Gasification plant developed by Air Liquide and KIT (the Karlsruhe Institute of Technology) using the Bioliq® process for producing methanol from straw.

+ 2.9%

the increase in EU biofuel consumption in transport between 2011 and 2012

From now on, the EurObserv'ER thematic barometers will be published in unilingual versions: French and English as usual, to which German, Polish and Romanian versions will be added. Italian and Spanish translations will also be provided as before. All versions are freely downloadable at:
www.eurobserv-er.org/downloads.asp

BIOFUELS BAROMETER

A study carried out by EurObserv'ER.

Despite the uncertain political context, biofuel consumption growth was firm in the European Union, rising to almost 14.4 million toe in 2012, i.e. a year-on-year increase of 0.4 million toe. However the previous years' weaker growth trend is confirmed with growth at just 2.9% between 2011 and 2012.

4.7%

the biofuel incorporation rate in transport across the EU in 2012

14.4 Mtoe

total biofuel consumption in transport across the EU in 2012

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This issue of the biofuel barometer is published at a critical time… in the run-up to the vote on a another European directive that will shape the development strategy for biofuel use in transport. The legislation should pressure the Member States to set new incorporation rates dictated by the environmental quality of the biofuels. After two years of plunging consumption due to binding sustainability criteria (see box next page), the aim is to revitalize growth in biofuel consumption.

THE EUROPEAN MARKET IN THE SLOW LANE

14.4 MTOE USED IN THE EUROPEAN UNION

As expected, 2012 confirmed the trend started in 2011, and European Union biofuel consumption growth just about held up. The EurObserv'ER survey conducted in June 2013 points to consumption (both certified as sustainable and otherwise) at about 14.4 Mtoe in 2012 compared to 14 Mtoe in 2011 **(tables 1 and 2)** – equivalent to 2.9% growth over 2011 (5.3% between 2010 and 2011). This slowdown follows the strong build-up in biofuel consumption between 2005 and 2010 **(graph 1)**.

Growth in 2012 was anything but even across the European Union, for while 14 countries increase their consumption (including France, Spain, Sweden and Finland), 10 others (such as the UK, Poland, Hungary and Italy) decreased it. The remainder either did not incorporate biofuel in 2012 (Malta and Estonia) or did not fill in our survey (Romania).

We proffer two reasons for the drop in consumption witnessed in a number of countries – firstly, the economic crisis which prompted certain importing countries to reduce their incorporation level and secondly the uncertainties surrounding forthcoming European legislation (see below).

The breakdown of biofuel consumption was appreciably the same as in previous years, with biodiesel accounting for 79.1% of total energy content consumption, far ahead of bioethanol (19.9%). Pure vegetable oil and biogas accounted for 1% of total consumption **(graph 2)**.

In addition to the data relating to biofuel consumption in transport, EurObserv'ER also sought to determine the share of this consumption that was covered by

Sustainability criteria

Since 2011, biofuel consumption has been associated with the establishment of binding sustainability criteria, which are now mandatory for the purposes of Renewable Energy Directive 2009/28/EC target calculations. These criteria apply to the whole biofuel production and distribution chain within the European Economic Area, and also to biofuel produced from raw materials from non-EU countries.

Tabl. n° 1

Biofuel consumption for the transport sector across the European Union in 2011 (toe)

Country	Bioethanol	Biodiesel	Other biofuels*	Total consumption	% certified as sustainable
Germany	795 142	2 143 929	17 675	2 956 746	100%
France	392 200	2 034 500	0	2 426 700	0%
Spain	227 038	1 474 331	0	1 701 369	0%
Italy	114 576	1 286 450	0	1 401 026	n.a.
United Kingdom	327 028	729 077	0	1 056 105	n.a.
Poland	153 676	859 604	0	1 013 280	n.a.
Sweden	214 142	226 953	64 372	505 466	93%
Austria	66 519	411 822	13 674	492 015	82%
Belgium	48 121	273 308	0	321 429	n.a.
Netherlands	148 968	172 327	0	321 296	n.a.
Portugal	4 611	310 253	0	314 864	3%
Czech Republic	59 282	240 566	0	299 847	0%
Finland	96 804	102 465	0	199 269	n.a.
Romania	47 721	138 746	9 721	196 188	n.a.
Hungary	54 123	110 003	0	164 126	n.a.
Denmark	49 798	82 502	0	132 300	100%
Slovakia	25 278	97 747	0	123 024	0%
Greece	0	103 396	0	103 396	0%
Ireland	29 628	67 704	119	97 452	n.a.
Luxembourg	6 423	39 092	164	45 679	100%
Lithuania	9 495	35 372	0	44 867	100%
Slovenia	3 761	31 433	0	35 194	100%
Latvia	7 649	14 644	0	22 293	0%
Bulgaria	0	16 791	0	16 791	n.a.
Cyprus	0	15 899	0	15 899	0%
Estonia	0	0	0	0	0%
Malta	0	0	0	0	0%
Total EU 27	2 881 982	11 018 915	105 725	14 006 623	29%
Croatia	1 290	2 651	0	3 941	0%

** Vegetable oils used in the pure state for Germany, Austria, Ireland, Luxembourg, Romania; biogas fuel for Sweden.* ***Source: EurObserv'ER 2013.***

Tabl. n° 2

Biofuel consumption for the transport sector across the European Union in 2012 (toe)*

