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Report Highlights:

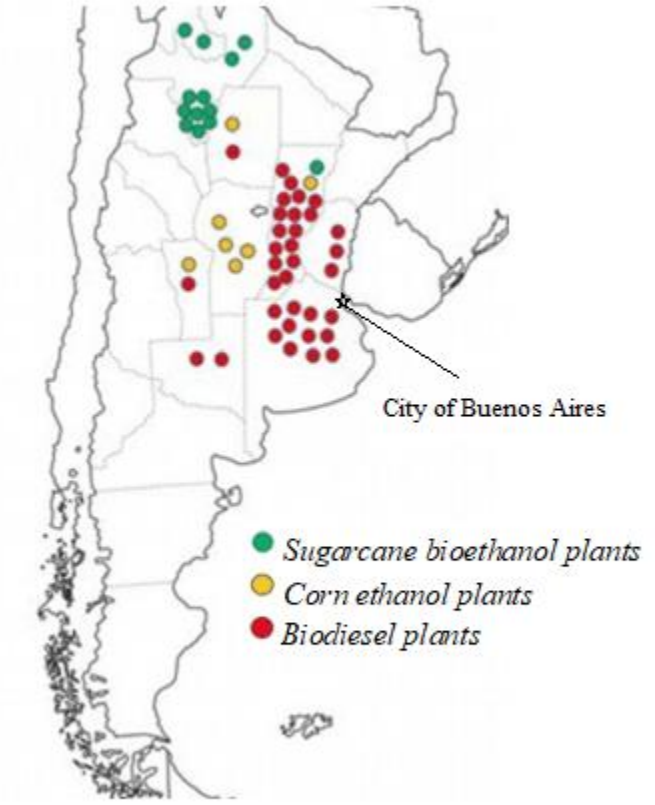
Argentine bioethanol consumption for 2022 is forecast at a record 1.1 billion liters due to the combination of increased gasoline demand and a higher blend rate, close to the maximum official blend rate. Biodiesel production in 2022 is projected to continue to recover after two very poor years caused by low overall diesel demand during the COVID-19 pandemic. Greater domestic consumption could more than offset somewhat lower biodiesel exports to the EU. Because of high global fuel and commodity prices, local processors have pressed to have the official biofuel prices increased to cover rising costs. Argentina has not announced any investment in a new biofuels plant in 2022. The latest addition was the expansion capacity of the largest corn ethanol plant in Cordoba province.

I. Executive Summary

Argentina's economy continues to be hindered by a growing fiscal deficit, slow growth, and very high inflation which puts pressure on the value of the peso and hampers opportunities for a large portion of the population to improve their standard of living. The ruling coalition is also facing difficulties creating cohesive policies and administration, as different factions often have differing views and solutions on how to resolve the nation's problems. A reaction to this situation is the recent resignation of number of important ministers.

Over the past year, attempting to manage dramatic changes transport fuel markets resulting from initial demand loss and on-going price volatility tied to Covid lockdowns and recovery, further price volatility resulting from global fossil fuel supply-demand imbalances, and now the war in Ukraine, Argentina has passed new biofuels legislation and regulations attempting to respond to market changes and building more flexible blending policies for both ethanol and biodiesel.

Figure 1: Approximate Location and Type of Argentine Biofuel Facilities



Source: FAS Buenos Aires and Clarin Rural

The new Biofuels Law 27640, passed in mid-2021, maintained the mandated blend rate for bioethanol at 12 percent, and reduced that of biodiesel from 10 percent to 5 percent. During the first months of its implementation, new and updated official prices brought relief to the sector and supplies of both biofuels under the mandate recovered strongly. However, in early 2022, the combination of outdated, low official prices (inflation in 2021 was 51 percent) and high world commodity prices, exacerbated by the Ukraine-Russia war, made suppliers of both biofuels slow their sales pace due to higher costs and negative returns. At the same time, lower than needed diesel imports (Argentina is not self-sufficient) combined with a biodiesel mandate cut by half and a growing fuel demand triggered a shortage of diesel which increased as the months went by. The government reacted and increased the official price of biodiesel and corn bioethanol, and later adjusted the price of sugarcane ethanol. Sales under the mandates recovered rapidly, but the diesel shortage persisted. In June 2022, the government passed a resolution permanently

increasing the biodiesel mandate from B5 to B7.5 and, at the same time, passed a decree temporarily increasing it which can rise as high as B12.5 to partially offset the diesel shortage.

Biodiesel exports are forecast to remain in line with the recent pre-COVID past, and are forecast to drop somewhat in 2022 from 2021 levels. The EU continues to be the sole destination, but there is growing concern in the Argentine biodiesel sector of a possible change of rule in the EU Parliament which could limit future exports. The fuel ethanol market remains insular with essentially no fuel ethanol traded as in past years.

Bioethanol for Fuel Use:

Consumption of bioethanol in 2022 is forecast at a record 1.1 billion liters as a result of higher gasoline consumption and a high blend rate which is projected to be close to the maximum authorized by the official biofuels program. The main reasons for higher consumption include a reactivation of the domestic economy after two years of pandemic-related shutdowns, subsidized fuel prices which boost greater consumption and when combined with currency arbitrage enabled by currency controls, attract consumers from neighboring countries to cross and refuel for less than half the price, and a strong official promotion of domestic tourism.

The new Biofuels Law 27640, passed in mid-2021, established the mandated blend rate for bioethanol at 12 percent, with half (6 percent) supplied by the sugarcane industry and half (6 percent) from the corn industry. If the government deems it necessary, the portion derived from corn ethanol can be reduced up to half, to a low of 3 percent of the total fuel mix, resulting in a potential floor for national bioethanol blend rate of 9 percent. For the period January-May 2022, corn ethanol accounted for 60 percent of the total bioethanol supply and sugarcane the remainder. Due to increased world commodity prices and higher production costs, primarily driven by high fuel and fertilizer prices, the government increased the official price of corn ethanol under the mandate to secure its supply. A few months later, an increase in the price of sugarcane ethanol paid directly by oil distributors was authorized.

For several years now, bioethanol producers have lobbied to have the mandate rate increased from 12 to 15 percent, at a time that it is convenient for the entire chain: the government could import less gasoline, oil companies would buy less expensive ethanol, and the ethanol industry would operate at full capacity and could consider investment in additional capacity.

The corn industry has five large plants operating with a production capacity of 900 million liters a year, although one is owned by a large conglomerate which is going through financial difficulties, and it is operating at a low capacity. Despite Argentina’s status as one of the world’s three largest corn exporters, growth in corn production has enabled sufficient supply for domestic ethanol production. Most plants can dry wet distiller’s grains, but approximately only half is dried as gas cost is high and its availability limited.

In 2022, the sugarcane industry will have 15 sugar mills operating, with 12 dehydrators and 16 distilleries, and a production capacity of approximately 700 million liters a year. These plants normally produce ethanol during the cane harvest in May-October and sell it year-round. They use molasses and direct cane to produce ethanol. Argentine sugar mills normally produce

enough sugarcane to supply the country's sugar needs, sugar for exports and to produce ethanol for the official mandate.

The biofuels mandate is the main driver of bioethanol production, as exports are quite limited and sporadic. Argentina regularly imports and exports ethanol for industrial use, although it is often difficult to determine the final intended use of exported ethanol. While the Energy Secretariat can authorize imports of ethanol to be used under the mandate, the new biofuels law continues to protect the domestic ethanol industry as it dictates that bioethanol used to comply with the mandate must be produced in Argentine plants with locally produced feedstocks.

