Biodiesel Production in Croatia

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AmCham

American Chamber of Commerce in Croatia Američka gospodarska komora u Hrvatskoj

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Introduction

Biodiesel is a type of biofuel introduced to the transportation industry primarily for its positive balance of carbon dioxide in relation to mineral fuels. The basis for the production of biodiesel is oilseeds' seed or oil, as well as animal fats and waste edible oil. The most widely used type of oil in Europe is rapeseed oil.

The rapeseed growth produces a certain amount of CO2 emissions which occur in the processes of cultivation, processing, transportation and finally during processing into biodiesel. However, the most important in this process is the fact that further cultivation and processing also draw a portion of biodiesel-related CO2 emissions back from the atmosphere, whereas fossil fuels constantly accumulate new emissions of CO2. Therefore, the production of biodiesel creates a partially closed circle, in contrast to fossil fuels which constantly accumulate CO2 emissions.

The CO2 balance in an operating diesel engine delivers increasingly more favorable ratios in favor of biodiesel as opposed to mineral fuels. Depending on the raw material used, biodiesel fuel currently emits from 35% to 90% less greenhouse gases (GHG) than mineral fuels. According to EU legislation, it will have to emit at least 50% less GHG than fossil fuels from 2017, and at least 60% less from 2018.[1]

The most important advantages of using biodiesel fuel in Croatia are the following:

- Characteristics equal to that of fossil fuels, but with much better lubricity, thus increasing engine lifetime,
- Reduction of environmental pollution,
- Contains no "major pollutants" – sulfurs and metals,
- It is a renewable source of energy,
- Transportation is completely harmless to the environment,
- Croatia is an excellent environment for the production of rapeseed, which contributes to the development of agriculture and thereby to employment increase in the real sector,
- Reduces the risk of water pollution,
- Biodegradable product,
- Generates independence from fossil fuels in the percentage of application,
- Resolves the issue of environmentally efficient management of waste edible oils.

[1] Directive 2009/28/ EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources and on the amending and later repeal of the Directive 2001/77/EC and 2003/30/EC, available at: http://eur-lex.europa.eu/legal-content/HR/TXT/?uri=CELEX%3A32009L0028

The Legal Framework for the Use of Biofuels

European Union

The EU strategy for energy development and climate change mitigation includes the objectives of achieving a 10% share of renewable energy in the transportation sector and reducing the emissions of greenhouse gases emitted by fuels in the transportation sector by 6% by 2020.[2]

The Directive (EU) 2015/1513 limits the quota of "first generation" biofuels, i.e. "conventional" biofuels to 7%.[3] Conventional biofuels are biofuels produced from the following raw materials: sugar, starch, vegetable oils and animal fats.[4] With regards to the 10% renewable energy transport quota which must be implemented by 2020, EU Member States must also prescribe the ways in which they will promote and incorporate "advanced biofuels" in their national plans. "Advanced biofuels" are produced from raw materials such as waste and agricultural residues that do not directly compete with food and animal feed crops.

The initially proposed legislation limited first-generation biofuels to 5%, but Member States in which oil production represents a significant segment of economic activity managed to increase the quota to 7%. In addition, preparations of a new plan for the period up to 2030 include considerations of the increase in the share of oilseeds primarily because alternative raw materials have not yet been developed.

Republic of Croatia

The regulation of the use of biofuels in transport falls under the competence of three ministries: Ministry of Economy, Ministry of Environment and Nature Protection and Ministry of Finance.

The most important document is the *National Action Plan for the promotion of the production and use of biofuels in transport for the period 2011-2020*, proposed and adopted in 2010 by the Ministry of Economy, Labor and Entrepreneurship.[5] The measures prescribed in the action plan encompass: incentives for the production of raw materials for biofuel production, incentives for the production of biofuels i.e.

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[2] European Commission, Climate Policy, available at: http://ec.europa.eu/clima/policies/strategies/2020/index_en.htm

[3] Directive (EU) 2015/1513 of the European Parliament and of the Council of 9 September 2015 amending Directive 98/70/EC relating to the quality of petrol and diesel fuels and amending Directive 2009/28/EC on the promotion of the use of energy from renewable sources, available at: http://eur-lex.europa.eu/legal-content/HR/TXT/?uri=CELEX%3A32015L1513

[4] Council of the European Union, "Preparing the transition to advanced biofuels", 28 April 2016, available at: http://www.consilium.europa.eu/hr/press/press-releases/2015/04/28-preparing-transition-advanced-biofuels/

[5] Ministry of Economy, "National Action Plan to promote the production and use of biofuels in transport for the period 2011 - 2020", January 2010, available at: http://www.mingo.hr/userdocsimages/energetika/Nacionalni%20akcijski%20plan%20poticanja%20proizvodnje%20i%20kori%C5%A1tenja%20biogoriva%20u%20prijevozu%20za%20razdoblje%202011.-2020.pdf

fees for subsidizing production, incentives for the use of biofuels i.e. the obligation by the distributors of liquid petroleum fuels to put biofuels on the market, as well as administrative measures and subsidies for R&D activities.