Country	Bioethanol	Biodiesel	Other biofuels**	Total consumption	% certified as sustainable
Germany	805 460	2 190 767	22 093	3 018 321	100%
France	417 600	2 299 800	0	2 717 400	100%
Spain	208 675	1 718 649	0	1 927 325	0%
Italy	98 667	1 263 734	0	1 362 401	n.a.
Poland	144 635	755 006	0	899 641	n.a.
United Kingdom	388 722	499 713	0	888 435	83%
Sweden	207 564	307 929	71 394	586 887	91%
Austria	57 124	449 024	13 141	519 289	83%
Belgium	48 366	281 026	0	329 393	n.a.
Netherlands	123 818	202 374	0	326 192	n.a.
Portugal	2 833	284 209	0	287 042	4%
Czech Republic	59 965	221 169	0	281 134	100%
Finland	85 268	169 461	0	254 729	n.a.
Denmark	70 528	159 006	0	229 534	100%
Romania***	47 721	138 746	9 721	196 188	n.a.
Greece	0	124 606	0	124 606	0%
Slovakia	23 789	76 566	502	100 856	94%
Ireland	28 710	54 665	62	83 436	n.a.
Hungary	27 236	30 835	23 429	81 500	n.a.
Lithuania	8 707	51 810	0	60 517	100%
Slovenia	5 290	46 337	0	51 627	100%
Luxembourg	1 286	45 582	119	46 987	100%
Latvia	6 703	12 514	0	19 217	0%
Cyprus	0	16 136	0	16 136	0%
Bulgarie	0	9 809	0	9 809	n.a.
Estonia	0	0	0	0	0%
Malta	0	0	0	0	0%
Total EU 27	2 868 669	11 409 473	140 462	14 418 603	57%
Croatia	905	31 458	0	32 363	100%

** Estimate. ** Vegetable oils used in the pure state for Germany, Austria, Ireland, Luxembourg, Romania; biogas fuel for Sweden.*
**** As 2012 data for Romania was unavailable at the time of publication, 2011 data was used by default.* ***Source : EurObserv'ER 2013.***

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PHILIPPE MONTIGNY/PROLÉA

Vegetable oil a raw material for making biodiesel.

sustainability certification in 2011 and 2012. Sustainability is now a consumption accounting eligibility criterion in the Directive's objectives. In June 2013, the information was forthcoming from some ten countries and in 2012 accounted for 8.2 Mtoe of consumption, or 57% of total consumption. For the most countries that have statistical reporting on this new indicator, almost all the consumption is already certified. As far as the others are concerned, biofuel consumption certification was either under way or non-existent in 2012. Wherever there is no certification, the renewable energy share will be adversely affected as it was back in 2011.

NEWS FROM THE MAIN PRODUCER COUNTRIES

Germany still leads the pack

In 2012 Germany increased its biofuel consumption slightly after the decline in 2011. AGEEStat (the Ministry of the Environment's working group on renewable energy statistics) reported that 2 190 767 toe of biodiesel, 805 460 toe of bioethanol and 22 093 toe of pure vegetable oil were used in 2012. Germany is thus the leading European biofuel consumer. All of this consumption (both in 2011 and 2012) was certified, meaning that the country can include it in its calculations towards meeting its renewable energy target. Germany's official biofuel share of total road fuel consumption rose 5.7% in 2012 from its 2011 level of 5.5%.

The bioethanol incorporation rate should continue to increase as E10 (fuel with 10% bioethanol) fuel consumption rises in Germany. The BDBE industrial association claims that bioethanol output increased by 7.4% in 2012 to 613 381 tonnes partly thanks to stepped-up sugar beet processing. In March 2013, AGEEStat reported the number of direct jobs in the biofuel sector at 22 700 in 2012 as against 23 200 in 2011.

France the top biodiesel consumer

France is not Europe's leading biofuel consumer, but in 2012 it reclaimed its place as the top biodiesel consumer. Statistics published by the observation and statistics office (SOeS), show that France used 2 299 800 toe of biodiesel in 2012 and 417 600 toe of bioethanol, making for total consumption of 2 717 400 toe. French biofuel consumption thus increased by 12% year-on-year. If we factor in the premiums awarded to methyl esters of animal oils and methyl esters of used oil, the incorporation rate in mainland France's road transport is 6.8% – one of the highest rates in Europe. As regards consumption certification, France was late in transposing the Directive (it happened in 2012, although it was scheduled for 2011). Accordingly, its biofuel was not covered by sustainability certificates in 2011 and thus could not be included in the year's calculations towards the Directive's target. This contrasts with 2012 when all the biofuel consumption was properly certified. In September 2012, the government presented a new action plan for agriculture that stipulated a maximum first-generation biofuel incorporation rate of 7%. The measure does not affect the growing distribution of E10 in filling stations. The 10% target should be achieved through the development of second- (or third-generation) biofuel based on crop, waste, algae or cellulose residue and through the development of electric or hydrogen-powered vehicles.

UK consumption tails off

HM Revenue and Customs data based on road fuel taxation statistics, shows that 634 million litres of biodiesel (31% less than in 2011) and 775 million litres of bioethanol (19% more) were used in 2012. This same data, converted into energy content, indicates a sizeable drop... 15.9% between 2011 and 2012 (from 1 056 ktoe in 2011 to 888 ktoe in 2012) (see methodology note). Furthermore biodiesel and bioethanol consumption evened out as the biodiesel share of energy content dropped from 72.3% in 2010, to 69.0% in 2011, slipping to 56.2% in 2012. DECC (the Department of Energy and Climate Change) explains that the change in legislation from April 2012 onwards is responsible for this drop in biodiesel consumption. Since then, the credits granted under the RTFO framework (Renewable Transport Fuel Obligation) have been doubled for certain types of biodiesel produced from used oil, which enabled distributors to reduce their incorporation level in 2012. DECC also points out that over the 12-month period, about 83% of biofuel consumption was certified as sustainable and that the renewable share in transport rose to 3.2% under the terms of the Directive.