Biodiesel:

Biodiesel consumption in 2022 is forecast to continue its recovery after a very poor 2020 and 2021 strongly affected by the COVID-19 pandemic. Consumption under the official mandate is forecast at 920 million liters but could be larger if the government extends the additional temporary 5 percent blending requirement put in place to help reduce the current diesel shortage beyond 60 days.

On and off-road diesel consumption (including biocomponents) is also expected to continue its recovery, increasing 6 percent in 2022. The main drivers behind this growth are a growing economy, an official policy subsidizing energy prices which support increased demand, and significantly lower fuel prices than in neighboring countries which result in large sales in border cities. Argentina's currency control regime has also created opportunities for currency arbitrage which encourage these cross-border fuel purchases. The combination of a smaller biodiesel mandate, lower than needed diesel imports, and a growing demand triggered a shortage of diesel. The government reacted by increasing the price of biodiesel under the mandate and by permanently increasing the mandated blend rate from 5 percent to 7.5 percent and setting a temporary additional mandate of 5 percentage points for 60 days, taking the total mandated blend rate during this period to 12.5 percent. For the first time ever, this transitory and exceptional mandate increase can be freely negotiated between suppliers and buyers, allowing large biodiesel exporters to participate. Post projects the average blend rate in 2022 at 7.5 percent, the highest since the pandemic began, but still notably lower that several years just prior to the pandemic.

Production of biodiesel in 2022 is forecast at 2.1 billion liters, the highest since 2019, triggered solely by higher domestic consumption. With more than 50 percent idle capacity, there are no new investments in the sector while the number of biodiesel plants remains at 33. By law, small and medium sized plants supply the official mandate, while 9 large plants, mostly owned by multinational grain companies, focus on exports and recently in the additional and temporary 5 percent official mandate. All these plants almost exclusively use soybean oil as feedstock.

The biofuels law protects the domestic biodiesel industry from import competition as biodiesel used under the official mandate must be produced in Argentine plants using locally produced feedstocks. A low use of capacity makes imports of biodiesel quite improbable. Exports of biodiesel are not directly addressed by the new Biofuels Law 27640.

Exports in 2022 are forecast at 1.2 billion liters, 17 percent lower than in 2021. The European Union continues to be almost the sole destination for exports. Exports of biodiesel to discretionary markets are not expected as the current world price of soybean oil is 30-35 percent higher than diesel.

There is no renewable diesel production in Argentina. There are a few feasibility projects underway, by local oil companies, but contacts believe current policy and economic conditions do not encourage such investment. According to contacts, a major policy objective of the Argentine soybean crushing sector, along with the national government is to negotiate a low-duty quota in the United States to export renewable diesel and/or vegetable oil for its production.

II. Policy and Programs

New Biofuels Law 27640 - July 2021

On July 16, 2021, the Argentine Congress passed Law 27640, entitled "Regulation and Promotion Regime for the Production and Sustainable Use of Biofuels" which replaces the original Biofuels Law 26093 of 2006, which expired in May 2021. The new law will expire on December 31, 2030 and may be extended 5 more years. Some regulations were promulgated on October 19, 2021 through Decree 717/2021 and in April 18, 2022 through Decree 184/2022. In addition, Resolution 438/2022 of June 16, 2022, modified the blend rates for biodiesel. To date, not all provisions of the law have fully passed through the rule-making process. Key points of the law and latest regulations include:

- The mandated bioethanol blend rate with gasoline is a minimum of 12 percent, with a potential reduction to 9 percent. The bioethanol market is intended to be split evenly between sugarcane and corn feedstocks, but in the case where high commodity prices are deemed to negatively affect fuel prices, all reductions in blending will come from bioethanol produced from corn.
- The Biofuels Law of 2021 mandated a biodiesel blend rate with diesel at a minimum of 5 percent, but which can be reduced to 3 percent when prices of feedstock increase in such a way that is deemed to distort fuel prices. However, in June 2022, Resolution 438/22 established that diesel be mixed at 7.5 percent supplied exclusively by small and medium plants under the mandate. At the same time, Decree 330/22 established an additional increase of 5 percent, for a temporary period of 60 days that can be supplied by any local biodiesel plant including the large companies which until now were only eligible for export. As a result, the biodiesel mix during these 60 days could reach 12.5 percent.
- Only bioethanol and biodiesel produced in plants in Argentina using locally produced feedstock of agricultural origin or organic waste may be used to meet mandates.
- Biofuels are exempted of the tax on liquid fuels and the tax on carbon dioxide which are applied on fossil fuels.
- The Secretariat of Energy will be authority with the power to regulate and control biofuels (it will determine official prices, quality, blend rates and sanctions for non-compliance)
- Companies producing or distilling fossil fuels cannot own nor participate in companies producing biofuels. If petroleum companies would in the future convert old refineries to produce Renewable Diesel and participate of the official mandate, they would have a limit of

production capacity as only small and medium companies are eligible and the biofuels policy should be amended to consider RD as a biofuel.

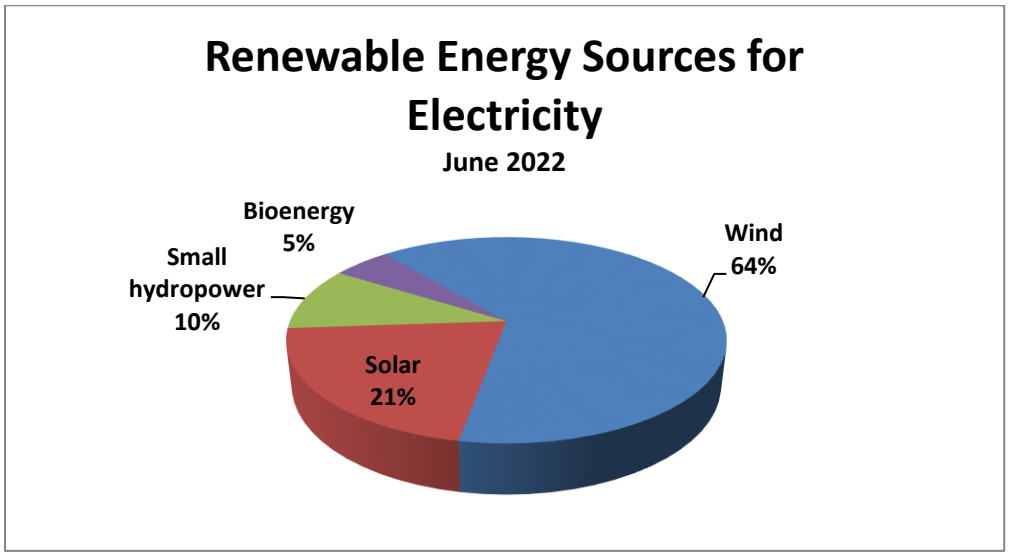
- The Secretariat of Energy could allow, if market conditions permit, the substitution of imported fossil fuel with local biofuels.
- The Secretariat of Energy will set and establish conditions for entities to consume internally produced biofuels, such as those used by bus companies, truck transportation or farm machinery and equipment companies.

