ECIPE OCCASIONAL PAPER • No. 2/2012

THE RISING TREND OF GREEN PROTECTIONISM: Biofuels and the European Union

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EXECUTIVE SUMMARY

This paper surveys and discusses the Renewable Energy Directive (RED) in the European Union and its compatibility with EU obligations in the World Trade Organisation (WTO). More particularly, it intends to shed light on the evolvement of policies in Europe to protect biofuels producers from foreign competition. While the effectiveness of traditional protective tools of trade policy – tariffs and subsidies – are diminishing, local producers have embraced the introduction of specific sustainability criteria that would have the effect of protecting incumbent market actors while increasing the cost for new foreign market entrants.

Europe's biofuels consumption is dominated by local supply. Imports play a growing yet small role. However, import is likely to grow in the near future as the cost of local production of biodiesel and ethanol are comparatively high. The local industry, however, has invested on the premise that demand for its production – especially of biodiesel – will continue to grow rapidly.

The utilisation ratio is below 50% and the industry is trying to cope with typical problems of overinvestment. This particular problem explains to a large degree why Europe established its new sustainability criteria in the way it did in 2009, when the Renewable Energy Directive was adopted. As countries now are introducing new types of certification schemes on the basis of RED, and as we are getting closer to the point in time when those criteria will be applied (2013), there is a growing fear that trade and competition will become one of the casualties of Europe's ambition to expand its own biofuels sector.

Restricting imports on the basis of these criteria is unlikely to stand up in a trade dispute in the WTO. If Europe moves to introduce indirect land-use change (ILUC) criteria as basis for restricting imports, it is obvious that its policy will be ruled against in the WTO. ILUC deals with factors that are beyond the control of producers of biofuels – e.g. emission of carbon in non-biofuels production.

While it is justifiable to consider the indirect effects of the shift of biofuels – or to regulate the environmental consequences of production of biofuels – policy cannot be used to protect domestic production at the expense of the competition agreed to in successive agreements at the WTO.

Like other forms of green protectionism, it is not environmental ambitions or policies that cause problems for international trade policy. It is the use of these policies for own industrial policy ambitions that cannot be squared by basic principles of rules of trade.

1. INTRODUCTION

Legislative intentions and consequences

There have been periods in modern trade policy when one particular area of controversies – or even outright disputes – has caught the attention of the entire trade-policy community because of its significance for the integrity of the world trading system and its rules. We may now have entered a new period that runs the risk of witnessing a profound conflict of systemic proportions: a clash between trade policy and trade law, on the one hand, and climate change policy, on the other hand. Unless steps are explicitly taken to avoid such a conflict, the world may not be far away from what some scholars fear will be an existential crisis for international trade policy. The consequences from such a collision would be felt in many fields. Significant trade volumes could be disrupted. Furthermore, it would challenge core and foundational beliefs on which the world trading system is based.

Yet it is not written in stone that such a conflict will or has to happen. It is the actions by policymakers today that will determine the scope for conflict. Nor will a conflict over climate change policies necessarily involve a confrontation between the two desired objectives of maintaining and expanding open world trade, on the one hand, and effective and equitable reductions of carbon emissions on the other hand. It is possible to reduce carbon emissions without violating commitments in the WTO or resort to protectionism more generally. In fact, green protectionism as such is not about pursuing an environmental goal but using environmental policies for protectionist purposes. So the problem that has emerged in recent years is that some countries have attached policy ambitions to their climate change programmes that really have little, if anything, to do with reducing carbon emissions. They are, at best, ambitions to limit the welfare cost of reducing carbon emissions. At worst, they are outright discriminatory measures without any green redeeming features at all. Frictions that have appeared in the trading system so far are not between WTO commitments and targeted policies to reduce carbon emissions.

In the growing body of climate-change legislation hides policies with other ambitions than reducing carbon emissions and curbing climate change. Furthermore, as in many other policy areas, processes to establish or reform legislation regarding carbon emissions have been unjustifiably influenced by specific interests that use such processes to advance their own economic interests. This is not surprising. Yet the difference between climate-change legislation and many other types of legislation, at least in Europe, is that many people have assumed that political rent seeking has only worked in one direction – in the opposition to climate change legislation.

One particular problem from the vantage point of trade and trade law is that some climate change legislation – or legislation with similar intent – espouses clear industrial policy ambitions: the political desire to support the build-up or expansion of local production, often at the expense of production generated from other parts of the world. One area in the European Union where industrial policy ambitions have clearly infected environmental policy is biofuels, and especially the Renewable Energy Directive from 2009, which is now subject to fierce debate and reform.[1]

The "Truman logic" of a biofuels trade dispute

Unless current policies in the European Union are changed, it is likely that a dispute over Europe's renewable energy policy will erupt. However, it would not be a dispute where trade law collides with ambitions to reduce carbon emissions, the purpose of renewable energy policy. A dispute would rather follow the logic of the Truman doctrine from the beginning of the Cold War: it is not core policies and ambitions that will be challenged, but derivative effects of these policies in areas with less widespread consequences for the world economy. The Truman doctrine held that the conflict between East and West during the Cold War was not going to trigger a direct military conflict between the Soviet Union and the United States. The conflicts between these core powers would rather be in the "peripheries" of each alliance – in Asia, Latin America or Southern Europe. Consequently, the Truman doctrine engendered a US policy aimed at protecting and supporting peripheries, e.g. Greece and Turkey immediately after the Second World War.

This is the context also for a likely biofuels trade dispute. The current policy to promote biofuels is not the centrepiece of climate change legislation in Europe. It is a derivative of more central pieces of legislation. Yet it is in these derivative policies where initial green purposes have been debauched by industrial policy ambitions.

Shifting away energy consumption from fossil fuels is a good ambition. This was also the promise on which the Renewable Energy Directive, also known by its acronym, RED (not to be confused with REDD), was sold. Apart from reducing carbon emissions, this Directive would also help to foster greater competition between energy sources, and between energy firms. The first casualty of Europe's generally ossified energy market is the consumer, who has to pay higher rates for energy. Yet RED and similar policies are premised on the idea that the substitution of fossil fuels is rationally organised and encourages market-based competition between various suppliers of biofuels, foreign as well as domestic suppliers. This is where Europe's biofuels policy drifted in the opposite direction.

The initial ambition to encourage a market-based change towards greener energy got blemished by other concerns. EU biofuels policy has become what Germans call a *mädchen für alles* – a policy charged with sundry and often contradictory ambitions and desires. Yet that policy is now close to becoming too complicated to manage. It is one thing to marry green ambitions with openness to trade and competition. It is a completely different thing if policy is also tasked with promoting local production. As things stands now, it looks as if the EU is about to ditch its ambition for a competition-based substitution of fossil fuels with biofuels. Foreign providers of biofuels – especially of rapeseed biodiesel, the main biofuel produced in Europe – appear likely to face market access restrictions – restrictions that undoubtedly will bolster local production.

If that happens, Europe's strategy will hit the buffer of legal reality. The means by which the EU is considering restricting access to the EU market is in collision with Europe's obligations under the agreements in the World Trade Organization (WTO).[2] And it is not the fine points of the policy that will cause concern. Nor are the problems marginal. The RED has established the grounds for trade restrictions that would violate basic principles of non-discrimination in an open and direct manner.

This paper stands at the juncture of trade policy and EU biofuels policy. It aims to demonstrate why trade restrictions in biofuels are not the appropriate way forward for the European Union. Such measures will no doubt cause huge controversies with other countries and may risk triggering bigger conflicts over trade and climate change – conflicts that would benefit no one. Furthermore, a discriminatory trade policy in Europe's panoply of biofuels policies would most likely hurt the ambition to switch from fossil fuels to biofuels by raising the cost to consumers of moving to a greener form of energy.

All this raises the question: why is Europe even considering using discriminatory trade policy? To examine this question we will take a closer look at production and trade structures in Europe and in the world with regard to biofuels. One of the conclusions has already been alluded to: industrial policy ambitions are a prominent part of Europe's attempt to substitute fossil fuels with biofuels. Yet that ambition is now distorting the entire biofuels policy. It is perfectly possible to achieve two ambitions invested in Europe's biofuels policy: greening Europe's energy consumption while promoting competitive and open markets. But if policy is also intended to support the build-up of a local industry – regardless of its international competitiveness – one or the other of these objectives will have to be discharged.

2. THE GLOBAL AND EU MARKETS FOR BIOFUELS

Let us start by examining the global and EU markets for biofuels. This section outlines the global profile of production, consumption and trade in biofuels. The main focus is on biodiesel. The data presented in this section shows that although production and consumption have increased in recent years, consumption has not risen according to the expectations of the industry. This has resulted in a situation of significant overinvestment and overcapacity in the biodiesel sector.

The global production of biofuels in 2008 amounted to approximately 83 billion litres, out of which 68 billion litres consisted of ethanol and 15 billion litres of biodiesel.[3] Hence, the biofuels market is tailored towards ethanol; world production consists of around 80 % ethanol and 20 % biodiesel.

In 2008, the daily worldwide production of biodiesel added up to 255,000 barrels, with the European OECD countries accounting for 143,000 barrels per day, i.e. 56.08 %. The biggest producers in Europe are Germany and France. The United States produced 46,000 barrels, equivalent to 18.82 % of global production.[4] As Table 1 demonstrates, Europe is the dominating region in the production of biodiesel. Many of the perceived competitors to biodiesel produced in Europe – e.g. Argentina, China, Indonesia and Malaysia – are in fact small producers in comparison with the EU. Only Germany, to take one example, produced more than ten times the amount of biodiesel produced in Malaysia.

