

## **Memorandum to the Environmental Audit Committee Inquiry – “Are Biofuels Sustainable?”**

### **1 LowCVP biofuels activity**

This Memorandum has been prepared by the Low Carbon Vehicle Partnership (LowCVP) in response to the Environmental Audit Committee Inquiry, “Are Biofuels Sustainable”?

LowCVP is an action and advisory group whose members work to accelerate a sustainable shift to low carbon vehicles and fuels in the UK and thereby stimulate opportunities for UK businesses. The Partnership is a multi-stakeholder forum with over 260 members including many leading vehicle manufacturers and fuel suppliers, major fleet operators, environmental and consumer groups, academics and representatives of the public sector including government departments.

LowCVP has undertaken a considerable programme of cutting-edge work in the area of biofuels including activities to:

- Identify environmental impacts of biofuels production & UK capacity to supply biofuels from indigenous sources
- Achieve consensus amongst leading research groups on WTW GHG calculation boundaries and methods demonstrated through detailed examination of the wheat to ethanol conversion
- Examine the feasibility for carbon certification and sustainability (C&S) assurance within the Renewable Transport Fuels Obligation (RTFO)
- Examine the feasibility of developing voluntary standards for sustainability assurance of biofuels to be used by fuel suppliers amongst others – work on-going.
- Develop guidance for reporting of carbon and sustainability criteria as part of the Renewable Transport Fuels Obligation for the Renewable Transport Fuels Agency. (Draft guidance has been issued for consultation and piloting, the outcomes from these activities have informed finalisation of the guidance that is underway and expected to be complete by November).

LowCVP has also been encouraging the incorporation of robust carbon and sustainability criteria as part of forthcoming European legislation on biofuels.

## **2 Monitoring and managing biofuels sustainability using reporting**

### **2.1 Sustainability impacts of biofuels**

Most organisations accept, and evidence indicates, that biofuels can be sustainable and make a worthwhile contribution to reducing road transport greenhouse gas emissions. However, their impacts are highly variable depending upon where, and the manner in which they have been produced. Some biofuels undoubtedly cause more harm than good. UK industry has recognised the environmental, social, political and reputational risks arising from supplying unsustainable feedstock and that these must be managed.

There is broad consensus that the challenge is to develop robust assurance systems to distinguish between biofuels that perform well and those that perform poorly (in both GHG saving terms and against sustainability criteria). In addition there is a need to put in place adequate complementary policies to manage indirect consequences of increased biofuel demand such that the global capacity to supply fuels sustainably is not compromised. Whilst the UK Government has shown leadership in the development of a robust assurance scheme, it has not to date engaged in developing an approach to address these wider issues such as indirect land use change.

The initial inclusion of C&S reporting within the RTFO is broadly supported by most stakeholders but has always been seen as a “stepping stone” to more effective controls. The Government’s recent announcement to move towards rewarding biofuels on the basis of their GHG saving and excluding unsustainable feedstock is broadly supported by most stakeholders; although there is debate how quickly the UK should proceed and extent to which it should align with more limited EU proposals.

### **2.2 RTFO reporting proposals**

The C&S reporting proposals within the RTFO are designed to encourage suppliers to source sustainable biofuels. This will be achieved through the Renewable Fuels Agency (RFA) requiring fuel suppliers to submit reports on both the net GHG saving and sustainability of the biofuels they supply in order to receive Renewable Transport Fuel Certificates (RTFCs). The initial reporting stage provides an environment in which to test the robustness of the criteria and methodology; and for suppliers to develop information-flows through their supply chains. It also reduces the risk of challenge under trade rules. Most NGOs would prefer mandatory criteria to be introduced from the start of the scheme.

The scheme is presently being finalised but draft guidance proposes all biofuels will be eligible for RTFCs irrespective of how they have been produced, but to receive RTFCs suppliers must report on the sustainability of the fuel supplied. Data must be provided monthly on each “administrative

batch”<sup>1</sup> of biofuel that has been supplied. “Not known” reports will initially be permissible as it will be difficult to provide information for some fuels sourced from overseas - particularly those purchased on the spot market. Permitting “not known” reports weakens an assurance scheme but was considered necessary by Government to reduce the risk of successful challenge under WTO rules (see Section 8) since requiring actual data on every batch of fuel may be considered a trade constraint.

Monthly reports (as illustrated) will contain commercially sensitive information and will not therefore be publically available, however the RFA will publish quarterly interim and annual reports based upon this information and will compare individual supplier performance to targets proposed by the Secretary of State (below). All suppliers claiming RTFCs<sup>2</sup> will also be required to produce an annual, publicly available, independently verified report of their performance. Annual Reports will contain aggregate monthly information with the exception of fuel volumes (which may be subject to commercial confidentiality). Annual reports will also provide details of:

- Actions to increase sourcing of sustainable biofuels and lower carbon intensity including actions to promote production on idle land
- Environmental management system certificates
- Existing verified environmental / corporate responsibility reporting.

