



Waste Framework Directive revision: European waste oil re-refining industry position

Full integration with the Circular Economy

GEIR is the European Waste Oil Re-refining Industry Association¹. GEIR member companies are active throughout Europe in supporting the collection of used oils and re-refining these back to valuable lubricant base oils. GEIR represents 80% of the waste oil re-refining industry in Europe.

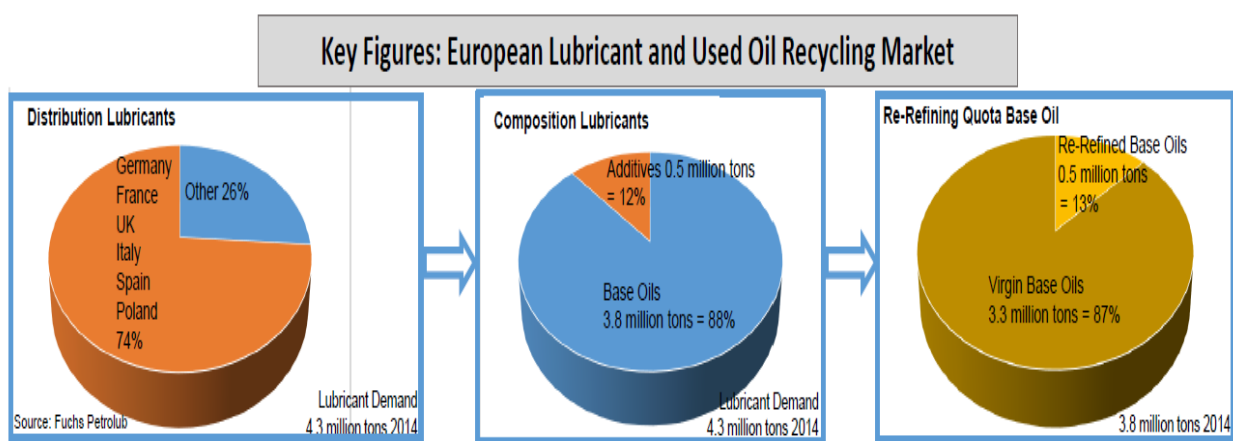
Used lubricating oils are the largest amount of liquid, non-aqueous hazardous waste in the world. The re-refining industry is entirely integrating the philosophy of circular economy in its daily business. Our activities aims at saving valuable raw material (crude oil) by re-refining used oil and turning it into a valuable raw material (base oil) for the lubricants market, the quality of which can be compared to that of virgin base oils.

Not to be confused with cooking oil, lubricating oils are used in every day mechanical processes. Applications range from automotive and transport to industrial production or escalators and lifts sectors. Lubricating oils are essential products that keep moving parts apart, reduce friction, carry away contaminants and debris, transfer heat and prevent corrosion for which the demand is high across Europe.

Making the waste hierarchy a reality – collect more, recycle more!

EU recycling target for waste oils – recycle more

The Waste Framework Directive is the principal EU legislation governing waste oil re-refining following the repeal of the Waste Oils Directive 74/439/EEC. In particular, waste oil re-refining is covered in the EU Waste Framework Directive 2008/98/EC by Article 3.18 on the definition of re-refining, Article 21 on waste oils and Article 4 on the waste hierarchy.



Source: GEIR, Dec. 2015

¹ GEIR, the [European Waste Oil Re-refining Industry Association](#) represents 14 waste oil re-refining companies in 7 Member States, i.e. Germany; Italy; Spain; Denmark; Greece; Portugal and Bulgaria. GEIR member companies are active throughout Europe in supporting the collection of used oils and the re-refining of waste oils back to valuable lubricant base oils. About 80 per cent of Europe's waste oil re-refining industry is represented by GEIR. GEIR is a sector group of UEIL, the Union of the European Lubricants Industry. UEIL is the strongest representative body for independent manufacturers of lubricants in Europe.



