GSI Global Subsidies Initiative

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ADDENDUM REPORT

Addendum to Biofuels—At What Cost? A review of costs and benefits of EU biofuel policies

August 2013

www.iisd.org/gsi

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About GSI

GSI is an initiative of the International Institute for Sustainable Development (IISD). GSI is headquartered in Geneva, Switzerland and works with partners located around the world. Its principal funders have included the governments of Denmark, the Netherlands, New Zealand, Norway, Sweden and the United Kingdom. The William and Flora Hewlett Foundation have also contributed to funding GSI research and communications activities.

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Addendum to Biofuels—At What Cost? A review of costs and benefits of EU biofuel policies

April 2013

Purpose

This *Addendum* updates the report *Biofuels–At What Cost? A review of costs and benefits of EU biofuel policies* (from now referred to as "the original report"), published by the International Institute for Sustainable Development's (IISD) Global Subsidies Initiative (GSI) in April 2013.

This *Addendum*:

1. **Provides corrected estimates of the size of EU subsidies to biofuels in 2011.** It overwrites those which were published in the original report (in Section 5.1.2, pages 33–41). Certain calculations made to generate the estimates for that report were found to have erroneously overestimated the volume of biofuels eligible for fuel excise tax exemption in certain countries. The principles and methodology used by IISD-GSI in making the estimates is unchanged (see Annex A for Member State level information), and is consistent with the wide body of previous IISD-GSI work: the errors resulted from the calculations made.
2. **Presents the calculations in full, so that others can easily assess them and make their own calculations**.

Corrected Estimates

The corrected estimates of EU subsidies to biofuels are presented in Table 1, along with the uncorrected estimates that appeared in the original report. In summary:

- The subsidy estimate related to fuel excise tax exemption has been corrected. The updated estimate for fuel excise tax exemption is €2,047 million in total, made up of €562 million for ethanol and €1,485 million for biodiesel. The corrected estimate is lower than the original estimates by €3,757 million in total. For bioethanol, the estimate is €2,048 million lower. For biodiesel, the estimate is €1,709 million lower.
- As a result, the overall estimate for EU biofuels subsidies is €5,515–€6,896 million, compared to €9,272–€10,653 million published in the original report.
- Only the estimate for fuel excise tax exemption, for both bioethanol and biodiesel, has been changed. All other estimates remain the same, including the market transfers which make up the largest type of subsidy.
- The conclusions and recommendations presented in the original report also remain unchanged.

TABLE 1: CORRECTED AND UNCORRECTED ESTIMATES OF EU SUBSIDIES TO BIOFUELS, 2011 (€ MILLION)

	ORIGINAL	CORRECTED
Support element Bioethanol (all numbers in € million)	2011	
Market transfers	318–736	318-736
Market price support	225–520	225-520
Other market transfers	93–216	93-216
Budgetary support (Reductions in or exemptions from fuel excise tax on volumes produced or consumed)	2,610	562
Support for research and development	26	26
Total Support Estimate Bioethanol (TSE)	2,954–3,373	906-1,324
Support per litre consumed (€ /litre)	0.48–0.54	0.15-0.21
Consumption (millions of litres)	6,214	6,214
Support element Biodiesel (all numbers in € million)		
Market transfers	3,097–4,060	3,097-4,060
Market price support	2,114–3,047	2,114-3,047
Other market transfers	983–1,013	983-1,013
Budgetary support (Reductions in or exemptions from fuel excise tax on volumes produced or consumed)	3,194	1,485
Support for research and development	26	26
Total Support Estimate Biodiesel (TSE)	6,317–7,280	4,608-5,571
Support per litre consumed (€ /litre)	0.48–0.51	0.32-.039
Consumption (millions of litres)	14,272	14,272
Total Support Estimate to Bioethanol and Biodiesel (TSE)*	9,272–10,653	5,514-6,895

** Figures have been rounded to the nearest million and there may be some small variations in summing columns or rows*

Implications for the Key Findings, Conclusions and Policy Recommendations of the Study

The key findings for EU subsidies to biofuels appeared in section 5.1.2 of the original report, page 41. They are updated by the corrected estimates presented above.

