Evaporator of Futurol pilot plant, France.

- 1,7 %

The decrease of biofuels consumption for transport in the European Union between 2014 and 2015 (in energy content)

BIOFUELS BAROMETER

A study carried out by EurObserv'ER.

The European biofuel market is now regulated by the directive, known as ILUC, whose wording focuses on the environmental impact of first-generation biofuel development. This long-awaited clarification has arrived against the backdrop of falling oil prices and shrinking European Union biofuel consumption, which should drop by 1.7% between 2014 and 2015, according to EurObserv'ER.

79.4%

Biodiesel part in the total biofuel consumption in EU transport in 2015 (in energy content)

14 Mtoe

total biofuel consumption in European Union transport in 2015

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Biofuel consumption has developed by fits and starts over the last three years. After dropping in 2013 and appearing to pick up in 2014, it should slip again in 2015 **(graph 1)**. First estimates put European Union biofuel requirements for transport at 14 Mtoe in 2015 (1.7% less than in 2014), yet in 2012 they amounted to 14.4 Mtoe. This drop (expressed in energy content rather than metric volume) can essentially be put down to the 2.4% drop in the biodiesel sector, whereas bioethanol appears to have increased by 0.8%.

The popularity of diesel engines in Europe is the main reason for biodiesel's status as the main biofuel used in transport. In 2015, the shares of the various forms of biofuel were:

- biodiesel: 79.4% (80% in 2014), i.e. 11 154 toe;
- bioethanol: 19.5% (19% in 2014) i.e. 2 743 ktoe (directly blended with petrol or previously converted into ETBE);
- biogas: 1.1% (1% in 2014) i.e. 150 ktoe.

Pure vegetable oil consumption has been amalgamated into the biodiesel consumption figure as its use as fuel is considered to be too marginal (<0.;%).

The EurObserv'ER survey also covers the consumption of biofuel certified as sustainable, and applies the criteria set by the European Renewable Energy Directive as the only biofuel to be considered

Tabl. n° 1

Biofuels consumption for transport in the European Union in 2014 (in toe)

Country	Bioethanol	Biodiesel**	Biogas fuel	Total consumption	% certified sustainable
France	414 111	2 541 235	0	2 955 346	100%
Germany	792 563	1 913 276	45 381	2 751 219	100%
United Kingdom	415 773	751 123	0	1 166 896	100%
Italy	8 383	1 055 174	0	1 063 557	100%
Spain	189 356	773 632	0	962 988	0%
Sweden	165 221	672 859	93 613	931 693	100%
Poland	133 658	557 681	0	691 339	100%
Austria	56 638	523 188	0	579 826	90%
Finland	69 897	364 636	1 462	435 995	100%
Belgium	36 502	373 342	0	409 844	100%
Netherland	128 332	246 561	0	374 893	100%
Czech Rep.	78 617	265 484	0	344 101	100%
Portugal	5 121	277 749	0	282 870	52%
Denmark*	0	228 886	0	228 886	100%
Hungary	84 480	110 451	0	194 932	100%
Romania	41 917	125 490	0	167 407	105%
Slovakia	30 954	105 164	0	136 118	100%
Greece	0	133 001	0	133 001	23%
Ireland	27 121	88 929	0	116 050	79%
Bulgaria	14 832	93 675	0	108 508	100%
Luxembourg	3 115	65 516	0	68 632	100%
Lithuania	5 547	57 556	0	63 104	97%
Slovenia	5 804	36 233	0	42 037	100%
Croatia	0	29 354	0	29 354	100%
Latvia	6 138	15 907	0	22 045	80%
Cyprus	0	13 343	0	13 343	100%
Estonia	5 804	0	0	5 804	0%
Malta	0	4 375	0	4 375	100%
Total EU 28	2 719 887	11 423 820	140 456	14 284 163	91%

** For Denmark, biodiesel and bioethanol is mixed due to confidentiality, so the figure contains both bioethanol and biodiesel.*
*** Vegetable oil included in the biodiesel figure.* ***Source: EurObserv'ER 2016.***

