

Transport Energy Task Force

Options for transport energy policy to 2030

Prepared by the Members of the
Transport Energy Task Force

FINAL REPORT IN SUMMARY

March 2015



Foreword



I have long believed that there is no single solution to climate change, and that reducing greenhouse gas emissions from fuels would be a necessary part of any solution, irrespective of the progress towards fuel efficiency and electrification of transport. The historical lack of consensus around biofuel policy has been disappointing, and while we don't have full consensus, the Task Force has re-shaped the conversation, creating a framework for the necessary political decision-making.

There is now a need for political leadership, to capture the momentum and alignment created by the Task Force. My personal view is that providing a robust and long-term route for ensuring the sustainability of all transport energy including biofuels is an essential next step. Without this the inevitable contradictions and disagreements about how to meet the shorter-term 2020 targets will re-emerge. It is also necessary to create a positive investment environment, by ensuring appropriate rewards are provided to existing operators, as well as those who will be needed to deliver future sustainable advanced biofuels.

The Task Force is an excellent example of open policy making, engaging a large and diverse group of stakeholders. It has been a pleasure to work with the Task Force, the staff from the Department for Transport and the Low Carbon Vehicle Partnership. They have all listened generously to the views of others, while communicating the needs of their own communities with clarity, moving beyond the simple rhetoric of advocacy. As a senior participant from Brussels commented, the constructive tone of the debate on biofuels, even when there was disagreement, was very unusual in Europe.

Chris Mottershead

Membership

The Task Force was chaired by Chris Mottershead, Vice Principal, King's College London, with support from the vice-chairs: Rob Wakely, Head of Low Carbon Fuels (DfT) and Andy Eastlake, Managing Director (LowCVP).

The Task Force was organised around five working groups. Chairs of these groups were:

Ausilio Bauen - E4Tech (WG 1); Chris Mottershead - Kings College London (WG 2); David Baldock - Institute for European Environmental Policy (WG 3); Rob Wakely - DfT (WG 4); Clare Wenner - Renewable Energy Association (WG 5).

The membership of the Task Force consisted of:

Aaron Berry - Department for Transport	James Beard - WWF
Adam Baisley - Olleco	James Mills - National Farmers Union
Adel Pishneshin - Jaguar Land Rover	Jay Parmar - BVRLA
Andrea Tyrrell - Vivergo	Jeremy Tomkinson - National Non-Food Crops Centre
Andrew Owens - Greenergy Fuels Ltd	Jeremy Walton - ASDA
Angel Alberdi - EWABA	Jerry Burton - Tesco
Angela Bowden - SCOPA	Jo Howes - BP Oil UK Ltd
Anja Hazebrook - Vivergo	Joe Platt - MBP Group
Baden Gowrie-Smith - CNG Fuels	John Baldwin - CNG Services Ltd
Ben Allen - Institute for European Environmental Policy	John Webb - Lex Vehicle Leasing
Charlotte Morton - Anaerobic Digestion and Biogas Association	Jonathan Murray - LowCVP
Chris Biggs – Sainsbury's	Keeley Bignal - Department for Transport
Chris Chandler - Lex Vehicle Leasing	Keith Bushell - Airbus
Chris Hunt - UK Petroleum Industry Association	Keith James - WRAP
Chris Malins - International Council on Clean Transportation	Kenneth Richter - Friends of the Earth
Chris Patience - AA	Konstanze Scharring - Society of Motor Manufacturers and Traders
Diana Raine - Air Products Ltd	Leigh Hudson - British Airways
Dickon Posnett - Argent Energy	Maddy Cobb - Virgin Atlantic
Dominic Scholfield - Gas Bus Alliance	Magdalena Golebiewska - TUI (Thomson)
Doug Parr - Greenpeace	Mark Rolph - Downstream Fuel Association
Eddie Jenkinson - The Co-operative	Mark Todd - Morrisons
Emma Butcher - Society of Motor Manufacturers and Traders	Marta Chrusch - BP Oil UK Limited
Grahame Buss - Shell International Ltd	Michael Cheshire - Evergreen Gas
Grant Pearson - Ensus	Mike Goldworthy - National Non-Food Crops Centre
Hilary Stone - Imperial College	Neville Jackson - Ricardo plc
Hugh Tucker - UK Petroleum Industry Association	Nigel Tait - Shell International Ltd
Ian Bacon - SMMT	Patrick Lynch - Greenergy Fuels Ltd
Ian Waller - Five Bar Gate	Patrick Mocatta - Gasrec
	Paul Blacklock - Calor
	Paul Gehres - British Airways
	Paul Watters - AA