The conclusions and recommendations of the original report appeared in sections 8.0 and 8.1 (pages 102–106). The corrected report (see below) corrects the figures in these sections, which include estimates of EU subsidies to biofuels.

Further Questions and Clarifications

IISD-GSI welcomes correspondence and debate on all its work, including that on biofuels in the EU contained in this *Addendum* and in the corrected full study report.

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Annex A.1 – Calculation Methodology

Budgetary support linked to volume produced or consumed

To decrease the end price of biofuels to consumers and make them similar to the prices of the conventional petroleum-based fuels, fiscal incentives supporting the sale of biofuels have been introduced in EU countries. In the particular case of biofuels, the application of tax exemptions or tax reductions for their promotion in the EU is feasible under the conditions settled by the EU Energy Taxation Directive (Cansino, Pablo-Romero, Román, & Yñiguez, 2012).

Most Member States have applied some form of tax reliefs to their own excise duty on biofuels. Tax reliefs are mainly applied to mineral oil duties, but may also take into account environmental taxes. Member States usually apply a full exemption to pure biodiesel and a partial exemption to blends. A number of Member States also applied a quota system, under which only certain volumes of biofuels are eligible for the exemptions.

GSI assesses excise taxation rates applied to conventional transport fuels (gasoline and diesel) and biofuels (ethanol and biodiesel) to determine if one product receives preferential treatment relative to its substitute product. In transport, bioethanol can be used as a substitute for gasoline, while biodiesel can substitute for diesel, with biofuels either used in a pure form or blended with conventional fuels.

Excise tax rates for conventional fuels and biofuels are traditionally reported by governments on either a per-litre or per-100-litre basis. The difference in per-litre excise tax between gasoline and ethanol, and diesel and biodiesel is calculated as the level of subsidy per litre. The amount of foregone revenue is estimated as the difference in excise rate per litre multiplied by the level of consumption for biofuels eligible for the exemption.

The following table provides an estimate for the EU-27 countries on the level of foregone revenue provided via the use of excise tax exemptions for 2011.

TABLE 2: 2011 EU MEMBER STATE BIOETHANOL EXCISE TAX EXEMPTIONS

COUNTRY	EXCISE TAX RATE (PER LITRE)					
	UNLEADED PETROL (€/PER LITRE)	BIOETHANOL (€/PER LITRE)	EXCISE TAX EXEMPTION (€/ PER LITRE)	BIOFUELS ELIGIBLE FOR EXEMPTION (LITRES)	LOSS OF FISCAL REVENUE (€)	POLICIES
Austria	0.55	0.55	-	-	-	Gasoline excise tax applied to ethanol consumed.
Belgium	0.34	-	0.34	102,673,377	34,806,275	Biofuel quota system: 250,000,000 litres eligible for exemption. Exemption of excise tax for unleaded petrol (blended with at least 7 % vol. bio-ethanol).
Bulgaria	0.42	0.42	0.00	-	-	
Cyprus	0.42	0.42	0.00	-	-	
Czech Republic						Relevant legislation: Excise Duty and Tax Warehouse Act 1. & Renewable and Alternative Energy Sources and Biofuels Act.
E85 and other ethanol blends	*0.55*	-	*0.55*	*8,331,945*	*4,590,902*	*E-85 fully exempt from excise taxation.*
Denmark	0.72	0.72	-	-	-	Biofuels exempt from CO_2 tax imposed on the use of conventional petrol and diesel for transport purposes put other duties applied.
Estonia	0.42	0.42	-	-	-	
Finland	0.64	0.64	-	-	-	Energy-content tax levied on both fossil fuels and biofuels based on volumetric energy content of fuel with CO_2 tax levied on fossil fuels and biofuels.
France	0.61	0.47	0.14	810,950,000	113,533,000	Ethanol is afforded a partial excise tax exemption.