TABLE 1: WORLD BIODIESEL PRODUCTION AND ESTIMATES (THOUSAND BARRELS/DAY)

COUNTRY/ COUNTRY GROUPS	2008	2009	2010	2011	2012	2013	2014	2008 production as % of total world production
OECD North America	48	34	44	48	49	49	49	18.82%
United States	46	33	43	47	48	48	48	18.04%
Canada	2	1	1	2	2	2	2	0.78%
OECD Europe	143	131	151	159	180	180	180	56.08%
Austria	4	4	4	4	4	4	4	1.57%
Belgium	4	4	4	4	4	4	4	1.57%
Germany	54	43	47	49	49	49	49	21.18%
France	34	38	38	43	44	44	44	13.33%
Italy	14	12	13	16	16	16	16	5.49%
Netherlands	6	5	5	11	19	19	19	2.35%
Poland	4	2	3	4	4	4	4	1.57%
Spain	6	9	21	23	24	24	24	2.35%
UK	3	4	5	6	7	7	7	1.18%
OECD Pacific	4	3	3	6	7	7	7	1.57%
Australia	1	1	2	4	4	4	4	0.39%
Total OECD	194	168	198	223	236	236	236	76.08%
Former Soviet Union	1	1	1	3	3	3	3	0.39%
Non-OECD Europe	4	4	4	4	4	4	4	1.57%
China	6	5	8	9	9	9	9	2.35%
Other Asia	19	20	25	39	45	47	47	7.45%
India	0	2	2	3	4	4	4	
Indonesia	5	6	7	7	7	7	7	1.96%
Malaysia	4	4	4	6	6	6	6	1.57%
Philippines	1	2	2	2	2	2	2	0.39%
Singapore	1	1	5	15	16	16	16	0.39%
Thailand	8	6	6	6	10	12	12	3.14%
Latin America	31	33	40	45	51	52	52	12.16%
Brazil	19	20	23	26	26	26	26	7.45%
Colombia	2	1	2	2	3	3	3	0.78%
Middle East	0	0	0	0	0	0	0	
Africa	0	0	0	0	1	1	1	
Total non-OECD	61	63	78	99	113	116	116	
Total world	255	231	276	322	349	352	352	

Source: International Energy Agency (2009)

The World Bank estimates that only 10 % of the biofuels produced in the world are traded globally, with Brazil accounting for 50 % of the exports.[5] That is a low figure when compared to other fuels, and shows the immature structure of the entire biofuels market. As regards biodiesel more specifically, there is 'basically no international trade', to quote a study by the United Nations Conference on Trade and Development (UNCTAD)[6]. That is an exaggeration. It is true that global trade in biodiesel is comparatively low, but there are also regions where it has been increasing in the past years. Europe is one of these regions. While EU countries produced just south of 10 billion tonnes of biodiesel in 2010, its imports amounted to approximately 2 billion.[7]

Given the low level of trade in the final refined products, it is instead of interest to examine the trade patterns of the feedstock used in the production of biodiesel. Vegetable oil is currently the most important feedstock for biodiesel, accounting for around 18 billion litres out of a total global production of 21 billion litres in 2010, while non-agricultural feedstock (second generation biofuels), represent around 2.5 billion litres. And as table 2 shows, among the vegetables oils, rapeseed represented 84 % of the feedstock used in global biodiesel production in 2006.[8]

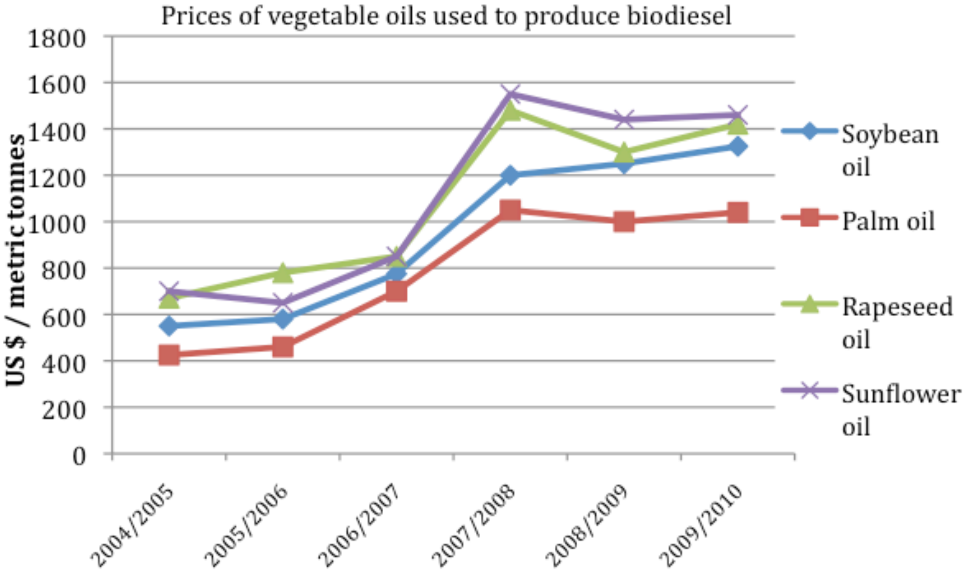
TABLE 2: GLOBAL BIODIESEL FEEDSTOCK USE IN 2006

FEEDSTOCK	% OF USE
Rapeseed oil	84
Sunflower oil	13
Soybean oil	2
Palm oil	1

Source: UNCTAD (2009)

Data on international prices for vegetable oils show that sunflower oil and rapeseed oil are traded for higher prices compared to soybean oil, and particularly in comparison to the less expensive palm oil. Prices fluctuate over time but while prices have generally converged in recent years, the difference between palm oil and other vegetable oils used for biodiesel production has expanded. Figure 1 shows the price developments between 2005 and 2010.

FIGURE 1: PRICES OF VEGETABLE OILS USED TO PRODUCE BIODIESEL (US$/METRIC TONNES)

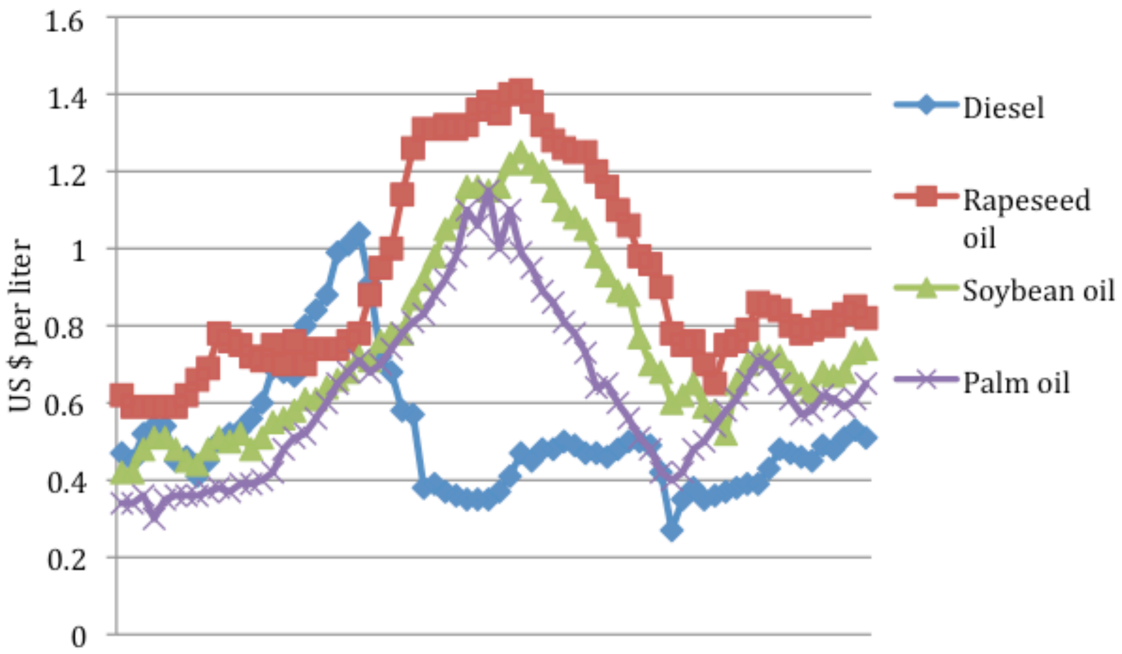


Source: UNCTAD (2009)

Moreover, given that biodiesel is in obvious head-to-head competition with traditional diesel, a comparison with the diesel price is of interest. In fact, since January 2002, the international market price for rapeseed oil has only been lower than the diesel price during a short period in the beginning of 2007 (see Figure 2). This has significant consequences for the competitiveness of biodiesel, especially for biodiesel produced from rapeseed. The price for palm oil is closest to the diesel price, but still above the very same.

Studies on the impact of the use of biodiesel on the fuel economy in automobiles have shown that using B20 (a blend of 20% biodiesel/80% petroleum diesel) increases fuel consumption by 0.9-2.1 %, while pure biodiesel increases fuel consumption by 4.6-10.6 %. This means that biodiesel prices would need to be around 10 % lower than petroleum diesel if consumers are to benefit from switching to biodiesel.[9] That puts pressure on the industry itself, but particularly so for the more expensive biodiesel crops.