Renewable Energy, Greenhouse Gas (GHG) Emissions and Other Environmental Issues

Based on the Emissions Gap Report (UNEP, 2016), file:///C:/Users/FAS/Downloads/emission_gap_report_2016.pdf Argentina accounted for 0.7 percent of global GHG emissions in 2014. President Alberto Fernandez announced at the UN Climate Change Conference in November 2021 in Glasgow, Scotland, an additional reduction from its Nationally Determined Contribution (NDC) presented in 2016, lowering it from 483 to 349 MtCO2e by 2030. The main tools to reach this goal are the expansion of renewable energies (by 2030 at least 30 percent of the total energy matrix will have to be from renewable sources), financing, lower subsidies to fossil fuels, expansion of protected areas, and improved efficiency in industry, transportation and construction. Additionally, an important project on production and exports of renewable hydrogen is under analysis and President Fernandez mentioned the need to create a system to swap debt for climate action.

In 2015 Argentina passed Law 27191/2015, the National Support for the Use of Renewable Sources of Energy, which requires that by 2025 at least 20 percent of Argentina's total electricity consumption should originate from renewable sources. In 2021 it accounted for 13 percent, while in April and May 2022 renewable energy accounted for 16 percent of the production of electricity. The lack of financing, low rates of new investment and the country's weak economic situation have slowed down investment in the sector.

Figure 2: Renewable Energy Electricity Sources in Argentina



Source: FAS Buenos Aires with Cammesa data – excludes large hydropower

Argentina continues to develop wind and solar power in many different regions, but with a focus mainly on wind in southern Patagonia and solar in the northwest and west of the country.

The Biofuels Law 26093/2006, which mandated the initial obligatory mix of a five percent blend of ethanol in gasoline and five percent blend of biodiesel in diesel in 2010, was also an important part of the country's early efforts to reduce GHG emissions. This goal was largely met on schedule for biodiesel but lagged for three years for ethanol. The first biofuels law expired in May 2021 and was replaced by the new Biofuels Law 27640.

Argentina does not have specific environmental or social/economic sustainability criteria for biofuels used in the domestic market; none specific to the cultivation of feedstock, nor minimum Lifecycle Analysis (LCA) derived CI (carbon intensity) values for biofuels. However, as the country is a major exporter of biodiesel, the criteria and regulations of other markets are closely monitored for export compliance. This is the case for the EU's second Renewable Energy Directive (REDII) and US Environmental Protection Agency (EPA) rulemaking. CARBIO, the Argentine Chamber of Biodiesel, produced a voluntary certification scheme and biodiesel exports are accompanied by certificates granted by the International Sustainability and Carbon Certification system (ISCC) or the French 2BS biomass biofuel voluntary sustainability scheme.

Mandates, Official Prices and Taxes Since 2007

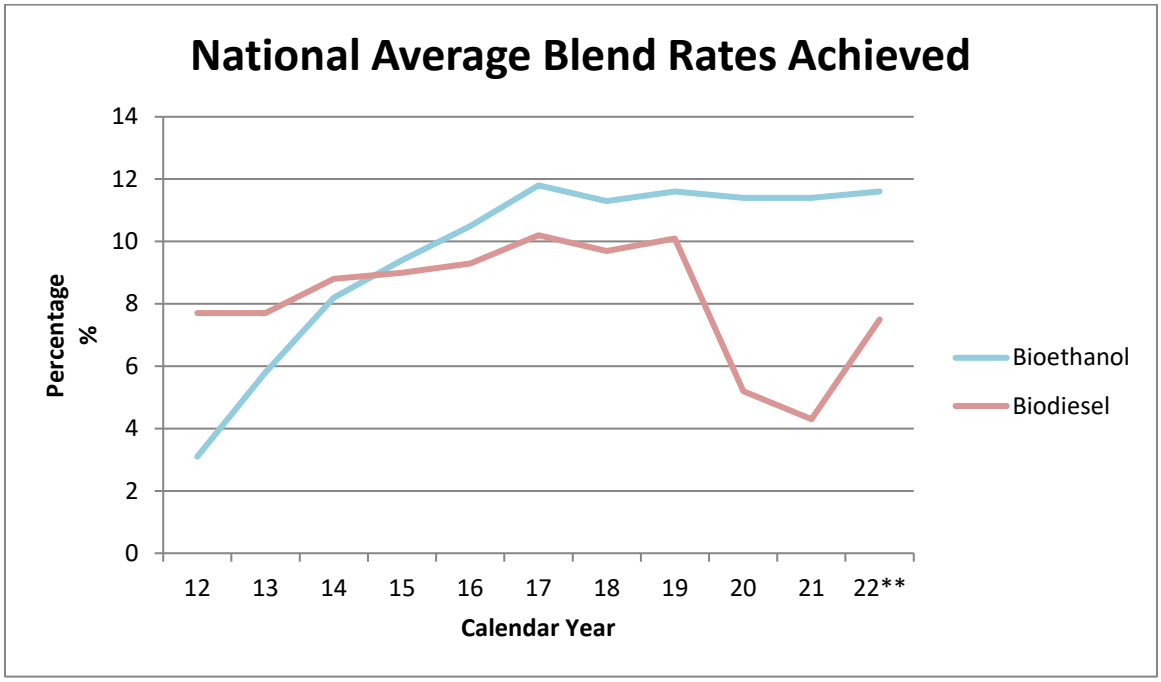
A) Blend Mandates

The Biofuels Law of 2021 mandated biodiesel blend rate with diesel at a minimum of 5 percent, but can be reduced to 3 percent when prices of feedstock increase in such a way that is deemed to distort fuel prices. However, in June 2022, Resolution 438/22 of the Secretariat of Energy established that the mandate mix of biodiesel in diesel be increased to 7.5 percent, and can only be supplied by small and medium plants. At the same time, Decree 330/22 established an additional 5 percent mix for a temporary period of 60 days that can be supplied by any local biodiesel plant, including the large companies which until now were only eligible for export. As a result, the biodiesel mix during these 60 days can reach 12.5 percent. Most contacts believe this period could be extended somewhat due to the current shortage of diesel in the country.

The new Biofuels Law 27640 passed in July 2021 maintains a 12 percent rate for bioethanol and the even split between corn and sugarcane, but gives the Energy Secretariat the power to reduce the blend rate to 9% if economically necessary, and all reductions are to be taken from the share provided by corn ethanol. In early July 2022, congressmen from Cordoba Province presented a bill to authorize flex fuel cars to run in the country.

In January 2010, with the first biofuels law in place, Argentina mandated a blend rate of 5 percent bioethanol in gasoline and 5 percent biodiesel in diesel. This ethanol mandate was increased to 9 percent in January 2014 and 10 percent in February 2014. At the same time, a 10 percent biodiesel blend requirement was added for power generation plants technically able to use a biodiesel blend but it was never enforced and so far very little has been used in this sector.

Figure 2: Bioethanol & Biodiesel Blend Rates



Source: FAS Buenos Aires
Covers all Diesel Pool for On/Off-road Use and excludes stationary power.
*** 2022 Projection*

B) Official Prices

The new biofuels law passed in July 2021 gives the Secretariat of Energy the authority to determine official prices under the mandate, blenders pay biofuel producers, taking into consideration input costs and a given profit.

Since the implementation of the original biofuels mandate in 2010, the formulas established for setting official prices of bioethanol and biodiesel under the mandate have undergone several changes. Further, in many periods, the government fixed prices which did not follow established policies at the time. Please refer to past annual reporting for past history on biofuel price setting.