Neither Croatian laws governing market competition nor EU legislation include specific incentives for biodiesel producers, but they do promote the use of incentives for initiating green energy use in certain sectors, such as marinas, public transport, taxi transportation etc. These incentives are under county jurisdiction, while the financing of biofuel production is covered by the fee of 0.04 kn/l paid per liter of diesel or petrol placed on the market[6]. However, information on how the collected funds are distributed is currently unavailable.

In addition, every three years Croatia is required to prepare a national report under the United Nations Framework Convention on Climate Change and the Kyoto Protocol, which analyzes the necessary steps for better implementation of plans as well as the realization of plans in previous periods.

[6] Government of the Republic of Croatia, „Odluka o visini udjela prihoda od trošarina koji se izdvaja za proizvodnju biogoriva u 2014. godini“ ("NN", br. 147/2013), available at: http://files.hrote.hr/files/PDF/Dokumenti/biogoriva%20za%20prijevoz/147_10_12_2013_Odluka_o_visini_udjela_iz_prihoda_od_trosarina_koji_se_izdvaja_za_proizvodnju_biogoriva_u_2014.pdf

Penalties for not Bringing the Planned Amount of Biodiesel on the Market

Republic of Croatia

According to the projections of the *National Action Plan to promote the production and use of biofuels in transport for the period 2011-2020*, distributors and manufacturers must participate with 3.46% biodiesel in the total consumption of diesel fuels in 2016.

Chart 7.4. Trajectories of the share of renewable sources energy utilized in transport by 2020 with an overview of the quota of individual biofuel types

Year	E_{OIE-P}	$E_{Elen-OIE-P}$	E_{BG-P}	Biofuel composition		
				Biodiesel	Bioethanol	Biogas
	%			%		
2011	1.40	0.49	0.91	0.82	0.09	0.00
2012	1.75	0.52	1.23	1.05	0.18	0.00
2013	2.00	0.55	1.45	1.16	0.29	0.00
2014	2.66	0.58	2.08	1.66	0.42	0.00
2015	3.92	0.61	3.31	2.48	0.83	0.00
2016	5.36	0.65	4.71	3.46	0.86	0.39
2017	6.67	0.68	5.99	4.39	0.96	0.63
2018	7.84	0.72	7.12	5.52	0.97	0.63
2019	9.00	0.77	8.23	6.62	0.99	0.62
2020	10.00	0.82	9.18	7.53	1.03	0.62

The Ordinance on the special environmental fee for the failure to bring biofuels on the market[7] prescribes the fee calculation model which determines the amount that distributors must pay to the Environmental Protection and Energy Efficiency Fund should they fail to meet the obligation of bringing the planned amount of biofuels on the market.

$$E_R = \frac{(E_{MG} - E_{BG}) * P_{CO2} * Z_3}{OV * 1000000} * K_{NB}$$

The above formula is currently the greatest problem for the development of biodiesel production, since it prescribes fees that are many times more cost-effective for distributors to pay at the end of the year for the failure to bring biofuels on the market, than purchasing biofuels on the market and blending them.

According to the formula, the **special environmental fee** which a fuel distributor with average annual sales of 100 kt of diesel fuel without blending biodiesel has to pay amounts to **HRK 4,200,355.16**. In comparison, **the estimated cost of blending the mandatory quantity of biodiesel would amount to HRK 20,423,087.50**. The calculations are shown in Annex 1.

[7] Government of the Republic of Croatia, „Uredba o posebnoj naknadi za okoliš radi nestavljanja biogoriva na tržište“, 5 October 2010., available at: http://narodne-novine.nn.hr/clanci/sluzbeni/2010_11_125_3243.html

In addition, based on the communication with the distributors, there also appears to be a problem of monitoring and non-payment of fees according to the mandatory obligation even in this form.

Examples of the best practices in the EU - Germany

In 2015, Germany replaced the "volumetric method" of determining the requirement for blending biofuels into mineral fuels with a 3.5 percent quota for the reduction of GHG emissions of fossil fuels. The quota will be raised to 4% in 2017 and 6% in 2020.

In German legislation, the prescribed fine is calculated according to the biofuel energy value, and in case of violation of the obligation for blending biofuels into mineral fuels it amounts to 43 EUR/GJ. A distributor of mineral fuels with average annual sales of 100 kt of diesel would have to pay a **fine of € 10,977,900.00**. The calculation is shown in Appendix 1.