FIGURE 2: INTERNATIONAL MARKET PRICES OF VEGETABLE OIL AND DIESEL



Source: World Bank (2010)[10]

The price differences have an effect on the competition between different types of biodiesel, especially considering that feedstock costs constitute more than 50 % of the production costs for biofuels.[11] The patterns of production and trade feedstock reveal which countries can benefit from the competitive advantage of producing for instance palm oil, in comparison with the more expensive rapeseed.

The EU is the world's largest producer of rapeseed (20,300,000 tonnes in 2010/2011), followed by China and Canada. The EU is also leading on the import side, together with Japan, whereas Canada is the main exporter. In terms of domestic consumption, the EU is likewise the number one, consuming around 23,150,000 tonnes in 2010/2011. One must bear in mind though that the figures do not differentiate between the uses of the rapeseed, i.e. there is no distinction made between the rapeseed used for food purposes or for biodiesel production.

TABLE 3: WORLD SUPPLY AND DISTRIBUTION OF RAPESEED ('000 METRIC TONNES)

	RAPESEED OIL			RAPESEED		
	2008/2009	**2009/2010**	**2010/2011**	**2008/2009**	**2009/2010**	**2010/2011**
PRODUCTION						
China	4700	5170	5219	12100	13657	12800
India	2058	2230	2265	6700	6400	7000
Canada	1780	1980	2385	12643	12417	11866
Japan	884	904	880	1	1	1
EU-27	8472	9370	9258	19000	21566	20300
Other	2593	2697	2639	7464	6583	6420
World total	**20487**	**22351**	**22646**	**57908**	**60624**	**58387**
IMPORTS						
China	453	785	700	3034	2177	1900
India	42	18	10	20	20	20
Canada	111	196	140	121	128	270
Japan	20	9	25	2123	2275	2200
EU-27	454	441	500	3342	2198	2200
Other	1350	1475	1554	3485	3776	3562
World Total	**2430**	**2924**	**2929**	**12125**	**10574**	**10152**
EXPORTS						
China	9	5	10	0	0	0
India	1	1	1	4	5	5
Canada	1527	1805	2025	7898	7169	6800
Japan	0	0	0	0	0	0
EU-27	142	111	150	98	157	220
Other	741	770	785	4024	3548	3252
World Total	**2420**	**2692**	**2971**	**12024**	**10879**	**10277**
DOMESTIC CONSUMPTION						
China	4853	5641	6100	13740	15114	15250
India	2095	2247	2274	6140	6661	6795
Canada	405	410	465	4636	4912	6120
Japan	919	915	908	2205	2255	2196
EU-27	8679	9615	10025	21374	23534	23150
Other	3193	3382	3386	6754	6938	6828
World Total	**20144**	**22210**	**23158**	**54849**	**59414**	**60339**

Source: USDA - Foreign Agricultural Service

Indonesia and Malaysia are the leading producers and exporters of palm oil, with production representing 23,600 tonnes and 18,000 tonnes respectively (see Table 4). The main importers are India (7,200 tonnes), China (6,250 tonnes) and the EU (5,400 tonnes). Domestic consumption of palm oil is highest in India, China, Indonesia, the EU and Malaysia. A significant yet unspecific share of consumption is not related to fuels.

TABLE 4: WORLD SUPPLY AND DISTRIBUTION OF PALM OIL ('000 TONNES)

	2006/2007	2007/2008	2008/2009	2009/2010	2010/2011
PRODUCTION					
Indonesia	16,600	18,000	20,500	22,000	23,600
Malaysia	15,290	17,567	17,259	17,763	18,000
Thailand	1170	1050	1540	1345	1500
Nigeria	810	820	850	850	850
Colombia	755	780	795	770	820
Other	2704	2867	3048	3134	3202
Total	**37329**	**41084**	**43992**	**45862**	**47972**
IMPORTS					
India	3650	5013	6867	6603	7200
China	5139	5223	6118	5760	6250
EU-27	4332	4960	5504	5206	5400
Pakistan	1618	2219	1949	2200	2300
Malaysia	403	669	1047	1250	1250
Bangladesh	898	724	700	951	965
USA	702	952	1036	994	975
Egypt	768	571	960	850	850
Iran	419	610	504	548	620
Russia	524	739	517	527	560
Other	8285	9096	8949	9779	10468
Total	**26738**	**30776**	**34151**	**34668**	**36838**
EXPORTS					
Indonesia	11419	13969	15964	16573	17850
Malaysia	12900	14644	15485	15530	16100
Papua New Guinea	357	439	507	500	500
Benin	273	358	348	450	480
United Arab Emirates	334	336	228	260	265
Other	2278	2480	2154	2111	2089
Total	**27561**	**32226**	**34686**	**35424**	**37284**
DOMESTIC CONSUMPTION					
India	3,671	5,063	6,275	6,753	7,750
China	5,138	5,222	5,618	5,930	6,277
Indonesia	4,520	4,704	4,855	5,430	5,745
EU-27	4,218	4,717	5,039	5,154	5,388
Malaysia	3,109	3,170	3,229	3,562	3,700
Pakistan	1,661	2,027	1,995	2,130	2,250
Thailand	702	943	1,229	1,290	1,520
Nigeria	1,155	1,190	1,208	1,232	1,240
USA	663	948	959	956	1,009
Bangladesh	880	796	700	911	960
Colombia	490	515	615	760	815
Egypt	595	560	660	760	815
Iran	400	538	570	570	600
Japan	521	551	531	581	580
Russia	528	705	584	526	560
Other	7,993	8,230	8,386	8,972	9,698
Total	**36,244**	**39,879**	**42,453**	**45,517**	**48,907**

Source: USDA - Foreign Agricultural Service

When it comes to sunflower seed and sunflower oil production, Ukraine, the EU, Argentina and Russia are big producers and the former three represent a great share of global export (see Table 5). The EU and Turkey are major importers, whereas domestic consumption is highest in Russia and the EU, in absolute figures.

TABLE 5: WORLD SUPPLY AND DISTRIBUTION OF SUNFLOWER SEED AND PRODUCTS ('000 METRIC TONNES)

	SUNFLOWER SEED			SUNFLOWER SEED OIL		
	2008/09	**2009/10**	**2010/11**	**2008/09**	**2009/10**	**2010/11**
PRODUCTION						
Argentina	2440	2300	2800	1345	1115	1180
Russia	7350	6425	5500	2565	2505	2082
Turkey	830	800	875	515	626	596
Ukraine	7000	6350	6750	2632	2545	2667
EU-27	7130	6940	6950	2460	2591	2536
Other	8524	7638	7777	2469	2244	2266
World Total	**33274**	**30453**	**30652**	**11986**	**11626**	**11327**
IMPORTS						
Argentina	128	40	70	0	0	0
Russia	12	23	25	37	55	100
Turkey	446	733	500	432	184	250
Ukraine	6	7	5	0	0	0
EU-27	635	269	300	1030	936	900
Other	581	413	446	2497	2714	2612
World total	**1808**	**1485**	**1346**	**3996**	**3889**	**3862**
EXPORTS						
Argentina	74	67	50	850	690	950
Russia	160	20	10	802	504	170
Turkey	13	20	10	131	68	60
Ukraine	767	354	400	2098	2645	2500
EU-27	449	543	450	120	150	130
Other	679	561	607	567	594	519
World total	**2142**	**1565**	**1527**	**4568**	**4651**	**4329**
DOMESTIC CONSUMPTION						
Argentina	3367	2750	2880	384	387	392
Russia	6917	6720	5595	1918	2016	2021
Turkey	1216	1477	1407	794	810	760
Ukraine	6285	6031	6350	375	156	159
EU-27	6775	7050	6790	3245	3402	3375
Other	8185	7659	7713	4014	4443	4425
World total	**32745**	**31687**	**30735**	**10730**	**11214**	**11132**

Source: USDA - Foreign Agricultural Service

Soybean oil is mainly produced in the USA, China, Argentina and Brazil (see Table 6). The Southern American countries also account for the largest part of world exports. China and India are major importers, and domestic consumption is especially high in China, but also in the USA, Brazil, the EU, India and Argentina.

