



Analysis of the Romanian biofuels industry under the current economic conditions using PESTEL

Analiza industriei de biocarburanți din România în condițiile economiei actuale cu PESTEL

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Abstract

Biofuels worldwide recorded considerable growth rates over the last years, making them one of the most flourishing young industries. The biofuels industry within the EU27 focused on the production of biodiesel, which is the equivalent of the regular fossil diesel. Main drivers, which led to this development, were a favorable legislative framework promoted by the EU, which was translated by each EU member state through excise tax exemptions and obligatory fuel blending levels, and higher production levels of oilseeds, the main raw material for biofuel production. Based on the favorable context within the EU and its agricultural potential Romania could increase both its internal consumption of biodiesel and become a net exporter of biofuel to other EU countries. A thorough analysis of the current market conditions in the European and Romanian economy, and in the biofuel market specifically, is a requirement for the long term sustainability of Romanian investments in biofuels. This study aims at providing a basis for identifying the risk factors, faced by investment projects in Romanian biofuels, using the PESTEL analysis tool.

Keywords: *biofuels, biodiesel, sustainable biodiesel production, PESTEL*

Rezumat

Biocarburanții au înregistrat la nivel global rate de creștere considerabile în ultimii ani, ceea ce i-a făcut una dintre cele mai înfloritoare industrii mondiale. Industria biocarburanților în cadrul UE27 s-a concentrat asupra producției de biodiesel, produs echivalent cu dieselul fosil. Principalele cauze, ce au condus la această dezvoltare, au fost un cadru legislativ favorabil promovat de către UE; transpus de fiecare membru UE prin reduceri de taxe și rate obligatorii de amestec al dieselului, și un nivel ridicat al producției de plante oleaginoase, principala materie primă în producția de biodiesel. Pe baza acestui context favorabil în cadrul UE și al potențialului său agricol România poate să crească atât consumul intern, cât și să devină un exportator net de biocarburanți către alte țări UE. O analiză detaliată a condițiilor de piață actuale în Europa și România, și în piața biocarburanților în special, este o cerință pentru o producție sustenabilă pe termen lung a biocarburanților în România. Studiul prezent își propune identificarea factorilor de risc

la care proiectele de investiție în biocarburanți în România se expun, cu ajutorul analizei PESTEL.

Cuvinte-cheie: *biocarburanti, biodiesel, productia de biodiesel, PESTEL*

JEL Classification: Q42, Q57

Introduction – Current situation at the EU level

Biodiesel in Europe has enjoyed strong growth over the last years due to a rising interest of the EU for environmental protection, respectively lower greenhouse gas emissions, and for a reduction in the import dependency on fossil oil for the transport use.

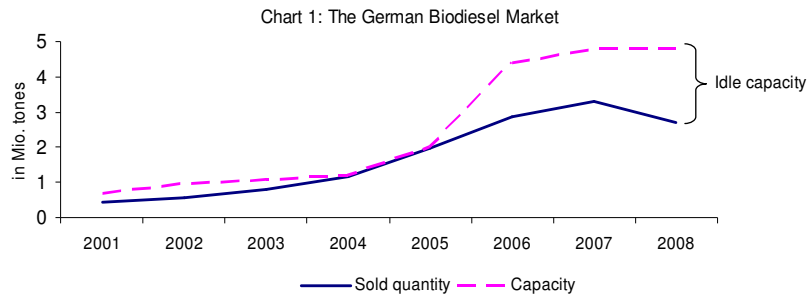
The biodiesel industry in Romania is still at its inception compared with other EU markets, but shows over the last year one of the highest growth rates. According to European Biodiesel Board [European Biodiesel Board] the Romanian production of biodiesel reached in 2007 approximately 36 thousands tones or 0.63% of the total production within the EU27.

