

# 2020 renewable heat and transport targets inquiry

## Energy and Climate Change Committee

### 1. Introduction

The Climate Change Committee is conducting an inquiry exploring the main challenges with, and potential solutions to, meeting the UK's 2020 renewable energy targets for heat and transport. This paper provides the Low Carbon Vehicle Partnership's response to the call for evidence by the Committee.

The questions the Committee has requested evidence on are as follows:

- Does the Government have the right policies in place to meet its 2020 renewable energy targets in the heat and transport sectors, and if not where are policies missing or inadequate?
- How could a whole systems approach across the power, heat and transport sectors be utilised to ensure the 2020 targets are met?
- To what extent is electrification of heat and transport a viable approach up to 2020 and beyond?
- What are the challenges (regulatory, technological, behavioural, and others) to decarbonising heat and transport over the longer-term and how might these be overcome?

#### 1.1. Low Carbon Vehicle Partnership

The LowCVP, which was established in 2003, is a public-private partnership working to accelerate a sustainable shift to lower carbon vehicles and fuels and create opportunities for UK business. Around 200 organisations are engaged from diverse backgrounds including automotive and fuel supply chains, vehicle users, academics, environment groups and others. The Partnership became a not-for-profit company limited by guarantee in April 2009 and receives roughly half its funding as a direct grant from the Department for Transport.

#### 1.2. Transport Energy Task Force

In providing evidence the Low Carbon Vehicle Partnership (LowCVP) has drawn on the work of the Transport Energy Task Force. The Department for Transport (DfT) and the LowCVP established the Transport Energy Task Force as a mechanism for stakeholders to help the Government examine and formulate options for policy regarding transport energy. Specifically the Task Force was asked to consider how the EU 2020 greenhouse gas emissions reduction and renewable transport fuel targets should be reflected in UK policy

and determine how low carbon fuels can help reduce greenhouse gas emissions from UK transport in the period to 2030 and beyond.

A full copy of the Transport Energy Task Force final report is available from the LowCVP website. [Transport Energy Task Force - Final Report](#)

## **2. Question responses**

### **2.1. Does the Government have the right policies in place to meet its 2020 renewable energy targets in the heat and transport sectors, and if not where are policies missing or inadequate?**

The Transport Energy Task Force was established to consider how to decarbonise transport energy. However the group agreed that continuing effort on energy efficiency and demand management will also be important in decarbonising transport.

#### **Reducing greenhouse gas (GHG) emissions now and in the future**

Transport energy can and should make a significant contribution to GHG savings particularly in the longer term. The electrification of transport is the cornerstone of current policy to reduce carbon emissions from transport energy. The Task Force agreed that actions to ramp up the adoption of electric vehicles should be continued to increase energy efficiency and decarbonise transport energy. Because electrification will take time and may not be effective in all transport sectors, the Task Force agreed that there will be an opportunity for the foreseeable future for sustainable biofuels to play a role towards the achievement of deep reductions in carbon from transport.

#### **Focus on pathway to 2030 goals and align delivery of 2020 targets with that pathway**

The Renewable Energy and Fuel Quality Directive targets for 2020 are challenging and not necessarily consistent with the longer term GHG and sustainability aspirations. The Task Force agreed the pathway to delivery of GHG emission reductions in 2020 needs to be consistent with that for the UK's goals for 2030. The Task Force agreed that the 2030 goals should include a focus on securing the greatest possible cost-effective GHG emission reductions from transport energy, and providing greater certainty about the sustainability of all fuels.

#### **Adopt options which minimise risk and uncertainty**

The Task Force agreed that the deployment strategy for replacement fuels and blends must ensure that fuel supply remains fit-for-purpose for use with available vehicles and infrastructure. All options available contain risks and uncertainties, but the Task Force agreed that we should focus on adopting policy where risks can be mitigated and options exist to manage uncertainties. There were varying views on the best way forward and some members disagreed on whether the targets were achievable or desirable. However, if the UK Government wishes to meet the EU 2020 transport targets there are two measures which would probably be necessary to achieve them.