Spain to pare down its incorporation rate

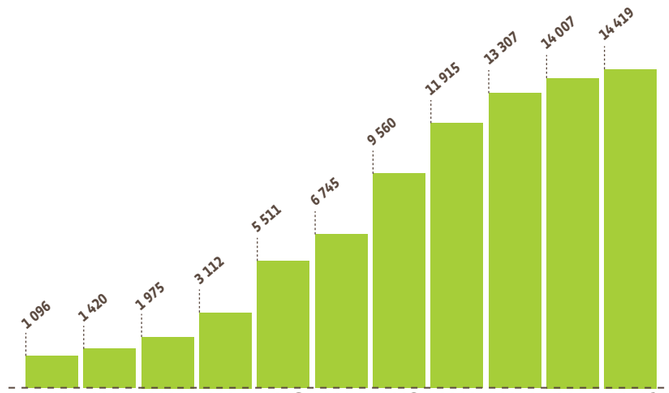
Spain is one of the countries where biofuel consumption growth remained buoyant. The IDAE (Instituto para la Diversificación y Ahorro de la Energía) reports that about 1 994 767 tonnes of bio-

Methodology note

EurObserv'ER has decided to harmonise its data-gathering method by asking the interviewed experts to express their biofuel consumption data in tonnes rather than energy units (toe or TJ). This is because minor distortions may be emerging between countries since many of them use their own individual weight (tonnes) or energy-equivalent volume conversion ratios. To avoid these discrepancies, Systèmes Solaires has adopted the conversion coefficients specified in Appendix III of the new renewable energies directive for calculating the energy density of transport fuels and expresses them in LHV (lower heating value).
The coefficients are 27 MJ/kg (equivalent to 0.6449 toe per tonne) and 21 MJ/l (equivalent to 0.5016 toe per m³) for bioethanol, 37 MJ/kg (0.8837 toe per tonne) and 33 MJ/l (0.7882 toe per m³) for biodiesel, and 37 MJ/kg (0.8837 toe per tonne) and 34 MJ/l (0.8121 toe per m³) for pure vegetable oil. For purified biogas of natural gas quality it is 50 MJ/kg (1.194 toe per tonne)

Graph. n° 1

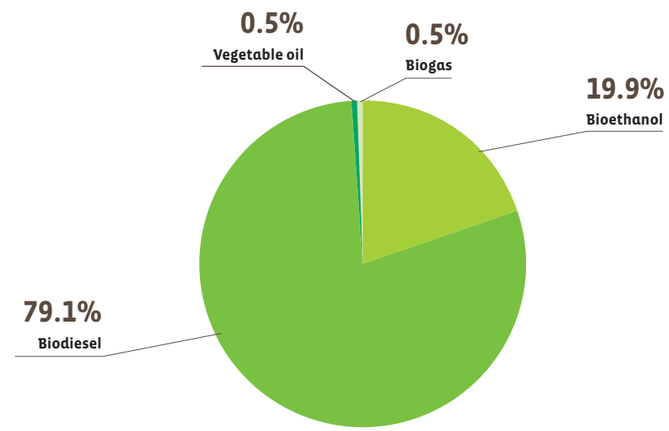
Trends in biofuel consumption used in transport across the European Union of 27 (ktoe)



Estimate.* ***Sources: 2002–2010 data (Eurostat 2013), 2011–2012 data (EurObserv'ER 2013).*

Graph. n° 2

*Share of each type of biofuel as energy content of EU biofuel consumption for in 2012**



Estimate.* ***Sources: EurObserv'ER 2013.*

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diesel (1 719 ktoe) and 323 586 tonnes of bioethanol (209 ktoe) were used by transport over the year. The country's energy content consumption increased by 226 ktoe between 2011 and 2012, amounting to 13.3% growth, which is exclusively put down to the increase (244.3 ktoe) in biodiesel consumption, for bioethanol's contribution dropped by 18.4 ktoe. Thus Spain provisionally holds onto its number three rank for biofuel consumption in Europe with a 7.3% incorporation rate in transport in 2012 (6.1% in 2011). It should be pointed out that Spanish consumption was not subject to sustainability certification in 2012, as the certification system came into operation on 1 January 2013. Royal Decree 1597/2011 stipulates that at that date, only biofuel certified as sustainable could be included in the binding incorporation target calculations. The shortfall fine for each missing metric tonne is 350 euros. In 2012, the incorporation rate in energy content was set at 6.5% (7% for biodiesel and 4.1% for bioethanol). The same rates should have applied in 2013, until the government decided to reduce the overall mandatory incorporation rate to 4.1% (4.1% in diesel and 3.9% in petrol) on 22 February 2013. The government views that these new targets should bring down fuel prices and give it time to analyse the technological developments required to achieve the European renewable energy target of 10% in transport.

Biogas filling station (Linköping, Sweden).

Sweden goes for 100% clean vehicles by 2030

Sweden has the highest incorporation rate of all the European Union countries. The initial estimates of the sustainable biofuel share of fuel consumption in transport supplied by the national statistics (Statistics Sweden) and energy agency (Energimyndigheten) indicate that it increased from 6.3% in 2011 to 7.8% in 2012. The energy agency claims that consumption of biofuel certified as sustainable rose to 327 556 tonnes of biodiesel in 2012, in addition to 271 438 tonnes of bioethanol and 83.3 million m³ of purified biogas (natural gas quality). The national statistics agency, for its part, puts total consumption of biofuel (sustainable and otherwise) at 348 442 tonnes of biodiesel, 321 863 tonnes of bioethanol and 83.3 million m³ of purified biogas. When EurObserv'ER converts these values to energy equivalent, it puts the share of biofuel consumption certified as sustainable at 91%, or 535 911 toe of a total of 586 887 toe. These figures have to be taken as magnitudes of scale because the accounting methodologies used by the two organisations differ slightly.

Sweden no doubt harbours the most ambitious aims for clean transport. An official Swedish government report (Statens offentliga utredningar) from the commission responsible for drawing up the country's future energy legislation was started in 2012. It aims to find solutions to wean Swedish vehicles completely off fossil energy by 2030. The idea of energy independence for transport is not new to the country. Back in 2005, a commission (Swedish Commission on Oil Independence) was set up to find solutions for reducing the country's dependence on oil. The project resulted in the publication of a report ("Making Sweden an Oil-Free society") in 2006, which reckoned that oil consumption in transport of 40-50% could be achieved by 2020. Its recommendations prompted the government to finance major research programmes into second-generation biofuel in 2006. In 2008, an action plan for oil-free vehicles also stimulated biofuel development with the introduction of tax exemptions for green cars, subsidies for filling stations that dispensed biofuel and swift implementation of the 2009 Renewable Energy Directive (RED).