However the EU27 is currently dominated by only two major players: Germany and France with shares of 50.6% and respectively 15.3% of the European biodiesel market. Both countries managed to build up, in a relatively short period of time, a strong biodiesel industry due to a legislative and fiscal framework promoting the use of biofuels (e.g. full tax exemption of biodiesel in Germany and tax exemption up to certain annual quotes in France). Despite this, the direct government support is currently reduced (e.g. taxes progressively increased in Germany) and the national promotion of biofuels is limited only to obligatory consumption quotas of biodiesel in combination with fossil diesel. According to the German Union of Biofuels (German Union of Biofuel Industry) the gradual increase in the excise tax burden on German biofuels led in 2008 to numerous biodiesel investment closures and an increase in idle capacity to approximately 2.1 million tones or 43.7% of the total production capacity.

In addition to higher tax burdens on biofuels, the biodiesel discount in Germany, which is calculated in this study as the price difference between fossil diesel at pump and biodiesel at pump, dropped, based on UFOP (Union for promoting the oilseed use) price data, to -3.2 Cents/Liter in December 2008 from 7.4 Cents/Liter in January 2008. Based on this calculation the sales price of biodiesel has more than outpaced the diesel price, within the period of one year, making the biodiesel more expensive than regular diesel.

The current negative discount, together with a general price increase in oilseeds, generated on the German market in 2008 a considerable reduction both in the number of producers and of capacities (German Union of Biofuel Industry). UFOP estimates that the biodiesel industry will no more enjoy state aid and will be in a direct competition with fossil fuels, despite the higher production costs of biodiesel. However Boom (Bomb, 2007) points out in his research the difficult survival of biodiesel without state aid due to the price sensitivity of markets (“consumers purchase cheap rather than green”).

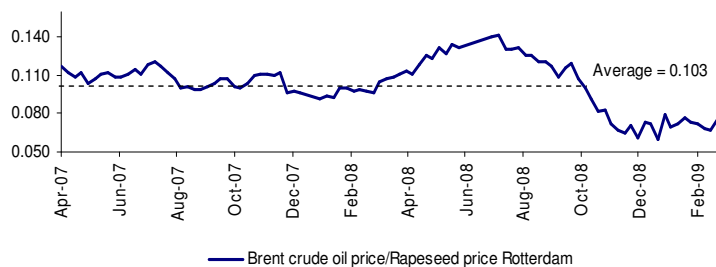
Chart 1 shows the historical build-up of production capacities and sold quantities in Germany on an annual basis, whereby the resulted gap reflects idle capacity. Based on this analysis the idle capacity was modest until 2005, but increased considerably from 2006, lowering the profitability of biodiesel investments and leading to the failure of some.



In addition to the partial reduction in the state aid offered by western European countries, the biodiesel industry faces also pressure from rising prices of oilseeds. Oilseeds markets have recorded strong increases both in volume and prices over the last years as a result of higher demand from the biodiesel industry. Thompson (Thompson and Meyers, 2009) stresses, starting from oil prices, the negative effect on oilseed prices from the obligatory consumption mandates for biodiesel, which were implemented by most of the EU countries to spur the biofuel industry. In case of low oil prices consumers would incline, without the obligatory mandates and the corresponding state spur, to buy fossil fuel instead of biodiesel. However with obligatory consumption mandates the biodiesel industry will grow irrespective of how oil markets evolve, leading at the same time to an increase in oilseed demand and prices.

Starting from these market relationships the historical effect on biodiesel of prices for both fossil oil and oilseeds is analyzed, in this study, through the index of weekly Brent oil prices, the reference oil type in Europe, to weekly prices for rapeseed, the main oilseed used in Europe for the production of biodiesel. This relationship considers both the price effect of fossil oil and the effect of rapeseed prices.

Chart 2: Index of factor prices with a high impact on biodiesel



The decrease in the index from the second half of 2008 points to the difficulties facing the biofuels industry in Europe: on the one hand prices for fossil oil dropped, making fossil fuels more appealing to consumers in terms of price, while the acquisition cost of rapeseed increased significantly, generating higher production costs for biofuels.