With the new biofuels law, the Secretariat of Energy set new, updated prices for the three biofuels under the mandate. These prices were periodically updated. In April 2022, the government set a price path through August for biodiesel and corn bioethanol. This measure was well received by the industry as it gave some predictability in an economy with significant problems and inflation projected at a minimum 80 percent in 2022. The official price of bioethanol of sugarcane is currently ARS $80.56 pesos per liter, but industry contacts indicate that since July 2022, gasoline distributors and ethanol plants agreed to set the price ARS $15 pesos per liter above the official price to offset higher costs of production and industry losses.

Table 1: Official Prices for Sugarcane Bioethanol, Corn Bioethanol and Biodiesel

Month/Year	Sugarcane Pesos/Lt	Sugarcane USD/Lt	Corn Pesos/Lt	Corn USD/Lt	Biodiesel Pesos/Lt	Biodiesel USD/Lt
Aug 2022			103.76	0.74*	175.35	1.25*
Jul 2022	95.56*	0.71*	100.74	0.75*	171.94	1.28*
Jun 2022	80.56	0.63	98.28	0.77	164.41	1.29
May 2022	80.56	0.66	96.35	0.79	161.19	1.31
Apr 2022	73.11	0.62	94.93	0.81	158.81	1.36
Mar 2022	73.11	0.64	73.11	0.64	126.78	1.12
Feb 2022	65.42	0.59	65.42	0.59	123.69	1.12
Jan 2022	59.35	0.55	59.35	0.55	120.09	1.12
Dec 2021	59.35	0.57	59.35	0.57	116.69	1.11
Nov 2021	59.35	0.57	59.35	0.57	112.74	1.09
Oct 2021	59.35	0.58	59.35	0.58	110.53	1.08
Sep 2021	59.35	0.59	59.35	0.59	108.36	1.07
Aug 2021	55.66	0.56	55.66	0.56	99.12	0.99
Jul 2021	55.66	0.56	55.66	0.56	99.12	1.00

Source: FAS Buenos Aires with data from the Argentine Under Secretariat for Fuels
** Estimated*

For information on earlier pricing history, see past report.

C) Taxes on Liquid Fossil Fuels and Fossil Fuel Carbon Emissions

The recently passed Biofuels Law 27640 will continue with a similar tax treatment for biofuels as was in place prior to the expiration of the original Biofuels Law 26093/2006. In December 2017, the Argentine Congress passed the Tax Reform Law 27430/2017, which among many changes, modified the tax structure of fuels and, for the first time, imposed a carbon tax on fossil fuels. Since March 2018, fuels have been subject to two taxes (compared to four previously): a tax on liquid fuels and a tax on carbon dioxide (with the objective of discouraging fossil fuels use and encouraging renewable energies). Biofuels, either pure or in fuel mix, were exempted.

Import Policy Including Duties/Export Taxes and Levies

Pursuant to the recently passed Biofuels Law, only biofuels manufactured by Argentine producers may be used in filling the official mandate – which effectively prohibits biofuel imports by fuel blenders to meet the mandate mix – unless authorized by the Secretariat of Energy.

Since the passage of the original biofuels law, the export tax differential between the biodiesel and soybean oil has fluctuated widely. Currently there is a nominal 3 percent differential export tax on biodiesel relative to soybean oil. However, the effective differential is now close to 10 percent. The effective rate for biodiesel is lower because it enjoys an export tax reduction granted to most manufactured products that is not provided to soybean oil and raw agricultural commodities. In March 2022, through Decree 131/2022, the Argentine government modified the export tax scheme for soybean byproducts effective immediately and valid until the end of 2022. The nominal export tax on biodiesel was increased 1 percentage point for a total of 30 percent

(23.07 percent effective tax), while soybean oil and meal export taxes were increased from 31 percent to 33 percent.

Table 2: Recent Export Tax Changes on Biodiesel, Soybean Oil, and Soybean

MONTH	BIODIESEL % Export Tax*	SOY OIL % Export Tax	SOYBEANS % Export Tax
March 2022 (Decree 131/22)	30.0 (23.07)*	33.0	33.0
January 2021 (Decree 790/20)	29.0 (22.5)*	31.0	33.0

**Biodiesel export tax nominal terms, effective rate in parenthesis*
Source: Argentine Government

Table 3: Import/Export Taxes and Rebate Rates for Ethanol and Biodiesel (July 2022)

Product	Import Duty Extra Mercosur %	Import Duty Intra Mercosur %	Export Tax %	Export Rebate %
Ethanol (2207.10 & 2207.20)	20.0	0.0	4.5	1.25
Biodiesel, <B30-100 (3826.00)	14.0	0.0	29	0.0
Biodiesel, B1-B30 (2710.20)	0.0	0.0	12	0.0

Note: Applicable HTS codes in parenthesis

See previous report for earlier export tax rates.

Financial Supports for Producers and Consumers

Argentina does not provide direct incentives to biofuel producers or consumers. However, support is provided through other measures, such as tax rebates and reductions. Biofuels Law 26093/2006 provided tax incentives to encourage biodiesel and bioethanol production via the biofuels promotion regime for domestic use but, with a few exceptions, most companies were not able to take advantage of them.

Provincial-level Support for Biofuels Remains Limited

The promotion of biofuels is limited to two biofuel-producing provinces, and even then many implementing regulations remain absent and there has been little success raising usage rates above national averages in local jurisdictions. The Province of Santa Fe, where 80 percent of the nation's biodiesel is produced, passed Law 14,010 in October 2020 which promotes the use of biofuels (biodiesel, bioethanol, pure and mixes). It encourages biofuel usage in the farm sector, transportation, logistics, governmental fleets, heat and power, and bunker use. The law continues to lack many implementing regulations. Since 2018, the largest city in Santa Fe Province, Rosario, ran a three-year long program to evaluate approximately 1,000 city buses on B25 and B100 with encouraging results, but this has not yet shown any progress in adding more vehicles to run on biodiesel or a change in policy.

The Province of Cordoba, where most bioethanol from corn is produced, passed Law 10,721 in November 2020 to encourage the production and consumption of biofuels and bioenergy. It promotes the use of biofuels produced in small on-farm plants and supports the large-scale use of biofuels in industry, transportation, and official vehicles. To date, there are roughly 20 small biodiesel plants under construction that are partially financed by the province. By late 2023, these plants are expected to produce roughly 20 million liters of biodiesel to supply public and private transportation in Cordoba, one of the main soybeans and corn producing province.

Impacting Fuel Pool Size through Incentives/Disincentives Targeting Demand

Other than the policies mentioned earlier in the report, the government does not take additional action to build demand for biofuels. In fact, the recently passed biofuels law can potentially reduce use by lowering the blend mandate in the name of reducing fuel costs for consumers. However, with growing demand and lower imports of diesel and gasoline, the government recently increased the mandate of biodiesel and maintained the 12 percent mandate on bioethanol. Switching fuel to higher ethanol or biodiesel blends remains doubtful, although the circumstances could force higher blends to compensate smaller oil imports. E100 or B100 remains very limited. Bioethanol producers are aiming at a 15 percent mix while the biodiesel sector would like to go to a minimum 12 percent mix. The province of Cordoba is implementing higher biofuels mandates, including E85, in provincial vehicles fleets. It is expected to be in place this year and in 2023 at the pump for all vehicles. Some other provinces are conducting feasibility studies or considering implementing a similar policy.

