

# RE-EXAMINING EU BIOFUELS POLICY: A 2030 PERSPECTIVE



Institute for  
European  
Environmental  
Policy

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‘EU biofuel policy must reflect the reality that while biomass in principle can be renewed, the overall quantity sustainably available is finite and must be shared across an emerging bioeconomy.’

*David Baldock, Executive Director IEEP*

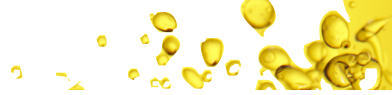


## **RE-EXAMINING EU BIOFUELS POLICY: A 2030 PERSPECTIVE**

**An IEEP discussion paper  
March 2014**

There is currently an important policy window that offers the opportunity to reshape EU biofuel and renewable energy policy more generally. This paper sets out a range of questions that now arise, some rather urgently, and proposes ways of realigning policy with the goal of supporting only environmentally responsible biofuel use. Biofuels remain only one part of the bioeconomy and the paper discusses policy approaches for the more efficient, sustainable and holistic management of Europe's bioresource base.

The paper builds on IEEP's own thinking, informed by 18 months of intensive dialogue with stakeholders under the IEEP Biofuel ExChange project.



## Introduction

Over the past decade, biofuels have moved from being a niche energy source in the European transport sector to being a significant source of road transport fuel. Europe has seen an increase in the use of biofuels by over 20 times between 2000 and 2011, with 14.4 Mtoe of biofuels being used by the transport sector within the EU in 2011<sup>1</sup>. This represents 16 per cent of all biomass used to deliver energy in the EU, with biomass overall representing 68 per cent of renewable energy used in Europe in 2011<sup>2</sup>.

Expansion in the use of biofuels has led to controversy regarding the environmental and social consequences of their use on such a large scale. Meanwhile, scientific and technical policy debates about whether biofuels deliver sufficient greenhouse gas (GHG) savings to warrant substantive support have intensified. EU policy has been instrumental in promoting much of the expansion in use, but has also sought, at least in part, to mitigate some of the potential negative impacts.

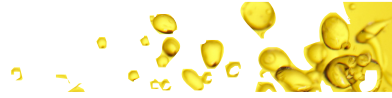
At present, the EU has a target to deliver 10 per cent of energy in transport from renewable sources by 2020<sup>3</sup> and separately to reduce the GHG lifecycle emissions of transport fuels by 6 per cent by 2020<sup>4</sup>. Both promote the expansion of biofuels. Over the past year, there have been intensive debates as to how best to address current failings in the policy mechanisms underpinning EU support. This has largely focused on how to ensure that GHG accounting takes proper consideration of the emissions from indirect land use change (ILUC) associated with biofuel feedstock production.

There is also recognition that EU policy has led to the adoption of predominantly conventional biofuels, ie those using primarily food or feed-based feedstocks reliant on land for their production. Moreover, technological and logistical advances towards biofuels using non land-based feedstocks such as waste and residues<sup>5</sup> have only materialised slowly. These issues are yet to be resolved, with proposed amendments to the relevant legislation currently stalled<sup>6</sup>.

On 22 January 2014, the European Commission set out its vision for EU climate and energy policy up to 2030<sup>7</sup>. Based on this Communication, the policies that have driven biofuel uptake and attempted to mitigate their consequences would be altered dramatically post 2020. Given the changing policy environment, it is a good moment to assess:

- what lessons can be learnt from the current biofuel and transport policy mix, what works and should be retained; and
- what policy measures are essential to enable an appropriate biofuels market to evolve and help deliver a low carbon European transport sector in the future?

Future policies need to be better informed in terms of both the opportunities and limits to the expansion of biofuel use in Europe. They will need both to address existing perverse outcomes and take forward emission reductions and market transformation.



## EU Climate and Biofuel Policy Post 2020

The European Commission's vision for a climate and energy framework post 2020 would rely on a high-level emission reduction target of 40 per cent by 2030. Beneath this would sit a binding, EU-wide target to deliver at least 27 per cent of Europe's energy needs from renewable sources. Unlike the present renewable energy target this would not be divided between Member States, with no binding national targets for renewable uptake foreseen. Instead, the Commission is proposing a new governance framework based on national plans for competitive, secure and sustainable energy<sup>8</sup>.

At present, support for biofuels originates from EU climate and energy policy. Within the Commission's Communication looking to 2030, there are three key statements that are critical when considering future policies to support and regulate biofuel use post 2020.