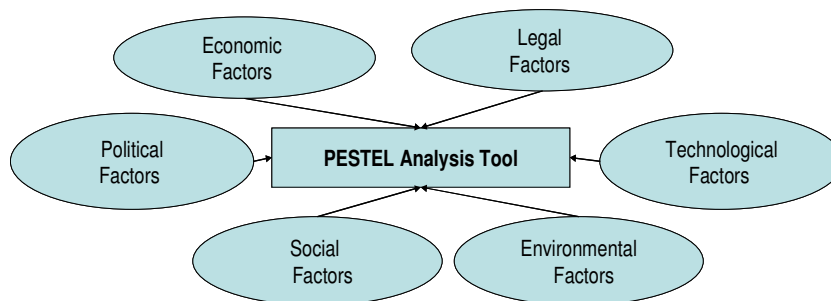
Based on available academic research and own research presented in this introductory part the biodiesel industry is currently undergoing serious challenges, despite its high historical growth rates and the support from the EU. In this respect the development of a successful biodiesel industry in Romania, both from a national and a management perspective, requires the consideration of the key risk factors right from project inception and planning. The paper is organized as follows: part 2 describes the methodology used in identifying factors affecting the biodiesel industry under the current market environment and part 3 assesses risk factors on the Romanian biodiesel industry, by using the PESTEL management tool.

Methodology

Brealey and Myers (2007) stress that the wealth of a firm is highest only when the firm accepts projects with a net present value. Practically a company chooses from a variety of projects and under its constraints (e.g. financial, managerial, know-how etc.) the project with the highest net present value. However in addition to the computation of the net present value, the risk factors potentially affecting the project survival over its lifetime are to be identified and considered in the investment decision. A useful tool for selecting and assessing these risk factors from a management perspective is PESTEL.

Gillespie (2007) defines PESTEL as a useful management analysis framework in identifying key factors from the relevant macroeconomic environment of a business. By highlighting these risk factors already in the planning phase, managers can adopt a prudent approach and better handle such risks, in case they actually occur. The main input parameters of PESTEL are shown in Chart 3.

Chart 3: Components of the PESTEL analysis tool



Source: A.Gillespie, Foundations of Economics (2007)

The identification of risk factors with PESTEL for biodiesel investment projects is viewed in this study in connection with both the Romanian and the European economic environments and their impact on companies acting in Romania and in other EU member states.

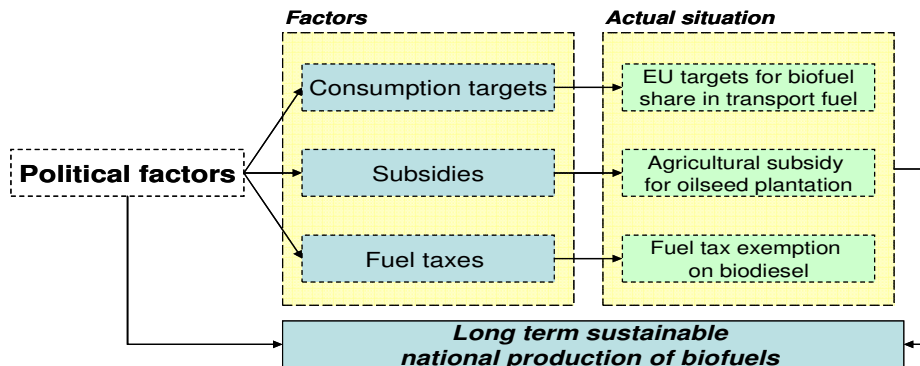
Assessment of risk factors on the Romanian biodiesel market using PESTEL

The identification and categorization of the factors influencing Romanian biofuel investment projects is carried out according to the PESTEL analysis and its components (Chart 3).

Political factors

The political factors identified refer to an unfavorable change in the support offered by the Romanian state to the biodiesel industry. General support schemes for the Romanian biodiesel industry relate to the accomplishment of the targets set by the EU for the percentage of renewable sources in the fuel for transportation. According to the latest EU decision (Euractive – “Biofuels for transport”) member states have to increase their share in renewable sources for fuel transportation, including but not limited to biofuels, to 10% by the year 2020.

