

# Innovating Ethanol in Europe: The story of political risk and diversification

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## Introduction: Renewable energy and regulation

The renewable energy boom is built on solar and wind power spreading across the landscape and connecting everything from our cars to toasters. Electric cars, better batteries, and a more sustainable energy system hold the headlines of a sustainable energy system. A return to more 'traditional' energy sources may highlight more efficient and more innovative technologies that contribute to a green boom. Transport still runs on oil, but in much of that gasoline is ethanol; largely produced by growing popular crops like corn or sugarcane. Financial subsidies may propel wind and solar to new heights, ethanol relies largely on regulatory mandates to fuel its success. Regulation serves to give certainty to companies to produce their product or service in a certain area and for an agreed length of time. This is a story about when regulation unexpectedly changes and the response by a firm.

## Ethanol in Europe

The drive to participate in the renewable energy boom after the economic crisis of 2008 prompted Mark Turley to assess opportunities in emerging energy technologies. Mark, a former Irish property developer who invested and built up a successful property portfolio in Poland along with a strong car dealership in his native Ireland, he sought ways to break into the renewable energy sector after downsizing his property holdings in 2006. He considered building an incinerator in Turkey, anaerobic digesters in Switzerland, Geothermal in Hungary, "I looked at solar, wind, biodiesel, bioethanol. And all of them needed subsidies. Except ethanol." It was this lack of subsidy that drove Turley to assemble a management team to launch his ethanol company in Hungary.

Ethanol Europe is the parent company to Pannonia Ethanol located along the Danube river in Dunafoldvar, Hungary. The company began building its facility in 2010 and began ethanol production in 2012, relying on locally grown corn. In 2013 it began producing high quality animal feed from the byproduct of distiller's grain. This animal feed is composed of 31% protein and when added to animal feed, such as milk cows, their production of milk increases. The ethanol plant was built and operated under the assumption of the European Union's Renewable Energy Directive (RED) of 2009, which mandated a minimum of 5.75% ethanol blend with petrol. A further increase in the blend was expected leading Ethanol Europe to invest € 10 million into a second site in Mohacs, Hungary. The EU failed to increase this requirement leading to the second investment being stopped in 2012. Instead, the company shifted resources to expand the Dunafoldvar plant to become the largest European ethanol producer in 2015.

## History of Biofuels and Production

Ethanol is alcohol. The first automotive vehicles relied on ethanol rather than petrol. The process itself can occur in a very simplified manner. In the 1970s, Brazil shifted its car fleet towards ethanol; produced

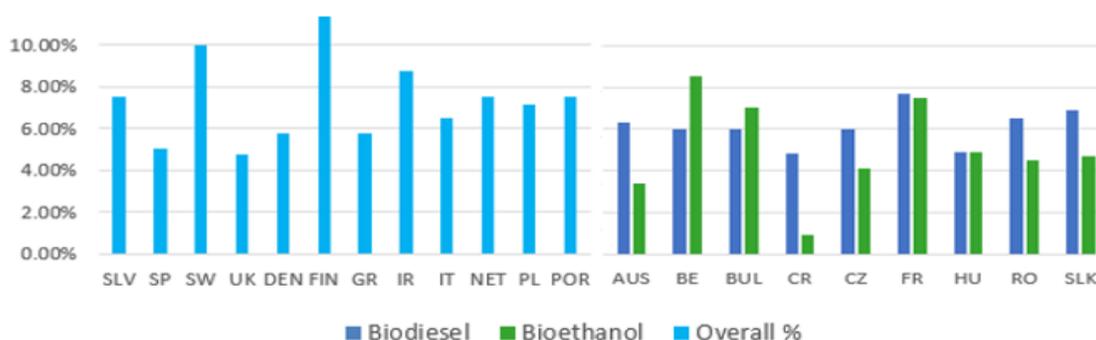


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from domestic sugarcane as global oil prices skyrocketed and sugar prices collapsed. In 2009, passage of RED held a transport target of 10% from renewables in the EU. Biofuels held the potential to make a meaningful contribution to this target. With multiple policy goals, from security of energy supply, technology development to rural development biofuels held strong potential to satisfy policy goals.