The Task Force agreed that displacing petrol with higher bioethanol levels (E10: bioethanol made from crops or wastes/residues, and blended in petrol above 5% and up to 10%) would probably be required to meet the RED target in the petrol market. The significant majority (91% in 2014) of petrol vehicles are currently compatible with E10 and the UK has three bioethanol facilities offering fuels with lower ILUC (Indirect Land Use Change) risks than crop biodiesel. There are risks around market acceptance, which can be mitigated by learning the lessons of roll-outs in other countries. Some members had concerns around locking in unsustainable crop based fuels, and they considered that E10 should not be introduced until there were further measures in place to ensure sustainability, mitigate food price impacts and support advanced biofuels.

The Task Force agreed that displacing diesel with high levels of waste and residue derived biodiesel (using B7 blend level) would be preferred over crop derived biodiesel in meeting the RED target in the diesel market. There are uncertainties regarding the availability of sufficient supply of waste and residues, and concerns around maintaining fuel quality. These would need to be monitored and actively pursued by industry.

### **Working Group 3**

The purpose of Working Group 3 was to consider the policy measures required to meet the EU Renewable Energy Directive transport fuels target for 2020 and how to provide confidence to investors and the wider stakeholder community in relation to renewable transport fuels over the time horizon to 2030.

Particular attention was given to how the Renewable Transport Fuels Obligation (RTFO) as the current key policy instrument in this arena could be adapted to both meet the GHG reduction goal for 2030 and provide investment certainty to 2030. Its merits and limitations were considered alongside other possible approaches.

Although a number of alternative mechanisms or approaches to the RTFO scheme were considered, there was broad support for retaining the RTFO and adapting it. For example, it can be reconfigured to deliver GHG targets relatively easily, and building on a current mechanism avoids the time delay and uncertainty of developing a new mechanism which might require primary legislation. The RTFO generally is seen as fit-for-purpose and well understood by industry although there are difficulties in adjusting it in ways designed to meet the dual RED and FQD targets in 2020. However, the group did not conclude whether the RTFO should remain an obligation-based scheme or move to a reward type scheme. Either way, additional policy instruments will be required, to create sufficient incentives for scaling up advanced biofuels, almost certainly including a (national) sub-target for 2030 (or thereabouts) or equivalent rewards. A re-tooled RTFO could include appropriate incentive mechanisms for advanced biofuels.

The Task Force noted that although the RED mandate, that 10% of transport fuel energy be renewable in 2020, we expected that the effective actual absolute level required to meet the legal target will be lower (around 7% including electricity) due to provisions in the directive for multiple-counting of electricity and waste derived fuels.

## **2.2. How could a whole systems approach across the power, heat and transport sectors be utilised to ensure the 2020 targets are met?**

A key issue identified by the Transport Energy Task Force related to the importance of wastes and residues and potential competition for these resources.

### **Wastes and residues**

Biofuels derived from appropriately certified wastes and residues were considered likely to be more sustainable. Sustainability criteria and effective monitoring would be needed, however, to ensure that only appropriate wastes and residues were used and at appropriate levels, in particular that their use did not result in negative displacement effects. It was noted that competition for waste and residue feedstocks in a number of sectors including other energy uses could be expected to increase, with consequences on availability, cost and the impact of their use for transport fuels. It would therefore be important for the Government to determine relative priorities for the use of such feedstocks as well as improving data capture on such feedstocks produced and consumed within the UK.

The ICCT study 'Wasted: Europe's untapped resource', commissioned by the European Climate Foundation, on EU availability of wastes and residues as biofuel feedstocks was considered; it indicated that there is enough resource sustainably available for up to 16% of EU transport fuel to be derived from waste in 2030. However, it was noted that not all of these feedstocks would be economic to collect, and that for production plants to be viable, feedstock would need to be concentrated geographically and that there may be growth in competition from other biomass users. It was suggested therefore that a more realistic figure for an achievable level of supply in 2030 might be half that number or even lower.

