

## **Biofuels in Argentina**

Biofuel production is growing steadily through the involvement of numerous companies. By 2010, Argentina could require approximately 600,000 cubic metres of biodiesel and 250,000 cubic metres of ethanol.

The development of biofuels constitutes an alternative to using fossil fuels, such as coal, gas and oil. In recent years, Argentina has become a major producer and exporter of biofuels, as it possesses the necessary raw materials (oleaginous plants, sugars, etc.) in abundance for production. At present, there are many Argentine and multinational companies involved in biofuel production, whose business activities are regulated by Law No. 26,093 (Sustainable Biofuel Production and Use Regulatory and Promotion System). This regulation sets the goal that by 2010, 5% of diesel consumed in Argentina must be biodiesel.

Continuing this policy of incentives for production, a further goal is that of the compulsory use of bio-ethanol (5%) mixed with naphtha, by 2012. According to official figures, by 2010, Argentina could require some 600,000 cubic metres of biodiesel and 250,000 cubic metres of ethanol.

The notable investment of companies in technology and innovation, significant scientific research in the bioenergy field, growing demand for renewable fuels worldwide and promotion of the sector by the government are factors that make Argentina an ideal place for the development of biofuels.

In fact, Argentine biodiesel exports tripled in the second half of this year, despite there not being a reduction in the withholding tax increases for the sector, which, on March 12, saw an increase of 15 percentage points in the proportional tax rate of this product. It was the less well-known Ministry of Economy's Resolution No. 126, which bears the signature of the then minister, Martin Lousteau, which led to biodiesel withholding tax rising from 5% to 20%.

## **Investments in biofuels to the value of almost US\$900 million**

Despite a fall in international grain and oil prices, with which part of its competitiveness is compared, the biofuels industry is still expanding with multi-million dollar projects on the short-term horizon. Thus, among the biodiesel plants that are due to open before 2010 and the sugar-mill projects aimed at making a mark in ethanol production, investments are currently being made that are worth almost \$900 million. If you also add to this figure, the factories that are already in operation representing a further investment of \$300 million, the final figure for the sector rises to approximately US\$1.2 billion.

According to a report by Claudio Molina, executive director of the Argentine Association of Biofuels and Hydrogen, since 2006, some fifteen biodiesel plants have started operations with a total investment requirement of US\$282 million. Currently, these plants have a capability of producing 1.5 million tons per year. A significant number of facilities are located in the Gran Rosario region, which also boasts the largest oil-refining centre in Argentina.

According to a recent report by the Argentine Renewable Energy Chamber of Commerce, Argentina will produce more than 10% of the world's biodiesel, making it "the third largest global producer with estimated sales of US\$1.5 billion". Over 90% of exported biodiesel is sold first to the United States, although the final destination is Europe. Up until last November, Argentina sold little more than a million tons.

The key, however, lies in what is to come, since by 2010 another dozen biodiesel plants are scheduled to be opened. According to Claudio Molina, these plants will add a capacity of 2 million tons per year and will require capital to the value of \$389 million. With the plants that have already been built and those that will soon open, the biodiesel industry will have a capacity of 3.59 million tons per year and will make investments to the value of \$671 million.

Paradoxically, Molina believes that the challenge lies in building a biodiesel supply to meet the requirements of the domestic market. In accordance with Law 26,093, from 2010, the diesel and naphtha consumed in the country must be cut with 5% biodiesel and bio-ethanol, respectively. "The uncertainty that threatens the creation of the domestic supply of biodiesel is linked to a lack of judicial and tax authority certainty implicit in Law 26,093 and with a lack of complementary regulations," Molina states. The market will require around 800,000 metric tons of biodiesel per year and 245,000 metric tons of bio-ethanol. A significant number of biodiesel exporters are also already looking enthusiastically at the local market and are hoping for the government to create the same symmetric resolutions that were recently issued for ethanol.

### **Sugar mills with ethanol**

In this regard, the sugar industry has found a reason to get involved in the production of bio-ethanol for the domestic market. The recent amendment of Law 26,093 with Law 26,334 opened the way for it to become part of fiscal promotion and gain a good price. Within it, there were regulations that facilitated conditions for domestic supply so that by the end of 2010, naphtha would be cut with 5% of bio-ethanol. As a result, this business has also attracted million-dollar investments. It is estimated that there has been an approximate outlay of \$500 million among some projects that have already been undertaken and others that are planned for the coming years.

"Sugar mills have to install dehydration plants, effluent plants, electrical energy cogeneration and improved efficiency. An investment of around US\$500 million is estimated for when naphtha will be cut with 10% ethanol, since the starting point is an initial 5%", Molina comments.

It transpires that Eurnekian group has a preliminary project to build a sugar mill in the North with a milling capacity of 20,000 tons a day, alcohol distillation for 300,000 tons per year and sugar cane and cereal processing. It would also include the planting of 50,000 hectares of sugar cane, among other crops.

This venture would account for almost half of the \$500 million set aside for the entire ethanol sector.