Waste oil is the largest liquid hazardous waste stream in Europe. Waste lubricating oils can be re-refined indefinitely. Currently, about 13% of all base oils consumed in the EU come from re-refined waste oils. The other 87% are virgin base oils produced from crude oil refining, mostly imported and produced by major global players. In this context, GEIR members representing independent producers and SMEs play a vital role in balancing the lubricant market in Europe whilst enhancing reuse of critical raw materials.

Despite the introduction of the waste hierarchy some years ago, its inadequate implementation across the Member States along with competition for energetic recovery (burning) of waste oils continue to be issues that prevent further re-refining of waste oils across Europe.

Diverging national implementation of EU waste legislation create different market conditions. Analyzing the situation across Europe, GEIR has identified a clear correlation between national recycling and collection targets and re-refining rates.

In some Member States, best-practice examples can be identified with national re-refining rates of up to 98% for collectable waste oils. Best practice examples include Greece (Laws 4042/2012, 2939/2001, 3854/2010 and Presidential Decree 82/2004), [Italy](#), [Spain](#) and Portugal.

GEIR believes that the introduction of collection and recycling targets for waste oils would better support the EU objectives towards a circular economy. EU recycling targets will enable the consistent and harmonised implementation of the waste hierarchy (art. 4 of Waste Framework Directive 2008/98/EC) whilst ensuring its strict application allowing for the reduction of per-capita waste generation in the EU, turning used oil as a hazardous waste to the value of a raw material.

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- **By 2020:**
 - ✓ An EU-wide target of **95% collection of waste oils** of the produced and collectable waste oil² in each Member State;
 - ✓ An EU-wide target of reaching at least **60% of re-refined waste oils** of the produced and collectable waste oil in all Member States (**target 1**);
- **By 2025:**
 - ✓ An EU-wide target of **100%** collection of waste oils of the produced and collectable waste oil in each Member State;
 - ✓ An EU-wide target of **85% of re-refined waste oils** of the produced and collectable waste oil in all Member States (**target 2**);
- Member States that have no waste oil regeneration facility shall be deemed to achieve these regeneration targets by exporting the collected waste oil from their country, in line with the requirements on transboundary shipments of hazardous waste set down in Regulation (EC) No 1013/2006, to another Member State.
- Member States that already achieve these targets at present, should keep their high rates of recycling.

² "Collectable waste oil" means waste oil that is capable of being collected, typically 50% of the annual lubricants consumption in the Member States"



By setting targets for the recycling of waste oils to base oils valuable European oil resources are conserved whilst the supply of base oil for Europe's industry/SMEs is guaranteed.

The collection targets suggested reflect the current situation in the Member States and what is technically feasible. With regard to the recycling targets proposed, they are based on what is technically and economically feasible. A stepped approach is recommended to accommodate the situation in the different Member States. Some Member States like Greece, Spain and Italy are re-refining between 85-100% of waste oils currently. Some other Member States do not have waste oil re-refining facilities and in order to reach the targets, they can export the waste oils to neighbouring countries which have facilities. Currently, existing waste oil re-refining plants have capacities to recycle more (+ 25%) and with achieving recycling targets outlined below, investments in 7 - 10 new plants would be economically feasible. Finally, the suggested targets should by no means serve as diminishing recycling in countries that perform well at present. On the contrary, such countries should keep their existing high recycling rates while others are brought up to a similar level.

Such targets can also be supported by economic instruments; however, economic instruments alone will not help to further used oil re-refining in Europe. In some countries economic instruments such as different types of tax reliefs on lubricants (e.g. in Finland, Spain or Greece) exist to support collection and management of waste oils, however, as taxation is national competence of EU Member States, it will depend on the Member State if they would be willing to pursue such measure or not. Therefore GEIR believes that EU-wide recycling targets would be the most efficient mean towards a circular economy.

Extended producer responsibility (EPR) schemes are already well-functioning for the waste oil industry. Usually, the EPR schemes are managed by means of a consortium which supports the collection, transportation and management of waste oils. Depending on the EPR scheme and national legislation in place, obligations by the consortium to send waste oil for re-refining rather than energy recovery (burning) also exist. Examples of well-functioning EPR schemes include [Italy](#), [Spain](#), Greece (Law 4042/2012 and Presidential Decree 82/2004, Official Gazette 64A/2.5.2004) and [Denmark](#).