TABLE 6: SOYBEAN OIL, WORLD SUPPLY AND PRODUCTION ('000 TONNES)

PRODUCTION	**2006/07**	**2007/08**	**2008/09**	**2009/10**
China	6410	7045	7314	8703
USA	9294	9335	8503	8897
Argentina	6424	6627	5914	6475
Brazil	5970	6160	6120	6460
EU-27	2640	2667	2314	2252
India	1157	1499	1287	1265
Mexico	685	636	609	616
Other	3866	3746	3682	4094
Total	**36446**	**37715**	**35743**	**38762**
IMPORTS				
China	2404	2727	2494	1514
India	1447	733	1060	1598
EU-27	991	1040	793	543
Algeria	295	383	365	402
Morocco	360	421	350	379
Iran	606	545	376	275
Peru	300	292	272	330
Bangladesh	327	401	254	349
Venezuela	351	363	325	299
South Korea	302	296	266	318
Other	2536	3224	2523	2681
Total	**9919**	**10425**	**9078**	**8688**
EXPORTS				
Argentina	5970	5789	4704	4430
Brazil	2462	2388	1909	1149
USA	851	1320	995	1523
EU-27	243	333	399	380
Paraguay	338	399	229	250
Bolivia	231	141	210	239
Russia	5	10	127	170
Other	465	538	524	624
Total	**10565**	**10918**	**9097**	**9065**
DOMESTIC CONSUMPTION				
China	8670	9693	9486	10435
USA	8426	8317	7378	7195
Brazil	3395	3955	4295	4970

EU-27	3368	3377	2779	2400
India	2500	2330	2300	2810
Argentina	459	1026	1425	1925
Mexico	820	839	800	805
Iran	775	725	580	550
Egypt	379	659	605	540
Japan	577	573	536	485
South Korea	436	444	447	445
Morocco	444	465	425	443
Algeria	295	355	364	403
Taiwan	380	382	377	378
Venezuela	355	378	345	327
Other	4188	4239	3951	4139
Total	**35467**	**37757**	**36093**	**38250**

Source: USDA - Foreign Agricultural Service

3. EU BIODIESEL CHALLENGED BY FOREIGN COMPETITION

Let us now turn to the EU market specifically. The previous chapter showed that the EU is a big producer and consumer of rapeseed oils while it only has a marginal role in the market for other biodiesel feedstock. This is an important element in understanding why Europe is erring on the side of protectionism in its biofuels policy. The EU has a big market share to defend against other countries that are increasing their role on the vegetable oil or biodiesel market. Yet EU production is comparatively expensive and requires subsidies – direct subsidies or subsidies through the market (barriers to entry).

The capacity of the EU sector to compete on its domestic and the world market is now increasingly challenged. Producers from other countries are clearly expanding production for sale on foreign markets. The EU is one of them. In particular, producers from Argentina and Indonesia have increased their presence on the EU market in the past years.

As shown in Table 7, Germany is the largest producer of biodiesel in the EU, with an annual production of around 2,861,000 tonnes in 2010, followed by France which produced 1,910,000 tonnes. Next in line come Italy, Belgium and Poland. Production has expanded very rapidly in the past five years – by 35% and 17% in 2008 and 2009 respectively – despite a moderation of growth due to the financial and sovereign crises. Production accelerated in 2010, but recent estimates from the European Biodiesel Board suggest that production decelerated in 2011.[12]

TABLE 7: THE EU BIODIESEL PRODUCTION ('000 TONNES)

COUNTRY	2002	2003	2004	2005	2006	2007	2008	2009	2010
Germany	450	715	1035	1669	2662	2890	2819	2539	2816
France	366	357	348	492	743	872	1815	1959	1910
Spain		6	13	73	99	168	207	859	925
Italy	210	273	320	396	447	363	595	737	706
Belgium				1	25	166	277	416	435
Poland				100	116	80	275	332	370
Netherlands					18	85	101	323	368
Austria	25	32	57	85	123	267	213	310	289
Portugal				1	91	175	268	250	289
Denmark/ Sweden	11	41	71.4	72	93	148	231	233	246
Finland					0	39	85	220	288
Czech Rep			60	133	107	61	104	164	181
United Kingdom	3	9	9	51	192	150	192	137	145
Hungary					0	7	105	133	149
Slovakia			15	78	82	46	146	101	88
Lithuania			5	7	10	26	66	98	85
Greece				3	42	100	107	77	33
Latvia				5	7	9	30	44	43
Romania					10	36	65	29	70
Bulgaria					4	9	11	25	30
Estonia				7	1	0	0	24	3
Ireland					4	3	24	17	28
Cyprus				1	1	1	9	9	6
Slovenia				8	11	11	9	9	22
Malta				2	2	1	1	1	0
Luxembourg					0	0	0	0	
Total EU	**1065**	**1433**	**1933.4**	**3184**	**4890**	**5713**	**7755**	**9046**	**9570**

Source: European Biodiesel Board

Despite the remarkably rapid rise of biodiesel production in Europe, the industry and policymakers are on the defensive about expanding global competition of biodiesels. One of the problems for the industry is that it has invested on the premise of a much faster rise in production. The utilisation rate in current EU biodiesel production stands at only 44%. Comparing the actual biodiesel production presented above, with the installed capacity in the EU, gives a concrete picture of the significant overinvestment in the sector.

The total EU production in 2010 was 9,570,000 tonnes, while the production capacity was close to 22,000,000 tonnes. For instance, Germany had a biodiesel production capacity of 5,200,000 tonnes, while the actual production was only 2,539,000 tonnes. Production capacity continued to increase in 2011 while European biodiesel producers estimated a slowdown in actual production, increasing the non-utilisation ration even further. Table 8, using the latest figures from the European Biodiesel Board, presents production capacity in the EU.

TABLE 8: BIODIESEL PRODUCTION CAPACITY IN THE EU ('000 TONNES)

COUNTRY	2003	2004	2005	2006	2007	2008	2009	2010
Austria	50	100	125	134	326	485	707	560
Belgium			55	85	335	665	705	670
Bulgaria					65	215	435	425
Cyprus			2	2	6	6	20	20
Czech Rep			188	203	203	203	325	427
Denmark	41	44	81	81	90	140	140	250
Estonia			10	20	35	135	135	135
Finland			0	0	0	170	340	340
France	500	502	532	775	780	1980	2505	2505
Germany	1025	1088	1903	2681	4361	5302	5200	4933
Greece			35	75	440	565	715	662
Hungary			0	12	21	186	186	158
Italy	420	419	827	857	1366	1566	1910	2375
Ireland			0	0	6	80	80	76
Latvia			5	8	20	130	136	156
Lithuania			10	10	42	147	147	147
Luxembourg			0	0	0	0	0	0
Malta			2	3	8	8	8	5
Netherlands			0	0	115	571	1036	1036
Poland			100	150	250	450	580	710
Portugal			6	146	246	406	468	468
Romania					81	111	307	307
Slovakia			89	89	99	206	247	156
Slovenia			17	17	17	67	100	105
Spain		70	100	224	508	1267	3656	4100
Sweden	8	8	12	52	212	212	212	212
United Kingdom	5	15	129	445	657	726	609	609
Total EU	**2049**	**2246**	**4228**	**6069**	**10289**	**15999**	**20909**	**21547**
Number of production plants	n.a.	n.a.	n.a.	n.a.	185	241	276	245

Source: European Biodiesel Board. Calculations based on 330 working days per year, per plant

TABLE 9: BIODIESEL PRODUCTION CAPACITY OF THE LARGEST EUROPEAN PRODUCERS (2008)

COMPANY	COUNTRY	NUMBER OF UNITS	PRODUCTION CAPACITY ('000 TONNES)
Diester Industrie	France	10	2000
ADM Biodiesel	Germany	3	1000
Verbio	Germany	2	450
Cargill	Germany	2	370
Ital Greenoil	Italy	1	365
Bioenergetica Extremena	Spain	1	320
Acciona Energia	Spain	2	270
Gate	Germany	2	260
Biofuels Corporation	UK	1	250
Novaol Srl	Italy	1	250
Natural Energy West	Germany	1	250
Total			**5785**
% of total EU			36.16%

Source: International Institute for Sustainable Development (2010)

In relation to the production capacity, the estimations for 2012 predict a consumption of biodiesel in the EU of 14.9 billion litres.[13] The consumption of biodiesel for transport was estimated at 9.6 million tonnes of oil equivalent (toe) in 2009, when the consumption of ethanol was 2.3 million toe.

TABLE 10: BIOFUELS CONSUMPTION FOR TRANSPORT IN THE EU IN YEAR 2009 (TONNES OF OIL EQUIVALENT)

COUNTRY	BIOETHANOL	BIODIESEL	OTHERS	TOTALS
Germany	581686	2224349	88373	2894407
France	455933	2055556	0	2511490
Italy	118014	1051639	0	1169653
Spain	152193	894335	0	1046528
UK	159000	822872	0	981872
Poland	136043	568997	0	705040
Austria	64249	424901	13369	502519
Sweden	199440	159776	35015	394231
Netherlands	138650	228886	0	367536
Belgium	37577	221252	0	258828
Portugal	0	231468	0	231468
Romania	53274	131328	0	184601
Hungary	64488	119303	0	183801
Czech Rep	51097	119809	0	170906
Finland	79321	66280	0	145601
Ireland	19733	54261	0	73994
Slovakia	6820	55041		61861
Greece	0	57442	0	57442
Lithuania	14091	37770		51861
Luxembourg	740	39915	498	41154
Slovenia	1859	27993		29852

Cyprus	0	15024	0	15024
Bulgaria	0	6186	0	6186
Latvia	1120	3570	0	4690
Denmark	3913	243	0	4156
Estonia	99	1626	0	1724
Malta	0	583	0	583
Total	2 339 339	9 620 406	137 255	12 097 001

Source: EurObserver (2009)

Although the ethanol production is smaller than the biodiesel production in the EU, both industries nevertheless have a common denominator in the problem of significant overinvestment (see Table 11). Total production in the EU was 3491 million litres in 2009, with an installed production capacity of 7252.4 million litres.