EUROPEAN INDUSTRY FACES UNCERTAINTY

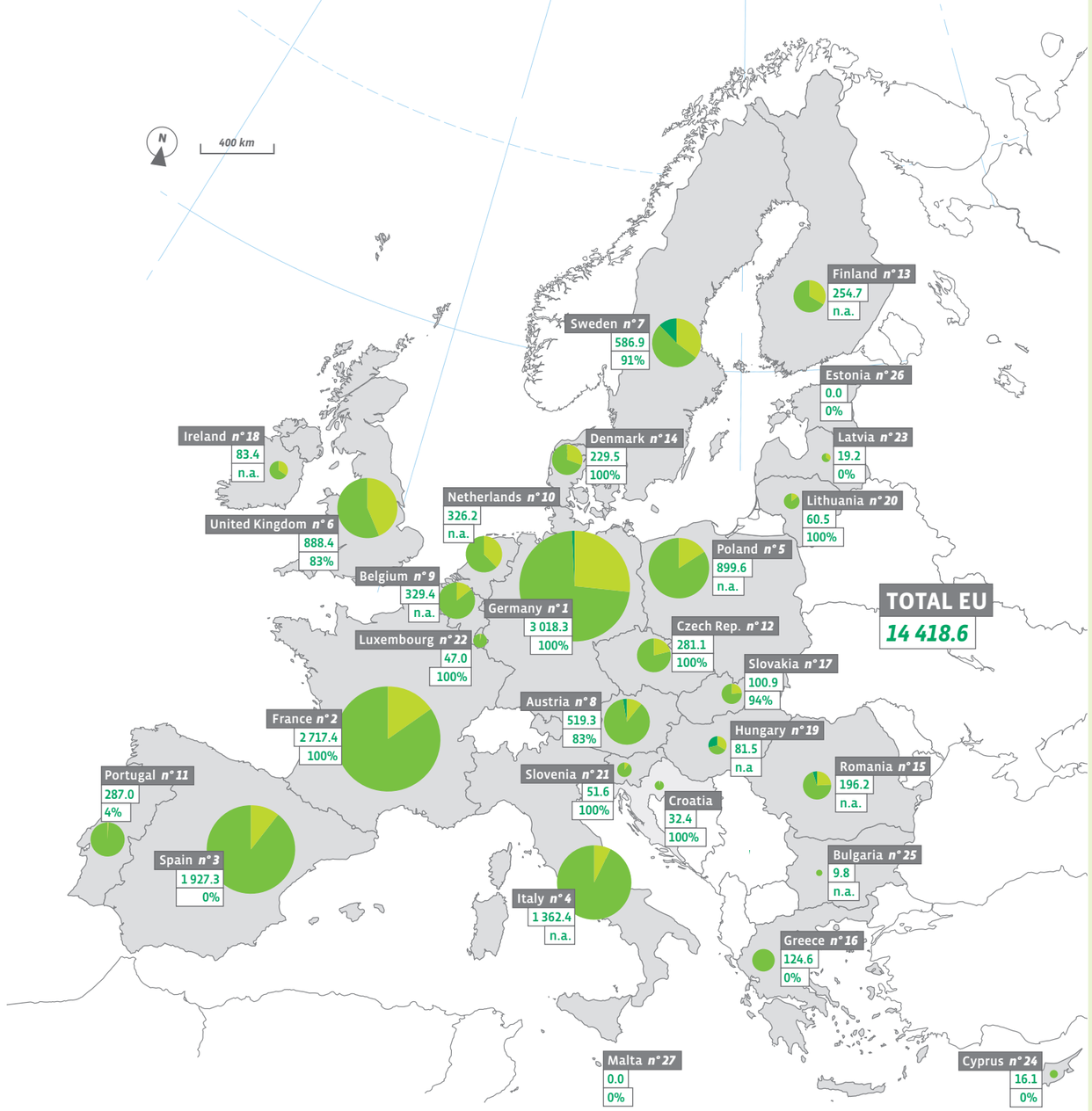
CAUGHT IN THE CROSSFIRE

The European first-generation biofuel industry has been hard hit over the past two years, continually facing off challenges from two fronts, increasing political pressure that aims to curb the expansion of first-generation biofuel consumption and the unfair competition practiced by the world's other major producer regions. In both cases, the European Union is at the centre of decision-making processes and negotiations, stepping in to ensure that international discussions comply with international regulations. Through the European Parliament and Council it also steers Member States' energy policies through the vote on directives.

The impact of indirect land-use changes (ILUC)

The current European political context is particularly alarming for the European biofuel sector. On 17 October 2012, the publication of a proposed "renewable energies" and "fuel quality" directives amendment ushered in a sea change in European biofuel strategy. The proposal contains the following measures: the capping of the first-generation biofuel share at 5% in the renewably-sourced

Biofuel consumption in transport in the European Union Member States at the end of 2012 (ktoe) broken down by sector share*



** Estimate. ** Vegetable oils used in the pure state for Germany, Austria, Ireland, Luxembourg, Romania; biogas fuel for Sweden and Denmark.* ***Source: EurObserv'ER 2013.***

energy incorporation targets for transport, factoring in indirect land-use changes (ILUC) into the greenhouse gas emission calculations (established using fixed coefficients in the proposal) and tightening the sustainability criteria by bringing forward to July 2014 (rather than from 2018) the enforced 60% reduction of greenhouse gas emissions for petroleum fuel for all new facilities. It also proposes applying a multiplying factor of 2 to 4 to the corresponding quantities in national accounting, to accelerate the transition to "advanced" biofuel types.