Targets could also be supported by strict application of public procurement based on life cycle costing as outlined in the modernized EU Public Procurement Directive 2014/24/EU, as it encourages and reinforces the waste legislation, helps foster the development of the

n economy and boosts the circular economy.

Environmental benefits

The re-refining targets suggested by GEIR will contribute to the effective implementation of the waste hierarchy by EU Member States, thereby alleviating the environmental burden of primary production of lubricants.

Reduction in CO₂ emissions

The proposed recycling targets for waste oils would contribute to supporting the targets set by the European Union on CO₂ emission reductions. Waste oil re-refining contributes to CO₂ reductions associated with extracting and processing crude oil. With modern re-refining technologies, CO₂ emissions (kg of CO₂ per ton of base oil) can be reduced by more than 50% as compared to the conventional production of base oil.

More sustainable production



In comparison to the primary production of lubricants, re-refined waste oils save up to 30 % of energy in the entire operation. The European Commission outlined in its Environmental Action Programme for 2020 that the energy recovery (burning) should be limited to non-recyclable products. Modern re-refined base oils fulfill high standards on low sulphur, aromatic or phosphorus content and deliver a high viscosity index.

Avoid illegal dumping of used oils

Recycling targets translate into higher collection rates, which reduce the potentially severe risks for human health and the environment arising from illegal dumping in water or soil or uncontrolled energy recovery (energy recovery (burning)). Illegal dumping of used oils in water could have serious environmental impact – estimates³ indicate that 1 gallon of used oil dumped in water can contaminate up to 1 million gallons of clean water.

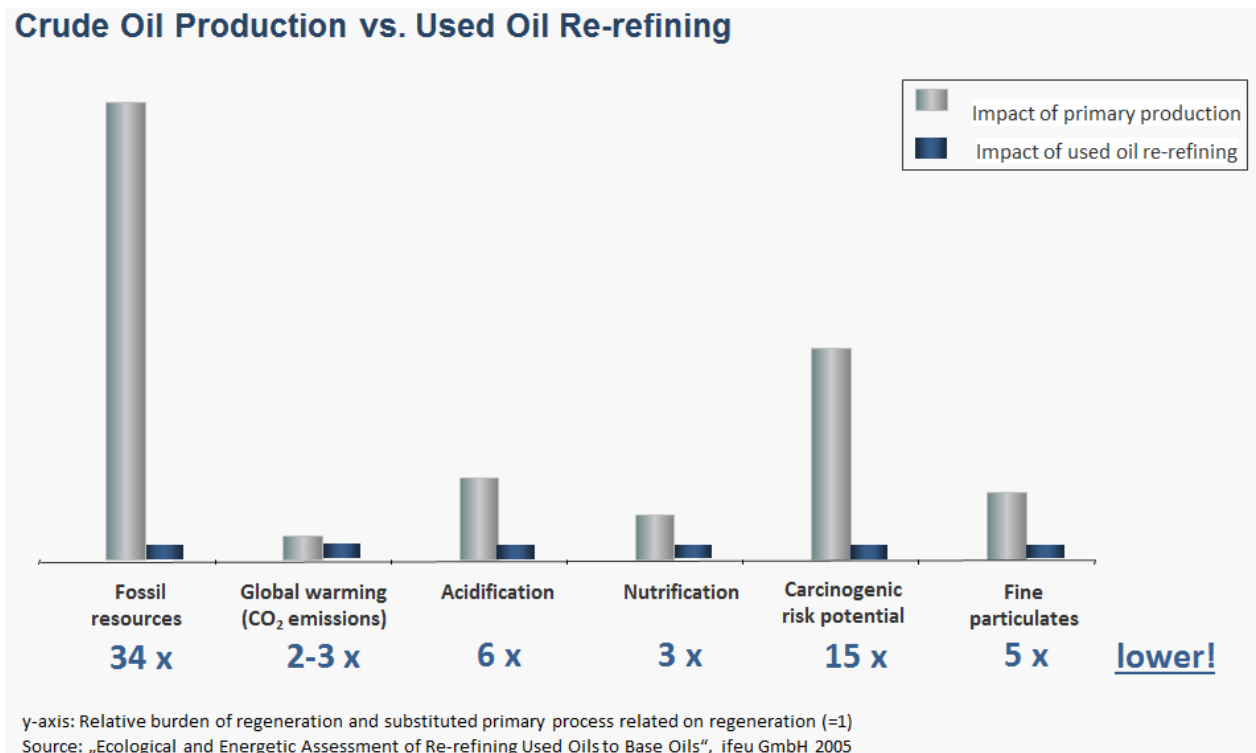
Similar REACH assessment than virgin oils