Another monetary advantage of ethanol is it does not rely on financial subsidies like wind or solar to encourage investment. Rather, it relies on a regulatory environment which mandates the percentage of bioethanol or biodiesel blended with petrol. Through regulatory transport mandates, the cost of ethanol is born by the consumer. Figure 1, shows the percentage of regulated blends in each country.

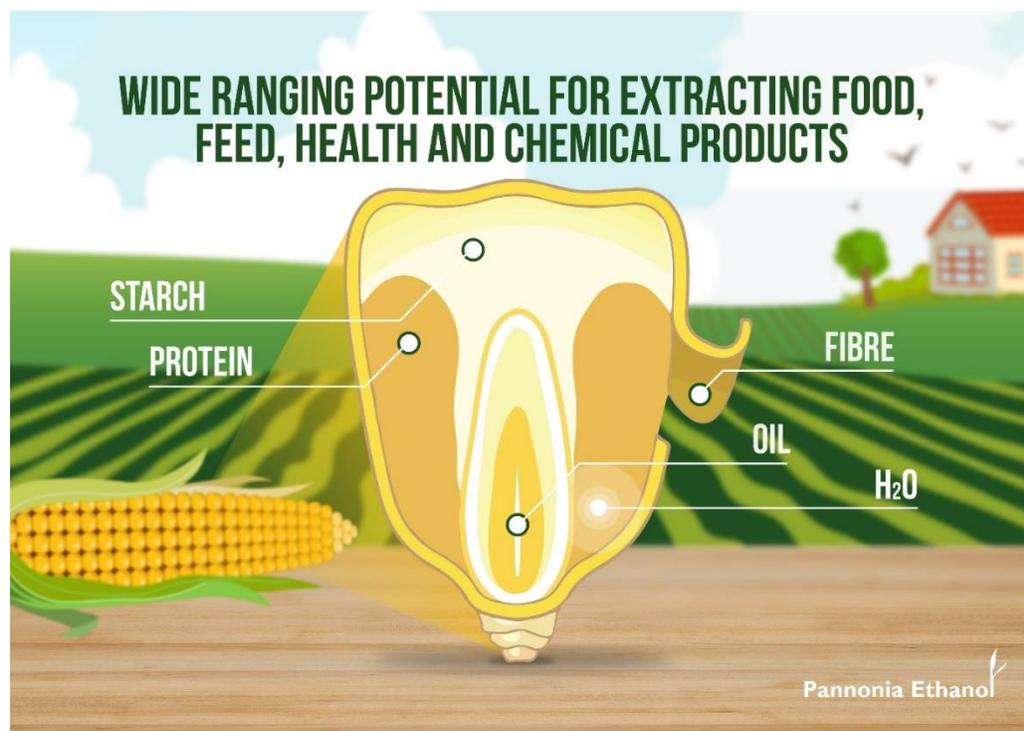
**Figure 1. Biofuel Mandates by countries (2017)**



*Source:* (Lieberz, 2017)

The production process of bioethanol consists multiple steps. Separated corn grain is cooked, then liquified for fermentation, and it is distilled in order to obtain a solution highly rich with ethanol (Deremince, 2016). Corn consist of 70% starch, 8% protein, 4% fat and 3 % fiber. The first products that are made from corn is DDGS, which is consist of 31% protein, therefore, it is valuable and high-quality animal feed (Deremince, 2016). The second product is ethanol with 99.9% pureness. The last byproduct that Pannonia Ethanol produces is corn oil. Sievers (2018) notes that during the process, in order to produce high quality animal feed, namely Distiller's dried grains with solubles (DDGS) the boiling temperature adjustment takes place from 150 °C to 120 °C.





Source: Pannonia Ethanol

## Biofuels policy debate

The more controversial components of biofuels is the indirect land use change (ILUC) and Greenhouse Gas emissions (GHG). In a simplified manner this is expressed as ‘food versus fuel’ and potentially more GHG because of land use change and production processes. Land that would normally be used for the production of food crops is given over to the production of crops for biofuels.