TABLE 11: ETHANOL PRODUCTION AND INSTALLED CAPACITY IN THE EU (MILLION LITRES)

COUNTRY	ETHANOL PRODUCTION						INSTALLED CAPACITY
	2004	2005	2006	2007	2008	2009	2010
France	101	144	293	539	1000	1250	1780
Germany	25	165	431	394	568	750	1159
Spain	465	317	348	402	303	254	558
Austria	0	0	0	15	89	180	240
Sweden	71	153	140	120	78	175	310
Poland	48	64	120	155	200	166	691
Hungary	0	35	34	30	150	150	210
Belgium	0	0	0	0	0	143	482
Slovakia	0	0	0	30	94	118	138
Czech Rep	0	0	15	33	76	112	270
Italy	0	8	128	60	60	72	302
UK	0	0	0	20	75	70	470
Lithuania	0	8	18	20	20	30	45
Latvia	12	12	12	18	20	15	12
Finland	3	13	0	0	50	4	48
Ireland	0	0	0	7	10	2	10
Netherlands	14	8	15	14	9	0	494
Bulgaria	0	0	0	0	0	0	10
Cyprus	0	0	0	0	0	0	0
Denmark	0	0	0	0	0	0	5.4
Estonia	0	0	0	0	0	0	0
Greece	0	0	0	0	0	0	0
Luxembourg	0	0	0	0	0	0	0
Malta	0	0	0	0	0	0	0
Portugal	0	0	0	0	0	0	0
Romania	0	0	0	0	0	0	18
Slovenia	0	0	0	0	0	0	0
Total	**739**	**927**	**1554**	**1857**	**2802**	**3491**	**7252.4**

Source: ePURE

TABLE 12: ETHANOL PRODUCTION CAPACITY OF PRODUCERS IN EUROPE (2008)

COMPANY	COUNTRY	INSTALLED PRODUCTION CAPACITY IN EUROPE ('000 TONNES)
Abengoa Bioenergia	Spain	614
Tereos	France	609
CropEnergies AG	Germany	600
Cristanol	France	387
Agrana Group	Austria	308
Verbio AG	Germany	296
Agroetanol	Sweden	166
IMA Srl	Italy	158
AlcoBioFuel	Belgium	118
Prokon	Germany	95
Total		**3351**

Source: Jung et al. (2010)

The main feedstock used for ethanol production in the EU is wheat, but corn and sugar are also used extensively in production (see Table 13).

TABLE 13: FEEDSTOCK FOR ETHANOL PRODUCTION IN THE EU ('000 TONNES)

FEEDSTOCK	2006	2007	2008 est.	2009 est.
Wheat	2500	2500	3200	3900
Corn	600	700	1600	1800
Barley and rye	500	300	500	500
Sugar	650	1000	1300	1400

Source: Jung et al. (2010)

The European biodiesel industry faces a number of problems. The situation for rapeseed prices on the international market is not favourable to the industry as the price wedge to competing sources of biodiesel has expanded. Also, lower-than-expected consumption has resulted in a failure for the industry to exploit its full capacity of production. It is natural for many sectors to have over-capacity, but the size of the biodiesel sector's non-utilisation ratio is astounding and unsustainable. At some point there will have to be a correction. In addition to high rapeseed prices and overcapacity, European biodiesel has inherent problems that affect competiveness. These relate to yield and costs of production.

It is notoriously difficult to estimate crop yields. Existing estimates suffer from methodological problems. Yet it is an important element if one is to understand the long-term competitiveness of an industry or a region. And it is difficult to escape the fact that Europe does not really perform at the levels that could make biodiesel production in Europe efficient overall.

The yield of oilseed production in different parts of the world differs significantly. The size of the crop yield depends on the natural conditions of the region and the biological productivity of the crops. Europe's problem in the biofuels sector is hence similar to the problem it is facing in agriculture: other climate zones in the world offer better weather conditions for effective farming.

Favourable natural conditions in Indonesia and Malaysia in combination with high biological productivity of palm trees results in a harvest of between 15 to 23 ton FFB (fresh fruit bunch) per ha/year, according to one study, which is equivalent to 3.4-5.1 tonnes of palm oil. Palm trees (FFB) can be harvested throughout the whole year, whereas rapeseed is an annual oilseed. In Germany, the yearly production of rapeseed amounts to around 4 tonnes per ha (equivalent of 1.5 tonnes oil per ha). Although lower than the Southeast Asian countries, the yield in Germany is higher than in Canada, the latter having an annual rapeseed yield of between 1.4 and 1.7 tonnes (equivalent to 0.5-0.6 tonnes of oil per ha). In comparison, soybean production in Argentina, Brazil, China and the USA generates an annual yield of between 2.0 and 3.3 tonnes per ha (equivalent of 0.4-0.6 tonnes oil).[14]

Agricultural production costs for oilseed also vary considerably between different regions. A comparison of production costs per hectare at farm level shows that Germany, the US, China and Canada are high cost producers, whereas production costs are considerably lower in Argentina, Brazil, Indonesia and Malaysia. The differences are slightly evened out when the production costs are measures per yield instead of per ha, although the same pattern remains.[15] A later study confirmed this pattern. When biodiesel made of rapeseed is compared with biodiesel made of palm oil, which is the biggest competitor to rapeseed, the comparison does not look favourable to rapeseed.

TABLE 14: PRODUCTION YIELD AND ENERGY OUTPUT

	Rapeseed	Palm oil
Yield of seed, fruits	4.11 t/ha/a	18.35 t/ha/a
Oil available from process	30%	17.7%
Yield of plant oil	1.23 t/ha/a	3.25 t/ha/a*
Yield of biodiesel	1 L/L oil	0.944 t/t oil
Yield of biodiesel	1.19 t/ha/a	3.07 t/ha/a
Gross energy of biodiesel (biodiesel energy value: 39 GJ/t)	46.5 GJ/ha/a	119.6 GJ/ha/a
Total parasitic energy	21.21 GJ/ha/a	45.35 GJ/ha/a
Net energy of biodiesel	**25.29 GJ/ha/a**	**74.23 GJ/ha/a**

Source: Thamsiriroj and Murphy (2009).

In Germany, the main European producer, the relatively high yield that result from intensive production systems do not completely compensate for the high production costs per hectare, so the overall price for production remains high. Soil conditions and climate are relatively favourable, but the costs rise as a result of high direct costs related to extensive utilisation of fertilizer and plant protection. Operation costs linked to labour costs are also high, as well as overhead costs like expenses for storing and machinery (in addition to significant taxes and fees). In fact, a study from 2000 showed that German farms managed to keep a profitable margin only thanks to elevated subsidy levels in the EU. German production is primarily intended for the domestic market.[16]

The comparison of production costs presented in table 15 below shows that South East Asian and South American countries have the lowest production costs of oilseed for biodiesel. The data in this table is somewhat old, but the differences in cost between various crops are likely to have remained largely the same since 2000.

TABLE 15: OIL CROPS – TOTAL PRODUCTION COSTS, YEAR 2000

		Rapeseed			Soybean			Palm oil (FFB)	
	Canada	Germany	China	Argen-tina	Brazil	USA	China	Indonesia	Malaysia
Euro/ha	274-304	934-1073	583	318-368	237-255	408-804	363-446	560-893	752-863
Euro/ton (rapeseed equivalent)	181-203	239-268	276	132-147	74-106	201-271	161-228	102-131	100-104

Source: Parkhomenko (2004: 257)

All these factors – rapeseed prices, production costs and yield – make it difficult for the European biodiesel industry to compete internationally. One way to protect the industry is to impose custom duties. Tariffs for ethanol in the EU are high, between € 10-19/hl, whereas the bound tariffs for biodiesel feedstock, which counts as industrial and not as agricultural products, are rather low; 3.2 % for rapeseed oil for instance. Several biodiesel producing countries outside the EU also enjoy GSP status and hence face lower tariffs.

TABLE 16: EU MFN TARIFFS FOR BIOFUELS AND VEGETABLE OILS FOR BIOFUEL PRODUCTION

COMMON NOMENCLATURA CODES AND DESCRIPTION	MFN BOUND TARIFF	TRQ WITH REDUCED TARIFFS
ETHANOL		
22071000 Undenatured alcohol with an alcohol content of > 80%	€ 19.2 /hl	
22072000 Denatured alcohol	€ 10.2 /hl	
BIODIESEL		
38249091 Fatty-acid mono-akryl esters, containing by volume 96.5 % or more of esters (FAMAE)	6.50%	
15162098 Other	10.90%	
15180091 Other	7.70%	
15180099 Other	7.70%	
27101941 Other	3.50%	
38249097 Other	6.50%	
VEGETABLE OIL FOR BIODIESEL PRODUCTION		
15071010 Crude soy oil for industrial use	3.20%	
15111010 Crude palm oil for industrial use	free	
15121110 Crude sunflower oil for industrial use	3.20%	
15141110 Crude rape oil for industrial use	3.20%	
FEEDSTOCK FOR ETHANOL PRODUCTION		
10019099 Wheat (medium and low quality)	€ 95/tonne	US: 572,000 tonnes; Canada: 38,853 tonnes; Other: 2,378,387 tonnes; import duty: € 12/tonne
10020000 Rye	variable tariffs, max tariff € 93	

10030090 Barley	€ 93/tonne	306,215 tonnes - import duty: € 16/tonne
10059000 Corn	variable tariffs, max tariff € 94/ tonne	500,000 tonnes imported to Portugal; 200,000 tonnes to Spain
12129180 Sugar beet	€ 67/tonne	
12129920 Sugar cane	€ 46/tonne	
FEEDSTOCK FOR BIOFUEL PRODUCTION		
Oilseeds: Rape (1205), Sunflower (120600), Soybeans (120100)	free	