Initiatives to incorporate energy efficiency standards in new vehicles and machinery are moving slowly. The introduction of hybrid or electric cars so far is negligible, though there are some minor tax incentives in place. The Argentine Congress is deliberating adopting a flex fuel market as exists in Brazil on and off for years. Diesel demand will grow at higher rates when Argentina's economy stabilizes, as there are limited alternative modes of transport to trucking in the commercial sector. Freight railroad capacity is slowly expanding, primarily in tracks going north and west from Buenos Aires and the ports near Rosario, from where more than 80 percent of agricultural exports are shipped.

Argentine President Alberto Fernandez announced last year that Argentina would focus long-term on the production, consumption and exports of green hydrogen. So far, limited progress has been made and contacts indicate that more concrete policy is needed to encourage the necessary investment.

Argentina has been working in the past years to regain energy self-sufficiency by increasing domestic production of oil and gas and power generation from new renewable energy plants. However, it has not yet taken significant steps to improve energy efficiency standards for light and heavy-duty vehicle fleets. In 2022, Argentina is forecast to use approximately 3 billion liters of diesel for power generation, 1 billion liters greater than in 2021. Biodiesel is practically not used in this sector.

Trade Agreements

In late June 2019, after 20 years of negotiations, the European Union and Mercosur reached a trade agreement that appears to allow duty free exportation from Mercosur countries of about 570 million liters of ethanol for industrial use and 250 million liters of ethanol for fuel use at a nominal import tariff rate and not the EU's high MFN duty rates for ethanol. Implementation would take place gradually over 6 years. Mercosur members will negotiate the quota distribution, with Brazil expected to take the largest portion, followed by Argentina and Paraguay. For biodiesel, the local industry expects that the agreement reached in early 2019, by which Argentina exports biodiesel to the EU under a quota and at a minimum import price, will remain over the next four years. However, three years after the agreement was signed, procedural steps needed for implementation appear to be moving slowly, according to publicly available reporting. EU countries have special concerns about deforestation in Brazil and the European Union Parliament will hold a vote in September. If the vote advances to 2023, the start of the phase out date of soybean biodiesel is expected to begin in 2030.

III. Fuel Ethanol

Table 4: Ethanol Used as Fuel

Ethanol Used as Fuel (Million Liters)										
Calendar Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022f**
Beginning Stocks	0	0	0	0	0	0	0	0	0	0
Fuel Beginning Stocks	48	45	53	64	44	72	126	136	181	190
Production										
Fuel Production	472	671	815	890	1,105	1,113	1,073	809	1008	1080
Imports										
Fuel Imports	0	0	0	0	0	5	0	0	0	0
Exports										
Fuel Exports	0	0	0	0	0	0	0	0	0	0
Consumption										
Fuel Consumption	475	663	804	910	1,077	1,064	1,063	764	999	1100
Ending Stocks										
Fuel Ending Stocks	45	53	64	44	72	126	136	181	190	170
Refineries Producing Fuel Ethanol (Million Liters)										
Number of Refineries	11	12	14	14	14	17	22	22	22	22
Nameplate Capacity	680	880	950	950	1,200	1,300	1,440	1,555	1,560	1,640
Capacity Use (%)	69.4%	76.3%	85.8%	93.7%	92.1%	85.6%	74.5%	52.0%	64.6%	65.9%
Co-product Production (1,000 MT)										
DDGS*	125	280	360	370	415	470	450	330	430	430
Feedstock Use for Fuel Ethanol (1,000 MT)										
Corn**	410	890	1,150	1,175	1,325	1,400	1,330	1,020	1,280	1,390
Molasses***	1,240	1,220	1,365	1,708	2,250	2,150	2,110	1,565	1,910	2,030
Market Penetration (Million Liters)										
Fuel Ethanol Use	475	663	804	910	1,077	1,064	1,063	764	999	1,100
Gasoline Pool 1/	8,158	8,066	8,520	8,629	9,137	9,453	9,176	6,698	8,733	9,500
Blend Rate (%)	5.8%	8.2%	9.4%	10.5%	11.8%	11.3%	11.6%	11.4%	11.4%	11.6%

Note: 1/ Includes all biocomponents (biofuels) like ethanol and ETBE as well as MTBE if used.
f = forecast
Source: Private and Secretariat of Energy data, Gasoline Pool: International Energy Agency
** Calculated on a dry basis (1 mt of corn = 0.313 mt of DDGs (assumes no oil extraction), although some plants sell in different proportions wet distiller's grains*
*** 1 MT of corn yields 417 liters of ethanol*
**** Sugar mills mostly use molasses but also can use sugarcane or convert sugar. To simplify, we assume only molasses is used with a conversion rate of 1 MT of molasses yields 246 liters.*

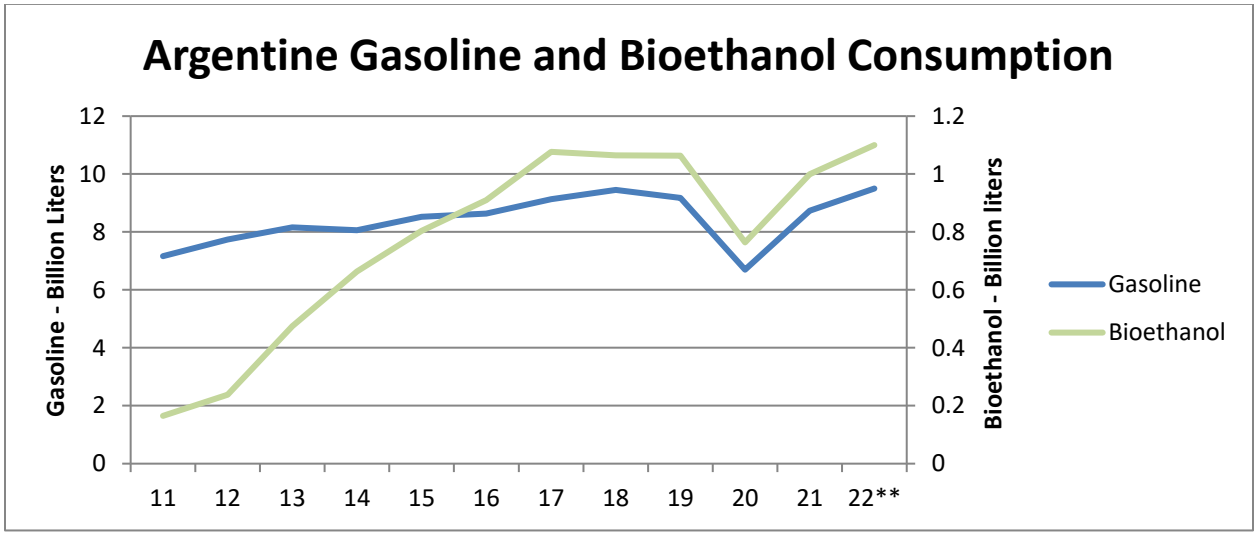
Consumption

Bioethanol consumption in 2022 is projected at 1.1 billion liters, 10 percent higher than in 2021, and very nearly the same as previous records set in 2017-18. The gasoline fuel pool is expected to reach a record 9.5 billion liters, slightly above pre-pandemic 2018. The projected blend ratio is 11.6 percent, close to the maximum permitted and essentially even with 2017's record 11.8%.