Given the current level of biofuel incorporation in road and rail transport, estimated by EurObserv'ER at 4.7% in 2012 (namely 14.4 Mtoe of an estimated 305 Mtoe of consumption), this proposal would effectively put a stop to the development of first-generation production sectors. The European Commission justifies it by the impact of indirect land-use changes (ILUC) on greenhouse gas emissions, which occur when biofuels displace crops that will occupy soils that were previously preserved (such as forests, natural meadows or peat bogs). The findings of studies conducted on behalf of the European Commission (such as by the American IFPRI) demonstrate that the impact of the ILUC effect on emissions is substantial, and particularly so in the case of biodiesel. Annex II of the RED's amendment proposal and Annex V which covers the Fuel Quality Directive have already set the additional emission values linked to the ILUC effect. They will be 12 g CO_2 equivalent per MJ for cereal-based biofuel, 13 g CO_2 equivalent per MJ for sugar plants (sugar cane, sugar beet) and 55 g CO_2 equivalent per MJ for biofuel using oilseeds (rape, palm oil, etc.). Taking the example of biodiesel from rapeseed, which is the main oilseed plant used for biofuel production in Europe, 55 g CO_2 equivalent per MJ for the ILUC effect will have to be added to the 46 g equivalent per MJ including the emissions related to growing, processing, transport and distribution (defined in annex V of the RED), making a total of 101 g of CO_2 equivalent per MJ. This takes the emission level over that of fossil biodiesel, which according to the ICCT (International Council of Clean Transportation), is about 89 g CO_2 equivalent per MJ for the whole of its lifecycle. Thus if the ILUC effect is taken into account the biodiesel balance becomes negative whereas the bioethanol balance remains positive but much less attractive.

The sector views this proposal as a particularly harsh reversal that penalises the European bioethanol and biodiesel industry. It comes only four years after the Climate Change and Energy Package was implemented in 2009, which had set a 10% Europe-wide renewable energy incorporation target for transport through the Renewable Energy Directive. At that time, the target effectively stimulated major development of first-generation biofuel, whose various forms were seen as the only viable alternative to petroleum fuel in transport in terms of cost considerations. The target, which was also in line with the reduction of dependency on fossil energies strategy, seemed to offer solid growth prospects. Consequently, the European industry players decided to make heavy investments in production capacity. Biodiesel seemed a logical choice in view of diesel's penetration in the European vehicle base. The European (biodiesel and bioethanol) industry is now in a situation where it will be unable to recoup much of its investment through insufficient growth prospects. According to the EBB (European Biodiesel Board), biodiesel production capacity in 2012 amounted to 23.5 million tonnes with European output standing at 8.6 million tonnes in 2011 (the 2012 figure is not yet available). EurObserv'ER puts European biodiesel consumption at 12.9 million tonnes for the year, meaning that 30% of Europe's consumption is imported. As for ePURE (European Renewable Ethanol Association), it puts bioethanol fuel production capacity at 8.1 billion litres with actual output running at 4.84 billion litres in 2012 **(table 3)**. The EurObserv'ER estimate of European bioethanol consumption in transport is 5.66 billion litres in 2011 (4.48 million tonnes), which implies that about 15% of this volume is imported.

The deliberately slanted European Commission proposal will form the basis for negotiations. In view of the stakes, the discussions between the concerned parties (governments, European Parliament, producers) are extremely tense as each party seeks to present its case.

The biofuel producers dispute the scientific bases and results of the ILUC models, which they claim cannot be taken into account as they stand. They also claim that the proposal will have a serious impact on employment (120 000 jobs across Europe), the industrialisation of regions and farming. Furthermore they imply that this proposal will increase food dependence in Europe with the depletion of oilcakes – biodiesel co-products – which are indispensable animal feed components. They also stress that innovations in second-generation biofuel and new sectors such as oleochemicals are likely to take longer to come through, as these sectors are largely funded by the revenues generated through first-generation biofuel development. ePURE, which defends the interests of the bioethanol sector, reckons that in all likelihood the 5% limit will be increased to 7%, and is optimistic that the legislators will set a separate target for bioethanol incorporation in petrol, given its lower impact on greenhouse gas emissions.

MEPs have split up into special committees to prepare the groundwork by tabling amendments for the European Parliament's plenary session.

On 10 July 2013, the environment committee (ENVI) proposed measures to underpin capping of first-generation biofuel and fast-forward the move to new generation biofuels manufactured from other sources such as algae or certain types of waste. According to ENVI, the share of first-generation biofuel, produced from food and energy crops, should not exceed 5.5% of the final energy used in transport in 2020. Advanced (second- and third-generation) biofuels, should amount to at least 2% of consumption in 2020. The ENVI committee insists that this development should not deprive other sectors of raw materials, destabilise European waste or forestry policy or have a negative impact on biodiversity. Renewably-sourced electricity should also amount to 2% of overall energy consumption in transport by 2020 to ensure that number of electric vehicles on the market is higher.

Three weeks prior to the proposal date, on 20 June 2013, the European Parliament's Energy Committee had already drawn up its own measures. It viewed that the European Union should encourage the use of "advanced" biofuel by setting binding targets, and find a reliable model for measuring the indirect land-use changes before including it in the legislation. Accordingly it asked

Tabl. n° 3

Bioethanol fuel output ***across the European Union in 2011 and 2012****
(millions of litres)

Country	*2011*	*2012**
France	1 007	1 200
Germany	770	773
Belgium	400	450
Netherlands	275	450
Spain	463	381
Sweden	200	230
Hungary	173	220
Austria	195	216
Poland	167	212
United Kingdom	320	167
Italy	60	150
Czech Republic	110	130
Slovakia	130	130
Bulgaria	10	40
Lithuania	18	27
Romania	65	20
Latvia	5	15
Finland	10	10
Ireland	10	10
Denmark	5	5
Cyprus	0	0
Estonia	0	0
Greece	0	0
Luxembourg	0	0
Malta	0	0
Slovenia	0	0
Portugal	0	0
TOTAL Biofuels EU 27	4 393	4 836

** Estimate.* ***Source: ePURE 2013.***

CÉDRIC HELSLY/PROLEA

Diester production at the Saipol de Grand-Couronne plant, Seine-Maritime.