The Report 'Wasted: Europe's untapped resource' is available from the ICCT website <http://www.theicct.org/wasted-europes-untapped-resource-report>

Decarbonising heavy duty vehicles, such as trucks and buses, is seen as being particularly difficult. Gaseous fuels, such as methane and biomethane will have a key role to play in road transport in the time horizon to 2030. This will require a robust strategy to ensure that the potential well-to-wheel emissions benefits are realised. There is also a role for LPG and the intriguing potential of bio-LPG. The deployment of refuelling infrastructure will be a key issue. Key evidence relating to this was provided by Element Energy's report 'Transport Energy Infrastructure Roadmap to 2050' which is available from the LowCVP's website <http://www.lowcvp.org.uk/initiatives/transportroadmap/TransportEnergyInfrastructure.htm>

## **2.3. To what extent is electrification of heat and transport a viable approach up to 2020 and beyond?**

The Task Force agreed that actions to ramp up the adoption of electric vehicles should be continued to increase energy efficiency and decarbonise transport energy. Because

electrification will take time and may not be effective in all transport sectors, we agreed that there will be an opportunity for the foreseeable future for sustainable biofuels to play a role towards the achievement of deep reductions in carbon from transport.

The potential market adoption and contribution of alternatives, such as electric vehicles, were considered by Working Group 4 and Working Group 5.

#### **Working Group 4**

The purpose of Working Group 4 was to provide guidance to the main group on identifying customer acceptability issues and proposing ways to address these related to the fuels mix to 2020 and 2030. Consumer opinion and acceptance are particularly important when new fuels are introduced, especially if it is perceived that the most tangible effect may be reduced fuel efficiency, or risks surrounding vehicle operability.

#### **Niche and alternative markets to 2020**

The view from Working Group 4 was that that other than bioethanol and biodiesel, all other options for renewable fuel deployment, including electric vehicles, will remain niche in the period to 2020. Beyond 2020, electrification of the road transport (with continued clear supportive policy) would move to the mass market. Uncertainty over UK electric vehicle (EV) take-up, the ratio of battery electric vehicles (BEV) to Plug-in Hybrid Electric Vehicles (PHEV) in the EV mix and the renewable content of electricity supply remain and will impact the level of decarbonisation. Gaseous fuels such as hydrogen, biomethane and bio-LPG could play a role in the period to 2030 also.

Key evidence relating to this came from the Automotive Council's Fuel Roadmap. Details of the road map and the report can be found on the LowCVP website

<http://www.lowcvp.org.uk/initiatives/transportroadmap/TransportEnergy.htm> .

### **2.4. What are the challenges (regulatory, technological, behavioural, and others) to decarbonising heat and transport over the longer-term and how might these be overcome?**

For the longer term, the UK is currently well placed to move both petrol and diesel biofuels towards more advanced and sustainable supplies based upon the knowledge and investments of domestic producers.

There was support for consistent sustainability definitions across all energy sectors which use biomass and we considered that the UK is well-placed to continue to lead this debate.

#### **Become progressively more sustainable**

The Task Force agreed the need for the UK to work towards and to champion a robust and consistent definition of 'sustainability' which is stable and evolves predictably over time. A risk-based approach may enable progress to be made as the definitions and systems are better understood and developed to identify feedstocks from local areas or specific sites which are demonstrably at low or no risk of causing ILUC or competition with food

production. This should be introduced as soon as possible post-2020. The Task Force agreed that until such a sustainability system can be assured, an appropriate crop cap combined with a minimum GHG saving threshold could be used to limit potentially unsustainable crop-based biofuels. There were a range of views on what level at which a crop cap should be set. The report includes a range of scenarios and the potential associated implications for complying with the EU 2020 targets, including scenarios without increased crop-based fuels.

### **Build on the current position to create UK success and deliver 2030 objectives**

The Task Force agree that the UK should invest in sustainable advanced fuels to deliver increased energy security, industrial growth, skills and jobs, and that there are a number of routes to achieve this objective. Investment in completely new facilities is one pathway and extending incentive mechanisms to sectors such as aviation and maritime could widen the pool of potential investors. There are also opportunities to build on existing investments such as adding advanced capacity to the current UK ethanol industry that could offer a more cost-effective solution.