Bioethanol plant in Wanze, Belgium

Tabl. n° 2

Biofuels consumption for transport in the European Union in 2015 (in toe)*

Country	Bioethanol	Biodiesel***	Biogas fuel	Total consumption	% certified sustainable
France	433 839	2 562 445	0	2 996 284	100%
Germany	756 449	1 780 716	41 798	2 578 964	100%
Italy	21 926	1 131 175	0	1 153 101	100%
Sweden	136 270	849 181	105 933	1 091 384	100%
Spain	181 850	788 667	0	970 518	0%
United-Kingdom	405 020	520 270	0	925 289	100%
Poland	159 461	587 150	0	746 611	100%
Austria	57 771	444 498	0	502 268	94%
Finland	69 897	364 636	1 911	436 444	100%
Portugal	22 087	329 034	0	351 121	100%
Czech Rep.	78 617	265 484	0	344 101	100%
Netherland	141 875	178 514	0	320 388	100%
Belgium	37 692	229 426	0	267 118	100%
Hungary	87 015	122 653	0	209 668	98%
Denmark**	0	205 909	0	205 909	100%
Romania	41 917	125 490	0	167 407	100%
Greece	0	143 164	0	143 164	22%
Slovakia	30 954	105 164	0	136 118	100%
Ireland	30 426	97 575	0	128 001	100%
Bulgaria	14 832	93 675	0	108 508	100%
Luxembourg	7 203	73 856	0	81 059	100%
Lithuania	9 680	57 847	0	67 528	98%
Slovenia	5 804	36 233	0	42 037	100%
Croatia	0	29 354	0	29 354	100%
Latvia	6 449	17 675	0	24 123	100%
Cyprus	0	9 376	0	9 376	100%
Estonia	5 804	0	0	5 804	0%
Malta	0	4 818	0	4 818	83%
Total EU 28	2 742 837	11 153 985	149 642	14 046 464	92%

** Estimate. ** For Denmark, biodiesel and bioethanol is mixed due to confidentiality, so the figure contains both bioethanol and biodiesel.*
**** Vegetable oil included in the biodiesel figure. Note : the consumption data were not available at the time of our survey for Croatia, Latvia, Estonia, Slovenia, Bulgaria, Romania, Slovakia and Finland. By default, EurObserv'ER has decided to use the same figure as for 2014.* ***Source: EurObserv'ER 2016.***

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in national targets. Preliminary estimates suggest that certified consumption was about 12.9 Mtoe, or 92.1% of EU biofuel consumption. The main discrepancy is explained by Spain's failure to implement the legal framework in 2015 that would have officially certified its biofuel consumption. This anomaly should be removed in 2016, as a Royal Decree has been passed to bring Spain's biofuel consumption in line with the Renewable Energy Directive's sustainability requirements.

EUROPE SCALES DOWN AGRO-FUEL INCORPORATION

For nigh on 5 years, first-generation biofuel, derived from agricultural crops, has been at the centre of heated debate about factoring in GHG emissions caused by indirect land use change (ILUC). This highly controversial issue was subject to a lengthy legal process that culminated in the adoption of a new directive shifting European biofuel policy on 9 September.

The main effect of the new directive which amends both the directive on petrol and diesel fuel quality and the Renewable Energy Directive is to limit the energy share of biofuel produced from cereal, sugar and oilseed crops on farming land to 7% by 2017 in Member States' renewable energy consumption for transport. The overall 10% renewable energy target in transport is retained, while the remaining 3% can be obtained through electric mobility (see further on) or by using biofuel produced from specific feedstocks that benefit from double accounting (listed in Annex IX of the directive).

The directive also stipulates that prior to 6 April 2017 every Member State must set a national target for incorporating "advanced" biofuel. The list of eligible feedstocks is given in Annex IX part A, of the Directive and this time excludes used cooking oils and animal fats. The reference value for the target is 0.5 of a percentage point in terms of energy content of the energy share produced from renewable sources in all forms of transport by 2020. The target is illustrative as the Directive stipulates that the Member States may set a lower reference target for reasons such as limited availability on the market at attractive prices, technical or climate features specific to the national market, or the implementation of other policies geared to promoting energy efficiency in transport or using renewably-sourced electricity.

Electric mobility is strongly encouraged both for road vehicles whose electricity consumption is five times the energy content of the electricity contribution produced from renewable sources and for rail transport whose electricity consumption amounts to 2.5 times this energy.

Three generations of biofuel

Biofuel is a liquid or gaseous fuel used for transport and produced from biomass. Three types of biofuel are generally distinguished:

- *First-generation biofuel* ***(said to be "conventional") which includes bioethanol and biodiesel outputs from the conversion of food crops (rapeseed, soy, beets, cereals…). The category also includes the production of vegetable oil that can be used pure and directly by specific engines.***
  The production of biogas fuel (generally in the form of biomethane) obtained by the anaerobic digestion process followed by purification is a somewhat special category because it can be produced both from fermentable waste and energy and food crops.
- *Second-generation biofuel* ***– sectors totally devoted to energy that do not rely on agri-food crops (no ILUC effect). They offer better yields and are more environmentally-friendly in terms of GHG emissions because they recover all the plant ligno-cellulose contained in the plant cells. The raw materials range from straw, green waste (tree cuttings, etc.) or even fast-growing energy plants such as miscanthus. They enable alcohol to be produced and thus bioethanol. Additionally some of the processes produce biodiesel.***
- *Third-generation biofuel* ***which includes biofuel produced from algae (also known as algofuel) that present the advantage of not competing with food or energy crops (plants and forestry). Recovery is through an oil sector and thus produces biodiesel.***