### *An improved biomass policy*

First, the Commission acknowledges that an *'improved biomass policy will [...] be necessary to maximise the resource efficient use of biomass in order to deliver robust and verifiable greenhouse gas savings and to allow for fair competition between the various uses of biomass resources in the construction sector, paper and pulp industries and biochemical and energy production'*. Such a policy would encompass *'sustainable use of land, the sustainable management of forests in line with the EU's forest strategy and address indirect land use effects as with biofuels'*. This hints at an opportunity to take a more strategic approach to bioenergy, in parallel to a new generation of renewable energy targets, potentially reconnecting biofuels to the wider resource efficiency debate.

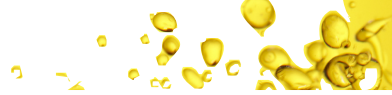
### *No more public support for biofuels from food crops*

The second statement confirms the intent to significantly alter the policy base for biofuel support post 2020. Within their vision the Commission states that biofuels produced from food-based feedstocks should not receive *'public support'* after 2020. This reflects a more widespread hardening of rhetoric regarding the use of food-based biofuels and builds on a previous statement in the Commission's proposal to amend existing policy on biofuels to address ILUC<sup>9</sup> *'[post 2020] biofuels which do not lead to substantial greenhouse gas savings (when emissions from indirect land-use change are included) and are produced from crops used for food and feed should not be subsidised'*. Importantly, the term *'public support'* is considered to extend beyond explicit subsidies for biofuel uptake to other policy mechanisms. This would potentially include policies promoting ie *'supporting'* their use to meet general EU targets for renewables and national support mechanisms including mandates and obligations. At the same time, it is clear that this proposed departure from current policies, while welcomed in the environmental community, will be criticised by those industrial and agricultural interests that benefit from current support regimes.

### *No continuation of a decarbonisation target for fuels*

Third, the Commission states that it *'does not think it appropriate to establish new targets for renewable energy or the greenhouse gas intensity of fuels used in the transport sector or any other sub-sector after 2020'*. This is a major change in policy. It would mean no future EU sub-target on renewable transport fuels. Furthermore, it would also see the end of targets within the Fuel Quality Directive (FQD) relating to the lifecycle GHG emissions of transport fuels. In essence this amounts to the wholesale scrapping of the current policy framework leading to biofuel promotion at EU level. Given the controversies, major political difficulties and pressure placed on the Commission from





governments and others regarding these policies, it is perhaps not surprising that a retreat in this area might be desired. Some aspects of it are clearly to be welcomed. With the loss of the current framework, however, there would be critical gaps in terms of the future regulation of low carbon transport fuels and the promotion of those biofuels that can make a genuine contribution towards decarbonising the EU transport sector.

In effect, the Commission Communication opens a major new chapter in the debate and sets out a high-level vision for Europe's climate and energy policy. No binding agreements have yet been made. The European Parliament has already offered a different perspective and the future vision for Europe's climate and energy policy is under discussion among Member States. The outcome is far from certain but it is fair to expect that current policy promoting biofuels will be changed significantly; while changes will focus on 2020 and beyond, there will be more immediate implications too. There is currently an opportunity to develop more sustainable approaches for the future.

## Reflections on the future of biofuels policy in the EU

Post 2020 a new generation of policies for biofuels and the lowering of overall emissions from the transport sector in the EU are needed.

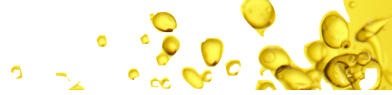
These should aim to deliver:

- a faster decarbonisation of the transport sector in Europe;
- a clearer and more appropriate role for those biofuels that are environmentally sustainable, without support for others; and
- the more efficient and sustainable use of Europe's limited supply of bioresources to deliver energy, transport and other uses within a more coherent framework.

To achieve this, a future policy framework must address several pressing requirements. Three core policy needs moving forward are discussed below.

### 1. Accelerated decarbonisation of transport

Decarbonisation of the transport sector has been relatively slow in recent years, despite progress in some areas. Beyond 2020, there is a continued need to quicken decarbonisation efforts to achieve the 60 per cent reduction in emissions by 2050 set out in the EU's Transport White Paper<sup>10</sup>. A range of sufficiently ambitious mechanisms to address emissions from the transport sector at different stages of the lifecycle would appear necessary to maintain momentum, particularly with the removal of a specific renewable energy target for transport after 2020. Some measures are indeed in place, such as the Directive on CO<sup>2</sup> emissions from cars, which is increasing the average energy efficiency of manufacturers' new car fleets. This addresses only one component of the problem, however; there is value in maintaining a parallel focus on the decarbonisation of fuels that are used by all vehicles, not only new ones.