There are several factors which explain relatively strong demand: an economic rebound following the end of COVID-19-related shutdowns and people returning to their normal life; the government promoted and strongly subsidized internal tourism; local prices of gasoline are subsidized and therefore inexpensive relative to other products/items; the government wants to maintain the lowest possible gasoline prices despite high world prices and this attracts many consumers of neighboring countries to cross and refuel at less than half the price they pay in their countries; and, due to lingering fears of disease transmission, many people still prefer to use their car and avoid public transportation.

Based on official data, oil companies purchased 439 million liters of bioethanol in the first five months of 2022, of which 40 percent was supplied by the sugarcane sector and the remainder by the corn sector. Sales of bioethanol from the sugar industry were low in March-May due to the low official bioethanol price. In April 2022, the corn industry, after announcing it would reduce production as the official price was not even covering the increased cost of corn, received a price increase of 30 percent and an escalating price scheme through August this year.

Figure 3: Argentine Gasoline and Bioethanol Consumption



*** Post forecast*
Bioethanol is all ethanol used as fuel. Gasoline pool includes all blended ethanol.
Source: FAS with Secretariat of Energy and International Energy Agency

There are industry talks with the government to see whether the bioethanol mandate could be increased to 15 percent. This would benefit the country and oil distributors as less gasoline would have to be imported and sold at a loss. At current prices, imported gasoline is sold at the pump for 30-35 percent below its cost as the government choses to subsidize the cost of energy.

Local oil companies are currently making around 40 percent gains on the sales of bioethanol in gasoline. In addition, larger demand through nationwide E15 use would soon require greater investment in the bioethanol sector to expand capacity. By late 2022, Cordoba Province could have in place an E85 program for the provincial government transportation fleet. Congressmen from this province have recently proposed a bill in Congress to authorize the use of flex fuel engines.

Production

Bioethanol production for 2022 is forecast at 1.08 billion liters, a similar volume produced before the pandemic, and 7 percent higher than in 2021. With the market remaining closed to trade, this is the result of a strong gasoline demand combined with a high blend ratio expected at 11.6 percent. The current biofuels law established the mandate at 12 percent, 6 percent supplied by the sugarcane industry and 6 percent. In the current year, roughly 580 million liters, accounting for 54 percent, are expected to be supplied by the corn industry and the balance by the sugar mills. In order to supply bioethanol under the mandate, both sectors had to negotiate and demand higher prices to cover their increasing costs. The corn sector received a 30 percent price increase in April and the sugarcane sector a 19 percent increase in July. The corn industry has more stable production throughout the year due to the nature of the feedstock used, which is available year-round and is easily stocked. The sugar industry produces only during the 6 months of the sugarcane harvest and sells during a 12-month period.

The corn industry is currently operating at a high tempo as the current official price is profitable. The production capacity of the corn sector is almost 900 million liters a year. There are 5 large companies with production capacity ranging between 100-270 million liters. The largest plant is owned by a large domestic agricultural cooperative and has recently put into operation additional capacity of almost 100 million liters a year. Most of the other companies continue to make improvements to add more capacity and be more efficient. One of the big bioethanol plants, located in Santa Fe, is owned by a large local company which is going through serious financial difficulties and is reported to be producing at a low capacity. There is another company, a dehydrator which processes the ethanol produced by 5-6 very small plants owned by large farmers which, under this scheme, can access part of the mandate. Argentine corn ethanol plants normally do not have feedstock supply problems, as corn production is substantially larger than domestic consumption. In marketing year 2021-2022, Argentina ranked as the world’s second largest corn exporter with 41.5 million tons. The corn ethanol industry is expected to use 1.4 million tons of corn in CY 2022 and give back 430,000 tons of DDGs for animal feed.

The local sugarcane industry is responsible for supplying half of the E12 mandate. It is normally somewhat short of fulfilling the mandate as the nature of the sugar industry business is complex. Sugar mills, located in the northwest of the country, supply the sugar consumed in the country year round, produce bioethanol, and export surplus sugar. After three years in a row of dry conditions, the current sugarcane harvest is expected to fall an additional 6-8 percent in 2022.

In 2022 there are in operation 15 sugar mills in Tucuman, 3 in Jujuy and 2 in Salta province. In total, they operate 12 dehydrators and 16 distilleries, with a capacity for bioethanol of about 700 million liters. Mills normally produce ethanol during the sugarcane harvest (May-October) and

continue to produce a few more months once it is over. They typically keep stocks to deliver ethanol during the first months of the year until the new harvest begins. These plants use molasses/sugarcane as feedstock, and their ethanol production varies depending primarily on sugarcane availability and the price of bioethanol vis-à-vis the price of sugar for export.

Corn ethanol plants produce wet distiller's grains and depending on market conditions, most can dry part of it. There are currently three large plants drying and industry contacts estimate that only 50-60 percent of the total is being dried as there is a shortage of gas in the country and drying is very costly. Usually the companies have contracts to deliver distiller's grains, CO2 and corn oil which in some cases are exported. Wet distiller's grains are normally distributed in an area no larger than 100 kilometers from the plants, while dry product is sold more widely and small volumes are exported to neighboring countries. The main consumers are local feedlots, dairies, and poultry producers.

Trade

Argentina has always imported and exported ethanol for industrial use. Although it can be difficult to determine the final use of ethanol exports, ethanol used as fuel is only traded internationally at large volume and lowest prices available and so it is unlikely any Argentine produce is used as fuel outside the country One of the large corn ethanol plants is currently exporting small volumes of "sustainable ethanol" to Chile and the EU. Both past and present biofuels laws dictate that bioethanol used to fulfill the blending mandate must be produced in plants established in the country and therefore, imports of ethanol for fuel must be specially authorized by the Secretariat of Energy.

As in past years, no fuel ethanol imports are expected in 2022 as Argentina will have an oversupply of feedstocks (especially corn) and processing capacity will meet the mandate and allow for some non-fuel exports. Argentina normally imports ethanol for industrial use and some beverage ethanol. Most of the product is un-denatured (hydrous) shipped under HTS 2207.10, but denatured ethanol is also imported (HTS 2207.20), generally in very small volumes. Argentine imports of ethanol totaled 2.6 million liters in 2020, the lowest since 2015. The vast majority was sourced from Bolivia and Brazil.