Germany	0.65	-	0.65	25,734,588	16,843,288	E85 exempted from tax until 2015.Tax deduction granted if the produced amount of biofuel is pure and not used to fulfil the biofuel quota.
Greece	0.68	0.68	-	-	-	Ethanol is not consumed in Greece.
Hungary	0.42	-	0.42	18,000,000	7,560,000	
Excise tax rates changed Oct 2011	*0.42*	*0.18*	*0.24*	*18,000,000*	*4,320,000*	*E-85 fully, then partially, exempted in 2011.*
Ireland	0.59	0.59	-	-	-	€0.03 per litre exemption from carbon tax but subject to normal energy taxes.
Italy	0.70	0.70	-	-	-	Ethanol excise tax expired.
Latvia						
E-85 (70-85%)	0.42	0.12	0.30	152,260	45,793	E-85 partially exempted from excise tax, all other blends subject to gasoline excise tax rates.
Lithuania	0.58					
Ethanol blends					*402,845*	*Bioethanol blended with motor spirit received excise tax exemption.*
E-15					*631,242*	*Bioethanol (E-15 motor spirit).*
Luxembourg	0.51	0.51	-	-	-	
Malta						
Netherlands	0.81	0.81	-	-	-	All forms of ethanol are taxed at the same rate as gasoline.
Poland	0.46		0.37	79,000,000	29,230,000	Reduced rate for petrol containing bio-components of €0.37 per each litre of bio-components added to petrol; reduced rate for bio-components used as pure biofuels of €2.35/1000 litres.
Portugal	0.65	0.65	-	-	-	All forms of ethanol are taxed at the same rate as gasoline.
Romania	0.42	0.42	-	-	-	All forms of ethanol are taxed at the same rate as gasoline.
Slovakia	0.55		0.55	82,714,831	45,493,157	
Slovenia	0.42	0.00	0.42	7,685,861	3,228,062	Excise duty on biofuels is €0. Energy products with biofuels added can benefit from excise tax refund or exemption from payment of the excise duty in proportion to the share of the added product; however, this may not exceed 5%.
Spain	0.42	0.00	0.42	469,286,525	197,100,341	Excise rate of 0% for all forms of ethanol.
Sweden	0.28	0.00	0.28	373,628,042	104,615,852	General exemption of all biofuels in 2011 from both energy and CO_2 tax. In 2012 ethanol blended up 6.5% receive full exemption, blends over 6.5% are taxed at full rate
U.K.	0.79	0.79	-	-	-	All forms of ethanol are taxed at the same rate as gasoline
Total					562,400,755	

**Lithuanian excise tax exemption rates for 2011 are based on 2010 figures reported by State Tax Inspectorate under the Ministry of Finance *
Hungarian E85 consumption figures for 2010 used for 2011*

** Poland: an average exemption of €0.37 per litre was assumed for 2011 (available for the first four months, until April 30, before the policy changed). Loss of fiscal revenue calculated on a prorated basis for the first four months of the year and based on USDA (2012) consumption data.*

**Sweden: Biofuels are exempt from energy and CO_2 taxes. The final excise tax per litre of €0.70 per litre on gasoline as reported by the European Commission is reduced by 40 per cent, which is the approximate percentage of the carbon tax comprising the final tax per litre (€0.70 per litre).*

**Germany: E85 volumes used to meet biofuel quotas are not eligible for excise tax exemptions, and potentially some or all of the E85 consumed in 2011 fell under the quota system. This would reduce the estimated subsidy figure in this report.*