LACK OF SCIENTIFIC CONSENSUS SURROUNDING THE ILUC EFFECT

Last March, when the political debate on the future of post-2020 biofuel sectors was particularly tense, the European Commission published the Globiom (Global Biosphere Management Model) Study, conducted by IIASA (International Institute for Applied Systems Analysis) and the consultant, Ecofys.

The study's conclusions confirm the impact of indirect land use change on biofuel's GHG emissions, but indicate that the ILUC effect, measured in grams of CO_2 per energy unit, is much higher in certain biodiesel production operations and lower in certain bioethanol production operations. Palm oil, which has caused deforestation in South-East Asia is singled out as presenting the gravest ILUC effects with a CO_2/MJ emission rate of 231g, followed by soy (150g/MJ), rapeseed (65g/MJ) and sunflower (63g/MJ). Bioethanol production is much lower-impact in this respect. Corn bioethanol is the least affected (14g/MJ), followed by sugar beet bioethanol (15g/MJ), sugar cane (17g/MJ) and wheat (34g/MJ). Advanced biofuels – not based on food crops – are hardly affected by land use change and in the case of short rotation or perennial crops actually display negative factors (-29 and -12g/MJ respectively).

The bioethanol industry has obviously welcomed the study. "Globiom confirms the findings of the International Food Policy Research Institute that European renewable ethanol has high net greenhouse gas savings compared to the petrol it replaces, and low risk of adverse land use change impacts", declared ePURE's Secretary-General, Robert Wright.

This contrasts with the opinion of the EBB's (European Biodiesel Board) Secretary-General, Raffaello Garofalo, who lambasted the study's conclusions as being opaque and unreliable, preferring to quote the study conducted by the California Air Resources Board (CARB), the agency involved in lifting the lid off the Volkswagen scandal, and which he feels is more accessible and credible. The CARB analysis finds that the ILUC effect of biodiesel, produced from rapeseed, is only 14.5g of CO_2/MJ, i.e. 4.5 times less than the Globiom study figure.

Incidentally, on the demand of Mr Garofalo, the European Commission's Vice President acknowledged in writing that the Globiom study does not meet the academic publication criteria for a peer-reviewed scientific journal. In the meantime, the Commission's experts are pursuing their investigations for preparing a new draft renewable energy directive that should be made public by the end of the year. Furthermore, Anna-Kaisa Itkonen, the Commission's spokesperson, has stated that "The Commission's work on gathering and analysis of the latest available scientific evidence and available research results on ILUC in relation to production of biofuels consumed in the EU is ongoing and is not limited to one study".

HVO biodiesel

The hydrogenation process has been patented and developed by Finland's Neste Oil, involving a catalytic reaction just as in the traditional process. Hydrogen rather than methanol is introduced to the oil as happens with the other types of biodiesel. The advantage of this technology is that it avoids the coproduction of glycerine, which so far has no local outlets. The technology also removes all the oxygen atoms, which enhances the final product's stability. Lastly, the reaction products are essentially alkanes, which ensure that higher cetane indices are obtained than with the other types of biodiesel.

NEWS FROM AROUND THE MAIN CONSUMER COUNTRIES

Tax boost for E10 in France

Sustainable Development Ministerial Statistical Department data for 2015, puts French biofuel consumption at 2 996 ktoe, which is a slight, 1.4% improvement on 2014. Nonetheless, biodiesel consumption remained more or less stable (rising by 0.8% or 2 562 ktoe), while in 2014 it increased by 10.8%. The reason for the difference is the rise in TGAP (the general tax on polluting activities) which rose to 7.7% on 1 January 2014 (7% for the petrol sector). The French system applies a TGAP rate that diminishes proportionally to the sustainable biofuel incorporation level in fuel. For example, a 7% incorporation rate of bioethanol in a petrol blend is not subject to TGAP.

We have also witnessed greater diversification in the incorporated forms of biodiesel. While consumption of FAME (Fatty Acid Methyl Ester) essentially rapeseed feedstock has slipped from 2 596 458 to 2 582 944 tonnes, consumption of synthetic renewable diesel (HVO biodiesel), increased from 98 832 to 140 861 tonnes, and that of WCOME (Waste Cooking Oil Methyl Ester) produced from frying oil increased from 61 828 to 92 335 tonnes. This contrasts with AFME (Animal Fat Methyl Ester) that decreased from 99 762 to 56 791 tonnes.