IV. Biodiesel

Table 5: Biodiesel

Biodiesel (Million Liters)										
Calendar Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022f**
Beginning Stocks	55	24	44	59	52	102	27	28	98	118
Production	2,270	2,935	2,060	3,020	3,260	2,760	2,440	1,315	1,960	2,100
Imports	0	0	0	0	0	0	0	0	0	0
Exports	1,296	1,815	895	1,847	1,875	1,585	1,147	675	1,440	1,200
Consumption	1,005	1,100	1,150	1,180	1,335	1,250	1,292	570	500	920
Ending Stocks	24	44	59	52	102	27	28	98	118	98
Production Capacity (Million Liters)										
Number of Biorefineries	36	38	38	38	37	36	36	33	33	33
Nameplate Capacity	4,550	5,200	5,200	5,400	5,000	5,000	5,000	4,430	4,430	4,430
Capacity Use (%)	49.9%	56.4%	39.6%	55.9%	65.2%	55.2%	48.8%	29.7%	44.2%	47.4%
Feedstock Use (1,000 MT)										
Soybean oil*	2,000	2,600	1,820	2,670	2,870	2,430	2,150	1,160	1,725	1,850
Market Penetration (Million Liters)										
Biodiesel, on-road use	1,005	1,100	1,150	1,180	1,335	1,250	1,292	570	500	920
On-road, Agriculture, Construction & Rail 1/2/	12,988	12,433	12,801	12,623	13,147	12,926	12,848	10,973	11,540	12,270
Blend Rate (%)	7.7%	8.8%	9.0%	9.3%	10.2%	9.7%	10.1%	5.2%	4.3%	7.5%
Diesel Pool, total 2/	15,588	14,233	15,001	15,023	14,547	13,826	13,248	11,773	13,560	15,270

Note 1/On and Off-road Diesel Pool; excludes stationary power (source Cammesa)
Note 2/ Fuel pools are defined as fossil fuels plus all "bio-components" (biofuels).
**1 MT of soybean oil (1x refined) yields 1,128 liters of biodiesel*

f = forecast
Source: Private estimate based on official data from Secretariat of Energy of Argentina and the International Energy Agency

Consumption

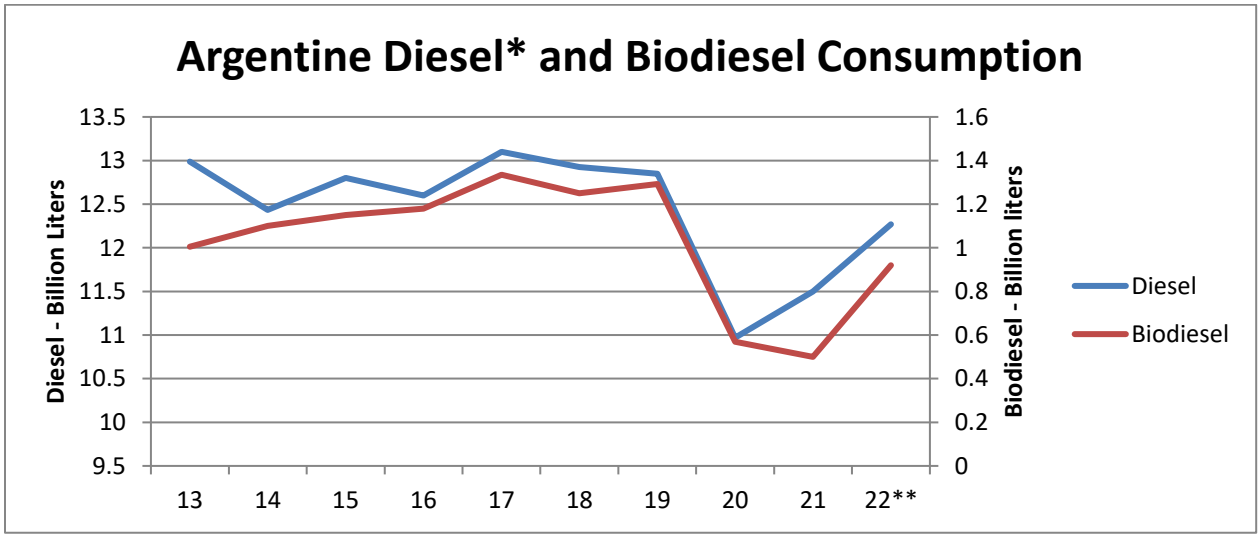
Argentine biodiesel domestic demand in 2022 is projected at 920 million liters, an 84 percent recovery from last year as the government reacted to a current shortage of diesel in the country by increasing blend rates permanently and transitory. The shortage of diesel in the country could encourage an even greater volume of biodiesel use in the last part of the year. Biodiesel use in 2022 will still be smaller than pre-pandemic years, because on and off-road diesel consumption and the blend ratio are expected to remain lower than in the period 2013-2019.

Consumption of on and off-road diesel in 2022 is forecast at 12.3 billion liters, a significant increase from 2021. This is a result of an economic recovery and the government's policy to maintain subsidized energy prices for the population which also boosts fuel consumption in border cities as prices are significantly higher in neighboring countries. The country normally

imports 20-30 percent of its diesel needs, but at the beginning of the year imports ran much slower than needed, mainly due to higher international oil prices and the fact that local fuel distributors/importers lost money selling at prices lower than their import cost. The shortage was felt primarily in the interior of the country and users, mainly transport companies and farmers stocked as much fuel as possible to continue operating knowing that prices could increase any time.

An additional factor which exacerbated the shortage of diesel was the reduction of the official biodiesel mandate from 10 percent to 5 percent established in the new biofuels law. To resolve the diesel shortage as quick as possible, in June 2022, the government established Resolution 438/2022 which permanently increased the official mandate of biodiesel in diesel from 5 percent to 7.5 percent. At the same time, the government also passed Decree 330/2022, named Additional Transitory Biodiesel Mandate, by which as an exceptional and transitory measure, it increased for 60 days (mid-June/mid-August) the official mandate by 5 percentage points. Volumes and prices are to be negotiated freely between buyers and suppliers, which in this case included, for the first time ever, large biodiesel export plants. Industry contacts indicate that there are significant possibility that the 60-day period could be extended. Post's consumption estimate for 2022 only takes into account the current policy in place of 60 days.

Figure 4: Argentine Diesel and Biodiesel Consumption



** All On and Off-Road Surface Transportation, includes biodiesel*
*** Post forecast*
Source: FAS with Energy Secretariat and International Energy Agency

The average biodiesel consumption rate for 2022 is forecast at 7.5 percent, higher than the 4-5 percent of the previous two years. The average blend ratio in 2013-2019 was slightly above 9 percent as the previous biofuels law and following policy changes had set a higher rate. The blend in the first semester of 2022 ranged between a low 4-5 percent as the increase in world vegetable oil prices and the lack of an updated official biodiesel price, adjusting to higher production costs, led suppliers to significantly reduce sales. In April, the government revised the official price for biodiesel and corn ethanol, reflecting higher world prices and costs following the advent of the Ukraine-Russia war. The update included a rising price path through August

2022 which accounts for high inflation. Biodiesel volumes supplied by small and medium plants recovered during April-June. With the new policy in place, a biodiesel blend of 7.5 percent is likely to remain the floor.

Production

Argentine biodiesel production in 2022 is forecast at 2.1 billion liters, 7 percent higher than the previous year, but far below levels over most of the past decade mostly due to higher exports to Europe and the United States when less stringent market protection measures were in place. Year-over-year, significantly higher domestic consumption is expected to more than offset lower exports. .