As ILUC is a complex issue, three years of debate took place after 2012 in order to try to estimate ILUC’s potential effects via complex mathematical models. This debate, coupled with the perceived influence of biofuel production on food prices, over a few years, led to the so-called ILUC directive in 2015, which set a cap of 7% on conventional biofuel production within the 10% target of renewable energy in the transportation sector. EU member states are free to restrict this cap even further (EU 2015). In twelve years, biofuels have thus gone from a promising tool to decarbonize transport to a technology with huge potential risks and that needs to change to remain relevant in the transport sector.

Producing scientific evidence around ILUC robust enough to lead the EC and the European Parliament (EP) proved to be a difficult task (Valin et al. 2015). Apart from scientific complexity, finding common ground on biofuels was hindered by the biofuel industry’s opponents, such as environmental NGOs, which have strongly polarized public opinion about biofuels and increased pressure on bureaucrats and politicians. Given that the ILUC effect of corn-based bioethanol is low, the variability is low as well. By 2012, Corn-based bioethanol already came to respect the more stringent environmental criteria of 2018. The good environmental performance of corn-based ethanol (high GHG savings and low ILUC) is thus a key argument for Ethanol Europe in order to protect the bioethanol industry. During this work, all policymakers shared this argument: they were all in favor of biofuels, or at least considering the option

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seriously, because of the significant GHG savings involved (DG ENER C1 rep. 2016; DG ENER C2 rep. 2016; DG ENV1 F1 rep. 2016; DG MOVE C1 rep. 2016).

In 2012, the expected increase in ethanol mandates did not happen. Instead, major amendments at the EU level emerged, imposing an undifferentiated cap of 5% on all food-based biofuels (including bioethanol and biodiesel) (EU 2009a). Because of the correlation between the start of biofuel production (the CEP was formulated in 2009) and rising food prices in 2008-2009, the impact of biofuel on feedstock prices was considered significant by many (Nikos 2008; Alavi Hojjat 2009). Even if the EU considers the impact marginal (a few percent, (EC 2012)), the food crisis made the issue politically sensitive and highly controversial. A further consequence is related to the compensating effect of reallocating arable lands in Europe from food to biofuel production. This phenomenon may create an incentive for farmers to compensate for this lack of food on the global market by using new lands to produce food. This effect is happening mainly in countries with lower environmental standards, which often results in deforestation (Defossez et al. 2014).

### Response of Ethanol Europe

The protracted policy struggle over the impact of biofuels lead Ethanol Europe down two different paths. Moving from a producer of biofuels to lobbying activities and pursuing innovative technologies. The drawn-out policy debate demonstrates the ability of the firm to adapt and adjust to an uncertain (and in their own words, an unfair) policy process.

Changes in the perception of biofuels at the EU level pushed Ethanol Europe to become more active in politics. The building of the Dunafoldvar ethanol facility and the groundbreaking of the Mohacs facility occurred under the assumption of increasing ethanol demand in Europe. In August 2012, the European Commission was set to vote on revising down the biofuels mandate to 5% from food-based sources. Reflecting back on this event, Director of Investment, Eric Sievers states, “that was the day we realized we got it all wrong.” Ethanol Europe was three years into a twelve-year public-private partnership, and now “the public part says no, we want to completely tear it up and start over. From that day on, political risk became our number one issue to navigate around.” Success was not guaranteed.

Drawing on the EU Directives from 2008 and the subsequent building the first facility with the goal to produce 10% of Europe’s ethanol, was not because the management was better than the competition. From Sievers point of view, “it is because we are stupid.” Other potential ethanol investors knew what the management did not know: not to trust the EU. Political risk was too high. Moving forward with a €200 million investment based on regulations, in hindsight, was a daring investment move. At the time, it appeared a stable investment opportunity free from government subsidies.

Lobbying activities of Ethanol Europe increased in Brussels to ensure support for a fuel mandate. The company met with lawmakers directly and acted through the biofuel’s industry lobby group, ePURE (Deremince, 2016). In 2012, as the struggle to maintain or increase the EU biofuels mandate occurred, the company had managers spend a significant amount of time in Brussels. The result was not an increase in the use of biofuels in fuels, but a slight decrease and the potential of phasing out food-based biofuels, which included ethanol. The changes affected the long-term growth of the company as an ethanol producer.