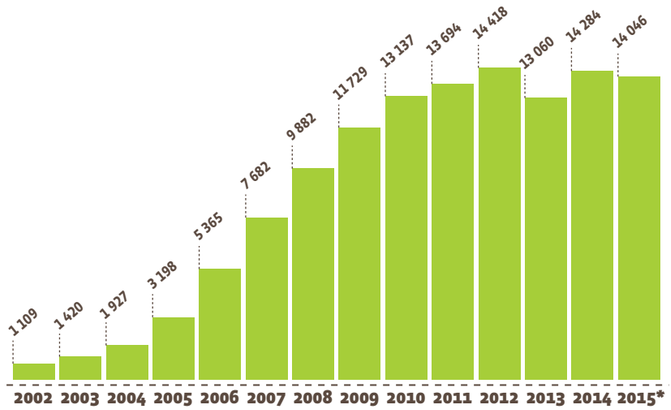
At the same time, bioethanol consumption has increased faster (by 4.8%, or 434 ktoe in 2015) because of the spread of service stations equipped with fuel 95-octane-E10 (containing 10% of bioethanol), aided by the 17 December 2015 Act, which promulgates a 2-cent tax cut compared to 95-octane and 98-octane petrol. The TICPE (domestic tax on consumption of energy products) will be lowered by 0.3 cents for E10, while the tax will be raised by 1.7 cents for 95-octane and 98-octane petrol, and by 3 cents for diesel. The SNPAA (National Union of Agricultural Alcohol Producers) reckons that the average pump price for E10 should be 5 cents lower than for 95-octane petrol at the same service station.

A change to the system tempers Germany's consumption

The Federal Environment Agency (UBA) claims that biofuel consumption plunged in 2015. In volume terms the drop

Graph. n° 1

Trend in biofuel (liquid and biogas) consumption ***for transport in the European Union (EU 28) in ktoe***



** Estimate.* ***Sources: Data from 2002 to 2013 (Eurostat 2016), data for 2014 to 2015 (EurObserv'ER 2016).***

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Biodiesel plant in Caparroso, Spain

JAVIER DOMPOS/TRAGSA

in biodiesel consumption was sharpest (6.8% down on 2014) falling to 2 013 000 tonnes, while bioethanol consumption also dropped (4.6% down on 2014) to 1 173 000 tonnes. When the figures are expressed as energy units, the drop in German consumption was about 2.6 Mtoe, which equates to 6.3%. The UBA also points out that the provisional energy content incorporation rate for 2015 is 4.9% as opposed to 5.3% in 2014. This contraction results from the new system introduced in Germany, which is based on a GHG emission reduction quota compared to reduction diesel and petrol fuels that indirectly stimulates biofuel use. The federal air pollution control act (Bundes-Immissionsschutzgesetz) of 2015 obliges the oil industry to reduce its fuel emissions by 3%. The level will be raised to 4.5% from 2017 onwards and to 7% from 2020 onwards. Accordingly certified biodiesel and bioethanol deliveries must indicate how much GHG has been avoided, and so to be more attractive, biofuel producers have every interest in improving their industrial processes to enhance their products' GHG efficiency.

Significant drop in the United Kingdom's biodiesel consumption

DECC, the Department of Energy and Climate Change, claims that biofuel consumption plummeted 17.1% from 1 767 million litres in 2014 to 1 464 million litres in 2015. The bioethanol share shrank 2.1% (from 812 to 795 million litres) while the biodiesel share fared worse, dropping by 30% (from 955 to 669 million litres). As for incorporated volumes, the bioethanol and biodiesel mix changed places in 2015, favouring the former. However in terms of energy content, biodiesel, whose energy density was higher, held on to its lead (520.3 ktoe for biodiesel and 405 ktoe for bioethanol). Turning to incorporation volume, bioethanol accounted for 4.6% of petrol fuels and 2.3% of the diesel total in 2015 with combined contribution of 3.2%, i.e. 0.7 of a percentage point less than in 2014. Since financial year 2013/4, the minimum biofuel incorporation percentage by volume has been set at 4.75% by the RTFO (Renewable Transport Fuel Obligation).

The UK's declining biodiesel consumption can be explained by the drop in palm oil imports, relating to the inclusion of the ILUC effect and also the high proportion of fuel that benefits from double accounting. According to Department for Transport RTFO statistics published in May 2016 for the period April 2015 – April 2016, 54% of the 915 million litres of biofuel meeting sustainability criteria, was made from waste/non-agricultural residue feedstock. The UK's biofuel policy will probably change through BREXIT, for it has always distanced itself from European biofuel policy, and used the RTFO system to avoid increasing its volume incorporation rate.