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NESTE OIL/TOMI PARKKONE

Bioreactor analysis, Neste Oil plant at Porvoo (Finland).

the European Commission to submit a report on progress made on scientific proof for the use of ILUC-related factors before the end of 2015. If needed a legislative proposal should be presented, obliging fuel suppliers to produce regular reports on estimated ILUC-related emissions from their biofuel from September 2016 onwards. The Energy Committee also suggests that first-generation biofuel should be limited to 6.5% of final energy consumption in transport. "Advanced" biofuel production should also be encouraged by gradually introducing binding targets for its use in transport. The minimum proposed targets are 0.5% in 2016, 2.5% in 2020 and 4% in 2025.

The final European Parliament plenary session vote, which will kick off negotiations with the European Council, should take place at the beginning of autumn.

Unfair competition

International disputes over unfair competition are another sore point for the biofuel sector and in this respect the European Commission's inquiries have started to produce results.

Following a complaint filed by the European Biodiesel Board (EBB) in July 2012, the European Commission opened two inquiries in August and November 2012 into antidumping and anti-subsidies concerning the differential export tax system introduced by Argentina and Indonesia respectively. The system enables these countries to sell cut-price biodiesel into the European market, with an export price that sometimes undercuts the cost of the raw material used to make it. This inquiry has been completed and on 27 May 2013 a European ruling instituted provisional 6-month antidumping tax on biodiesel imports from Argentina and Indonesia. According to EBB Secretary-General, Raffaello Garofalo, "This decision represents a first step to counter unfair and uncompetitive biodiesel imports from these countries". But he considers that "the level of anti-dumping provisional duties defined so far is in fact insufficient to stop this unfair trade". Thus he calls for additional anti-subsidy duties to be fixed as a matter of urgency, under the framework of the on-going anti-subsidy proceedings.

Spain's industry was particularly hard hit, leading to a number of players going out of business. This is because Spain had become the major purchaser of Argentine biodiesel (about half of Argentine's biodiesel exports) ahead of Italy and the Netherlands.

On a positive note, this time for the European bioethanol sector, the European Council published a ruling on 22 February 2013 imposing anti-dumping duties on American bioethanol imports. Henceforth and for the next five years, duty will be applied to American bioethanol at a rate of 62.9 euros per tonne. However the anti-subsidy proceedings (conducted in parallel with the anti-dumping proceedings) have been closed as the Council considered that in view of the length of the prejudice incurred, the implementation of anti-dumping duties suffices. According to ePURE, this decision amounts to legitimate recognition of the damage caused to the European bioethanol industry. The American subsidies enabled US bioethanol exports to increase from 102 million litres in 2009 to 1.17 billion litres in 2011, or 20% of European consumption.

NEWS FROM AROUND THE MAIN MANUFACTURERS

Tereos is banking on flexibility

The bioethanol sector players do not have the same resources to face the recession and the modifications to European legislation **(table 4)**. Thanks to the flexibility of their industrial facilities and their presence on the international market, some of them are seeking to diversify the production balance between sugar, alcohol and bioethanol as market trends emerge. French group Tereos is one of the top European sector players. Its bioethanol sales in FY 2011/2012 amounted to 1.1 million m³. It seems that the South American market is currently less complicated than the European market. Guarani, its Brazilian subsidiary, is riding high in its local expanding market. The situation enabled Guarani to seal a strategic partnership with Petrobras, the oil company, in 2010 in a contract that alone covers almost all Guarani's sugar cane-based ethanol sales. In Europe, the volume of Tereos' sales of cereal and sugar beet ethanol increased by 20% over FY 2011/2012, making the most of excellent beet harvests in France and the Czech Republic. The company also benefited from an increase in prices from the second half-year onwards (that rose from about 600 to 720 euros/m³) after "denatured ethanol" in the E90 blend (90% ethanol: 10% petrol) from the United States, whose imports initially classified as "chemicals" benefiting from lower customs duties that destabilised the market (see the July 2012 biofuel barometer), was reclassified. French and European market growth prospects are still much less attractive because of the pending European legislation. France's choice to cap the incorporation rate at 7% has the merit of contributing towards the aim of keeping industrial facilities open. However in the light of the high cereal prices, Tereos has decided to develop food production, substituting part of its bioethanol production on its Lillebonne site. The year 2012 was good for the group as a whole. Its turnover rose from 4 409 million euros in 2011 to 5 037 million euros in 2012 with a net profit at 312.6 million euros compared to 237 million euros in 2011.


FUTUROL

R&D pilot site of the Futurol project. So-called second-generation ethanol production process, from lignocellulose (Pomacle-Bazancourt-Marne).

Abengoa Bioenergy enters the second-generation era

Not only is Abengoa Bioenergy the leading European biofuel producer (with 1.5 million m³ of production capacity, including 1.3 million m³ of bioethanol), but it is also one of the major producers

Tabl. n° 4

Production capacities of the main biodiesel producers in Europe in 2012 (tonnes)

Company	Country	Number of plants in 2011	Production capacity in 2012 (tonnes)
Diester Industrie & Diester Industrie International	France	France (7), Germany (2), Italy (2), Austria (1), Belgium (1)	3 000 000
Neste Oil	Finland	Finland (2), Netherlands(1)	1 180 000
Biopetrol Industries AG	Switzerland	Germany (2), Netherlands (1)	1 000 000
ADM Biodiesel	Germany	Germany (3)	975 000
Infinita Renovables	Spain	Spain (2)	900 000
Biocarburantes CLM (Natura)	Spain	Spain (3)	855 000
Marseglia Group (Ital Green Oil and Ital Bi Oil)	Italy	Italy (2)	560 000
Entaban	Spain	Spain (5)	675 000
Verbio AG	Germany	Germany (2)	450 000
Cargill	Germany	Germany (1)	250 000
Acciona Energia	Spain	Spain (2)	283 000

Source: EurObserv'ER 2013.

