

A Multi-Level Perspective of Argentina's Transport Decarbonisation Potential, Focusing on the Biodiesel Technological Innovation System

LANDSCAPE

Infrastructure

Many infrastructural projects until 1960, emphasis on rail transport.

1960s: Privatisation of infrastructure leading to low maintenance. This led to the growth of road transportation.

Nevertheless, road quality is still considered low.

Social Acceptance

1976: The government lost support due to the liberalisation of the market due to a financial crisis.

Lately food security issues have also risen.

On the other hand, Latin America is demonstrating greater approval regarding genetically modified agricultural resources; hence soybean cultivation is generally more accepted than in other regions such as Europe.

Conflicts with exporting countries

The nationalisation of YPF in 2012 led to tensions with important markets importing biofuels from Argentina, such as Spain.

Financial Crises

The first financial crisis was observed during 1975-1990 when the workforce of the country turned from industry to services. Moreover, during this period the incentivisation of Natural Gas was a dominant policy that led to prosperity during 1990-1998.

Afterwards, a new recession occurred (due to other countries facing problems) leading to devaluation of the Argentinian Peso. In this manner, Natural Gas prices were lowered, which further increased its demand.

Domestic Biofuels Resources

Argentina is the third largest producer of biofuels globally.

TRANSPORT REGIME

Natural Gas is usually used as a transition fuel. Hence prolonged dominance may lead to a lock-in.

Landscape pressure: Conflicts with Spain decreased exports after 2012

Window of opportunity: Biodiesel policy in 2005

First Period (1970-1990)				Second Period (1990-2005)				Third Period (2005-2018)			
		1970	1990			1990	2005			2005	2018
Oil Products	No specific percentages are available for this period. They are dominant during the whole period since no other major fuel was used for transportation during this period.	Dominant	Almost 93%	Oil Products	They are dominant during the whole period since no other major fuel was used for transportation purposes.	Almost 93%	Around 71%	Oil Products	They are dominant during the whole period since no other major fuel was used for transportation purposes.	Around 71%	Around 74%
Biofuels	No specific policy on biofuels during this period and almost no usage.	0%	0%	Biofuels	No specific policy for biofuels during this period.	0%	0%	Biofuels	Biodiesel production was mainly exported until 2012. Landscape pressures led Argentina to aim for other markets but also increase self-consumption. Also, Argentina quickly reached the legal threshold of 10% in the fuel mix. Key challenges: further increasing the biodiesel share; balancing financial benefits from exports with environment gain from self-consumption	0%	9%
Natural gas	Natural Gas is starting to demonstrate an important increase during this period due to the incentivisation policies during the 1980s.	Nearly 0%	Around 7%	Natural gas	Between 1998 and 2003 the devaluation of the Argentinian Peso led to Natural Gas prices being favourable. Natural Gas has become part of the regime.	Around 7%	Almost 28%	Natural gas	Use of natural gas remained stable. Due to increase in demand its share was reduced.	Almost 28%	Around 16%
Actors	<ul style="list-style-type: none"> Ministry of energy and mining 1957: The Argentinian Institute of Oil & Gas (IAPG) was established to represent the interests and support the activities of oil and natural gas companies. Yacimientos Petroliferos Fiscales (YPF), public company which distributed gas in many developing markets in the country. Gas de Estado (GdE), also a public company involved in the distribution of natural gas. Both YPF and GdE were privatised in 1989.			Actors	<ul style="list-style-type: none"> Ministry of energy and mining. Argentinian Institute of Oil & Gas (IAPG) Yacimientos Petroliferos Fiscales (YPF), became private in 1989 Gas de Estado (GdE), also became private in 1989 			Actors	<ul style="list-style-type: none"> Ministry of energy and mining Argentinian Institute of Oil & Gas (IAPG) Yacimientos Petroliferos Fiscales (YPF), nationalised in 2012 (was also public until 1989) Gas de Estado (GdE), still private 		
Legislation & policy	Natural Gas is starting to demonstrate an important increase during this period due to the incentivisation policies during the 1980s.			Legislation & policy	2003: Efforts to boost soybean exports.			Legislation & policy	2007: Laws on sustainability (e.g. Law 26,197). 2016: Targets for specific mix of biofuels with oil products.		

Windows of opportunity:
1980s: many cars turned to CNG due to the financial crisis
1998-early 2000s: Favourable Natural Gas prices

BIODIESEL TIS

- 1. Entrepreneurial Activities**

6 large companies. 3 domestic and 3 global.

The companies have mainly focused on soybean, although there are requirements for other biofuels too.
- 2. Knowledge Development**

There are not many research institutions in Argentina and there was a slower development (in comparison with Brazil) regarding research.
- 3. Knowledge Diffusion**

Knowledge diffusion is mainly achieved through legislation that encourages the use of biofuels.
- 4. Guidance of the Search**

Lately research is focused on agricultural issues such as the cultivation of soybean. Argentina is one of the global powerhouses of soybean production possessing a significant knowledge base on this sector. Expansion of research in other biofuels crops instead of focusing only on soybean production is deemed necessary.
- 5. Market Formation**

Barriers for domestic demand since small farmers are facing difficulties due to high taxes.

The sector has been expanded in recent years, mainly due to the important natural resources.

Ethanol is also increasing since there is no competition from biodiesel.
- 6. Resource Mobilisation**

Law 26,093 has led to mobilisation of important resources towards the use of biofuels and especially biodiesel since it has set specific targets.

Moreover, the broad participation of stakeholders in soybean production has attracted private investments.

Automotive industries are not heavily concerned since the current biofuel mix targets do not require important modifications.

Concerns over financial viability due to tax incentives.
- 7. Creation of legitimacy/ counteract resistance to change**

Significant societal approval.

The low prices of biofuels in the region have attracted the attention of media.

Strong community engagement.