It is clear from the above that the penalization system is simple and prescribes penalties that force the distributor to fulfill the requirement. The excise duty system is calculated based on the entire diesel fuel unit, and there is no reduction of the excise duties for the bio-component.

Examples of the best practices in the EU – Italy

In 2015, Italy introduced a requirement of a minimum of 5% of biodiesel blended into diesel. It will be mandatory to begin blending advanced biofuels in 2018 in the amount of 0.6%, which will rise to 1% in 2022.

Fines are prescribed according to a certificate based on energy value. One certificate contains 10 Gcal of mineral fuel. If the payer fails to comply with the mandatory blending of biofuel into mineral fuel, the fine is calculated according to the certificate and it amounts to 750 EUR per certificate.

In this case, a distributor of mineral fuels with average annual sales of 100 kt should pay an **annual fine of € 77,025,000.00** in the event of a violation of the law, which certainly compels him to comply with the obligation. The calculation is shown in Appendix 1.

Recommendation

All EU member states have introduced the obligatory blending of biofuels into their legislative frameworks. Failure to meet the obligation is noticeable only in Slovenia and Croatia, with Slovenian fuel prices still limited by the state.

On the other hand, Croatia has liberalized fuel prices without accompanying this with fulfilment of legal obligations. This has brought extra profit margins to fuel distributors and at the same time hampered the development of biofuel producers, who are faced with the distributors' failure to comply with their statutory obligations.

Fulfilling the plans of the *National Action Plan to promote the production and use of biofuels in transport for the period 2011 - 2020*, as well as those from Directive 2009/28/EC on the promotion of the use of energy from renewable sources, primarily depends on the method of penalizing the failure to bring the mandatory quota of biofuels on the market.

It is therefore AmCham's opinion that the Croatian biodiesel market can only be boosted by a fee calculation formula that will encourage distributors of mineral fuels to buy biofuel rather than pay fees for failing to bring biofuels on the market, as per best EU practice. This must of course be accompanied by adequate monitoring and collection of fees by the competent authorities.

An adequate formula would contribute to the development of agriculture in Croatia, new employment in agriculture and industry, reduction of greenhouse gas emissions, as well as improvement of waste management by utilizing waste such as waste edible oil or animal fat as raw materials for the production of biofuels.

Appendix 1 – Examples of Calculating the Special Environmental Fee

Croatia

Distributor with average annual sales of 100 kt of diesel

EMG, kg/t – MG, kg / mp - average total greenhouse gas emissions for motor fuels	3603.4
EBG, kg/t – MG, kg / mp - average total greenhouse gas emissions for biofuels	1328.0
PCO2, EUR/t – average median price of emission allowances of the CO2 equivalent	6.0475
Z3, EUR/HRK – average foreign currency selling rate for EUR/HRK	7.63
OV, GJ/t – average heating value of biofuels	32
KNB – coefficient of the failure to bring biofuels on the market	10-UB
UB – share of biofuels brought on the market in relation to the mandatory amount	EBGS/EBGO
EBGS, MJ – energy of biofuels brought on the market	0
EBGO, MJ – energy of biofuels required for market placing	128,020,000.00
ER, kn/MJ – special environmental fee	0.032810148

Fine (special fee): HRK 4,200,355.16

The amount of biofuels that must be blended into 100 kt of diesel fuel, kg	3,460,000
Price of biodiesel in the period 10-16 May, 2016, USD/mt	903.94*
Exchange rate for USD/HRK	6.53

The cost of fuel blending: HRK 20,423,087.50

*Average purchasing conditions in the period 10-16 May, 2016 based on the secondary listing of ULSD 10 ppm CIF Cargo (GEN/LAV) were 414.44 USD/mt for diesel, while the purchasing conditions for biodiesel for the same period were 903.94 USD/mt. The price of biodiesel is more stable than the price of diesel, resulting in a variable proportion of biodiesel in the final price of diesel which raises the purchasing conditions for distributors.

Germany

Distributor with average annual sales of 100 kt of diesel

Lower energy value of biodiesel	37.0 MJ/kg
Mandatory blending of biodiesel	6.9 kt
Energy value = (amount of diesel * energy value) / 1000	255,300 GJ
Fine 255,300 GJ * 43 EUR / GJ	

Fine: 10.977.900,00 EUR

Italy

Distributor with average annual sales of 100 kt of diesel

Amount of mineral fuel, kg	100,000,000,00
Amount of mineral fuel, t	100,000.00

Calorific value of the fuel per unit, Gcal/t	10.27
Total calorific value, Gcal	1,027,000.00
Fine EUR/certificate, 1 certificate=10 Gcal	750.00
Number of certificates	102,700.00

Fine: 77.025.000,00 EUR

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