplied to the domestic market.

Clause 11 of the agreement establishes the price formula to be used for transactions between biodiesel producers and blenders. The resultant price from this formula will be published on the Secretary of Energy's website at the beginning of each month and will be established in Argentine pesos per ton. The formula is:

Pesos/ton sold Ex-Works the biodiesel plant = (cost of one ton soy oil + Transaction Cost of the oil) times 1.06 + Transportation Cost of one ton of soy oil + cost of one ton of methanol times 0.155 + Other Cost Components times IPIM + Profit per ton of biodiesel where,

- Transaction Cost is 5% of the price of soy oil
- Transportation Cost assumes 100 kilometers distance between the soy oil processor to the biodiesel plant at a rate of US\$0.10/km
- Other Cost Components is established at US\$163.75/ton biodiesel
- IPIM refers to the official inflation rate adjustment
- Profit is established at US\$28/ton.



<i>(in tons/year)</i>	(A) Installed Capacity	(B) Volumes Offered for Domestic	(C) Volumes Assigned by govmt
Renova	480,000	144,000	33,750
Dreyfus	305,000	84,000	27,500
Patagonia Bioenergía	250,000	84,000	33,130
Ecofuel	240,000	72,000	29,108
Unitec	230,000	230,000	113,097
Viluco	200,000	200,000	108,594
Explora	120,000	120,000	89,091
Molinos	100,000	36,000	27,810
Diaser	96,000	96,000	79,459
Biomadero	72,000	48,000	44,152
Vicentin	63,400	24,000	23,928
Aripar	50,000	50,000	50,000
AOMSA	48,000	48,000	48,000
Maikop	40,000	40,000	40,000
Rosario Bioenergy	36,000	36,000	36,000
Diferoil	30,000	30,000	30,000
Pitey	18,000	18,000	18,000
Soyenergy	18,000	18,000	18,000
Ecopor	10,200	10,200	10,200
TOTALS	2,406,600	1,388,200	859,820

Resolution 554/2010, increasing domestic market to B7

Resolution 554/2010 was published in early July 2010 and essentially ratified an Addendum to the agreement reached with biodiesel producers dated January 20, 2010. It adds new biodiesel producers and states a desire to increase the domestic mandate to 7%, up from the original 5% established by Law 26.093/2006. This new agreement was signed July 5, 2010 and increase the number of market participants to 23 from the original 19.



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			Domestic Market		
	Company	Capacity	B5	+ B2	= B7
1	Unitec Bio SA	230,000	113,097	9,440	122,537
2	Viluco SA	200,000	108,594	8,488	117,082
3	Explora SA	120,000	89,091	4,784	93,875
4	Diaser SA	96,000	79,459	3,744	83,203
5	Renova SA	480,000	33,750	17,266	51,016
6	Oil Fox SA	50,000	0	50,000	50,000
7	Aripa Cereales SA	50,000	50,000	0	50,000
8	Patagonia Bioenergia SA	250,000	33,130	16,111	49,241
9	Vicentin SA	63,400	23,928	24,913	48,841
10	AOM SA	48,000	48,000	0	48,000
11	Ecofuel SA	240,000	29,108	16,320	45,428
12	Biomadero SA	72,000	44,152	1,125	45,277
13	LDC Argentina SA	305,000	27,500	16,898	44,398
14	Molinos Rio de la Plata	100,000	27,810	13,407	41,217
15	Maikop SA	40,000	40,000	0	40,000
16	Rosario Bioenergy SA	36,000	36,000	0	36,000
17	Diferoil SA	30,000	30,000	0	30,000
18	Soy Energy SA	18,000	18,000	0	18,000
19	Pitey SA	18,000	18,000	0	18,000
20	Hector Bolzan y Cia.	10,800	0	10,800	10,800
21	Ecopor SA	10,200	10,200	0	10,200
22	New Fuel SA	10,000	0	10,000	10,000
23	ERA SRL	9,600	0	9,600	9,600
	TOTAL (annual tons)	2,487,000	859,820	212,896	1,072,715



Ethanol Legislation

Bioethanol Law #26.334/2008

Bioethanol Law #26.334 was published in December 2007 and is comprised of only five short articles. Its first article announces that this law will promote ethanol production for the domestic market *and to generate surpluses for export markets*. This is a new addition and a step forward, given that Biofuels Law #26.093 did not address export markets.