Such action is more efficiently and effectively pursued at EU level than within individual countries because of the single European market. There is, therefore, a strong case for the continuation of some form of explicit decarbonisation target for transport fuels post 2020 as well as other measures such as support for the roll-out of an alternative fuels infrastructure<sup>11</sup> for Europe.

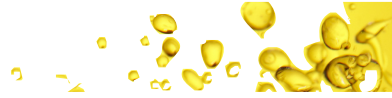
The EU currently has a transport fuel decarbonisation mechanism in place, in the form of Article 7a of the FQD. In principle, this provides a strong mechanism designed to:

- limit the use of the more GHG-intensive unconventional fossil fuels;
- reduce emissions along the supply chain of fossil fuels;
- promote the highest carbon saving biofuels;
- and promote other low carbon energy sources based on well-to-tank emissions<sup>12</sup>.

Progress in implementing the FQD has been relatively slow and it is unquestionably demanding in some respects. One criticism, which is taken seriously by the Commission, is that it creates obligations to implement some measures that are relatively expensive, in terms of cost per tonne of emissions avoided, such as advanced biofuels. In principle there are cheaper options that Member States can pursue on their own, such as encouraging fuel efficient driving and introducing charges on vehicles entering city centres at busy times. Nonetheless, these have drawbacks, including unpredictable outcomes, and on their own seem unlikely to be sufficient to bring about lower emissions on the timescale required to meet the 2050 objectives. Measures to reduce the carbon intensity of fuels are complementary to national action and need to be adopted throughout the EU to be effective.

Without the FQD the EU mechanisms for focussing development on low emission biofuels will be greatly weakened. As a consequence too much weight would fall on purely national measures, which are much less likely to provide confidence to an emerging capital intensive industry when compared to a clear long-term EU policy framework. It is, therefore, considered necessary to continue, strengthen and improve the current policy framework for decarbonising transport fuels at the European level.

As a minimum, post 2020, the FQD decarbonisation targets should remain in place and be strengthened. The rationale for EU action on decarbonisation within the FQD is compelling given the need to ensure an effective internal market for fuel supply and use. Under a future FQD regime, the increased use of high carbon saving biofuels would continue to be one means of decarbonising transport fuels. There is, therefore, a need to revisit how biofuel use is treated within the FQD to ensure that: those biofuels that are being promoted do deliver a high level of GHG reduction; and that mechanisms are strong enough to promote the 'best' fuels for supporting innovation in the sector. Such actions would necessarily include addressing the current limitations in approaches to GHG accounting frameworks relating to fossil fuels and ILUC associated with biofuel production.



## 2. Biofuel market transformation

It is now clear that current policy has failed to drive sufficient innovation in the biofuels sector. Conventional biofuels, based mainly on agricultural crops, continue to dominate the market. The advanced biofuel industry, often utilising wastes and residues, has not had the confidence to invest in new commercial plant on a sufficient scale<sup>13</sup>. Into the future, it remains necessary not only to find policy mechanisms to promote the most sustainable biofuels, but also, simultaneously, to ensure that their potential environmental consequences are assessed in an appropriate framework and fully understood.

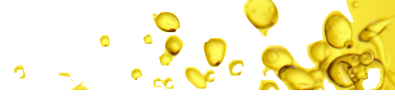
There is certainly a case for supporting the development of advanced biofuels from waste and residues. However, the mistakes of the past must be avoided. Support mechanisms should be confined to those feedstocks where public support is justified and sustainability standards are satisfied. This in turn requires effective research to analyse and understand the sustainability consequences of *inter alia* diverting the materials in question to the energy sector and to liquid fuels in particular. The options for different end uses of these materials need to be carefully assessed before specific uses are promoted over potentially viable alternatives by targeted policies. The biofuels debate has to date been characterised by a lack of research focusing on the consequences of different use patterns and in particular the scaling up of technologies, availability of sustainable feedstocks and environmental consequences of their use.

