



Bio-ethanol plant in Cartagena. Source: Abengoa

Photo: Joe Raedle/Getty Images

Interview Javier Salgado, President Abengoa Bioenergy

‘Biofuels have reached the point of no return’

Biofuels have won the battle with fossil fuels in Europe, says Javier Salgado, President of the Spanish company Abengoa Bioenergy. According to Salgado, the new European legislation paves the way for biodiesel and ethanol to become the primary fuels.

Europe’s largest producer of bioethanol is getting ready for a major swing in the energy power balance.

| by Steven Adolf

Javier Salgado Leirado appears to be a happy man. Less than a year ago the president of Abengoa Bioenergy often appeared in the Spanish media arguing against what he considered misleading campaigns against the biofuel industry and its alleged effects on food prices and inadequate CO₂ balance. He says that the lobby of the established oil industry, hand-in-hand with environmental groups, tried to destroy the public image of the emerging biofuels sector. The main issue at stake appeared to be the European directive to promote biofuels, but the biofuel producer claims that the real issue was the loss of power by vested oil interests. Strong language was used because, according to Salgado, it was a life-and-death struggle.

If you visit the 42-year-old ceo in his office on the third floor of the corporate building at Madrid's Paseo de Castellana these days, you'll meet a much more relaxed Salgado. He explains that Abengoa, Europe's largest producer of bioethanol, has a much brighter future than it did a couple of months ago. He says that the new European directive, which was passed by the European Parliament last December, creates a point of no return for the use of biofuels in Europe, despite negative publicity. There is no turning back because it is laid down now as a European objective that by 2020 10 percent of energy used in transport is to come from biofuels. "The approval of the directive for sustainable energy has completely changed the situation in Europe. Europe has clearly stipulated its obligation regarding renewable energy. The directive will now be incorporated into national legislation," explains Salgado.

Anti-biofuel camp |

He thinks that the new objectives for biofuels will force the producers to develop production technologies that will lead to more sustainability in the future. The existing biofuel industry in Europe will have a transition period until 2017 to reduce CO₂ emissions by at least 50 per cent – measured over the complete cycle from growing biofuel crops, via production of fuel in the plants to its emissions through use. New factories with new, second generation crops (non-food crops and crops with higher energy efficiency) even have to meet a CO₂ emission reduction of 60 per cent. The anti-biofuel camp has dismissed the directive as an ineffective measure that is not well monitored. However, Salgado says that he takes the legislation seriously: "The sector can adapt to this well organised approach. We now have a framework that allows enough time to adjust. It is easy enough to discuss second generation biofuels, but at the end of the day they involve risks with large investments."

The main objective in the end is a far reaching change from the current model of fossil energy to a system of energy through reuse, according to Salgado. This will lead to a significant shift in power that will cause a major stir. Elsewhere, the changes are clearly visible. Currently, 75 per cent of pump sales in Brazil,

where Abengoa has two factories, involves ethanol. Transport fuels in the United States comprise 10% ethanol. By now the total ethanol industry in the US has a larger market share than any individual oil company, which is an indication of changing interests, says Salgado.

So far, the European market for biofuels has had a slow start. Abengoa's own Spanish market is a good example. In recent years Spain has invested large amounts of money in wind turbines and solar panels. Last year, wind energy contributed substantially to the electricity supply during certain months of the year. The biofuel factories, on the other hand, had a considerable overcapacity or were simply temporarily closed. Last year, another twenty new biodiesel plants were set up, quadrupling the production capacity in one year to 3.3 million tons. However only a fraction, approximately 16 per cent, of the new capacity was used. Spain preferred to import the cheaper

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subsidised biodiesel from the US. Sales of ethanol remained weak: in the first half of 2008, Spain consumed 74,000 tons of the 86,000 tons of bioethanol it produced. This is not much as compared to a production capacity which for years has been around 456,000 tons, most of which has been supplied by three Abengoa plants.

However, this year the future of biofuels looks more promising. This is mainly due to the Spanish legislation. In anticipation of European standards, Spain introduced a regulation that, from this year, 3.4 per cent of energy use in the transport sector must come from biofuels. In 2010 this figure will increase to 5.83 per cent of all fuel consumed. This way, three million tons of oil equivalents have to be replaced within two years.