It then specifically states in article 2(a) that sugarcane producers are grandfathered within the context of this law, and in article 2(c) stipulates that controlling shareholders need to be Argentine persons, or legal entities whose capital is primarily owned by Argentine citizens.

Article 3 stipulates that those ethanol facilities that fall within the scope of law 26.334 will also benefit from the incentives provided under law 26.093. This is a significant step because for the first time, biofuel production that may be exported has access to actual tax incentives from the government to develop the industry and to invest.

Resolution 1293/2008 which regulates how internal market ethanol projects will be selected

The Application Authority also oversees ethanol production as per Resolution 1293/2008, which was published along with the ethanol law in November 2008. Article 1 indicates that those projects approved for the industry will be approved “ad referendum” by the Minister of Federal Planning, Public Investment and Services himself. This ministry oversees the Secretariat of Energy.

This decree outlines how production facilities will be chosen to supply ethanol for the internal market. Article 3(a) states that the first 20% of ethanol production will be located anywhere in the country *except* in the provinces of Buenos Aires, Cordoba and Entre Rios. Furthermore, within this preference, small and medium enterprises, and within these, preference will go to those that have agricultural production (i.e., farm coops). However, in the same sentence it states that equal preference within all these groups are given to those contemplated in Bioethanol Law #26.334, i.e., existing sugarcane producers – virtually all of which are in the NW provinces of Tucuman, Salta and Jujuy.

Article 3(b) then states that the remaining 80% of selected projects will be chosen under the same guidelines as above, but without excluding the three provinces, again giving equal weight to those enterprises already encompassed under law 26.334.

Resolution 1294/2008 which establishes pricing for internal market ethanol

Resolution 1294/2008 was published in November 2008 along with the ethanol law. It addresses the government’s decision to establish the price at which ethanol is sold in the domestic market for the E5 requirement that begins January 2010. Under article 2, ethanol producers are not



allowed to sell ethanol at any price other than that established by the government, which is published on the Secretariat of Energy's website on the first business day of each month and is the price to be used for all commercial transactions that month.

The price formula is addressed as an Annex to Resolution 1294/2008. It stipulates that the Secretary of Energy will each month choose the higher of two prices minus a 3% transfer value. The pricing is established as ex-works; ethanol buyers, typically the blenders/retailers of fuels, must incur the cost of transport to their blending installations to meet the E5 specs.

"Precio 1" (Price 1) is a formula based on a "Typical Project" and calculates the cost of producing one liter of ethanol including a profit margin:

$((\text{liters of diesel} * \text{average price of diesel fuel}) + (\text{man-hours} * \text{hourly labor rate}) + (\text{cubic meters of natural gas} * \text{price of natural gas}) + (\text{valor of the remaining components of ethanol production})) * (1 + \text{a correlation factor}), \text{ where:}$

- The price of fuel (diesel) used for the formula is that in the sugarcane growing northern provinces of Tucuman, Salta and Jujuy.
- The labor rates used are those of the sugarcane workers according to union agreements in northwest Argentina (the sugarcane region).
- The remaining cost component is inflation-adjusted, and the correlation factor is that which gives the project an adequate return on investment, and is set at 0.313.

However, the Minister of Federal Planning, Public Investment and Services reserves the right to review and modify the formula for Price 1.

To define a "Typical Project", the government assumed ethanol produced with sugar cane, although it states that other feedstock such as corn, sorghum, beets and biomass are also welcome to use these same figures. The technologies used are of international standards. Additional assumptions of the government include:

- A twelve month construction period;
- Capacity of 26,400 tons;
- A cost of \$60 million pesos (equivalent to about US\$16 million at current exchange rates of 3.7 pesos/USD);
- Financing comprising 60% of total cost at an interest rate of 14%, in pesos;
- Yield was assumed to be one ton sugarcane = 0.070 cubic meters (70 liters; 18.5 gallons) of ethanol;
- And various other calculations.

"Precio 2" (Price 2) is determined as the average price of super unleaded gasoline as published on the Secretary of Energy's website each month. Note that this is an ex-works price, and that the cost of transportation, blending, distribution and retailing is not included.



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Price 2 has a cap at 35% above the price of Price 1.

Resolution 1295/2008 which provides technical and quality requirements for ethanol

Resolution 1295/2008 was published in November 2008 along with Bioethanol Law #26.334. It addresses quality requirements for ethanol as an Annex to the Resolution and uses ASTM D specifications for aspects that include density; methanol content; water; copper; acidity; sulphur; sulphates; appearance; among others.

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