Expanding the role of sustainable, advanced biofuels requires:

- an intensive research effort to evaluate the resource base, relevant processes and consequences of expanding production and use, and to consider how best to regulate any unwanted consequences - the question of economic viability will be relevant, as will the role of 'support crops'<sup>14</sup>;
- a strong GHG accounting framework that properly considers the consequences of waste and residue use; and
- a new policy framework by which non-market ready advanced techniques can be brought to the fore.

On the question of policy approach there are currently proposals, which have support from sections of industry and some Member States, to set a volume (sub-)target reserved for advanced biofuels. This would, however, imply the continuation of a potentially problematic volume target framework and wide-scale blending of fuels. The quantities of advanced biofuels available are unlikely to be significant enough to deliver high levels of blending across all transport fuels, especially when other bioenergy resource needs are taken into account.

An alternative approach is to develop a package of measures that focus on the barriers to development. This could include aid at the EU and national level for a number of pioneering plants in a similar approach to that for new carbon capture and storage (CCS) facilities. This could be combined with aid for the development of sustainable feedstock markets where this was needed, promotional activities, etc. The prohibition on support for food-based biofuels, as proposed by the Commission, would form a further spur to investment in advanced biofuels assuming a wider emphasis on transport fuel decarbonisation.



### 3. Sustainable sourcing of biofuels – the question of standards

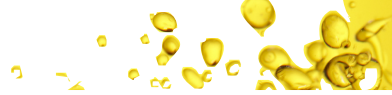
Despite the proposed withdrawal of support from the conventional biofuels sector, the legacy of existing targets and policies will remain. Even with a ban on support for food-based biofuels from 2020, there may well be continued use of conventional biofuels, given the growth of the industrial sector that provides them. This sector can be expected to call for continued support at the EU level and to place pressure on national governments to do the same. Moreover, conventional biofuel production may continue or perhaps expand even without EU policy support, particularly if oil prices rise and energy security concerns continue. As a consequence, biofuels from many different feedstocks and sources may well play a role in Europe's future transport fuel mix however they are defined and subdivided. It is, therefore, essential that future policy contains robust mechanisms for ensuring that land use and sustainability concerns are mitigated effectively in EU law.

As the feedstock base becomes more complex, encompassing a wider variety of materials from spatially disparate and diverse locations, regulatory clarity becomes ever more important. The relative sustainability of all feedstocks will vary depending on the conditions of production, energy conversion and use and a future EU system will need to capture this. A robust, clear and operational set of sustainability standards is important for the considerable range of industries involved, either directly in the biofuels and biomass production pathways or in sectors competing for the same resources. All face considerable uncertainties that changes in European policy will tend to aggravate. A stable set of standards that meet the requirement of the next few decades is overdue.

What is required of a new set of generally binding sustainability standards to 2030?

- The existing GHG saving requirements in the Renewable Energy Directive need to be retained and strengthened with the current GHG accounting frameworks reviewed and adjusted to take account of ILUC.
- The scope of the current standards needs to be extended to cover both land-based feedstocks and the future generation of waste and residue feedstocks.
- The scope of coverage needs to be significantly enlarged to consider biomass feedstocks rather than only biofuels. Currently sustainability requirements at EU level only apply to biofuel and bioliquid uses; however, many of the same wastes, residues, and other more novel feedstocks for advanced biofuels are also fundamental future resources for renewable heat and electricity generation and other industrial purposes. To ensure the sustainable use of a common resource base, future sustainability criteria for the management of biomass feedstocks would most efficiently be dealt with collectively. This would provide for a more holistic approach to their management and reintegrate biofuel into the broader debate on biomass use for energy and materials.
- Future sustainability mechanisms should be based on full lifecycle GHG emissions and promote new and emerging low carbon technologies. Revised standards, however, will also need to consider broader environmental issues including, *inter alia*, efficiency of resource use, biodiversity impacts and substitution impacts.





If the appropriate standards can be adopted then a further question to consider is how a future sustainability scheme might be applied. The existing regime for biofuels relies on a set of criteria largely delivered through voluntary schemes to ensure compliance. Some of the approaches suggested to deal with such questions in the solid biomass sector are more pragmatic, distinguishing feedstocks into broad categories of 'likely sustainable' and 'likely unsustainable'. This is not sufficiently precise for wider adoption. Considerable research effort is needed to analyse and understand more fully the criteria for best approaches to managing future sustainability. It is clear, however, that increasingly Europe will be relying on an integrated biomass resource base with a larger waste and residue component and standards will need to reflect this.