Spain will have sustainably-certified biofuel in 2016

Spain's IDAE, (Institute for Energy Diversification and Savings) reports that biofuel consumption rose by just 0.8% in 2015. In volume terms, the drop in bioethanol use (from 293 628 to 281 989 tonnes) was offset by the rise in biodiesel use from 875 416 to 892 430 tonnes. As for energy content, consumption reached 970 518 toe (0.8% more than in 2014)

In 2015, Spain failed to toe the Renewable Energy Directive line on sustainability criteria. In March 2015, the European Commission formally demanded that Spain conform to the directive, which it conceded by adopting a new Royal Decree on 30 April 2015, establishing their application from 1 January 2016 onwards. Another Royal Decree dated 4 December 2015 set out the biofuel incorporation roadmap through to 2020. The decree, which abandons sector-specific targets, imposes a 4.3% minimum energy content incorporation rate for biofuels in 2016. This rate will gradually rise to 5% in 2017 and to 8.5% in 2020.

Legal problems rein in Belgian biodiesel consumption

Biodiesel consumption in Belgium fell dramatically in 2015 from 422 462 to 259 611 tonnes because of a Constitutional Court order dated 7 May 2015 that annulled article 7 of the Act dated 17 July 2013 on biofuel incorporation in fossil fuel volumes. The result was the absence of any legislative framework for setting a sustainable biofuel incorporation rate in diesel. The Neste Oil petroleum group and producer of HVO biodiesel (hydrotreated vegetable oil) brought this appeal to the Constitutional Court on the grounds of discrimination by the Act. The Court ruled the difference in the law's treatment in the area of incorporation between producers of FAME (fatty acid methyl ester) and the other forms of sustainable biofuel as anti-constitutional. Early in December 2015 a draft bill was approved removing this difference between FAME and HVO biodiesel to provide legal certainty and achieve European renewable energy targets for transport.

Bioethanol consumption remained stable, and rose from 56 602 tonnes in 2014 to 58 447 tonnes in 2015 (i.e. 37 692 toe). A significant rise is expected from the beginning of 2017, because of a Belgian government decision taken in February 2016 to raise the bioethanol incorporation rate in petrol from 4 to 8.5% as from 1 January 2017. Thus, E10 petrol, which may contain up to 10% bioethanol (6% for biodiesel), will be launched and eventually replace the current 95-octane Super grade of petrol, once the European Commission has given its assent.

CONDITIONS FOR EUROPE'S FIRST-GENERATION BIOFUEL INDUSTRY WORSEN

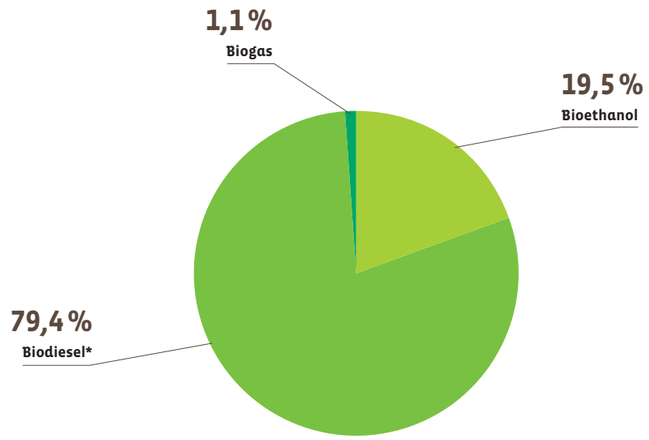
The year 2015 was tough for Europe's biofuel industry players. The European Union-wide drop in fuel consumption was compounded by a number of countries' refusals to increase their incorporation targets... and this limits market opportunities for the sector.

The situation is partly due to the price of ethanol which was held down at an extremely low level throughout the year and thus eroded profits. Nonetheless business picked up early in 2016, which improved the results of groups whose financial year runs from April to March. The price of ethanol (FOB Rotterdam) rose from its March 2015 level of € 450/m³ to € 511/m³ at the end of February 2016, with peaks of more than € 600/m³ at the end of 2015 when the supply position was somewhat tense.

