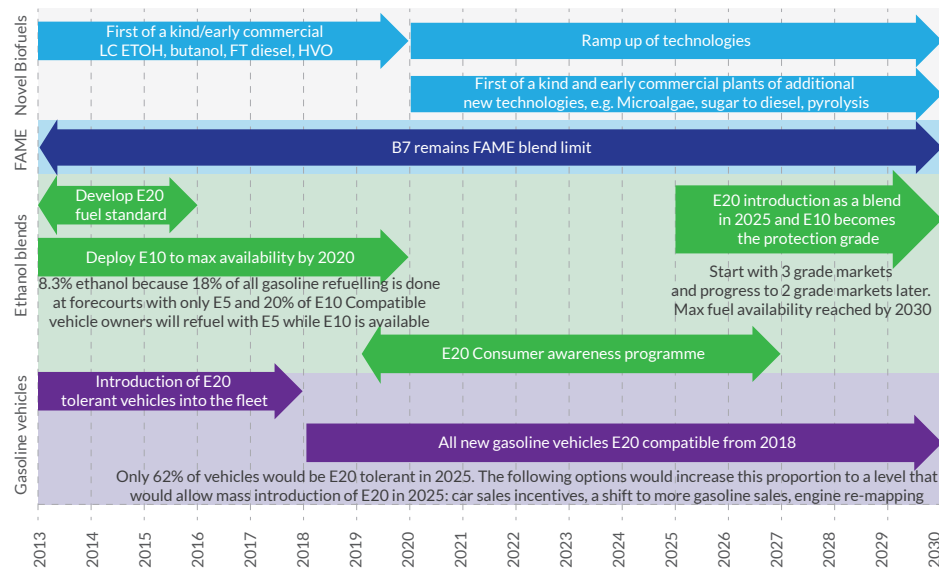


Figure 1
Proposed evolution of roadmap ingredients



A harmonised Auto-Fuel biofuel roadmap for the EU to 2030

26 November 2013

Introduction

The study shows that biofuels and vehicle efficiency will be vital to reducing greenhouse gas (GHG) emissions within Europe's transport sector, as liquid fuels will continue to play a significant role up to 2030 and beyond. Other alternative fuels - including gas, electricity and hydrogen - will also make an increasingly important contribution by 2030.

For the first time, this report provides a harmonised Auto-Fuel Biofuels Roadmap for the EU to 2030, which examines in detail what the fuels industry could achieve in terms of sustainable biofuels supply and how it will be integrated into the vehicle fleet by 2030. The study demonstrates that a range of biofuels could deliver:

- at least 8% of the EU's 2020 10% Renewable Fuels target, based on the current Renewable Energy Directive (RED)
- around 4% of GHG emissions savings required to meet the 6% Fuel Quality Directive target in 2020
- 12 - 15 % energy contribution to transport fuel and 8% reduction in GHG emissions of road transport by 2030

The study strongly supports the development of advanced biofuels. It shows that advanced biofuels could grow to at least 20% of the biofuels market in 2030. The potential for advanced biofuels could be far greater, especially beyond 2030, and a great deal of the feedstock could come from EU Member States.

However there is no 2030 policy framework for biofuels. There is also an urgent need for specifications for new biofuel blends, for policy to promote high quality advanced biofuels and compatible vehicles, and a framework that addresses biofuel sustainability issues. A concerted Auto-Fuel effort will be essential to deliver effective biofuelled-vehicle solutions.

The harmonised Auto-Fuel biofuel roadmap for the EU to 2030 was commissioned by a consortium of six automotive and fuel companies – Daimler, Honda, Neste Oil, OMV, Shell, and Volkswagen – with findings guided by wider stakeholder consultation across the European fuels, vehicles, consumer and public policy sectors.

E4tech is a globally operating strategic consultancy focused on sustainable energy with offices in London and Lausanne. Since 1997 we have helped industry, government, investors, and others understand the global opportunities and challenges of clean energy. Our team has a strong track record in providing high quality strategic business and policy advice backed up by sound technical knowledge.

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Meanwhile, EU policy on biofuels to 2020 and beyond remains highly uncertain. The implementation of EU biofuels policy is fragmented at Member State level, leading to ambiguity for fuel and vehicle industries, and ultimately policy-makers and consumers. Furthermore there is a lack of clarity over what the fuels industry can achieve in terms of sustainable biofuels supply and how this can best be integrated into the vehicle fleet. This study iden-

tifies an achievable and coherent pathway for both the fuels and auto industries.