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### Diversification and opportunities

The political risks of ethanol in the EU set Ethanol Europe onto a different trajectory. The loss of the Mohacs plant and uncertainty in EU ethanol policy forced management to reframe the strategic focus of the firm. Ethanol Europe emerged on the scene in Brussels to defend the case for ethanol in Europe, it also raised the profile of the firm. “Suddenly we became well-known,” and people began to call us. People were contacting them because they were trying to develop ethanol projects or they had new technologies that required the ethanol production process. The reputation of the firm evolved beyond a fighter for ethanol and towards a management firm with expertise and money to invest in the ethanol sector.

After a year of people approaching the firm, Sievers stated in 2014, “We stepped back and asked how do people perceive us? People perceive us as folk who have money, who have technical expertise, and who are more doers than talkers.” Then the idea that the company is a venture capital fund was floated. “Within 5 minutes the whole management team just said that is what we should be. Because, someone comes in we can give them an answer within a day or two, because we don’t have multiple levels of boards and staff. We’re five people who get around and decide stuff.” This decision shifted the strategic focus of the firm.

This reframing of the company enabled them to refocus their operations. Conversations with people who approached the firm were different with this new investor perspective. One of the first ventures under this model was a Swedish university based firm that contacted Ethanol Europe in August 2015. Their unproven technology offered to remove fiber at the start of the ethanol production process and turn it into prebiotics. Prebiotics are used to improve the gut health in humans and animals, aiding the digestion process and improving overall health. For Ethanol Europe, the technology offered to remove a waste that unnecessarily flowed through the ethanol process requiring additional resources, such as heat and plant capacity to process an unnecessary element in the production of ethanol. By selling prebiotics the firm could gain additional revenue from a waste product.

The reply from Sievers was the inventors should just come to Hungary to discuss the technology as it clearly fit within the operations of the plant. “After a four-hour meeting Mark just got up and leaned over, shook his hand and said, ‘we are going to do a deal’. So that is it. I don’t know how it will happen but it will happen.” Later, Ethanol Europe financed building a test facility and both partners worked together for two years. they eventually signed an agreement at the end of 2017. Sievers perspective was, by not having an agreement, both parties learned to work together on a basis of trust. In this arrangement, Ethanol Europe took over the financial risk and the Swedish firm was able to test their technology. “Technology does not matter as much as people.”

### Conclusion: From ethanol to innovators

Mark Turley entered the ethanol market due to the lack of government subsidies necessary to sustain the business. Ethanol Europe was launched with the expectations the EU regulated mandate of fuel blend would continue and even increase. Social debates and policy changes forced the company to cancel a large investment and loose €10 million. Political risk emerged as a barrier to sustained growth. Perceptions of the industry with a large negative impact around ILUC and GHG emissions put the company on the defensive as it sought to shift and shape opinions in Brussels as debates around the future of ethanol were discussed. The company emerged as a voice of knowledge, drawing from its own experience producing ethanol rather than drawing from a research or public policy background.

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The stranding of the Mohacs facility and the political shifts within Brussels consumed a large amount of company time. Involvement in the policy debate did put the company in the public eye and became known to others interested in the ethanol industry. This higher profile meant experts, whether from the ethanol industry or from technology companies seeking partnerships, contacted the company for advice and services. Over time, these contacts shifted the company to acknowledge its role as an innovative leader in the sector that could serve as an incubator to certain technologies that draw on the ethanol production process. Working as an investment fund, rather than a simple ethanol company, enabled the management to seek growth areas away from the commodity sector of ethanol and diversify its product portfolio. The company is now on track to reduce its dependency on the regulated ethanol market, selling ethanol to other manufacturers and producing byproducts that serve as new revenue streams.

The story of Ethanol Europe proceeds from a firm dependent on a regulated market to ensure market access for its product. The threat of this loss of protected status prompts the firm to increase its political involvement. Despite attempts to influence the political process, a solution presents itself based on looking at how the firm is perceived by others. It is a company that delivers to market a product and has expertise and production processes valuable to other firms, particularly in the area of unproven technology. By shifting the management philosophy from an ethanol firm, nearer to a venture capital firm, nimble and able to make quick decisions on involvement and funding, the firm becomes more agile and extends its activities outside the regulated environment. This enables the firm to eventually even move out its ethanol production from the regulated sector to one reliant on the free market.