TABLE 3: SOURCES FOR ETHANOL EXCISE TAX CALCULATIONS

COUNTRY	EXCISE TAX RATE (PER LITRE)		
	UNLEADED PETROL (€/PER LITRE)	BIOETHANOL (€/PER LITRE)	BIOFUELS ELIGIBLE FOR EXEMPTION
Austria	European Commission (2012)	European Commission (2012)	Austrian Ministry of Life Lebensministerium (2012
Belgium	European Commission (2012)	Belgium Ministry of Finance (2012)	Belgium Ministry of Finance (2012)
Bulgaria	European Commission (2012)	European Commission (2012)	European Commission (2012)
Cyprus	European Commission (2012)	European Commission (2012)	European Commission (2012)
Czech Republic	Czech Republic Ministry of Finance (2012); Czech Republic Ministry of Finance (2013)	Czech Republic Ministry of Finance (2012); Czech Republic Ministry of Finance (2013)	Czech Republic Ministry of Finance (2012); Czech Republic Ministry of Finance (2013)
Denmark	European Commission (2012)	European Commission (2012)	European Commission (2012)
Estonia	European Commission (2012)	European Commission (2012)	European Commission (2012)
Finland	EBB (2012b)	EBB (2012b)	EBB (2012b), OECD (2012)
France	European Commission (2012)	European Commission (2012)	DGEC (2011)
Germany	European Commission (2012)	European Commission (2009)	Eltis (2013), Authors calculations
Greece	European Commission (2012)	European Commission (2012)	European Commission (2012)
Hungary	European Commission (2012)	Hungarian Ministry of National Development (2012)	Hungarian Ministry of National Development (2012)
Ireland	European Commission (2012)	European Commission (2012)	European Commission (2012)
Italy	European Commission (2012)	European Commission (2012)	European Commission (2012)
Latvia	Latvian Ministry of Finance (2013)	Personal communication with Latvian Ministry of Finance (August 15, 2013)	Personal communication with Latvian Ministry of Finance (August 15, 2013)
Lithuania	European Commission (2012)	Lithuanian Government (2013)	Lithuanian Government (2013)
Luxembourg	European Commission (2012)	European Commission (2012)	European Commission (2012)
Malta	European Commission (2012)	European Commission (2012)	European Commission (2012)
Netherlands	European Commission (2012)	European Commission (2012)	European Commission (2012)
Poland	European Commission (2010); European Commission (2012)	European Commission (2010); European Commission (2012)	Author's calculations; USDA (2012)
Portugal	European Commission (2012)	Personal communications with Portuguese Tax and Customs Authority (August 14, 2013)	Personal communications with Portuguese Tax and Customs Authority (August 14, 2013)
Romania	European Commission (2012)	European Commission (2012)	European Commission (2012)
Slovakia	European Commission (2012)	European Commission (2012); Slovakia Ministry of Finance (2013)	EurObserv'ER (2012)
Slovenia	European Commission (2012)	European Commission (2012)	Slovenia Ministry of Finance (2013)
Spain	European Commission (2012)	European Commission (p. 13 2012)	CNE, 2011
Sweden	European Commission (2012)	European Commission (2012)	Swedish National Audit Office (2011)
U.K.	European Commission (2012)	European Commission (2012)	European Commission (2012)

TABLE 4: 2011 BIODIESEL EXCISE TAX EXEMPTIONS[1]