Therefore, a biofuels roadmap is proposed that should deliver important GHG emissions savings by 2030. By implementing these measures we can put the EU on a trajectory to greater savings post-2030 and contribute to improving fuel quality, tail pipe emissions, green growth, and EU competitiveness.

The Biofuel Roadmap to 2030

The study undertook a structured analysis of options, leading to the following Roadmap proposal:

- Supply **FAME biodiesel** within the existing B7 blend wall, given vehicle cost and feedstock availability challenges associated with going beyond the blend wall.
- Aim for **maximum E10 roll-out by 2020, followed by the introduction of an E20 ethanol blend¹ in 2025**. The uptake of bioethanol is a key part of the roadmap. The main constraint is the ability of non-flex-fuel vehicles to accept variations in fuel density and oxygen content, rather than supply. E20 compatible vehicles will need to be developed and deployed more widely. However, going beyond the E20 blend wall is not deemed worthwhile for the mass market. A coordinated approach to informing consumers is also required.
- Focus on the **accelerated development of advanced biofuels based on lignocellulosic feedstocks and on drop-in biofuels, particu-**

larly diesel drop-ins including Hydrotreated Vegetable Oil (HVO). High quality drop-in biofuels will facilitate further fossil fuel replacement and GHG reductions without the additional cost of moving vehicle blend walls, infrastructure build up and consumer acceptance issues around technical compatibility.

Advanced biofuels based on lignocellulosic feedstocks, wastes, and residues; and other feedstocks such as algae, will make a small contribution by 2020 based on business-as-usual projections, but could represent at least 20% of the biofuel diesel and gasoline substitutes by 2030. However, with strong industry and policy support, availability could be doubled in the EU as the ramp up could be accelerated following demonstration of the technologies.

Considering important features such as the rate of vehicle fleet turnover, the number of storage tanks at refuelling stations, consumer impact, commercial readiness, and deployment trends of different fuels, a timeline for the roadmap is proposed as shown in Figure 1.

Key Auto-Fuel policy recommendations

There is a critical need for a joined-up Auto-Fuel vision to deliver Europe's transport energy and environmental goals - therefore a coherent and overarching 2030 road transport policy must be at the core of the EU's sustainable transport strategy.

The framework for decarbonising road transport should:

- Be based on **sound evidence of what could be achieved through fuel and vehicle measures**, taking into account factors such as evolving customer preferences towards new technologies, the importance of high quality fuels, efficiency and cost effectiveness.
- Include **supporting measures for the development of required fuel and vehicle technologies and related infrastructure**. This should include robust CEN standards to ensure high quality fuels.
- Be built on a **roadmap for biofuels deployment, such as shown in Figure 1**. This roadmap should be supported by an appropriate biofuels policy framework to ensure biofuels can be introduced in a timely and sustainable manner.
- Include a **policy framework for sustainable feedstocks**, with certification of biofuels at least in line with the existing Renewable Energy Directive feedstock sustainability requirements and refined as evidence on

sustainability evolves. Policy should encourage positive practices such as the production and use of biofuels based on waste and residues. The risks of negative land use impacts should be tackled by introducing policies that incentivise the use of biofuels with low Indirect Land Use Change (ILUC) risk and ILUC mitigation actions. Vulnerable land should be protected as a general rule.

Advanced biofuels should play a major role.

These biofuels can improve the quality of fuels, increase the fuel efficiency of engines, and decrease tail-pipe and CO₂ emissions. A core recommendation is to develop a cross-industry Roadmap to 2025 in line with an advanced biofuels target, which should include:

- **An advanced biofuels funding programme** building on the European Industrial Bioenergy Initiative and other programmes e.g. Structural Funds.
- **Additional initiatives at Member State level** to encourage deployment.
- Recognition that **drop-in fuels can perform better than ethanol and FAME**, and can improve the quality of fossil fuels they are blended with.
- A programme to **ensure motorists have timely, full and accurate information** to support their purchasing decisions.

¹ E20 is a 20% blend of bioethanol in fossil gasoline; other components (such as bio ethers) may comprise some of this blend to give an equivalent oxygenate level to bio ethanol.