Import restrictions |

Last summer Abengoa, Spain's largest ethanol producer, reopened its ethanol plant in Salamanca that had been closed since September 2007. Soon, a new biodiesel plant will be started up on the site of the strategically important Cepsa refineries in San Roque in southern Spain. Meanwhile, the Spanish government has imposed restrictions on the import of cheaper biodiesel from the US. With good reason, according to Salgado. "It was not a free trade issue; the US was just solving its own problem of overcapacity in its biodiesel production."

Initially, San Roque will be the only biodiesel plant run by Abengoa. It will use vegetable oils such as palm oil, soybean oil and possibly rapeseed oil as raw materials. "However, we will also investigate the application of new technological developments. It is very likely that we will ultimately use algae as a raw material."

From an economic perspective the requirements to introduce biofuels could not come at a worse time. The entire world and Spain in particular, is hit hard by the financial crisis. The Spanish business community is complaining about the extreme caution with which banks regard credit applications. Apparently, Abengoa is no exception. According to reports in the Spanish press, plans for a new ethanol plant in the port of Bilbao have been called off. Salgado denies this, but with some nuance. 'We are not planning to withdraw; however, we also have other opportunities within our growth options. And financing problems are not exclusive to our company,' says the president.

When it comes down to it, he says, the current European directive is more important than the shortage on the credit market. He

Abengoa received the prize for the worst lobby group in Brussels

points out Abengoa's efforts to maintain its top position in the European bioethanol market. A new ethanol plant was opened in Lacq, France, last September. Abengoa is building Europe's largest bioethanol plant, with a capacity of nearly 500 million litres, in the port of Rotterdam. 'To us, Rotterdam is a fundamental hub in Europe's fuel market. It is going to be our best competitive plant,' says Salgado. Start-up is planned in the first quarter of 2010.

The president foresees that Abengoa's leadership position could come under pressure because of the European directive. He suspects that large oil companies will also venture into the market. 'I cannot predict at what stage they will enter the market, but we are counting on it. Oil companies in Brazil, and also in the US, are already investing in technologies for second generation biofuels. The directives force oil companies to diversify their supply,' Salgado says. Is he worried that the cash-rich oil giants will force relatively small companies such as Abengoa off the market? 'There will be stiff competition. It will be hard for us to maintain our leadership position but that is our objective nevertheless.' He does not actually regard the oil companies as fresh competition: they are already opponents today. Furthermore, in his view, developments in Brazil have proved that power can shift: the Brazilian oil companies are still important, but the bio-ethanol industry has managed to take over their position. A

similar process is happening in the United States, where Abengoa has four plants. 'When we started in the United States in 2002, ethanol made up two per cent of the energy supply; now it sits at 10 per cent. Abengoa is one of the ten top ethanol companies in the US.'

Boost |

Javier Salgado also hopes that the energy policies of the new government under President Obama will give a new boost to biofuels. 'We have to be careful in our assessment, but the first signs are clearly aimed at a greater reduction of emissions in the transport sector,' says Salgado. The Energy Bill two years ago already stipulated a minimum consumption of first and second generation ethanol up to 2022. That will have far reaching effects according to Salgado. Consumption will grow from the seven or eight billion gallons of ethanol that are currently on the market to nearly 36 billion gallons. California and 14 other states could move the regulation's introduction forward to 2015. Salgado believes that Obama considers it important for national security to release the US from its dependence on oil energy. The upshot will be more biofuels, he says. 'We are very happy with this new government. Obama was very clear, even during his campaign, about the type of economy he envisions and where jobs should be created. I believe that the Recovery Plan will include very concrete, short term measures for our industry.'

Abengoa is adding two new ethanol plants to its four plants in the US, one in Illinois and one in Indiana, both with a capacity of 90 million gallons (1 US gallon = 3.8 litres). 'These will double our existing capacity of 200 million gallons. We use predominantly corn for this, but our future expansions will undoubtedly be second generation plants,' he says. Other methods of bioenergy and reuse are being developed, such as enzyme hydrolysis to generate ethanol, the use of biomass and gasification. 'Our factory in Kansas is already using multifeed stock such as wood straw and corn stover. New crops, such as miscanthus grass, are being developed. We are trying out forest waste as a source of biomass.' Algae are being considered for the production of biodiesel. It is an alternative that does not compete with the food chain and the algae can sequester CO₂. 'A centre to sequester CO₂ in combination with the production of biodiesel clearly has our interest, also for our existing plants,' says Salgado.