COUNTRY	EXCISE TAX RATE (PER LITRE)					
	DIESEL (€/PER LITRE)	BIODIESEL (€/PER LITRE)	EXCISE TAX EXEMPTION (€/ PER LITRE)	BIOFUELS ELIGIBLE FOR EXEMPTION (LITRES)	LOSS OF FISCAL REVENUE (€)	POLICIES
Austria						Blended biodiesel is taxed at the same rate as diesel.
Pure biodiesel	*0.40*	*-*	*0.40*	*95,879,268*	*38,064,069*	*Pure biodiesel is fully exempted from excise tax.*
Pure vegetable oil used for fuel purposes	*0.40*	*-*	*0.40*	*18,939,492*	*7,518,978*	*Pure vegetable oil used for fuel purposes is exempt from excise duties.*
Belgium	0.42	-	0.42	373,616,482	158,263,942	Biofuel quota system with 380,000,000 litres of biodiesel authorised for exemption in 2011. Diesel blended with at least 5% volume of FAME provided partial exemption.
Bulgaria	0.32	-	0.32	1,018,838	326,028	Excise Duties and Tax Warehouses Act governs collection of excise duties on fuels and sets the rate of fuel excise duty for biodiesel and bioethanol at zero.
Cyprus	0.33	0.33	-	-	-	
Czech Republic						
B30	*0.45*	*0.31*	*0.13*	*182,535,166*	*24,419,719*	
B100	*0.45*	*-*	*0.45*	*35,507,244*	*15,827,226*	*Pure biodiesel is fully exempted from excise tax.*
PVO	*0.45*	*-*	*0.45*	*-*	*-*	*Pure vegetable oils are fully exempted from excise tax.*
Denmark	0.47	0.47	-	-	-	Biodiesel is fully taxed.
Estonia	0.39	0.39	-	-	-	
Finland	0.47	0.47	-	-	-	Energy-content tax levied on both fossil fuels and biofuels based on volumetric energy content of fuel with CO_2 tax levied on fossil fuels and biofuels.
France	0.61	0.47	0.14	810,950,000	113,533,000	Biodiesel is provided a partial excise tax exemption.
Germany	0.47	0.18	0.29	169,913,680	48,833,192	All biofuels used to meet the quota are subject to standard excise taxes except for second generation biofuels. Pure biodiesel (B100) and vegetable oil outside benefit from a partial exemption.
Greece	0.41	0.41	-	-	-	Biodiesel is taxed like motor gas oil: €412 per 1000 litres.
Hungary	0.39	0.39	-	-	-	Biodiesel is taxed at the same rate as diesel.
Ireland	0.48	0.48	-	-	-	€0.03 per litre exemption from carbon tax but subject to normal energy taxes
Italy	0.59	0.59	-	-	-	Biodiesel is taxed at the same rate as diesel.
Latvia						Biodiesel from 5–30% taxed as the same rate as diesel.
30–99%	*0.33*	*0.23*	*0.10*	*-*	*-*	*Partial tax exemption for blends over 30%.*
B-100	*0.33*	*-*	*0.33*	*1,261,048*	*414,885*	*Full exemption for pure biodiesel.*
Lithuania	0.30				362,499	(FAME) blended with diesel.
Luxembourg	0.33	0.33	-	-	-	
Malta	0.38	0.38	-	-	-	
Netherlands	0.44	0.44	-	-	-	Biodiesel is taxed at the same rate as diesel.
Poland	0.34	-	0.34	285,000,000	71,250,000	Exemption for bio-components for blended fuels; bio-components used as pure biofuels taxed at a low level.
Portugal	0.36	-	0.36	45,280,000	16,481,920	Excise tax exemptions available under certain conditions to recognized small biodiesel producers, annual individual maximum production of 3,000 tonnes and national cap of 40,000 tonnes per year.
Romania	0.32	-	0.32	166,342,135	52,564,115	Energy products used as motor fuel exempted from excise duties when produced completely from biomass. Law 343/2006 in gives a full detaxation for biodiesel as a blend.
Slovakia	0.39	-	0.39	162,852,679.07	62,861,134.12	Excise tax exemption is 100% on biodiesel used in blends of up to 5% biodiesel by volume.
Slovenia						
B100	0.40	-	0.40	868,825	347,530	Excise duty on biofuels is €0. Energy products with biofuels added can benefit from excise tax refunds or exemption from payment of the excise duty in proportion to the share of the added product; however, this may not exceed 5%.

[1] Note: Numbers may differ slightly due to rounding.

B5	0.40	-	0.40	39,634,136	15,853,654	
Spain	0.33	-	0.33	1,879,688,369	620,297,162	Zero excise rate for all forms of ethanol, potentially until 31/12/2012.
Sweden	0.15	-	0.15	348,500,679	53,216,054	General exemption of all biofuels in 2011 from both energy and CO_2 tax. In 2012 ethanol blended up to 6.5% received a full exemption: blends over 6.5% are taxed at full rate.
U.K.	0.78	0.55	0.23	800,040,000	184,233,211	Biodiesel produced from used cooking oil provided a 20 pence per litre exemption until March 31, 2012.
Total					1,484,666,318	

**Germany: Outside of the quota, B100 receives a preferential excise tax rate of €0.186 per litre and PVO a preferential rate of €0.184 per litre. Due to challenges in accurately calculating the volume of biodiesel consumed above the quota (target of 4.4 per cent by energy in the diesel component of transport) and eligible for the exemption it was assumed 254,870,519 litres of biodiesel were eligible. Federal Ministry of Finance Subsidies Report estimated the fiscal loss from biofuel excise tax exemptions at €125 million in 2010 and €45 million in 2011.*