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stateside (1.4 million m³) and in Brazil (235 000 m³). The company, which boasts 14 bioethanol and biodiesel production plants (in Spain, France, the Netherlands, USA and Brazil) produced 2 516 million litres of biofuel in 2012 as against 2 750 million litres in 2011.
In April 2013, Abengoa Bioenergy commissioned a demonstration plant that uses its "Waste-to-biofuel" (W2B) technology in Balbilafuente, Spain. The plant will have capacity to process 25 000 tonnes of solid municipal waste to produce 1.5 million litres of bioethanol fuel. The process relies on both fermentation treatment and enzymatic hydrolysis. During the conversion process, the organic matter is treated to produce cellulose- and hemicellulose-rich organic fibres for onward conversion to bioethanol. Abengoa will very shortly upscale, as construction of what it claims to be the first industrial size second-generation bioethanol profit centre is currently underway at Hugoton, Kansas (Abengoa Bioenergy Biomass of Kansas) with an annual output capacity of 100 million litres. The feedstock it will use includes maize stalks, straw and switchgrass. It should go on stream before the end of 2013. The group views research into enzymes for producing second-generation biofuel as a strategic priority, and it claims to have six research centres (four in Spain and two in the United States) employing as many as 45 research workers.
Its technology investments increased from 134 million euros in 2011 to 207.2 million euros in 2012, with backing from both the American Department of Energy, the Spanish Ministry of Industry and the European Union Framework Programme. Abengoa Bioenergy (through its Abengoa Bioenergía Nuevas Tecnología subsidiary) is committed to many research projects such as biofuel development from algae through the "FP7 BIOFAT Project" (BIOfuel From Algae Technology) and "PlanE ECOALGA" projects.
Abengoa's 2012 sales turnover was more or less stable (2 225 million euros in 2011 compared to 2 138 million euros in 2012). Tougher market conditions saw its operating income (EBITDA) slip further to 91 million euros in 2012 (from 152 million euros in 2011 and 212 million euros in 2010).

Abengoa Bioenergy's "Waste-to-Biofuels" demonstration plant (Babilafuente, Spain).
LUIS F. LORENZO/ABENGOA

Diester Industrie restructures

The leading European biodiesel producer **(table 5)** had to contend with very harsh economic and competitive conditions in 2012. Diester Industrie (of the industrial group, Sofiprotéol), states the year was marked by a sharp recovery in domestic sales volumes (by 27% to 1.65 million tonnes) from its performance in the previous uncharacteristic year. In 2011, the incorporation of methyl esters from used oil and animal fats into diesel benefited from the double counting rule, which led to a drop in diester production. In 2012, the incorporation rate of these esters was capped at 0.35%, enabling plant-based diesel production to pick up. However, Diester Industrie International's (DII) profit margins were badly hit by the sales prices depressed by biodiesel imports from Argentina and Indonesia. DII's output dropped 30% to 0.38 million tonnes. Diester's international subsidiary in Germany was beset by the introduction of double counting and the increase in palm and soy ester imports. However in Italy, the situation improved from the summer onwards through lower costs and Italian regulations giving preferential terms to biodiesel produced from European seeds.
The growth prospects for 2013 hang in the balance. According to Diester, biodiesel production suffers from reduced visibility because of the many uncertainties over the allocation of accreditations awarded in France, capping of double counting for methyl esters from animal fats and used oils and reduction in the tax relief on biofuel from 2013 onwards. These are compounded by the conjecture over the outcomes of discussions about first-generation biofuel and the anti-dumping complaint. Diester intends to boost the industrial efficiency of its sites in preparation for this phase and improve integration of its esterification and crushing sites. As a result, DII reorganized its European biodiesel facilities at the beginning of February by selling two of its sites in Germany (MBH) and Austria (Novaol Austria) to its American partner Bunge (Diester holds 60% of DII's shares and KBBV, a Bunge Group subsidiary, the remaining 40%) and by ceding its 100% stake in Belgian subsidiary Oleon Biodiesel to Diester Industrie. DII's biodiesel production capacity dropped from 1 million tonnes before the operation to 700 000 tonnes afterwards. Its 2012 sales turnover was stable at 2 669 million euros in 2012 (compared to 2 690 million euros in 2011). Biodiesel production only accounted for 8% of Sofiprotéol's earnings (assessed at 240 million euros in 2012), whereas it accounted for a quarter in 2011.
Turning to second-generation biofuel, Sofiprotéol, the industrial consortium that owns Diester Industrie, is involved in the BioTfuel project (budget of 113 million euros). The project aims to develop and launch a full chain of biodiesel and biojet fuel production processes from ligno-cellulosic biomass – straw, forest waste, etc., by 2020.

Second generation in a bridging phase

The European Commission now wants clean biofuel production to take off on a wide scale. Last December it announced the funding of five projects to set up commercially-viable or demonstration production plants for "advanced" biofuel through the European NER300 funding programme. The projects are:

Tabl. n° 5

Production capacities of the main bioethanol producers in Europe in 2012 (millions of litres)*

Company	Country	Production sites	Number of plants in Europe	Production capacity in 2012 (millions of litres)	Raw materials
Abengoa Bioenergy	Spain	Spain (4), Netherlands (1), France (1)	6	1 281	Barley, wheat, cereals, raw alcohol, maize, maize lignocellulose
Tereos	France	France (6) Czech Rep. (2) Belgium (1)	6	883	Sugar juices, sugar beet, wheat
CropEnergies/ BioWanze (BE)	Germany	Germany (1), Belgium (1), France (1)	3	808	Sugar juices, sugar beet, cereals, wheat
Cristanol	France	France (4)	4	540	Sugar juices, sugar beet, wheat, glucose, raw alcohol
Ensus	United Kingdom	United Kingdom (1)	1	400	Wheat
Agrana	Austria	Austria (1), Hungary (1)	2	400	Wheat, maize
Verbio	Germany	Germany (2)	2	380	Sugar juices, cereals
Agroetanol	Sweden	Sweden (1), Czech Rep. (1)	2	210	Cereals

** Only European plants are included.* ***Source: EurObserv'ER 2013.***

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Study of biomass production systems from microalgae in bioreactors (Karlsrühe Institute of Technology).