CropEnergies, Germany's top bioethanol manufacturer saw its 2014/2015 sales drop from 827.2 to 722.6 million euros between 2015 and 2016. Yet its operating result improved (86.7 million euros in 2015-2016 compared to -11.2 million euros in 2014-2015) which gave it a positive net profit of 42.7 million euros. Yet this improvement will be short-lived. The temporary closure of the Wilton plant in the United Kingdom, will reduce the group's output from 1 056 000 m³ in 2014-2015 to 837 000 m³ in 2015-2016, and cause sales to drop by about 625–700 million euros in 2016-2017. In the bioethanol market

Graph. n° 2

Breakdown of total EU 2015 biofuel consumption in energetic content for transport by biofuel type*



** Including 0,2% of vegetable oil.* ***Source: EurObserv'ER 2016.***

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segment, many major players' results faltered in 2015 and the segment was rocked by Abengoa Group's financial difficulties as it struggled to stay afloat.

The end of 2015 and start of 2016 were also marked by turmoil at Abengoa caused by poor financial management. The group started insolvency proceedings on 25 November 2015, posting a 9 billion euro debt at the time. A few months later, the loss for FY 2015 was put at 1.1 billion euros. The creditors and the group reached an agreement on 9 March 2016 to avoid bankruptcy, whose terms – a 1.2 billion euros cash injection – were approved by the Board on 1 July 2016. The plan has yet to be endorsed by at least 75% of the group's shareholders and accompanied by an asset swap plan. Many competitors have their eyes set on the group's various production sites. For example, the group's Belgian bioethanol production plant (closed since 2011) will be sold to a consortium led by AlcoGroup. In Spain, the biodiesel production plant will be absorbed by the petroleum giant, Cespa. The break-up will also extend to the USA, where Green Plains, Kaapa Ethanol and BioUrja are lining up to take over Abengoa's American sites.It has hardly been plain sailing for the European biodiesel industry either, for the situation is tougher for producers from agricultural groups that use local agricultural feedstocks than for the oil groups that get their oil supplies on the global market.

The French agricultural group Avril, one of the European biodiesel leaders, issued a press release in April 2016, stating that from August onwards until the end of the year it would be scaling down the esterification activities of its French subsidiary Saipol, because of a slump in orders. Sales forecasts early in April 2016 were for 928 000 tonnes compared to 1.5 million tonnes at the same timeline in 2015. Thus, the sharp forced reduction in Avril's activity over the past two years in 2015, has led to the same biodiesel production level as that of Neste Oil the petroleum group for palm oil, with 2 million tonnes (1.5 million in France and 0.5 million abroad), as opposed to 3 million tonnes in 2013 and 2.7 million tonnes in 2014.

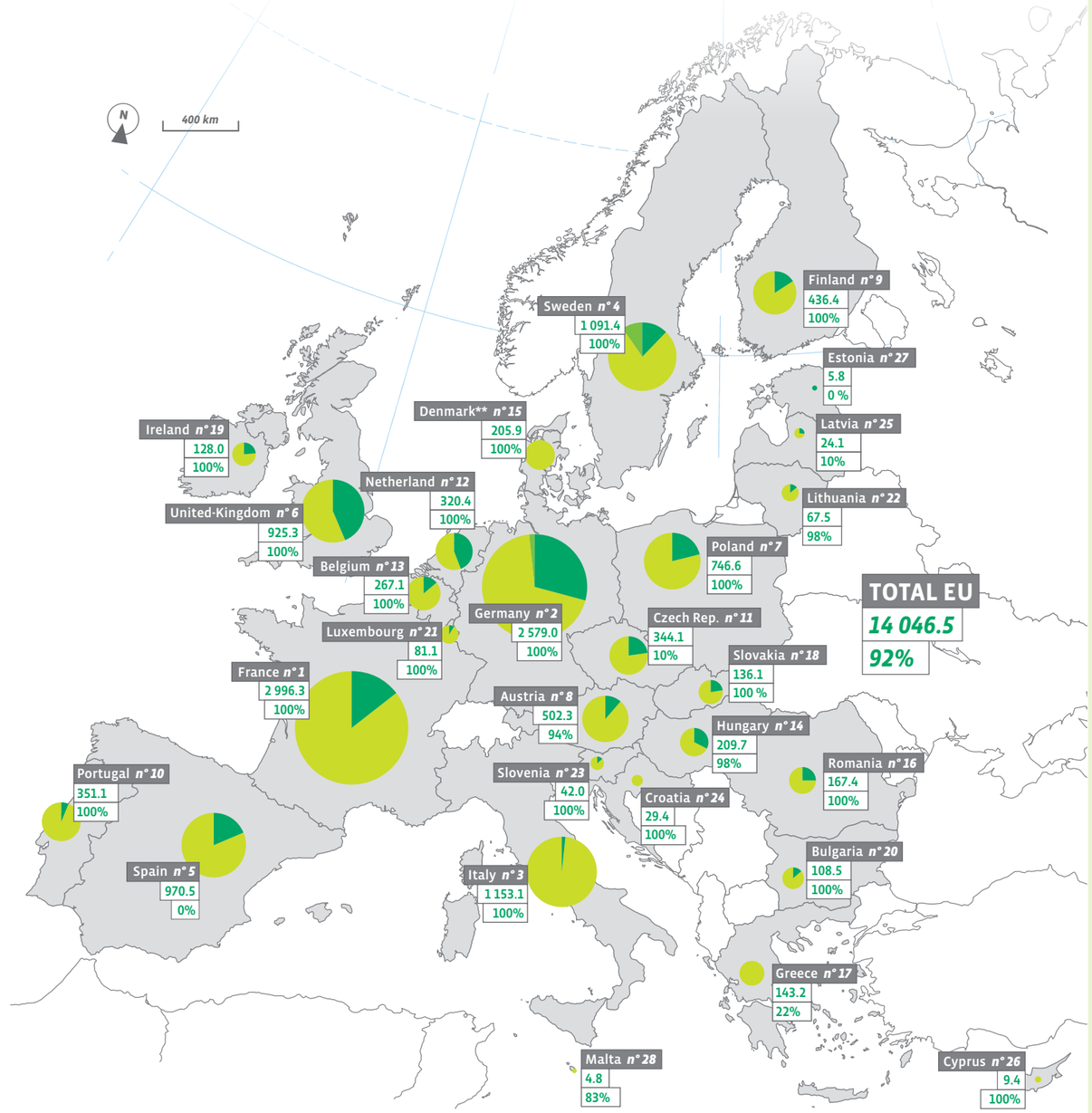
The group singles out a number of factors to account for its economic woes:

- over-capacity of the European biodiesel market, which in the context of the falling diesel oil price and the euro-dollar exchange rate encourages European oil companies to import esters that benefit from the double accounting mechanism;
- development of hydrotreated vegetable oils (HVO) on the European market for producing biodiesel, stimulated by the development of low-cost palm oil imports;
- declining competitiveness of French and European oilseed, as a result of low rapeseed yields within the European Union.

The Avril group's situation gives all the more reason for concern as the petroleum giant Total intends to convert its la Mède (Bouches-du-Rhône) refinery into a biodiesel production plant by spring 2017, which will push its annual output of HVO up from 20 000 to 500 000 tonnes – which equates to a little less than a quarter of the French market volume.

In contrast, its rival, Neste Oil, which produces HVO biodiesel from waste and resi-

Biofuel consumption for transport ***in the European Union in 2015* (ktoe) with respective shares of each sector***



Key

Country
331.8 *Biofuel consumption for transport (ktoe)*
100% *% certified sustainable*

Bioethanol *Biodiesel**** *Biogaz*

** Estimate. ** For Denmark, biodiesel and bioethanol is mixed due to confidentiality, so the figure contains both bioethanol and biodiesel. . *** Vegetable oil included in the biodiesel figure. Note : the consumption data were not available at the time of our survey for Croatia, Latvia, Estonia, Slovenia, Bulgaria, Romania, Slovakia and Finland. By default, EurObserv'ER has decided to use the same figure as for 2014.* ***Source: EurObserv'ER 2016.***

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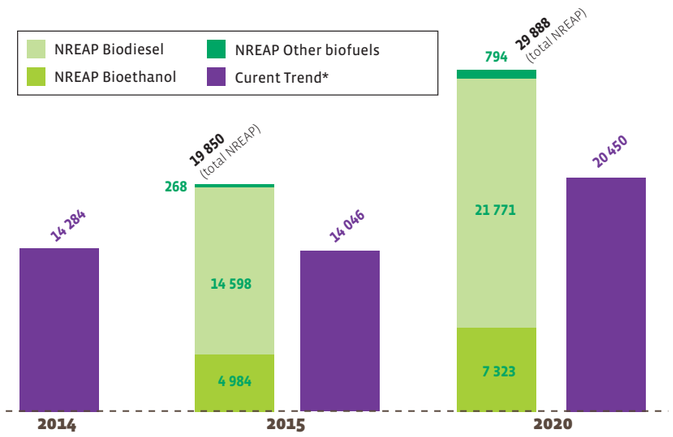
Magnus Weckstrom/Nestle Oil

due, is at a turning point with the launch of its "Renewable Energies" department. In 2014, the group posted an overall profit of 3 552 million euros, including 575 million from "renewable energy" products (i.e. 16% of the total) while in 2015, it posted a profit of 2 759 million euros, including 711 million euros from renewable energies (i.e. 26% of the total). In 2015, 70% of its sales of renewable products went to Europe and Asia and 30% to America.