TABLE 5: SOURCES FOR BIODIESEL EXCISE TAX CALCULATIONS

COUNTRY	EXCISE TAX RATE (PER LITRE)		
	DIESEL PETROL (€/PER LITRE)	BIODIESEL (€/PER LITRE)	BIOFUELS ELIGIBLE FOR EXEMPTION
Austria	European Commission (2012)	European Commission (2012)	Austrian Ministry of Life Lebensministerium (2012
Belgium	Belgium Ministry of Finance (2013)	Belgium Ministry of Finance (2013)	Belgium Ministry of Finance (2013)
Bulgaria	European Commission (2012)	Republic of Bulgaria (2007)	Novinite.com (2011)
Cyprus	European Commission (2012)	European Commission (2012)	European Commission (2012)
Czech Republic	Czech Republic Ministry of Finance (2012); Czech Republic Ministry of Finance (2013)	Czech Republic Ministry of Finance (2012); Czech Republic Ministry of Finance (2013)	Czech Republic Ministry of Finance (2012); Czech Republic Ministry of Finance (2013)
Denmark	European Commission (2012)	European Commission (2012)	European Commission (2012)
Estonia	European Commission (2012)	European Commission (2012)	European Commission (2012)
Finland	EBB (2012a)	EBB (2012a)	OECD (2012)
France	European Commission (2012)	European Commission (2012)	DGEC (2011)
Germany	European Commission (2012)	European Commission (2009)	SRES (2013), Authors calculations, EurObserv'ER (2012)
Greece	European Commission (2012)	European Commission (2012)	European Commission (2012)
Hungary	European Commission (2012)	European Commission (2012)	European Commission (2012)
Ireland	European Commission (2012)	European Commission (2012)	European Commission (2012)
Italy	European Commission (2012)	European Commission (2012)	European Commission (2012)
Latvia	Ministry of Finance (2013)	Ministry of Finance (2013)	Ministry of Finance (2013)
Lithuania	European Commission (2012)	European Commission (2012)	Government of Lithuania (2013).
Luxembourg	European Commission (2012)	European Commission (2012)	European Commission (2012)
Malta	European Commission (2012)	European Commission (2012)	European Commission (2012)
Netherlands	European Commission (2012)	European Commission (2012)	European Commission (2012)
Poland	European Commission (2012)	European Commission (2010); European Commission (2012)	Authors calculations; USDA (2012)
Portugal	European Commission (2012)	Personal communications with Portuguese Tax and Customs Authority (August 14, 2013)	Personal communications with Portuguese Tax and Customs Authority (August 14, 2013)
Romania	European Commission (2012)	European Commission (2012)	Olteanu (2011)
Slovakia	European Commission (2012)	European Commission (2012); Slovakia Ministry of Finance (2013)	EurObserv'ER (2012)
Slovenia	European Commission (2012)	European Commission (2012)	Slovenia Ministry of Finance (2013)
Spain	European Commission (2012)	European Commission (2012)	CNE, 2011
Sweden	European Commission (2012)	European Commission (2012)	Swedish National Audit Office (2011)
U.K.	HMRC Customs (2013)	HMRC Customs (2013)	Department for Transport (DfT) (2013)

Annex A.2 – Market Price Support (Mandates)

Market price support broadly measures the intervention affecting both consumer and producer prices by artificially elevating the price of biofuels. In the European Union, among the most important instruments are mandatory blending rates and border protection through tariffs (European Commission, 2011).

The former establishes mandatory requirements for the share of biofuels in transport fuels sold, whereas the latter aims at protecting European production of biofuels through tariffs on biofuel imports. A mandate allows biofuel producers to overcome technical or other barriers imposed by primary fuel suppliers, who may object to the use of biofuels, while also providing long(er)-term targets, thus enhancing the predictability of market developments and reducing investment risks. As mandates put upwards pressure on wholesale biofuel clearing prices (the price at which a market clears or sells its product) the beneficiaries of this policy are biofuel producers who able to sell into the EU market at an elevated price if the mandates were reduced or removed. As biofuels are currently more expensive to produce than fossil fuels, the additional costs at the pump are borne by consumers.

Market size (the total value of transactions) can be estimated from measuring the total production or consumption of biofuels and some measure of the market price. To put the following market price support estimates in context, the 2011 market size of the EU's biofuel industry was estimated at €15.2 billion by wholesale value (EurObserv'ER, 2012; Platts, 2013; author calculations).

Accurate market price support measurements require clean data on world reference prices and imputed transport costs to move biofuels to key terminals; currently, however, these are often challenging to measure. The market price support estimates made use of the best available data and information that IISD-GSI could locate. The subject is a relatively new one, and both data and information may improve over time, as further research is conducted and information improves.