In the EU, used lubricating oils are classified as hazardous waste. Re-refining technologies are very sophisticated: they help removing dangerous substances and additives. As a result, produced base oils are non-hazardous meeting the same REACH criteria as for virgin oils.

Improved life-cycle analysis (LCA)

Based on commonly accepted LCA data such an up-to-date re-refining compared to the direct use as heavy fuel equivalent⁴ leads to the following positive environmental effects of waste oil re-refining (IFEU 2005)⁵:

Crude Oil Production vs. Used Oil Re-refining



³ www.youtube.com/watch?v=K5LyzTVT5ME

⁵ IFEU 2005: Ecological and energetic assessment of re-refining used oils to base oils: Substitution of primarily produced base oils including semi-synthetic and synthetic compounds; on behalf of GEIR; Heidelberg 2005; This calculation considers a proportion of 85 % API class I base oil and 15 % synthetic oil.



A good economic case

Given the importance of lubricants for the EU's industrial sector, recycling targets for waste oils can play a vital role towards a circular EU economy, while improving the global competitiveness of EU companies.

Recycling targets should help ensuring that material supply of lubricants continues to benefit from an already well-functioning secondary raw material market. Recycling targets which result in higher recycling rates could bring additional 800 thousand tons base oils to the sector, an increased turnover of more than 500 Mio Euros per year. Finally, they should allow maximizing the utilization of Europe's re-refineries capacity to the best economic benefit.