The proposed targets will not be mandatory (which could be considered a constraint on trade) but illustrate the level of performance that the Government expects from fuel suppliers. Suppliers will be encouraged to strive to meet these targets but no penalties will be issued for failing to meet them.

<b>Proposed annual supplier targets</b>	<b>2008-2009</b>	<b>2009-2010</b>	<b>2010-2011</b>
Percentage of feedstock meeting a Qualifying Standard	-	50%	80%
Annual GHG saving of fuel supplied	40%	50%	60%
Data reported on sustainability characteristics	35%	65%	80%

There is no consensus on the appropriateness of proposed targets. Oil and most biofuel producers consider some of the targets to be challenging or unachievable; whilst NGOs support their rigour (but would prefer mandatory criteria).

The reporting process will make information available in a way that is accessible to consumers and which could inform their purchasing decisions. It

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<sup>1</sup> An “administrative batch” is one with homogenous sustainability characteristics. For example: one hundred tanker movements of fuel with the same characteristics (e.g. palm oil from Malaysia meeting the requirements of the Round Table on Sustainable Palm Oil (RSPO) could be reported as a single batch. A separate tanker movement of palm oil from Malaysia without any form of assurance would be reported as a different batch.

<sup>2</sup> Suppliers claiming less than 450,000 certificates in an obligation period do not need to submit an annual report.

will also enable environmental NGOs to identify company performance. The intention is to drive good practice using the principle of corporate social responsibility.

A limitation of the proposed approach is that not all obligated suppliers have a significant retail market presence. LowCVP estimate about 91% of RTFC certificates will be earned by 8 companies (largely refiners) but that these only represent about 40% of the retail market. This is largely because BP no longer has refining capacity (following the sale of Coryton) but has the UK's largest retail presence. Supermarkets are also not obligated and therefore will not be required to provide C&S reports (although their suppliers will).

### RTFO Monthly reporting format

Batch number	Fuel type	Quantity of fuel (litres or kg)	Biofuel Feedstock	Feedstock Origin	Sustainability Information			Carbon Information		
					Env. Standard	Social Standard	Land use in Nov 2005	Carbon intensity	Impact of LUC	Accuracy level
33001	Bioethanol	250,000	Wheat	UK	LEAF	Mechanised + LEAF	Cropland	72	0	2
33002	Bioethanol	100,000	Wheat	France	-	Mechanised	Cropland	76	0	2
33003	Bioethanol	250,000	Sugar beet	UK	ACCS	Mechanised	Cropland	45	0	4
33004	Bioethanol	1,000,000	Sugar cane	Brazil	-	-	Cropland	19	0	2
33005	Bioethanol	500,000	Unknown	Unknown	-	-	Unknown	72	Unknown	0
33006	Biodiesel	1,000,000	Oilseed rape	UK	ACCS	Mechanised + RTFO	Cropland	79	0	2
33007	Biodiesel	250,000	Oilseed rape	Unknown	-	Mechanised	Unknown	79	0	2
33008	Biodiesel	500,000	Palm oil	Malaysia	RSPO + RTFO	RSPO + RTFO	Cropland	49	Unknown	2
33009	Biomethane	150,000	Dry manure	UK	By-product	By-product	By-product	36	0	2
33010	Bio-ETBE	500,000	Wheat	UK	LEAF	Mechanised + LEAF	Cropland	12	0	2

## 2.3 Proposed Voluntary Kitemark Scheme

To overcome the limitation that many fuel suppliers will not be required to report through the RTFO, the Government has invited the LowCVP to evaluate the feasibility and need for a voluntary “kitemark scheme” to assure the sustainability of biofuels sourced in the UK. This work is intended to provide an input to Government activities in developing the second phase of the RTFO. Specifically, the project will provide the basis for a decision on whether, and if so how, to implement a voluntary biofuels sustainability assurance scheme in parallel with both carbon and sustainability reporting (from 2008); and the possibility of mandatory environmental standards (from 2011).

Use of the kitemark would demonstrate to consumers that the company sourced sustainable fuels and would enable companies to effectively differentiate their product. It would enable the company to assure customers that the biofuel they supplied delivered real and measurable environmental benefits with good GHG savings and no wider social concerns. It should assist companies to educate and manage their supply chains. This feasibility study examines whether and if so how to take forward the development of the scheme.

There are a number of important practical issues that would need to be resolved for the scheme to operate successfully. Most notably exchange agreements operating between different fuel suppliers to reduce the need to transport fuel around the UK. The study has just commenced and will be completed in Spring 2008.