### Close examination of the sector

- **Current biodiesel production:** currently the total is 1.5 million tons, but it is expected that the plants to be opened by 2010 will add a further 2 million tons approximately.
- **Export:** Argentina produces 10% of the world's biodiesel and up until last November, exports only accounted for little more than a million tons.
- **Promoting ethanol:** in view of the imminent entry into force of the cutting of 5% of naphtha with bio-ethanol within two years, the involvement of the sugar mills in this process is discounted. It is estimated that the sector will make various investments totalling approximately \$500 million.

### Wind energy in Argentina

Wind energy production shows remarkable growth with the construction of wind farms mainly using the rich winds of Patagonia and the province of Buenos Aires for renewable energy generation.

In San Juan, the largest wind generator in South America was built. The development of wind energy is one of Argentina's priorities in terms of renewable energy. There are now several companies in the country, supported by both national and provincial governments, which are engaged in the construction of large wind farms, soon to join those that are already operating in Patagonia and in the south of Buenos Aires province. Operations are regulated by Law No. 25,019 (National Wind and Solar Power Regulatory System).

The best natural conditions for wind power generation: constant and uniform wind in many parts of the territory, especially southern Argentina; the creation of institutions to promote the business, such as the Argentine Wind Energy Association (AAEE) and the Argentine Wind Generator Chamber of Commerce (CADGE); and the substantial investment in wind projects, such as the construction of the Malaspina wind farm, in Chubut province, make Argentina an ideal location.

**National and foreign companies have spent US\$450 million on the development of the sector. The Energy Secretary stated that "8% of the energy consumed in the country will come from renewable resources like wind and biofuels".**

**Argentina is now one of the South American countries with most wind turbines in operation. It has more than forty windmills generating renewable and ecological energy in the country. Of those forty, twenty-six are located in the Antonio Moran wind farm, near the city of Comodoro Rivadavia, and became very well known in its time. There are also three windmills in Punta Alta, two in Pico Truncado, two in Tandil and one in Claromec , Mayor Buratovich, Rada Tilly, Pehuen C , Cutral C , Darregueira and General Acha.**

The Antonio Moran wind farm is the largest wind energy venture in South America. It has twenty-six turbines that generate 25 million kw per year.

Several different domestic and foreign companies foresee strong growth in wind energy, which is why an investment of US\$450 million is projected for the sector over the next 5 years.

Unlike European countries that are at the forefront of renewable energy, Argentina has only recently begun development of wind power facilities that promise to create a new industry requiring a skilled workforce and export opportunities.

To this end, several companies are developing various projects, despite there only being capacity at the moment for installing 300 eolic megawatts, given that the industry closed 2006 with 25% growth.

Daniel Cameron, the Secretary of Energy was present at the World Congress on wind power in early October in Mar del Plata. In his presentation, he outlined the tasks that the government is undertaking to contribute to the use of this type of energy. He predicted that, in the short-term, 8% of energy consumed in the country would come from renewable resources, such as wind and biofuels.

"The commitment is based on it being a renewable source of clean energy, which, in all likelihood, will become profitable in Argentina within three or four years," Hugo Brendstrup, the chairman of INVAP Engineering, explains.

"Because of the exceptional wind resources we have in Argentina, a system of interconnected wind farms can make a significant contribution to the nation's energy balance, which must diversify (to reduce our current heavy dependence on fossil fuels), and increase the generation capacity for the electrical system to be able to sustain demand", he adds.

INVAP has a diverse range of projects in development. From its business unit INVAP Engineering, it is one of the pioneers in the development of renewable energy, taking wind measurements and assessing wind resources in many locations with a view to future wind farm construction.

It currently has three main areas of operation: low, medium and high power

The most advanced wind project is that of low power with systems whose usual power does not exceed 15 KW or 20 KW at most. The company has been developing it for several years and it has been extensively tested in the harsh environments of Patagonia and the region of Comahue.

Similarly, they are committed to high power, such as large projects with a view to the future construction of extensive interconnected wind farms with in-house technology, which would make use of the resource that much of the national territory offers, especially Patagonia, which has one of the best wind corridors in the world. There is also the possibility of exporting wind turbines.

"The realisation of the high-power wind energy project with in-house technology would lay the foundations for the development of important technology-based industries, and create many skilled jobs in Argentina", Brendstrup suggests.

The estimated time for this first phase of the project is three years and the investment would exceed US\$13 million. After this phase, the serial production of wind turbines would begin and during the following two years, the first wind farm facility with in-house technology would be built with an investment in excess of US\$120 million. The location has not yet been decided.

The Ingentis project, promoted by Emgasud and the province of Chubut, in its second phase of construction, anticipates the construction of a 100 MW wind farm comprising of 50 turbines of 2 MW each.

This phase will commence during the second half of 2009 and it is estimated that its start up and commercial operation will begin in 2011.

"This wind park will be the largest in the country and will represent an annual saving of 7,400 tons of carbon dioxide", Arnoldo Girotti, the general manager of the company, explains. The investment would reach US\$150million.

For his part, Enrique Pescarmona, the chairman of IMPSA, would like to take advantage of the wind farms that will be built in Patagonia and will produce 3,000 megawatt hours in 2010 and power that will generate 15,000 megawatt hours from conventional sources, to provide them with technology.