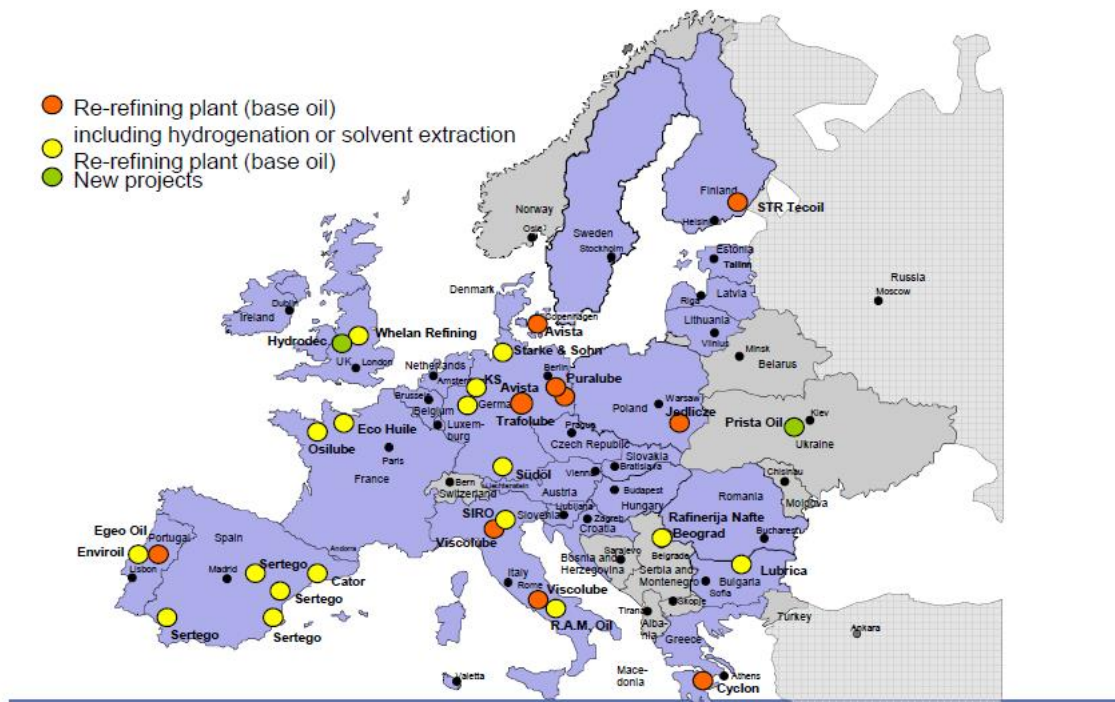
Creating 'green' jobs in Europe

Waste oil re-refining creates and secures green jobs and supports the green economy of resources in line with European Commission's upcoming Communication on job creation in the 'green economy' in 2014⁶.

While the sector currently employs directly in 28 plants about 1000-1200 people in re-refining and 2000-2500 people mostly local jobs in the collection of waste oil and base oil production, there is indication for scope for further employment and investments.



European Re-refining Landscape



Source: GEIR, Map of re-refineries in Europe, 2016

⁶ Commission Work Programme 2014, p. 7, http://ec.europa.eu/atwork/pdf/cwp_2014_annex_en.pdf



According to a recent estimate, the EU could realistically boost GDP and create between 1.4 and 2.8 million jobs through resource efficiency⁷. Recycling targets which help to increase the recycling rate of waste oils would, e.g. in Germany lead to investment opportunities of more than 50 million Euro and create additional jobs. Furthermore, the industry contributes to creating indirect jobs in a diversity of sectors, from accounting, quality control to cleaning and repair work.

Less dependence on third countries

Recycling targets for waste oils contribute to the reduction of crude oil imports from third countries, making the EU industry and society less vulnerable to high prices, market volatility and the political situation in supplying countries⁸.

As a matter of fact, 70% base oil can be recovered from waste lubricating oils. One liter of base oil can also be obtained by refining of approximately 100 liter of crude oil. Considering the two processes, re-refining of one barrel of waste oils saves about 100 barrels of crude oil imports leading to 700 Mio. – 1.500 Mio €/p.a. savings over the EU energy bill e. g. crude oil imports savings. Estimates⁹ indicate that recycling used oils can save up to 900 million barrels of crude oil annually. By way of example in Italy, 88% of used oils are re-refined, and 12% are combusted.

Maximizing utilization of re-refining capacities

Currently existing re-refining facilities have partially unused capacity, therefore, encouraging more waste oils to be sent for re-refining will boost the competitiveness of these facilities along with appropriate management of this hazardous waste stream.

Transboundary shipments for recycling purposes can help create a truly circular EU economy, as waste oil management and its obligations are viewed from an EU perspective. Already today, transboundary shipments from other Member States ensure that e.g. in Germany the existing facilities are used to an optimum capacity. Transboundary shipments are strictly regulated through the Basel Convention.

Investment opportunities for re-refining facilities exist in a number of EU regions and transboundary shipments can contribute to investment security. By way of example, the total current investment in Germany is about 220 million Euro, only re-refineries invest in Germany about 500 Euro per ton used oil, a significant figure for some markets.

⁷ Every percentage point reduction in resource use could therefore lead to up to 100,000 to 200,000 new jobs. Source: "Macroeconomic modelling of sustainable development and the links between the economy and the environment" (2011), GWS et al for the Commission. See also: "The opportunities to business of improving resource efficiency" (2013), AMEC et al for the Commission; and: "Resource Revolution: Meeting the world's energy, materials, food and water needs" (2011), McKinsey Global Institute.

⁸ See Roadmap Circular Economy Strategy 4/2015

http://ec.europa.eu/smartregulation/impact/planned_ia/docs/2015_env_065_env+032_circular_economy_en.pdf

⁹ <http://www.youtube.com/watch?v=ZivhWIM0Q8s>