Lobby |

Not everyone will accept without question the good intentions

Abengoa

Abengoa was established as an engineering company in 1941 by Sevillian engineer Javier Benjumea who died in 2002. Under his leadership the company became one of the leading Spanish multinationals in the fields of solar energy, biofuels and waste management. Last year Abengoa Bioenergy, the biofuel division that generates about a quarter of the turnover, experienced major growth: in the third quarter it reached a turnover of €613 million, 42 per cent higher than in the same period in the previous year. The holding's profits in the third quarter of 2008 increased by 25 per cent to €101 million.

of Abengoa's president. The complex debate about the use of bioethanol and biodiesel was characterised by fierce accusations from both parties. Biofuel opponents claim that the use of the so-called first generation raw materials such as grains, corn and palm oil not only drove up food prices but also equated to higher energy use and CO₂ emissions. The Swiss 'food sociologist' Jean Ziegler, advisor to the United Nations, accused the biofuel lobby to have taken 'a criminal path' that would lead to worldwide food shortages. Scarce arable land is supposedly misused to replace food crops with more profitable energy crops.

Salgado did not escape unscathed either. The president came up against the European Federation for Transport and Environment, an independent environment NGO that advocates sustainable transport within the EU. Abengoa quoted the Federation in advertisements as having said that bioethanol would be the only real alternative for oil when considering energy dependency and reduction of greenhouse gas emissions. The Federation responded angrily: its opinion is that many biofuels lead to more emissions when you take into account the effects of conversion and cultivation of farmland for the production of biofuel crops. Things didn't improve when, during the ongoing correspondence regarding the clash, Salgado quoted from a research report that turned out to have been written by his own pro-bioethanol group. Abengoa received the prize for the worst lobby group in Brussels, a prize he shared with the producers of palm oil in Malaysia and Brazilian ethanol producers.

The president is keen to say he is not very happy about that prize. It doesn't keep him awake at night, but he doesn't think it is fair. He doesn't deny that the first generation raw materials have certain disadvantages. However, he says that the use of the current crop is a necessary phase for the development of new generation raw materials that do not compete on the food market and have a more efficient ratio of energy to CO₂ emission output. He draws a parallel with the IT industry. 'Ten years ago, nobody said that we should only use computers with three gigabyte microprocessors and that those with only one gigabyte were useless.' He argues that it is hard to imagine the development of second generation biofuels if there isn't first a market for fuels from the first generation. 'We would be happy if we already had established technologies for the second generation. And we think that time will come. But, at the current prices, this technology is not viable yet.' Salgado stresses that Abengoa continues to look for new crops, such as CO₂ consuming algae for biodiesel. The ethanol plant in Salamanca will soon start up an experimental production unit, to extract ethanol from biomass.

The increase and conversion of arable land for biofuel crops is a tough and ongoing problem. The European legislation needs to be reassessed in 2014. Many calculations and research reports already indicate that the planting of biofuel crops has far reaching consequences that, on balance, are not very positive. The felling of trees and the use of grassland cause high CO₂ emissions. Not only the trees, but the soil itself contains and releases CO₂. It will take



Javier Salgado. Source: Abengoa

many decades for the reduced biofuel emissions to compensate this. The problem of converting the land to biofuel crops is that, in turn, existing food crops need to be relocated to new land.

Salgado disputes that the raw materials for the first and second generation biofuel-crops need more farmland. He points out how inefficient agricultural politics in Europe are: Europe is three times less productive per hectare of farmland than the United States. This is mainly due to the ban on genetically modified crops. 'We want more technology and more competition. I say: open up the market. Countries like Romania and Bulgaria have enormous agricultural areas. Strive to increase the yields there.' Javier Salgado won't give up. Biofuels are the future here. 'Make Europe as competitive as the United States. That way we will produce more, we won't need to talk about hunger and we can reduce the import of raw materials for biofuel production.' ■