Source: Jung et al. (2010); Commission regulation (EC) No. 948/2009

In comparison to the EU tariffs, it can be noted that the US charges a specific tariff of US$0.1427 per litre of ethanol, adding to the small ad valorem tariff that is already in place. Australia also has a specific import tariff of US$0.31 on ethanol and biodiesel. Brazil also has a high tariff of around 20 % on ethanol, although it was removed for a short time in 2006 during the shortage of ethanol.[17]

In sum, the low bound tariffs on biodiesel imply that the European biodiesel industry cannot be protected by custom duties. It is therefore in need of other forms of support or protection. On a national level, tax exemptions constitute the main form of support for biofuels. Complete or partial tax exemptions apply to ethanol and biodiesel in almost all EU countries.[18]

The total support for biofuels in Europe is high although it has declined. The support in 2008 in the EU amounted to €3 billion (biodiesel €2.17 and ethanol €0.84 billion), which is a decrease compared to 2006 (€3.7 billion). The support per consumed litre in 2008 was €0.24 for ethanol and €0.22 for biodiesel, which can be compared to the higher figures from 2006; €0.7 and €0.5 for ethanol and diesel respectively.[19]

TABLE 17: ESTIMATED COSTS OF TAX EXEMPTIONS IN THE EU IN 2008

	Quantities (litres)	Exemption (€/l)	Loss of fiscal revenues (€)
Austria	251,019,396	0.38	94,132,273
Belgium	108,739,182	0.35	0
Bulgaria	37,124,480	0.31	11,386,078
Cyprus	17,898,311	0.25	4,385,086
Czech Rep	95,654,987	0	0
Denmark	0	0.38	0
Estonia	3,505,191	0.37	1,296,570
Finland	14,441,084	0	0
France	2,550,559,822	0.15	382,583,973
Germany	1,831,719,218	0.32	589,080,900
Greece	95,524,978	0	0
Hungary	102,240,000	0.35	35,784,000
Ireland	50,488,889	0.37	18,579,911
Italy	703,411,200	0.33	228,608,640

Latvia	2,432,302	0.33	0
Lithuania	57,764,338	0.27	15,863,820
Luxembourg	52,917,404	0	0
Malta	1,216,782	0	0
Netherlands	258,755,556	0	0
Poland	429,862,400	0.3	127,045,691
Portugal	167,684,960	0	0
Romania	75,985,778	0	0
Slovakia	73,297,244	0.44	31,884,301
Slovenia	28,090,756	0	0
Spain	655,093,333	0.33	216,835,893
Sweden	163,947,520	0.39	63,939,533
UK	872,618,400	0.25	218,154,600
TOTAL	**8,701,993,511**		**2,039,561,269**

Source: Jung et al. (2010)

TABLE 18: TOTAL ESTIMATED SUPPORT FOR BIODIESEL IN THE EU (€ MILLIONS)

SUPPORT ELEMENT	2007	2008
Market transfers	Not Calculated	NC
Budgetary support linked to volumes produced or consumed	2,133	2,040
Reductions in or exemptions from fuel excise tax	2,133	2,040
Support for value-adding factors	333	95
Grants for investment in fixed capital	NC	NC
Payments for crops grown on set-aside land	261	48
Payments under the energy crops scheme	72	47
Support related to distribution and consumption	NC	NC
Support for research and development	31	35
Total support estimate	**2,497**	**2,170**
Consumption (millions of litres)	7,446	9,972
Support per litre consumed	0.34	0.22

Source: Jung et al. (2010)

TABLE 19: MARGINAL SUPPORT PER LITRE FOR ETHANOL AND BIODIESEL IN THE EU (2007/2008 AVERAGES)

SUPPORT ELEMENT	ETHANOL	BIODIESEL
Market price support	0.015	NC
Excise tax exemption	0.239	0.224
Energy crop payment	0.006	0.011
Set-aside-payment	0.045	0.115
Total support (€/litre)	**0.305**	**0.35**

Source: Jung et al. (2010)

In addition to extensive tax exemptions and subsidies, the European biodiesel industry is currently protected by anti-dumping and countervailing duties imposed on US biodiesel. These measures were introduced in July 2009 and will continue for five years[20]. Anti-dumping duties range from €68.80 per tonne to €198 per tonne net, which means around €0.09 per litre – €0.25 per litre. Countervailing duties represent a value of €211.20 per tonne to €237 per tonne (€0.24 - €0.27 per litre).[21]

Future Scenarios

To further understand the problems of overinvestment in the EU biofuels industry it is of interest to consider forecasts for biofuels demand in the European Union. Estimations from UNCTAD, as Table 20 reports, suggest that the demand for biodiesel in the EU could increase by 116% by 2020, while the demand for ethanol is estimated to face a fivefold increase. That is a remarkable growth and if biodiesel follows that track, it will have reached its installed capacity today. In other words, it is reasonable to assume that the biodiesel industry in Europe has made investments on the premise that installed capacity will be utilised in a few years. But that is a hazardous bet, considering global price competition and unfavourable price conditions for Europe's rapeseed biodiesel.

If the UNCTAD estimate is proven correct, ethanol will be in a different position. Rising demand in the EU can increase utilisation of installed capacity as well as increase import from other countries quite sharply.

TABLE 20: POTENTIAL DEMAND FOR BIOFUELS, BASED ON EU AND US TARGETS (BILLION LITRES)

	2010		2015		2020	
	Ethanol	Biodiesel	Ethanol	Biodiesel	Ethanol	Biodiesel
USA	46561	2461	68137	9464	96528	17024
EU	4902	11000	17647	13750	32431	23800

Source: UNCTAD (2009: 57)

Moreover, with respect to the use of first generation biodiesel and second generation biodiesel respectively, the share of vegetable oils in global biodiesel production is estimated to decrease from over 90% (2007-2009) to 75% by 2019. Vegetable oils are expected to be progressively replaced by alternative feedstock like Jatropha, which is cultivated mainly in India; biomass (estimated to account for 6.5 % of biodiesel production in 2019) as well as animal fats, mainly used for biodiesel production in the US.[22]

In a scenario of a global biodiesel blend obligation of 10%, research estimations (NIPE/Unicamp) show that the production and consumption of biodiesel would amount to 136 billion litres per year (36 billion gallons). This would require a production area of 76 Mha, assuming that 50% of biodiesel would be produced from palm oil (production yield 3000 L/ha) and 50%from castor oil (yield 600L/Ha).[23]

A study by Frondel & Peters (2007) suggests that in order to meet the energy target of 5.75% of transport fuels from renewable sources by 2010, 11.2 million hectares of land would be needed, a figure which corresponds to 13.6% of the entire arable land in the EU25. It has also been suggested (IEA, 2010) that in order to replace the consumption of fossil fuels by biofuels in 2020, 38% of the cultivable land would need to be used for production.[24]

The policies of the EU and the US with regard to biofuels influence the trade opportunities for developing countries. UNCTAD has calculated the effect to two future scenarios. In Scenario 1, the EU and the US set out to expand the biofuels sector while giving priority to domestic producers in order to assure energy independency. The goal in scenario 2 is to increase the use of biofuels to fight global warming, with the result that priority will be given to biofuels based on their contribution to lowering the rate of greenhouse gas emissions, regardless of where the production takes place.[25]

In the first scenario, the total exports of biofuels could amount to $200 billion by 2020. In comparison, it is estimated in the second scenario that the total trade (exports) could represent a value of $520 billion by 2020. The foregone income for developing countries in the first scenario, from exporting feedstock rather than refined biodiesel is approximated to be between $14.3 billion (Scenario 1) to $294.2 billion (Scenario 2) in the year 2010.[26]

4. EUROPE'S BIOFUELS POLICY AND WTO OBLIGATIONS

The European Union's biofuels policy builds on many different policy measures. This chapter will outline some of them – particularly those of central importance to the nexus trade and biofuels policy. We start with the Renewable Energy Directive and then move to agriculture and trade policy.

The Renewable Energy Directive[27]

The Renewable Energy Directive is primarily a standard-setting directive. It aims to promote the use of certain types of biofuels – or, to be more precise, what biofuels effectively should qualify for consumption in Europe. This is not the first standard that the EU has used for biofuels. Previous legislations include a fuel-quality regulation that concerned some technical standards of various fuels, for instance the cloud point of a fuel.

Yet the Renewable Energy Directive also establishes a target level for the use of biofuels in the European Union. It sets out that 20% of all energy used in the EU by 2020 has to come from "renewable sources". Biofuels will of course be crucial to achieving the ambition of an increased role for renewable energy. A target of a 10% biofuels-share in transport, equal for all countries, has also been set.

In order for biofuels to be accounted for in the national targets for renewable energy obligations and, *nota bene*, to be eligible for financial support for the consumption of biofuels, they must meet the following criteria:

The greenhouse gas emission savings from the use of biofuels should be at least 35%. This target will increase after 2017. From 2017, greenhouse gas reductions should be 50%, and 60% thereafter for refineries beginning operation in 2017 and beyond.

They should not be obtained from land with high biodiversity value, that is:

a. Forest undisturbed by significant human activity.

b. Areas legally designated for nature protection.

c. Highly biodiverse grassland.