The estimates are also necessarily dependent on a number of assumptions. Key factors driving the results are:

FACTOR	ASSUMPTION	NOTES
The selection of biofuel prices (wholesale per-litre traded prices) for the European Union and world reference prices affects the size of the price-gap calculation.	It is difficult to obtain EU and world wholesale biofuel reference prices for bioethanol and biodiesel from one source. As a result, different reference prices for this study were obtained from several data providers, with price data likely developed using differing methodologies. Price data for this study was sourced from Ecofys, the OECD, and BigOil.net* (with data drawn from the Platts European Market Scan).	Platts provides price data which could be used to calculate a proxy average EU and world traded price for 2011; however, they do not provide official estimates for either reference prices. Ecofys produced an average world wholesale price for bioethanol and biodiesel. The OECD provides EU and world price data that can be provisional in nature. For average bioethanol world prices, it is based on a Brazilian Sao Paulo ex-distillery, and for biodiesel a German producer price net of biodiesel tariff is provided.
International transport costs and distribution costs (per litre) for bioethanol from Brazil to Europe	Stakeholders within the Brazilian bioethanol industry reported €0.4 per litre as an average for international distribution costs.	The quality of information on transport margins varies across countries, assumptions used are not always easily discerned in published price-gap reports, and the degree of uncertainty or variance for the adjustments is likely to differ by fuel type and geographic location. Stakeholders have indicated international transportation costs may be higher, and better information could be sourced from shipping or biofuel companies.
International and national transport costs for biodiesel	As Europe is the largest producer of biodiesel and Member States often consume a significant portion of their domestic production, the assessment did not assume any international transport costs.	The method assumes a functioning wholesale fuels market with producers looking to sell their product at the nearest EU trading hub; however, feedback from stakeholders has indicated domestic distribution costs should be included with the price-gap method.

* BigOil.net is a provider of daily market and fuel price data to the downstream petroleum industry.

Valuing the support provided to the biofuels sector from mandates is challenging. This report recognizes there are a range of factors other than blending mandates that may affect EU wholesale biofuel prices (such as higher production costs, sustainability costs and tariffs on imported biofuels) and hence this is an initial effort to put forward a preliminary assessment of the level of market price support provided via blending mandates in the EU.

BOX 1: METHODOLOGICAL NOTE ON ESTIMATING THE SUPPORT PROVIDED BY MEMBER STATE CONSUMPTION MANDATES.

The level of support provided by the consumption mandates is assessed from the viewpoint of a theoretical producer of biofuel (whether located inside or outside the EU). A biofuel producer will identify the best market to sell their product based on a range of factors, but principally it will be determined by the price they are able to secure. In the EU, prices for bioethanol and biodiesel are higher than average world prices; hence, a biofuel producer will factor in transport costs for their product and then estimate the profit they could make from selling into the EU market. The higher price for biofuel in the EU represents demand (and supply) forces. This analysis attempts to estimate the value of biofuel consumption mandates introduced by Member States (the consumption mandates help establish a market for biofuels) while recognizing there are other factors affecting biofuel clearing prices (these are discussed further below). The value of consumption mandates implemented by EU Member States in support of bioethanol and biodiesel consumption was estimated in this report as the difference between the EU wholesale price for biofuels and a world reference price, minus an adjustment for freight costs. The amount of support estimated is very sensitive to changes in either world or EU reference prices.[2] See Koplow (2009) for a deeper discussion of the challenges in applying a price-gap methodology.