## 3 GHG-savings

The majority of studies show that most biofuels produce considerably fewer GHGs than fossil fuels when measured on a life-cycle basis. The level of GHG-savings varies widely (for example the wheat to ethanol process can save between 7 and 77% GHG of fossil fuels) depending upon the feedstock, process and use of by-products<sup>3</sup>.

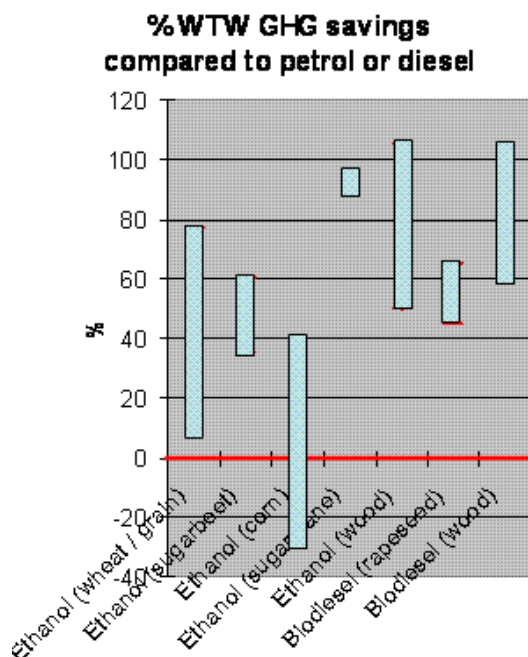
The figure (overleaf) illustrates the performance of different feedstock and fuels and demonstrates that most biofuels are less carbon intensive than fossil fuels. The highest GHG savings are achieved by sugarcane ethanol and “advanced” biofuel processes; but wheat ethanol can achieve high GHG-savings (>75%) if produced appropriately. Higher GHG-savings are achieved by:

1. Using crops grown in areas of high productivity (e.g. tropics)
2. Employing combined heat and power (CHP) and similar systems – and optimising export of renewable electricity and use of heat as part of the production process
3. Optimising the application of fertiliser to balance good yields with managing soil N<sub>2</sub>O emissions; and using lower carbon intensity fertilisers that are becoming available

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<sup>3</sup> <http://www.lowcvp.org.uk/assets/viewpoints/Biofuels%20WTW%20final%20report.pdf>

- Using biomass or by-products to produce the process heat and electricity generation or to co-fire with gas CHP systems.



Derived from Concawe 2006

Transport emissions within some (e.g. European) supply chains are a small percentage of the overall GHG emissions and therefore local production and consumption does not necessarily achieve significant additional credits.

### 3.1 Costs of GHG-saving

Producing biofuels with higher GHG-savings is generally more expensive (although some very inefficient practices are not commercially viable). There is relatively little data in the public domain on the relative cost of delivering GHG savings for different biofuel pathways but a LowCVP study examined the process of converting wheat to ethanol.<sup>4</sup> The GHG-savings and costs of producing ethanol by a range of production processes are illustrated below (assuming DDGS is used for animal feed).

Production process	% GHG saving	Relative cost	Cost of GHG saving
Natural gas boiler + grid electricity	7	1.03	2.87
Natural gas boiler + steam turbine	21	1	1
Natural gas, gas turbine + steam generation + steam turbine	40	0.91	0.47
Natural gas, gas turbine + co-fired steam generation + steam turbine	35	1	0.58
Straw boiler + steam turbine	44	1.32	0.61
Straw boiler + steam turbine + condensing turbine	48	1.36	0.58

<sup>4</sup> <http://www.lowcvp.org.uk/assets/viewpoints/Biofuels%20WTW%20final%20report.pdf>

The cost-effectiveness of the biofuel, in terms of £ per tonne of carbon equivalent avoided, is five times higher for a low carbon intensity bioethanol compared to a high carbon intensity equivalent. Using DDGS as a renewable energy source in place of gas would raise GHG savings by about another 30%, but without incentives there are currently more commercially viable uses for the product. The highest GHG savings are likely to require higher capital cost plants – that could be supported through Enhanced Capital Allowances – but progress in developing the Government proposed scheme had previously stalled as a result of European Commission concerns regarding State Aid.

### **3.2 Rewarding biofuels based upon their GHG-saving**

To encourage production of biofuels with lower carbon intensity and lower costs per tonne of carbon saved requires incentives to be based upon their GHG-saving. The optimum scheme design (that avoids risks of breaching WTO rules and introducing other market distortions – see Section 8) rewards biofuels in a linear manner based on their carbon saving above a threshold of 0% (in order that there is no incentive to supply biofuels with a negative GHG-saving). For example; the RTFO could be designed such that 1 RTFC was earned for 1 litre of fuel with a 50% GHG-saving. A 75% GHG-saving would earn 1.5 certificates, etc. The RTFO C&S Feasibility Study<sup>5</sup> that was undertaken by LowCVP concluded that differentiating and rewarding biofuels on the basis of their carbon intensity in this manner is probably acceptable under trade rules.