They should not be obtained by land classed as having had high carbon stock in January 2008 and that no longer has this status, such as:

a. Wetlands.

b. Continuously forested areas.

c. Undrained peatland.

Biofuels sourced from the EU must meet environmental and agricultural requirements and standards laid down in previous Council Regulations. This is a single pan-European biofuels sustainability scheme based on Article 95 of the treaty. Biofuels that do not meet those standards can still be sold and used, but they are not eligible for excise tax exemption and cannot be used to achieve the 10% target for biofuels in transport.

The compatibility with the "sustainability standards" will be verified in three different ways: Companies will have to report to EU member states about the sourcing of their biofuels, bilateral and multilateral agreements (the EU aims to conclude bilateral and multilateral agreements with provisions on sustainability criteria with other countries). The use of the directive, however, is not conditioned on a successful conclusion of such agreements. Voluntary national and international certification schemes (the European Commission may decide that those certifications are sufficient to verify compliance with the sustainability criteria and with the requirement of 35% greenhouse gas savings).

The directive also sets out how calculations should be done. The calculation method must take into account the effect of the direct land change use. Therefore, EU member states will submit a list of areas where they state there would be *no carbon emissions from conversion to biofuels*. Foreign biofuels producers need to report on whether there are such emissions unless there is a bilateral or multilateral agreement covering this aspect.

In case there are emissions from land use change and if there is no bilateral or multilateral agreement in situ, companies need to calculate the greenhouse gas emissions associated with biofuels production. The annexes to the Renewable Energy Directive provide a calculation methodology and also a list of default values for the attribution of greenhouse gas savings to different types of biofuels, on which companies can rely for their calculations. However, the Commission is expected to improve its methodology and to update the "default values" over time. It has already been reported that a deal has been struck with the effect of postponing until 2020 the integration of indirect land-use change (ILUC) emission factors in the RED sustainability criteria but that the threshold levels agreed in 2009 will increase faster than what was originally planned.

The criteria in the Renewable Energy Directive apply to both EU and imported production. They are, according to the directive, defined in order to avoid any de facto discrimination; definitions have been made on the basis of the international scientific evidence available.

It is an understatement to say that the directive is controversial. It has been subject to intense debate – before and after it was adopted. Some NGOs are questioning the greenhouse gas savings calculation methodology (e.g. the absence in the methodology for taking account of ILUC emissions) used by the European Commission or the lack of other criteria, e.g. criteria based on human rights and the social effects of biofuels production in third-world countries. Doubts also remain on whether the Renewable Energy Directive imposes a too heavy administrative burden on biofuels producers.

One of the concerns that have been conspicuously absent from the debate, however, is the trade effect of this new standard. Yet the consequences of the Renewable Energy Directive on trade and trading rights are distinct elements of the directive. If a foreign exporter cannot document that it meets the established criteria, it will not be eligible for the tax exemption and the use of the imported biofuel cannot be part of the national obligations to increase the share of renewable energy in a country's energy mix. This is a clear and drastic cut-off point for effective access to the EU market which one can expect to have serious implications for exporters of particular crops and biofuels.

The European Union has argued that this standard is not biased in favour of locally produced biofuels. The same regulation applies to domestic and foreign producers; hence, there is no discrimination and no hidden protectionism in the introduction of this standard. That conclusion, however, is not shared by countries facing threats of having market access to Europe severely restricted due to RED.

RED and the WTO

Clearly, Europe has designed a biofuels policy with the ambition of switching its energy mix in favour of greener biofuels substituting fossil fuels. Yet this is not the only ambition invested into the current biofuels policy. Europe has also viewed its biofuels policy as a way to modernise its programme for agricultural subsidies – the Common Agricultural Policy (CAP) – and to harness ambitions of building up a domestic industry for the production of energy. Those ambitions are clearly stated in Europe's biofuels policy, and biofuels production is also supported financially through the agriculture subsidy programme and through tariff protection. The ambition was already set out in the 2003 CAP reform, which expressed clearly the sentiment that:

> "Promoting the use of biofuels in keeping with sustainable farming and forestry practices laid down in the rule governing the common agricultural policy could create new opportunities for sustainable rural development in a more market-oriented common agricultural policy."[28]

And, no doubt, biofuels production in Europe has increased as a consequence of this shift in the CAP. EU biofuels production grew rapidly in the period up to the crisis in 2008, and it was especially biodiesel production that constituted the rapid volume growth. Yet as the previous chapter showed, the increase in biofuels production inside the EU was slower than the expansion of Europe's production capacity. Investments have been made on the premise that the market would actually grow faster, and that there would not be a crisis that would depress demand growth significantly.

The other problem for the local industry is that it remains uncompetitive on world markets, and that a strong connection between local and world market process effectively means that foreign producers are likely to take a big portion of future market demand in Europe. The difference in price is also significant – and that applies equally to the biodiesel and ethanol sectors. Increasing subsidies to the sector in Europe has helped to make it more competitive, but only at the margins. Increasing demand will have a positive effect on the average price, but one of the concerns of the industry is that other suppliers from abroad may represent a big share of the future market increase, and hence that future market increases may not be the blessing the industry has expected.

Nor can the industry expect further support from traditional trade protectionism – through tariffs and subsidies. Biodiesel tariffs are already low – indeed they are also bound at low levels, as was shown in the previous chapter. It is also unlikely that the support to rapeseed producers will go up to such an extent that output prices for biodiesel made of rapeseed will go down. With the lack of effective opportunities to protect the market and the margins by these traditional instruments, the only way to raise barriers to foreign competitors is to engineer non-tariff barriers. Unsurprisingly, this is exactly what the RED may do. It is, in trade policy parlance, a technical regulation that has laid the ground for closing off the EU market for the two main competitors to biodiesel made of rapeseed: soybean oil and palm oil.

The Renewable Energy Directive adds a new type of policy to Europe's box of trade restrictive measures in biofuels: a production and process methodology standard. RED expands the panoply of measures by effectively regulating how biofuels should be produced in order to get uninterrupted market access to the EU market. At the heart is the tax excise exemption for biofuels and the obligation for each EU member to reach a decided level of biofuels in its energy mix by 2020 (the target varies between countries).

The Renewable Energy Directive sets out an emission-based criterion and a land-based criterion for biofuels on which effective market access to Europe will be conditioned. Biofuels that cannot meet these criteria can still be sold on the European market, but it will not be granted the favourable treatment given to biofuels that qualify on the basis of the criteria. Regulating sustainability in the biofuels sector is no doubt a legitimate policy. But the design of RED does it in a way that will be ineffective and clash with important rules of world trade.

That the directive is not going to affect global sustainability in biofuels production should be clear to everyone just by judging the size of Europe's share of the global market. For example, Europe represents only 15% of the global market for palm oil, one of the vegetable oils that Europe wants to regulate with RED, and its share is declining for the simple reasons that world growth is higher than EU growth. Of that share, it is only a small part which is used for biodiesel; palm oil is mainly used for other purposes than energy. Europe does not have the market power to cajole or force other producing countries to accept Europe's view of sustainability. It can force foreign producers out of the EU market, but the only effect of such a policy is that trade will be shuffled from one country (EU) to another (which does not have a policy similar to RED). The conditions for global sustainability will not be affected. So it is unlikely that the basis for a policy that will shut palm oil out of the EU market is environmental; If Europe does not consume palm-based biodiesel, other regions in the world will do so.

The other effect of forcing foreign biofuels out of the EU market is that the shift away from fossil fuels in Europe will be slowed down. By limiting the supply of biofuels on the EU market the price of biofuels will predictably be higher than without market-access restrictions. There will hence be a higher economic cost of substituting fossil fuels with biofuels. Furthermore, if the effect of the entire legislation is to push EU consumption to ever greater dependence on locally produced biofuels, there will be problems with supply security. Not only do EU biofuels require extensive subsidies in order to be commercially viable for farmers and producers, there are also limits to how much biofuels can be produced.

The Renewable Energy Directive also runs afoul of some of the most basic rule of the World Trade Organization (WTO). That itself does not mean that the EU would be ruled against if a dispute was brought to the WTO; there are also rules in the WTO that allow for conditional departure of the core rules. But even a cautious analysis suggests the RED would not stand up to examination by the standards required by WTO rules.

WTO rules are especially attentive to discrimination between domestic and foreign products. A central part of any legal analysis of the RED will therefore be to determine if there is discrimination between "like products". The sustainability criteria will effectively discriminate between products that are like in the most basic definitions: physical characteristics, tariff classification and end-use of biofuels. As both RED criteria operate as process and production methodology (PPM) regulations, they do not really fit with the standard way of defining likeness, which normally considers physical aspects of a product, not how it has been produced.

However, previous cases have demonstrated that PPMs can affect the conditions for determining likeness if there is a clear linkage between the physical property of a good and the production methodology, such as in the use of a chemical in the production process. If this view is taken by a WTO body in a dispute over biofuels, it is likely that the emission-based criteria may be authorised as it effectively will affect the physical characteristics of a product, in this case the level of emissions by burning the fuel. But the there is no linkage between the land-based criteria and the physical characteristic of biofuels. Hence, discrimination on the basis of the land-based criterion will be discrimination of like products, and hence against core rules in the GATT agreement (one of the agreements in the family of WTO agreements).[29]

If the emission-based criterion is not a sufficient basis to treat products as unlike, discrimination on that ground will also flaunt GATT rules. This may very well be the outcome if it is proven that a biofuel has been discriminated against on false presumptions about its greenhouse gas saving, or that the methodologies for comparing greenhouse gas savings between domestic and foreign products are biased or in other ways treat specific biofuels unfairly. If this is a correct argument, the emission-based criterion will hardly stand up to WTO scrutiny.