Limitations to this analysis

A number of factors complicate this method of assessment. There may also be a range of other factors pushing up (or down) EU wholesale market prices that are not accounted for in this method. These may include:

- **The fact that EU biofuel production costs will be higher than production costs in non-EU countries** due to a range of factors including higher energy costs, salaries, and health and safety compliance, etc.
- **The extent to which the EU market prices contribute to world reference prices will also affect any price-gap calculations**. While bioethanol produced in the EU is a small part of the world market (as an average during 2008-10 around 6 per cent of world production), biodiesel produced in Europe forms a significant part of the global biodiesel market (as an average during 2008–2010 around 52 per cent of world production[3]) (OECD/FAO, 2011).
- **Sustainability costs** involving administrative and reporting requirements to meet EU regulations can result in additional operational costs pushing up EU biofuel prices as opposed to upward pressure from blending mandates. These costs can push up EU prices and the theoretical size of support provided by the mandates (Charles & Wooders, 2011).
- **Imported biofuel from outside of the EU is subject to border taxes**, such as taxes on bioethanol and import duty on biodiesel (6.5 per cent ad valorem) (Ecofys & German Union for the Promotion of Oils and Protein Plants, 2012). The effect of EU tariffs or anti-dumping duties on bioethanol and biodiesel, while correcting unfair market situations, also push up the costs of imported biofuels, thereby increasing EU biofuel prices and increasing the size of the price-gap and the support value.
- There could also be a range of other policies or market forces affecting wholesale market prices.

Due to the complexity of these forces acting on EU whole market prices, they were not accounted for as part of the method for measuring market price support.

Market price support for ethanol

Market price support for bioethanol was calculated by multiplying production and imports figures by a price gap of between €0.05–€0.12 per litre (the difference between EU bioethanol wholesale average price of €0.58–€0.63[4] per litre and the world bioethanol average price of €0.47 per litre minus transport and handling charges).

[2] Reference prices, both European Union and world wholesale biofuel market prices used in this report to measure the size of market price support vary slightly from wholesale biofuel reference prices applied in IISD's (2013) study which may reflect any differences in support estimates.

[3] Based on average volumes between 2008–2010.

[4] A sensitivity analysis was provided for the EU wholesale ethanol price to develop a range estimate.

TABLE 6: MARKET PRICE SUPPORT TO BIOETHANOL IN 2011

	2011
EU production of bioethanol (million litres)*	4,392
EU ethanol imports for fuel use (million litres)**	1,822
EU ethanol wholesale average price (€/litre)***	0.58-0.63
World ethanol average price (€/litre)****	0.47
Transport and handling charges, Brazil to the EU (€/litre)*****	0.04
Price gap (€/litre)	0.05-0.12
Market price support-production (€ million)	225-520
Market price support-imports (€ million)	93-216
Total market price support (€ million)	318-736

Sources:

** ePure (2012).*

*** Authors calculations based on EurObserv'ER, 2012 minus 2011 EU production figures.*

**** OECD-FAO, 2011.*

***** OECD-FAO, 2011.*

****** Personal communication with Brazilian bioethanol expert, 2013. €0.04 per litre for shipping bioethanol from Brazil to Europe was used as a proxy for distribution costs that would need to be paid by the bioethanol producer (personal communication with Brazilian bioethanol expert, 2013). It is possible that this is a lower bound estimate, with shipping costs from Brazil to Europe being higher depending on conditions, which would reduce the price-gap figure and the level of support via the mandates to bioethanol.*

Notes: All figures have been rounded so numbers may not sum exactly

Market price support for biodiesel

Market price support for biodiesel was calculated by multiplying production and import figures by a price gap of €0.22–€0.28 per litre (the difference between EU biodiesel wholesale average price of €0.83–€0.90[5] per litre and the world bioethanol average price of €0.62 per litre.

TABLE 7: MARKET PRICE SUPPORT TO BIODIESEL IN 2011

	2011
EU production of biodiesel (million litres)*	9,743
EU biodiesel imports for fuel use (million litres)**	3,562
EU biodiesel wholesale average price (€/litre)***	0.83–0.90
World biodiesel average price (€/litre)****	0.62
Price gap (€/litre)	0.22–0.28
Market price support-production (€ million)	2,114– 2,772
Market price support-imports (€ million)	983–1,288
Total Market Price support (€ millions)	3,097– 4,060

Sources:

** EBB, 2012a.*

*** Author's calculations, based on EurObserv'ER, 2012 minus 2011 EU production figures.*

**** BigOil.net. Platts European Market Scan, 2012.*

***** Ecofys & German Union for the Promotion of Oils and Protein Plants, 2012.*

Notes: All figures have been rounded so numbers may not sum exactly

[5] A sensitivity analysis was provided for the EU wholesale biodiesel price to develop a range estimate.

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