Chart 4: Political factors in the Romanian biofuel industry



Source: Own analysis based on current research

The political risk factors in the biofuel industry are analyzed according to chart 4:

- Agricultural subsidies are currently granted for oilseed cropping both from the EU and from the Romanian state. The level of subsidy from the EU amounts to 50EUR/hectare, which is supplemented by 30EUR/hectare from national funds. In addition developers receive up to 45 EUR/hectare more in case they close delivery agreements of oilseeds with biofuel producers. Based on these subsidies the area cultivated with rapeseed increased to approximately 349 thousands hectares in 2007 from approximately 48 thousands in 2004 (FAOSTAT).

- Based on *Tax Law 343* from 2006, with applicability from 1 January 2007, biodiesel is exempt from tax excise duties. Compared with biodiesel regular diesel is subject to an excise duty in 2009 of approximately 0.283EUR/liter (E-transport – “Accize, benzina mai scumpa cu 16 bani”, 2008) or approximately 34% of the current sales price of diesel at pump (Europe Energy Portal).

- Included under political factors with a high future impact, is also the long-term sustainability of biofuels, which is defined as ensuring the growth of biodiesel production without negative externalities on the economy. Negative externalities include a replacement of the arable lands allocated to food supply with oilseed cropping for the biofuels production, which on the other hand can reduce the availability and increase the price of food supply.

Economic factors

The economic factors with an impact on the biofuel industry are divided according to the whole value chain of biofuels, They include both factors relating to general macroeconomic conditions and factors, which affect preponderantly the biofuel industry, either on the supply, production or distribution side.

The analysis of the economic factors is carried out according to Chart 5:

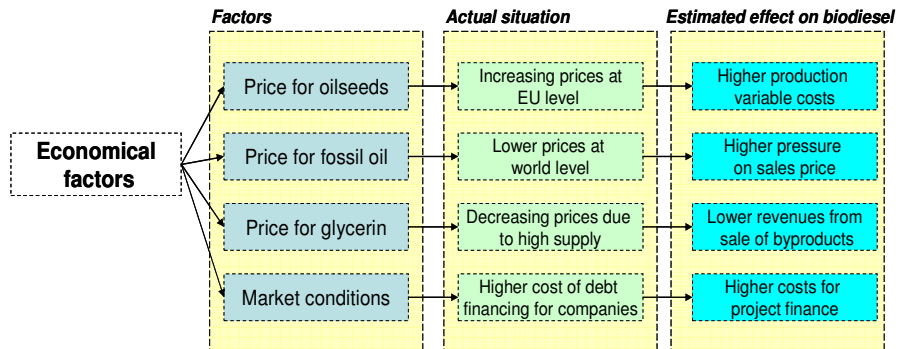
- On the supply side the current increase in prices of oilseeds, which are the main raw material for biofuels (Chart 2), generates higher production costs for biofuels and lower profitability margins.

- On the sale side the current decrease in oil prices, which in turn typically leads to lower fossil fuel distribution prices, generates a high price pressure on biofuels (Chart 2).

- Additionally a decline in the price of byproducts obtained from the biodiesel process and sold on the market generates both lower revenues and marginal returns. The main byproduct obtained from biofuels is glycerin, which can be transformed in a further step into pharmaceutical glycerin.

- The general increase in the cost of financing of companies is analyzed based on the yields required by the capital markets for investing in corporate bonds.

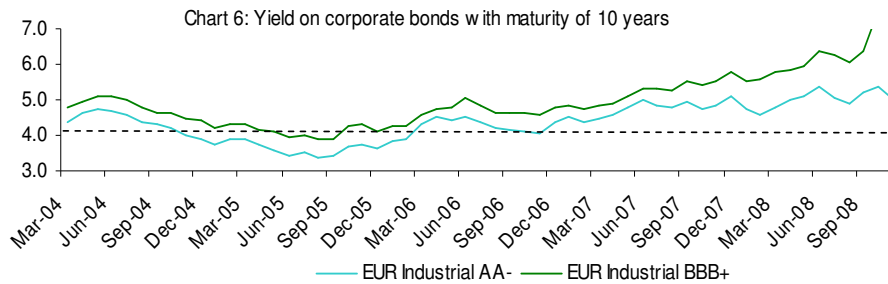
Chart 5: Economical factors in the Romanian biofuel industry



Source: Own analysis based on current research

Chart 6 analyzes percentage yields on corporate bonds with ratings of “AA-“and “BBB+” and issued in the EUR currency with a maturity of 10 years. Yields for both ratings show a positive trend, while the yield on bonds with a rating of “BBB+” had the highest growth with approximately 1.5% increase for the period 2007-2008. The cost of

financing for companies has thus increased, making current financing of investment projects more expensive.