## A way forward: Sustainable and holistic management of Europe's bioresources

As it stands, the Commission's 2030 climate and energy vision will not provide sufficient impetus for decarbonisation in the transport sector. Additional measures will be needed beyond 2020 to ensure confidence in the sustainable biofuels sector, secure the efficient and sustainable use of biomass, and reduce emissions from the transport sector.

For biofuels to take on a future role in a low carbon Europe, the questions surrounding sustainability, resource use and relative GHG savings need to be addressed in a more cohesive way. This would provide a framework for improved measures to promote innovation in the sector and allow its contribution to Europe's long-term decarbonisation plans. Without effective assurances, biofuels will continue to be problematic and any policy support will not be justifiable.

As noted, there are EU level sustainability criteria for biofuels and bioliquids, but not for solid biomass. Such a distinction becomes less appropriate and even unworkable once advanced biofuels are brought to the market given an increasingly shared resource base. There is a need to recognise in the EU policy and legal framework the interconnectivity of the resource base deemed 'most sustainable' for both heat and electricity generation and advanced biofuels, ie wood waste and agricultural residues. Furthermore, as a growing literature points out, policy should promote the cascading use of bioresources rather than focusing only on single uses<sup>15</sup>. On this approach, energy applications often come later in the chain rather than at the beginning.

For 2020, in parallel to efforts to promote emission reductions and renewable energy, there is a logic for introducing an EU strategy that deals with Europe's diverse bioresources collectively, ie biomass used for energy and industrial materials, including bioplastics, pharmaceuticals and a wide range of novel products. Incentives to

use these materials specifically for biofuels need to be reframed into a wider bioresources agenda with the aim of ensuring that biomass is used to deliver the most effective emission savings and wider public benefits. Waste and residues in particular need to be used in an appropriate way to deliver Europe's long-term needs within sustainable limits.

Within the EU debate on renewable energy policy towards 2030, the European Commission is calling for an 'improved biomass policy'. We agree that the time has come to shape a new strategy and framework to address the application of the feedstocks used across the bioeconomy. This would complement and inform the delivery of climate and energy goals, which should of course continue. Parts of this framework, including *inter alia* accounting rules, sustainability standards and limitations on national support policy, would best be delivered as binding requirements at the EU level to ensure the effective functioning of the internal market. Such requirements would most logically be set out in a new 'Bioresources Directive'<sup>16</sup>. This would provide a more integrated set of objectives and principles for the efficient use of Europe's bioresources. It would set out a framework for the sustainable use of biomass that could then be applied across EU policy, complementing climate policy, resource efficiency goals and existing waste management requirements. It would be the place to embed strict sustainability criteria and lay down sensible hierarchies of biomass uses in line with their public benefit. Technical standards, for example for LCAs, might be located here too. This would allow EU law to reflect the reality that while biomass in principle can be renewed, the overall quantity that is sustainably available is finite and must be shared across an emerging bioeconomy.

## Notes

<sup>1</sup> Europe – A Bioenergy Outlook, 2013 – AEBIOM - <http://www.aebiom.org/blog/aebiom-statistical-report-2013>

<sup>2</sup> Energy, transport and environment indicators, 2013 edition, Eurostat pocketbook

<sup>3</sup> Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources [RED]

<sup>4</sup> Directive 2009/30/EC of the European Parliament and of the Council of 23 April 2009 amending Directive 98/70/EC as regards the specification of petrol, diesel and gas-oil and introducing a mechanism to monitor and reduce greenhouse gas emissions and amending Council Directive 1999/32/EC as regards the specification of fuel used by inland waterway vessels and repealing Directive 93/12/EEC [FQD]

<sup>5</sup> Waste and residues in this context would be considered to be material such as agricultural wastes, forest residues etc. For full details of the nature of wastes and residues that might be considered see IEEP factsheets identifying and summarising the sustainability of waste and residue use at [http://www.ieep.eu/assets/1173/IEEP\\_2013\\_The\\_sustainability\\_of\\_advanced\\_biofuels\\_in\\_the\\_EU.pdf](http://www.ieep.eu/assets/1173/IEEP_2013_The_sustainability_of_advanced_biofuels_in_the_EU.pdf)