The proposed method in RED for determining the emission savings of a biofuel makes two different assessments. It gives one assessment, of the *typical value* of emissions savings, and another for the *default value*. As the Commission's own calculations show, there are differences in results between the two: the typical value of GHG savings are substantially higher than the default GHG savings value attributed to specific biofuels. And it is the default value that should be used for biofuels that have not been greenlighted for uninterrupted market access through other mechanisms suggested in the Directive (e.g. a multilateral or bilateral agreement). It is, in other words, the default position. And there are some biofuels that will meet the 35% threshold when the typical value is used while underscoring when benchmarked according to default values. Default values have deliberately been set at low levels to ensure that no biofuels should be allowed to enter if the greenhouse gas criterion is not met. But default values are not the actual values – they are rather based on "worst-case-scenario" valuations.

The original directive also opened up for domestic producers to claim the typical value while foreign producers had to go for the default value when they applied for authorisation to access the EU market. The Commission has changed that view, or at least issued a communication which suggests that domestic and foreign fuels should be treated equally in choice of methodology.[30] If that is actually followed in the way individual EU member states chose to introduce the Directive, which is not clear, the question remains about the legality of a decision to deny equal market access on the basis of the default values.

To defend different valuations of greenhouse gas savings, and charges of bias in determining the cut-off point itself, the EU will have to give a water-tight environmental reason. That is difficult for a variety of reasons. One of them is related to the fact that default values do not place a representative valuation on each and every biofuel. Another difficulty is that the grounds on which the calculations of all values are based are pretty shaky. Regardless of what claims are made about the scientific certainty of various valuations, it remains an open question whether one can prove they are fair and unbiased valuations. To put it mildly, transparency has not exactly been a guiding principle for the valuations used by the Commission.

The problem the EU will face is that most other calculations done on greenhouse gas savings will come to a different conclusion than that used by EU authorities. Of the several calculations that now have been done, the original threshold values in the RED differs from almost every other estimate in that it gives a higher value to local production and a lower value to foreign production. It is difficult to escape the suspicion that the default values have been set to ensure that EU production will pass the test while the main competitors to rapeseed-based biodiesel will fail.

Despite violations of GATT rules, a policy measure can be authorised under the so-called General Exception clause, GATT Article XX. This article allows for departure from GATT rules, but only under certain conditions to avoid that an exception could become an open-ended excuse for overtly protectionist policies. Two of the specified justifications for conditional departure are of relevance to a WTO examination of the Renewable Energy Directive. Firstly a measure which is "necessary to protect human, animal or plant life or health…", and, secondly, a measure "relating to the conservation of exhaustible natural resources if such measures are made effective in conjunction with restrictions on domestic production and consumption" can be justified grounds for violations of other GATT rules.

An analysis of potential RED discrimination on the basis of these two exceptions will not come to a conclusive result. According to one analysis, both sustainability criteria in the RED will pass these tests (although the same analysis predicts RED will fail an Article XX examination).[31] Doubts can however be cast on that conclusion, especially regarding the land-based sustainability criteria. Not only are the exceptions themselves open to interpretation, existing case law does not give sufficient guidance. It appears clear that the exact merits of a case will be of importance. It is one thing to discriminate a good which involves production that puts pressure on the ambition to protect animals close to extinction, but it is another to discriminate a good which involves production using an exhaustible but unthreatened resource which can thrive in other areas than the one being used for growing oil crops. In the end, the WTO body to rule on the matter will have to make judgements about whether a measure is "necessary" or if measures are "made effective".

Notwithstanding the importance of interpretation of the two clauses, it is the *chapeau* of Article XX which presents the greatest difficulty to any government wanting to defend a measure under Article XX. It presents greater difficulties because it imposes clearer restrictions on measures to avoid discrimination. The *chapeau*, which is usually the part that disqualifies discriminatory measures defended under Article XX, demands that measures shall not be "arbitrary or unjustifiable discrimination" or a "disguised restriction on international trade". In this context, a measure needs to be justified on a basis other than what has been stated under the two possible exception motivations mentioned above. This is a much tougher test. The intent as well as the effectiveness of a measure will be scrutinised. This is also where a discriminatory application of RED, as it is currently designed, will run into difficulties. There are a number of features of RED that present problems.

The closer one examines RED, the more revealing the industrial policy ambitions of it be-comes. This is important because several previous cases interpreting the meaning of a "disguised restriction on international trade" have pointed to the "design, architecture and revealing structure" as a basis for determining if there is an intention to "conceal the pursuit of trade-restrictive objectives". What are the problems for RED?

Firstly, the land-based criterion is deliberately designed not to have an effect on most biofuels produced in Europe, especially biodiesel based on rapeseed. It is a criterion which explicitly addresses conditions in other countries, but overlooks possible environmental problems in Europe related to the conversion of land into biofuel crops.

Secondly, the 35% cut-off point in the emission-based criterion is not chosen by chance or on the basis of strict environmental criteria. It is a target that is deliberately designed to qualify domestic production of biofuels while it disqualifies some of the biofuels produced in other countries. Before the RED was adopted, the European Parliament made an initial effort to raise the initial cut-off point, but it was deemed impossible as domestic production then was at serious risk of being disqualified.

Thirdly, the 35% target in the emission-based criterion introduces a barrier between two goods that are in a direct competitive relationship: rapeseed biodiesel from Europe, on the one hand, and soybean or palm oil biodiesel from Latin America, the US, and Asia on the other hand. There is no doubt that justifying a discriminatory measure is an especially sensitive issue if the main material effect is to alter the nature of the competitive relationship. To ensure that some foreign biodiesel (and ethanol) are disqualified already from the time when RED will kick in (2013), the EU will use the default value of greenhouse-gas savings, which it knows is far from an accurate description of the actual saving made by switching from fossil fuels to biofuels.

These problems, and others (RED will have even greater problems passing the test of the Technical Barriers to Trade Agreement in the WTO and can be ruled against on the basis of nullification of previously agreed trading rights), make it likely that the EU would not be able to uphold RED in the event of a WTO dispute.

5. CONCLUDING COMMENTS

In the past two years, there has been increasing tensions around the issue of indirect land-use change as a factor of emissions in the production of biofuels. No doubt some of these tensions have been generated by the lack of transparency over how various ILUC calculations have been done and suspicions that biofuels will not have such a positive effect on GHG savings when ILUC factors are accounted for. Furthermore, it is not surprising that regulators try to get control over the full economic and environmental consequences of its biofuels policy.

What is surprising, however, is that few people have challenged the notion that it actually is possible to build reliable ILUC factors into current sustainability criteria without further weakening the credibility of the legislation itself and its compatibility with international obligations. The methods to calculate the GHG effects from direct land-use change are problematic, but ILUC takes these problems to a much higher level. Despite its intuitive appeal, it is close to impossible to design legislation that accurately and fairly reflects real and full emissions from indirect land-use change. Those who are convinced that it is possible should consider the vastly different results that have been generated by the many attempts to estimate ILUC for a variety of biofuel feedstock.[32] Any model that attempts to capture indirect effects will be fraught with methodological problems. Inevitably, models will have to build on a series of assumptions about economic and environmental behaviours, but if assumptions change the result will change too. In this case, an estimate on the ILUC effects of various biofuels will have to take account of too many factors for any legislation based on such estimates to meet the most basic principles of legislation, such as predictability and due process.

Furthermore, if such estimates form the basis for market access restrictions, it would most certainly fail an examination in the WTO. Indirect land-use changes deal, to a large degree, with factors that are beyond the control of the biofuel feedstock producer. It is rather based on the premise that it is the behavioural change of other economic actors that should be accounted for. In other words, it is not the sustainability of biofuel crop farming that is the issue. Without any doubt, such legislation cannot live up to the "likeness" test in the WTO and would directly fail the *chapeau* requirements in GATT Article XX.

The ILUC debate, however, has started to change the political economy of sustainability criteria. It has increasingly become clear that ILUC or other revisions to RED sustainability requirements are not going to be as one-sided as when RED was established. Then it was evidently clear that local production in the EU was to be granted competitive favours vis-à-vis its foreign competitors. That is no longer the case. The domestic EU industry rightly fears an expansion of sustainability criteria to cover ILUC emissions for the simple reason that it is highly likely that a good part of production in Europe would fail to live up to the new conditions. It cannot be assumed that such a revision would integrate well with the industrial policy ambitions that have guided previous legislation. Consequently, local industry has activated a new role as opponent to ILUC-based revisions of the Renewable Energy Directive.

RED is still a work in progress but it is becoming increasingly clear that it cannot easily integrate all the ambitions that guided RED when it was designed. It is close to reaching a point when some of Europe's trading partners will react by legal means, and any diligent policymaker in Europe should admit that the WTO agreements contain legal restrictions to Europe's policy ambitions. It is still possible to combine its green biofuels ambitions with respect for the principles and rules of world trade. However, the third wheel of Europe's biofuels policy – its activist industrial policy ambition – cannot be a guide for policy without weakening the environmental purpose behind the legislation.

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9. World Bank (2007: 16)
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