Source: Analysis Bloomberg Data

Legal factors

The influence of legal factors on Romanian biofuel production encompasses the biofuel blending rates as set out in the *Government Ordinance 456* from 2007, which replaced the former *Government Ordinance 1844* from 2005. Through this fossil fuel producers are required to distribute fuel which is mixed with biofuel. The obligatory blending levels are set out as follows:

- From 1 July 2007 a minimum content of 2% of biodiesel in the final diesel fuel for transport.
- From 1 January 2008 a minimum content of 3% of biodiesel in the final diesel fuel for transport.
- From 1 July 2008 a minimum content of 4% of biodiesel in the final diesel fuel for transport.

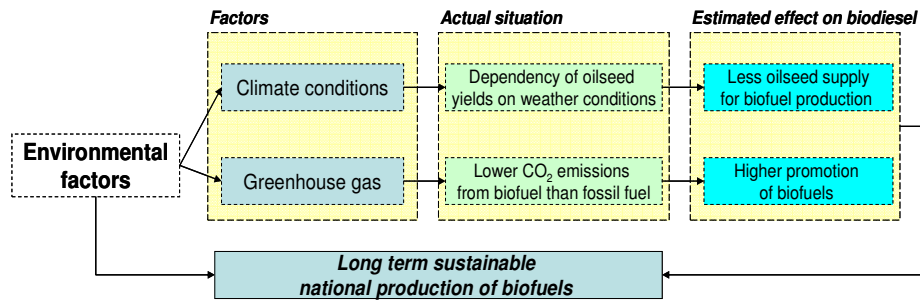
Through the obligatory blending rates the biodiesel industry has recorded a considerable jump in production volumes reaching 36 thousand tones in 2007 from 10 thousand tones in 2006 (European Biodiesel Board).

This study regards a reduction or elimination of the obligatory blending rates by the Romanian government as a legal factor with a high risk.

Environmental factors

Environmental factors in the biofuel industry encompass unfavorable climate conditions and rising awareness for reduction in pollutant gas emissions. These factors are presented in chart 7.

Chart 7: Environmental factors in the Romanian biofuel industry



Source: Own analysis based on current research

The impact of unfavorable climatic conditions on the biofuel production is observed indirect through the supply of oilseeds as raw materials. According to IENICA (IENICA – “Report from the state of Romania”, 2004). Romania has an insufficient land irrigation system to cover the increasing surfaces of cultivated land with oilseeds, which in turn makes the dependency on good weather conditions higher. In this regard the production increase over the last years was modest compared with the surfaces cultivated, as can be observed from table 1 on rapeseed production in Romania.

Table 1: Romanian rapeseed market

Year	2001	2002	2003	2004	2005	2006	2007
Harvested area(Ha)	82,400	54,559	12,744	47,931	84,222	102,532	348,758
growth in %		-33.8%	-76.6%	276.1%	75.7%	21.7%	240.1%
Production (tonnes)	101,800	35,900	8,100	98,661	147,566	175,050	348,169
growth in %		-64.7%	-77.4%	1118.0%	49.6%	18.6%	98.9%
Yield (tonnes/Ha)	1.24	0.66	0.64	2.06	1.75	1.71	1.00
growth in %		-46.7%	-3.4%	223.9%	-14.9%	-2.6%	-41.5%

Source: FAOSTAT

Conclusion

The biofuel industry in Romania is currently at low levels compared with other EU countries; however the interest has increased due to favorable investment conditions offered by the Romanian state. Despite this the macroeconomic and business specific risks affecting the biofuel industry are high, making the industry vulnerable to changes in its environment and uncertain for investment decisions.

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