<sup>6</sup> At the time of writing, proposals to amend the RED and FQD to take account of ILUC and promote advanced biofuels up to 2020 are stalled with an initial vote (12 December 2013) in the Council of Ministers ending in Member States being divided. For further IEEP analysis see <http://www.ieep.eu/minisites/pursuing-change-in-biofuels-policy-developing-alternatives/>

<sup>7</sup> European Commission (2014) A policy framework for climate and energy in the period from 2020 to 2030, COM(2014) 15 final, Brussels, 22.1.2014

<sup>8</sup> For detailed analysis by IEEP on the effectiveness of the proposed policy set for 2030 see 'The European Commission's Proposed 2030 Climate and Energy Framework – Some First Reflections'

<sup>9</sup> Proposal COM(2012) 595 final of 17.10.2012 for a Directive of the European Parliament and of the Council amending Directive 98/70/EC relating to the quality of petrol and diesel fuels and amending Directive 2009/28/EC on the promotion of the use of energy from renewable sources.

<sup>10</sup> The White Paper for the EU transport sector sets out the ambition for a 60 per cent GHG reduction in the transport sector to be met by 2050 compared to 1990 levels. European Commission White Paper COM(2011)144 of 28.3.2011, Roadmap to a Single European Transport Area – Towards a competitive and resource efficient transport system.

<sup>11</sup> A legislative proposal by the Commission (Proposal COM(2013)18 of 24.1.2013 for a Directive of the European Parliament and of the Council on the deployment of alternative fuels infrastructure) to this end may be adopted in the coming months, though likely in a significantly weakened form.

<sup>12</sup> Well-to-tank emissions are also sometimes referred to as fuel cycle emissions. These are the part of the total lifecycle emissions that are associated with a fuel's extraction, production and transport, and any other emissions generated prior to combustion.

<sup>13</sup> Wasted, Europe's Untapped Resource, an assessment of advanced biofuels from waste and residues, European Climate Foundation, IEEP et al, February 2014

<sup>14</sup> It is understood from industry sources that energy crops are needed to 'support', ie complement, the supply of wastes and residues to ensure the economic viability of a plant and the consistency of supply. This is because waste and residue production is not consistent spatially and temporally. Growing energy crops will trigger ILUC or other environmental consequences, unless grown in truly 'unused' land. There are serious questions as to the existence and extent of such land.

<sup>15</sup> A recent example of this is work undertaken by nova-Institute for the German Federal Environment Agency on 'Environmental Innovation Policy – Greater resource efficiency and climate protection through the sustainable material use of biomass' ([https://www.umweltbundesamt.de/sites/default/files/medien/378/publikationen/texte\\_03\\_2014\\_druckfassung\\_uba\\_stofflich\\_abschlussbericht\\_kurz\\_englisch.pdf](https://www.umweltbundesamt.de/sites/default/files/medien/378/publikationen/texte_03_2014_druckfassung_uba_stofflich_abschlussbericht_kurz_englisch.pdf))

<sup>16</sup> A similar idea was put forward by MEP Bas Eickhout (The Greens/EFA) calling for a Biomass Framework Directive in his 'Strategy for a bio-based economy' ([http://gef.eu/uploads/media/A\\_strategy\\_for\\_a\\_bio-based\\_economy.pdf](http://gef.eu/uploads/media/A_strategy_for_a_bio-based_economy.pdf))



## Further Reading

Allen, B, Kretschmer, B, Kieve, D, Smith, C and Baldock, D (2013) *Biofuels and ILUC – Q&A: Answers to common questions surrounding the ILUC debate*. Biofuel ExChange briefing No 5. Institute for European Environmental Policy (IEEP), London.

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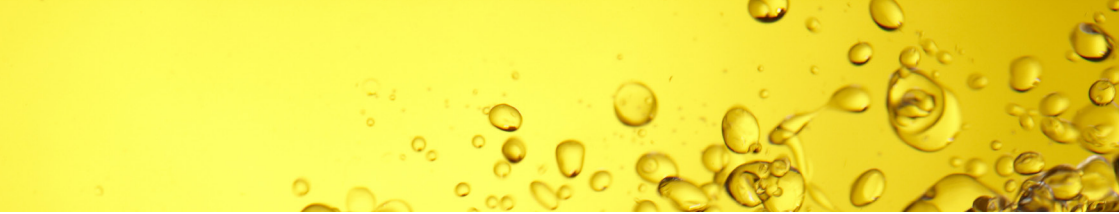
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