The Task Force agreed that the commercialisation of sustainable advanced biofuels should be a priority for meeting 2030 goals, and that mobilising investment will be vital to achieving this. Long-term confidence is required to stimulate this investment. The Task Force agreed that the adoption of a target for sustainable advanced biofuels would contribute to this goal, but that additional complementary policies such as fiscal and capital support may be needed to accelerate commercialisation.

## **3. Conclusions**

In recent years progress in reducing the environmental impact and improving the sustainability of transport fuels, and the growth potential that comes from this process in the UK, has stalled. The Transport Energy Task Force in its deliberations has come to the conclusion this need not be the case. Transport fuels can significantly reduce greenhouse gas emissions, improve sustainability and offer growth opportunities in the UK, based on the findings set out below.

**The Task Force has set out a package of recommendations which, if implemented, would allow the UK to meet EU 2020 GHG reduction and renewable transport fuel targets and help reduce GHG from UK transport and promote growth in the period to 2030 and beyond.**

### **Findings & recommendations**

- Transport energy can and should make a significant contribution to GHG savings both now and in the long-term.
- Climate change mitigation should be the primary focus of policy for transport fuels.
- The UK should also seek to secure economic benefits from developing the market for advanced fuels in terms of skills, intellectual property, employment and inward investment.

- 'Advanced' fuels are those using non-conventional technologies that can convert non-food-crop biomass into biofuel. They are not inherently sustainable, therefore measures are required to ensure their sustainability, including the delivery of substantive GHG savings even when ILUC is included.
- The group recognised that ILUC and sustainability issues needed to be addressed. An appropriate definition of sustainability should include competition for land for production of food and fuels. This will require assessment at a project or regional level.
- Biofuels can be sustainable with careful application and auditing of sustainability monitoring measures.
- The deployment strategy for replacement fuels and blends must ensure that fuel supply is to internationally agreed specifications and remains fit-for-purpose for use with available vehicles and infrastructure.

### Fuel options

- Electrification of transportation is a key aspect of current government policy to reduce carbon emissions from transport energy and should be supported, but appears unlikely to be effective in all transport sectors and will take considerable time to fully deploy.
- Liquid transport fuels will still be the dominant form of transport energy in 2030. There is an opportunity in the foreseeable future for sustainable biofuels to decarbonise liquid fuels.
- Biofuels are a viable option to provide carbon savings to 2030. However, due to the unknowns over this period, other sectors may be in a better position to deliver these carbon savings – and careful assessment should be carried out as to whether this is the case.
- Advanced fuels are being developed and offer the opportunity of sustainable drop-in fuels in the future. These fuels will be in limited supply globally before 2020 and would make an advanced fuels target above 0.5% unlikely to be achieved by 2020, though there may be greater scope to 2030.
- Wastes were considered to be a lower ILUC and sustainability risk feedstock than land-using feedstocks. However there are risks relating to the availability of waste feedstocks due to potential future levels of demand.
- The sustainability of land-using feedstocks can vary greatly, but some land-using feedstocks are lower risk.
- **Recommendation: If land-using feedstocks are to be widely supported then a robust and effective mechanism to ensure sustainability would be required.**

### Existing policy framework

- The RED mandates that 10% of transport fuel should be renewable in 2020. However we expect that the effective level will be lower (around 7% including electricity) due to multiple-counting of electricity and wastes.

- If targets are increased under the current RTFO to meet the RED target, central scenarios developed in the Task Force indicate that suppliers would meet their obligations with a significant increase in crop-based biodiesel and the ILUC implications that brings.
- Biofuel supply volumes sufficient to meet the RED target are not expected to meet all of the 6% reduction in carbon intensity of transport fuel by 2020 as required by the FQD.
- **Recommendation: If the FQD is to be met then it will require additional upstream measures.**
- **Recommendation: If the government wishes to avoid a significant increase in crop-based biodiesel, it is likely that a crop cap would need to be introduced.**
- **Recommendation: If the UK decides to introduce E10 as part of a strategy to meet the RED target, an early roll-out with government support may lead to higher penetration levels and greater chance of success in meeting the targets in 2020.**