There has been no investment in the local biodiesel sector in 2020-2022, with stagnant production capacity and number of plants. The use of capacity for 2022 is projected at 47 percent, showing a strong recovery since the pandemic started in early 2020, a year in which used capacity dropped to 30 percent. The government divides the 33 biodiesel plants currently operating into three different categories based on production capacity to determine if they are eligible to participate of the official mandate:

Table 6: Biodiesel Plants by Production Capacity

Size/Capacity	9-23 Million Lts	54-110 Million Lts	136-690 Million Lts
Small	8		
Medium		16	
Large			9

Source: FAS Buenos Aires with data from Secretariat of Energy

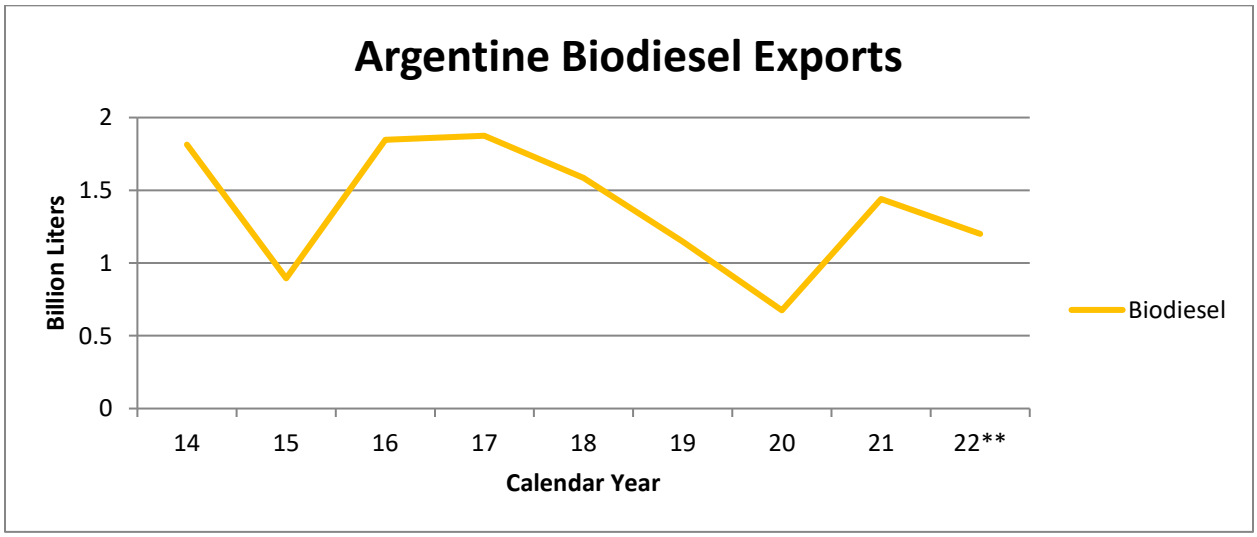
With the current high official price and the increase of the mandate by 2.5 percentage points, most small and medium plants are operating at high capacity and enjoying good returns. Large biodiesel plants are supplying most of the additional, temporary 5 percent mandate set for 60 days which can be freely negotiated between buyers and sellers. Contacts indicate that their current selling price is significantly lower than the equivalent of the official price paid under the mandate.

The main and almost exclusive feedstock used by the local industry is soybean oil and most of it is supplied by the large exporting companies that have their own crushing plants to export meal and oil when not used for biodiesel. Medium and small companies normally buy vegetable oil from the large crushers. Feedstock availability is normally plentiful as Argentina is the world's third largest soybean producer, and number one exporter of meal and oil. While, some crushers are concerned about current slow soybean sales, they still expect a reasonable level of crushing and do not think the supply of oil is at risk.

Trade

Exports in 2022 are forecast at 1.2 billion liters, 17 percent lower than in 2021. Shipments in the first semester of 2022 were almost 1 billion liters, 50 percent higher than the same period a year ago. The Netherlands was practically the sole destination as the European Union is the only market where Argentine biodiesel is being shipped with sales to the United States and Peru discontinued. Local exporters believe that to date there is only one additional boatload of about 30 million liters committed over the next few months as the minimum import price shuts any window of arbitrage. However, exporters indicate that some additional sales will be done in the last quarter of the year, especially to supply southern European countries where winters are not as cold. Exports to discretionary demand markets are not expected in the short term as the current world price of soybean oil is currently 30-35 percent higher than ICE Gasoil.

Figure 5: Argentine Biodiesel Exports



*** Post's forecast*
Source: FAS Buenos Aires with Secretariat of Energy database

All biodiesel exports continue to be shipped from ports close to Rosario city where most of the large crushing and biodiesel plants are located. The majority of the export plants are multinational companies with 2-3 local groups participating alone or in conjunction with other large companies.

The European Union continues to be the main and practically exclusive market for Argentine biodiesel because the United States and Peru, once important markets, remain closed to Argentine biodiesel due to high retaliatory tariffs. Please refer to past annual reporting for past history. In February 2019, the European Commission and Argentina agreed to an annual duty-free quota for biodiesel of 1.36 billion liters at a minimum import price based on Argentina's official FOB soybean oil price plus production costs and freight. Eight local biodiesel producers are authorized for export. Contacts indicate that Carbio, the Argentine Biofuels Chamber, distributes the annual quota among its members based on capacity and past export performance. There are recent concerns in the local biodiesel sector as the EU Parliament industry committee voted recently to restrict soybean oil as a feedstock for biodiesel production due to environmental concerns related to deforestation in countries outside the EU, and the EU's Deforestation-free Supply Chain Initiative groups the soybeans with palm oil as main drivers of

agricultural expansion leading to deforestation. Lawmakers want to advance the start of the phase-out date of soybean oil biodiesel, set at 2030, as early as 2023. This is not yet law, and a vote is expected by the European Parliament in September.

Since early 2018, the US, once Argentina's main biodiesel export market following retaliatory import tariffs placed by the European Union to protect its market, continues to apply high anti-dumping and countervailing duties which, when combined, average over 140 percent. This makes it almost impossible for Argentine product to reach the U.S. market, at least not until these duties expire in 2023 and if they are not extended at similarly high rates.

Peru began importing Argentine biodiesel in 2012 to help meet its blend mandate and support it exports to Europe. However, in 2016, Peru set anti-dumping and anti-subsidy duties on Argentine biodiesel imports which curtailed exports. These expired in early 2021 and were renewed for five more years until 2026.

As in past years, biodiesel imports are not expected due to huge idle capacity and the need for a special authorization required from the Secretariat of Energy. The biofuels law mandates that biodiesel feedstock must be sourced from local processors.

V. Advanced Biofuels

Argentina does not have production of renewable diesel. A few local oil companies have some projects and there are just a few old oil refineries which could be adapted for its production, but they are far from becoming a reality due to the country's fragile economic condition. Vegetable oil crushers are closely monitoring this business and waiting for market opportunities. Argentina would naturally use soybean oil as the main feedstock.

A large biodiesel plant in Rosario developed a technology to produce second generation, high quality biodiesel derived from sewage. This is the only pre-pilot level, commercial development known to date of advanced biofuels in Argentina.

Few entities or organizations in Argentina are involved in biofuels and non-conventional energy research. The most important are INTA (the National Institute of Agricultural Technology) Y-Tec, a joint venture between YPF (the National Oil Company) and Conicet, the national science and technology agency, and several state and private universities. In most cases, research is relatively limited in scope and mostly focused on the use of waste for biofuels production, the use of corn and sorghum stubble for second-generation bioethanol, and more recently, green hydrogen. One of the large biodiesel plants in Rosario has invested in research and production of high-quality biodiesel derived from sewage. The company recently developed a second-generation biodiesel through a process called RAUPE (Renewable Advanced Unique Premium Energy), with the support of the Ministry of Science and a public university. There are also some lines of research working on developing biofuels from algae and different plants such as Jatropha and Acrocomia palm trees.

Attachments:

No Attachments