Graph. n°3

Comparison of the current trend in biofuel consumption for transport against the NREAP (National Renewable Energy Action Plan) roadmaps (ktoe)



Subject to possible changes in line with the new European regulation. Our projection for 2020 doesn't include the consumption of the United-Kingdom.* ***Source: EurObserv'ER 2016.*

SECOND-GENERATION BIOFUEL DEPENDS ON REGULATORY DEVELOPMENTS

In this unsettled situation, "second-generation" (2G) biofuel types, produced from residue or lignocellulose matter of forest and farming origin are experiencing an upswing. To produce 2G biofuels, the biomass is converted by biochemical, thermochemical or hybrid methods.
Regulatory developments will govern the development of 2G biofuels but they appear to be on track, as 2015 was marked by the inauguration of commercial production plants all over the world. According to the IFP Energies Nouvelles Panorama 2015, total annual production capacity of these biofuel companies at the end of 2014 was 350 000 tonnes and 254 000 tonnes of production capacity were under construction.
In Europe, there are many pilot projects developing 2G, some of which were interrupted between 2014 and 2015.
In France, the Futurol project, started in 2008, should soon bear fruit. It aims to develop and market a comprehensive cellulosic ethanol production solution.
This ambitious project, partly funded by Bpifrance that involves 11 partners (including Tereos and Total) is structured around three stages: setting up a pilot site with annual production capacity of 180 000 litres, developing it into a prototype (3 500 000 litres p.a.) and since 2015 into an industrial plant (180 000 000 litres p.a.). Axens will market the process.
As explained in last year's barometer, the USA's 2G biofuel market has taken off faster than Europe's, with a number of commercially viable plants that have recently started up. A case in point is the DuPont (Iowa) plant which was commissioned at the end of October 2015. This biorefinery is described as the world's largest cellulosic ethanol production plant, with annual production capacity of 114 million litres. Feedstock will mainly be sourced from farming land close to the plant while most of its output will be distributed in California because the State has an ambitious GHG reduction policy.
Moreover the site will be used as a showcase to garner international investors keen to import these technologies. In fact DuPont has entered into a licence agreement with New Tianlong Industry in July 2015 to co-construct a cellulosic ethanol production plant in China.

THE FUTURE AWAITS DEFINITION AT MEMBER STATE LEVEL

The European Council has clarified European biofuel policy for 2020, by penning a new directive in September 2015. Many of the key Member States have clarified their roadmaps to 2020 and are set to achieve their 10% renewable energy target for transport.
However the United Kingdom's departure from the European Union will affect EurObserv'ER's biofuel consumption forecasts that are based on an effective biofuel incorporation rate of about 8% **(graph 3)**. The UK actually accounts for about 13% of fuel consumption in European Union transport (39.5 Mtoe of the 295.1 Mtoe in 2014).
While, from a regulatory stance, the issue of biofuel use in transport is regulated through to 2020, uncertainties remain for the post-2020 period and their significance through to 2030. The European Commission intends to present a new renewable energy directive for 2020–2030 to address this by the end of 2016, with a new common invariable European renewable energy target of 27% right across the Member States.
However the text will no longer mention targets for transport. During a European Parliament seminar held on 3 May, Marie Donnelly, Director for new and renewable sources of energy of the European Commission's Directorate General for Energy said: *"The continuation of the sub-target for the transport sector is something that has not been accepted and will not be continued in our proposal at the end of this year."* Abandoning a specific target in transport for after 2020 has drawn sharp criticism from biofuel industry representatives. In the absence of consensus between the Member States, each one will be free to apply a national ceiling in line with its energy policy and national interests. The draft directive should also clarify the factoring in (or otherwise) of the ILUC effect and the method used to calculate it. This decision will determine which type of biofuel will be furthered.
The future of the 7% cap on biofuel from subsistence farming is a key element of the new post-2020 policy framework. The European Commission is aware that the biofuel sector needs greater stability, as Marie Donnelly emphasized: *"It is important, I believe, that the legislative framework delivers a clear message that gives clarity to that sector,... For the moment we are in dialogue. We will continue with our modelling regarding the costs and implications (of dropping the 10% target)".* □

Sources:Umweltbundesamt UBA (Germany), SOeS (France), DECC (United Kingdom), Ministry of economic development (Italy), IDAE (Spain), POPIHN (Poland), Swedish Energy Agency, CBS statline (Netherlands), DGEG (portugal), University of Miskolc (Hungary), SPF Economy (Belgium), University of Eastern Finland, Ministry of Environment and Energy (Greece), Statistics Lithuania, SEAI (Ireland Republic), STATEC (Luxembourg), Ministry of Energy, Commerce, Industry and Tourism (Cyprus), ENS (Denmark), NSO (Malta), Eurostat.

The next barometer will deal with the heat pump sector

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