### Investment Certainty

- Investment certainty is predicated on having reasonably clear demand for the product. There are many factors which affect this investment confidence but there are no quick fixes and confidence will need to be rebuilt with predictable long term policies.
- Sustainability of individual feedstocks and supply chains needs to be as clear as possible.
- First generation biofuel plants in the UK offer economic and environmental benefits, and may provide a cost-effective route to securing domestic production of advanced biofuels.
- There was broad support for the principle of moving towards a policy for 2030 which was based on maximising GHG emission reductions, and retaining the RTFO as the principal policy mechanism.
- **Recommendation: The group called for a robust definition of sustainability for relevant feedstocks to be prioritised at EU level, with the UK applying the framework available to best national advantage.**
- **Recommendation: If investment for domestic production is to be secured, advanced biofuels will require more than a sub-target, including capital and fiscal support. Opportunities to build on existing investments in ‘first generation’ plants should be explored alongside new-build facilities.**
- **Recommendation: To ensure policy is effective there needs to be a consistent public policy approach to incentivising feedstocks for use across the economy including the heat and power sector.**

### Consumer Acceptance

- The coordination of the fuels roadmap with the vehicle technology and automotive roadmaps is critical to ensuring that compatible vehicles and fuels come to market concurrently in order to optimise consumer uptake and acceptance.
- The deployment strategy for replacement fuels and blends must ensure that fuel supply remains fit for purpose for use with available vehicles and infrastructure.
- Of the proposed measures to comply with the RED renewable transport fuel target in 2020, only the introduction of E10 represents a new fuel grade.
- **Recommendation: A review of fuel taxation to better reflect carbon impact and energy efficiency could provide consumers with a robust rationale for duty rates and encourage the uptake of lower carbon fuels.**
- **Recommendation: If a new grade such as E10 is introduced then a cross-industry group, with DfT and LowCVP involvement, should be formed as soon as possible to develop a communications plan and materials.**

### Alternative Fuels

- An advanced fuels sub-target should be included in the RTFO, provided a clear definition of advanced fuels can be agreed, and further work is undertaken to establish how much fuel could be available for use in the UK by 2020. A sub-target should extend to 2030 to provide investors with a signal that the UK wishes to drive investment into these technologies.
- A clear and consistent classification framework, defining all fuels and technical terms, is critical when considering new fuels.
- There are promising fuels derived from non-biogenic carbon sources. However, like any new feedstock these carry sustainability risks, which will necessarily centre on environmental factors. Sustainability in terms of feedstock availability, cost and technology readiness levels will also need to be considered.
- **Recommendation: It will be crucial to define the policy goal of the RTFO if extending to encompass new fuels.**
- **Recommendation: The group recommends that further work is carried out to assess the sustainability risks of new fuels and to propose a policy framework as appropriate.**

### Gaseous Fuels

Gaseous fuels, such as hydrogen, methane and biomethane, and LPG and bio-LPG will have a key role to play in road transport in the time horizon to 2030.

- This will require a robust strategy to ensure that the potential well-to-wheel emissions benefits are realised.

## Electrification

The Transport Energy Task Force focused primarily on the liquid fuel sector challenges and acknowledged the vital role increasing electrification must play in the long-term decarbonisation of transport. A range of LowCVP members have (outside the task force) indicated some of the challenges of the electrification agenda which are highlighted below

- The support for the ULEV and Plug-in vehicle market must be maintained over the long-term in order to meet the aggressive uptake scenarios required to meet the carbon targets.
- Closer coordination between the energy supply, distribution and consumer market and the automotive and transport sector is required to plan the most cost-effective infrastructure and investment pathways for large scale electrification.
- A more robust approach to assessing the total energy use and carbon impact of vehicle use is required as the current CO<sub>2</sub> regulation ignores upstream carbon emissions.
- The effective engagement of consumers and users of vehicles through accessible information and education is essential to help encourage uptake of new but more complex vehicle choices and to encourage efficient transport usage patterns.

**The LowCVP and its members are actively working in all these areas and would be very pleased to present to, and work in collaboration with, the Energy and Climate Change committee to continue to develop robust policies for the decarbonisation of UK road transport.**