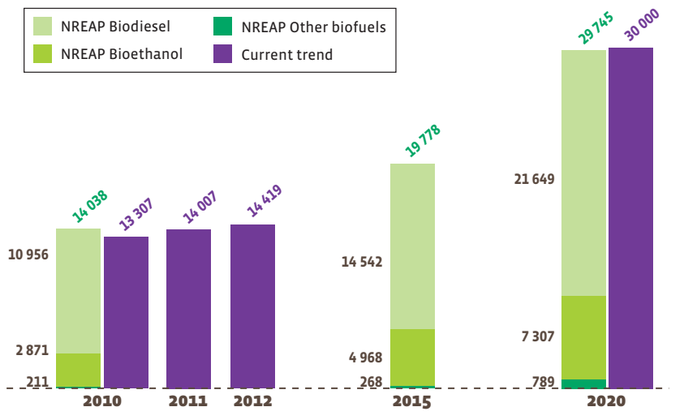
LUKAS TREMLER/KARLSRUHE INSTITUT FÜR TECHNOLOGIE

Ajos BtL (88.5 million euros, Finland), BEST (28.4 million euros, Italy), CEG Plant Goswinowice (30.9 million euros, Poland), Woodspirit (199 million euros, the Netherlands) and UPM Stracel BtL (170 million euros, France). The latter will be sited at Strasbourg, in the UPM Group's paper pulp mill. This "biomass-to-liquid" production plant will use a biomass gasification process. It will be fully integrated into the mill's paper and pulp production line and use as much as 1 million tonnes of woody biomass to produce 105 000 tonnes of second-generation biodiesel. The Ajos BtL project, based on the same principle, will produce 115 000 tonnes of second-generation biodiesel from 950 000 tonnes of woody biomass and 31 000 tonnes of tall oil (a paper pulp residue) as its feedstock.

A Bloomberg New Energy Finance study reports that bioethanol production from non-food cellulose matter (straw, switchgrass, crop waste, wood and wood waste) could become as competitive as maize bioethanol by 2016. The analyst draws on a study of the production costs of 11 world players who are leading producers of cellulose alcohol, using enzymatic hydrolysis technology. These findings show that in 2012 the cost of cellulose ethanol was $ 0.94 (€0.72) per litre, i.e. about 40% higher than the cost of maize ethanol put at $ 0.67 (€0.51) per litre. The price difference should drop dramatically as operating costs fall. The cost of the enzymes used to produce a litre of alcohol dropped by 72% between 2008 and 2012. The VTT Technical Research Centre of Finland has also announced commercial development of cellulose ethanol, with a clutch of fifteen plants (in Europe, America and Asia) scheduled for construction very soon. The VTT, which coordinates the European Disco (Discovery of novel enzymes) research programme, has developed powerful enzymes that accelerate biomass conversion into sugar and alcohol, which are already being commercially developed.

Graph. n° 3

Current biofuel consumption trend in transport compared to the National Renewable Energy Action Plan roadmaps (ktoe)



*Subject to possible changes in line with the new European regulation. **Source: EurObserv'ER 2013.***

WHAT ARE THE IMPLICATIONS FOR CONSUMPTION IN 2020?

Current discussions revolving around the modification of the two directives will not affect the 10% renewable energy target for transport in 2020, but will affect the proportions of the types of biofuel involved in fulfilling this target. However the issue of energy equivalent incorporation amounts could also be raised when the final vote on the directive is made. If the European Union decides to limit the incorporation rate of first-generation biofuel (to 5%, 6.5%, or even 7%) from 2020 onwards and introduce a minimum incorporation rate for "advanced" biofuel (such as 2.5%), which would be subject to premium, these decisions could significantly reduce the volumes to be incorporated. An amendment allocating a mandatory percentage for using renewably-sourced electricity in transport (such as 2%) is also likely to reduce biofuel incorporation volumes.

Thus the targets set in the National Renewable Energy Action Plans could become inappropriate for the new regulation. Furthermore calculating incorporation volume projections to the 2020 timeline has turned into a minefield. Pending the European Union decisions, EurObserv'ER has decided to adhere to the consumption forecasts it made for 2020 **(graph 3)**, that are in phase with the NREAPs in effect on the publication date of this barometer. These forecasts will be revised at the end of the year in our annual barometer to factor in the new strategic reorientation of European Union biofuel policy.

The amendments passed that will affect the Renewable Energy and Fuel Quality Directives are just one step and will be a single element of a much broader framework. The European Commission, in a January 2013 communiqué accompanied by a draft directive, spelled out the Union's fuel substitution strategy. The document claims that the solution for the future of mobility cannot rely on a single type of fuel and thus all possible substitute fuels should be tapped (biofuel, electricity, hydrogen, LPG, natural gas), by focusing on the energy infrastructures. "Advanced" biofuel is one of the solutions and accordingly, the Commission intends to boost incentive measures to encourage its use. It also takes the view that only "advanced" types of biofuel should benefit from public aid after 2020.

This policy is sound because it will contribute to improving energy supply security, restart economic growth, boost the competitiveness of European industry and reduce greenhouse gas emissions attributable to transport. □

Sources: table 1 and 2: AGEE-Stat (Germany, SOeS (France), DECC (United Kingdom), IDAE (Spain), Ministry of Economic Development (Italy), Institut for Renewable Energy (Poland), Statistics Sweden, Energimyndigheten (Sweden), Statistics Netherlands, Statistics Austria, DGGE (Portugal), University of Miskolc (Hungary), Ministry of Industry and Trade (Czech Rep.), SPF Economy, DG Energy (Belgium), Tulli (Finlande), CRES (Greece), Energy Centre Bratislava (Slovakia), Ministry of Economy of the Slovak Republic, Statistics Lithuania, SEAI (Ireland), STATEC (Luxembourg), APEE (Bulgaria), Slovenian Environment Agency, Ministry of Commerce, Industry and Tourism (Cyprus), Danish Energy Authority, Ministry of Economics (Estoniea), Central Statistical Bureau of Latvia, University of Zagreb (Croatia).

The next barometer will cover the subject of heat pumps.

Download

EurObserv'ER is posting an interactive database of the barometer indicators on the www.energies-renouvelables.org (French-language) and www.eurobserv-er.org (English-language) sites. Click the "Interactive EurObserv'ER Database" banner to download the barometer data in Excel format.

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