Peter Smith - Cargill
Philip Monger - PRA
Richard Kneller - Department for Transport
Richard Moore - Jaguar Land Rover
Rick Taylor - Vivergo Fuels
Robert Arnold - RAC
Robert Walker - Society of Motor
Manufacturers and Traders

Roy Murray - BP Oil UK Limited
Teresa Sayers - Downstream Fuel Association
Tom Parsons - BP Oil UK Limited
Vikram Paul - Shell International Ltd
William Bushby - Anaerobic Digestion and
Biogas Association

In addition a number of government departments participated in the Task Force in an observer role. These were: Department for Business, Innovation & Skills, Department of Energy and Climate Change, Department for Environment, Food and Rural Affairs and HM Treasury.

Disclaimer

The output from the Transport Energy Task Force contained in this final report constitutes a broad consensus of opinion on a wide range of issues developed through the activities of the individual work groups and the high level group. However the views and opinions of organisations and their representatives that participated in the Transport Energy Taskforce may differ from those in this report.

Introduction

The Department for Transport (DfT) and the Low Carbon Vehicle Partnership (LowCVP) established the Transport Energy Task Force as a mechanism for stakeholders to help the Government to 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.

Transport is a major source of greenhouse gases. Around a quarter of domestic carbon dioxide (CO₂) and other greenhouse gas emissions in the UK come from transport. Reducing greenhouse gases from transport will help the UK achieve its long-term goal of reducing the greenhouse gas emissions by at least 80% compared to 1990 levels by 2050. Biofuels can help reduce greenhouse gas emissions from transport but it is important that unintended impacts are avoided, such as indirect land use change.

Indirect land use change (ILUC) occurs when a crop previously used for food or feed is redirected to fuel markets, causing a market deficit and resulting in land elsewhere being brought into production to compensate. This can result in increased carbon emissions as it is predicted that land use change such as deforestation occurs to facilitate the increased demand for land. Accounting for ILUC using ILUC 'factors' significantly increases emissions for scenarios where high volumes of crop biofuels are used. However, there is a high degree of uncertainty on the extent of ILUC effects, and in consequence there are different views amongst stakeholders on appropriate ways to address the issue.

The Task Force was asked to identify and assess options to decarbonise transport energy by providing expertise from a broad stakeholder group. The Task Force explored the potential for building broad consensus amongst stakeholders on the role transport energy could play and how this could be delivered, and provided advice and input to future work commissioned by Government with respect to road transport energy policy, if required.

This document has been developed in consultation with members of the Transport Energy Task Force. It contains views and information from a range of sources including industry experts, government departments and published research. A series of working groups collected evidence and made recommendations on specific issues and a high level group considered the evidence and directed the drafting of the final report which reflects the broad consensus of the group. Where consensus wasn't achieved the variety of views are reflected in the document.

The Task Force first met on 29 September 2014 and delivered its findings to the Department for Transport in March 2015.

This document is a summary of the full report of the Transport Energy Task Force. The full report is available from the LowCVP website www.lowcvp.org.uk

Key Messages

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.

The following key messages arising from the work undertaken by the Task Force are intended to be viewed as a coherent set that are read and interpreted together.

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. Electrification of transport is a cornerstone of current policy to reduce carbon emissions from transport energy. We **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.

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. **We agreed** the pathway to delivery of GHG emission reductions in 2020 needs to be consistent with that for the UK's goals for 2030. **We 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

We 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 uncertainty, but **we 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.

We 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 majority of petrol vehicles are currently compatible with E10 and the UK has three bioethanol facilities offering fuels with lower ILUC 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.

We agreed that displacing diesel with high levels of waste and residue derived biodiesel (using B7) 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.

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

We agreed the need for the UK to work towards and 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. **We 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

We 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.

We 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. **We 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.

The Key Messages are drawn from the detailed findings and recommendations of the Transport Energy Task Force which are presented in the Conclusions at the end of the report.

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 be the dominant form of transport energy in 2030. There is an opportunity for 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 of 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.
- 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 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 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 using the discretion available to it in due course.**
- **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, 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.**
- **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. Like any new feedstock these carry sustainability risks, which will necessarily centre on environmental factors. However, 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.**

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