The alternative approach would be to set a minimum threshold GHG-saving. This does not provide an incentive to produce biofuels with better GHG-savings (above the threshold) and would not adequately compensate or encourage production of “advanced” biofuels. The overall level of GHG-savings achieved through such an approach would be lower, but it would be administratively cheaper and easier to operate. Setting an arbitrary limit (say 30%) is also more liable to challenge under WTO rules.

Most stakeholders support the development of the RTFO to a scheme that rewards fuels on the basis of carbon intensity (although views differ on the timing and need for policies to ease the transition for established biofuel suppliers). An incentive based upon carbon intensity should provide an efficient market based mechanism to facilitate the delivery of increased GHG savings at lower costs. It may also stimulate the development and implementation of “advanced” biofuels and research and development of low carbon agricultural practices and conversion technologies. It would also reward co-firing with renewable feedstock, including by-products, to achieve lower biofuel carbon intensity.

There is broad consensus that the long-term policy framework should be technology neutral based upon the environmental performance of the fuel and not based on a feedstock type or conversion process. The long-term subsidies for fuels or technologies is undesirable, but is considered necessary in the short-term to facilitate market introduction of low carbon alternative fuels that without specific incentives are unlikely to displace petroleum based fuels. Alternative support to address specific

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<sup>5</sup> <http://www.lowcvc.org.uk/assets/viewpoints/Biofuels%20WTW%20final%20report.pdf>

obstacles such as high capital cost plant, for example, should be made available – such as through Enhanced Capital Allowances.

### 3.3 RTFO GHG-saving calculation

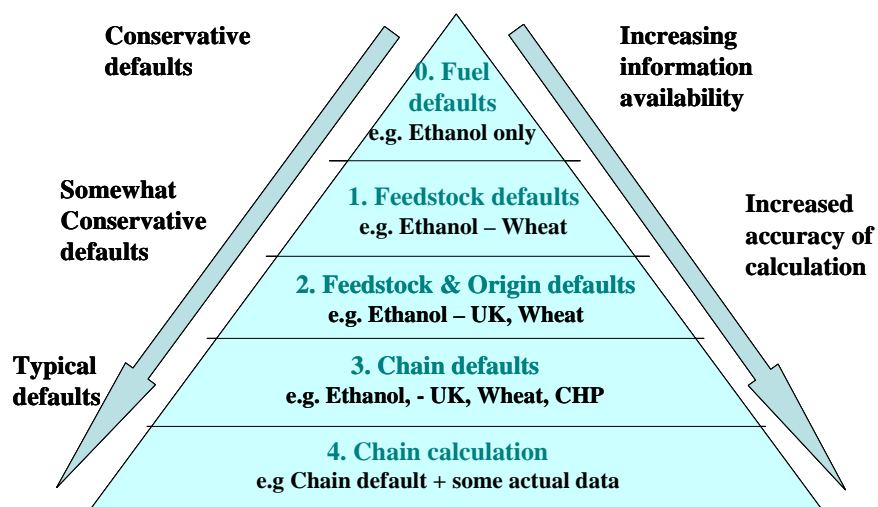
The methodology used to calculate the carbon intensity of biofuels for reporting under the RTFO is a well-to-wheel calculation that includes all significant sources of GHG emissions. This enables direct comparison of fuel chain GHG saving on a like-for-like basis. Detailed calculations have been made for the principal feedstocks expected to supply biofuel to the UK at the start of the RTFO scheme:

- Ethanol from: sugar cane, sugar beet, wheat and corn
- Ethanol converted to ETBE
- FAME biodiesel from: tallow, used cooking oil, palm oil, soy and rapeseed
- Biomethane from anaerobic digestion of MSW and manure.

It is expected that the RFA will extend this list as significant new production pathways are introduced into the UK market. The Technical Guidance provides instructions for fuel chains not currently defined.

The calculation methodology uses default values that provide estimates of the carbon intensity of different fuel chains. It enables suppliers with specific information about their supply chain to supply additional qualitative or quantitative data to improve the accuracy of the calculation. The scheme is designed to encourage better reporting of data by applying more conservative GHG savings to high level default values (where little is known about the origin of the supply chain), but typical default factors where the calculation includes more detailed information. This flexible calculation method provides a practical, cost-effective and credible reporting system. Suppliers will also be required to report on the amount of detailed information used in their GHG calculations.

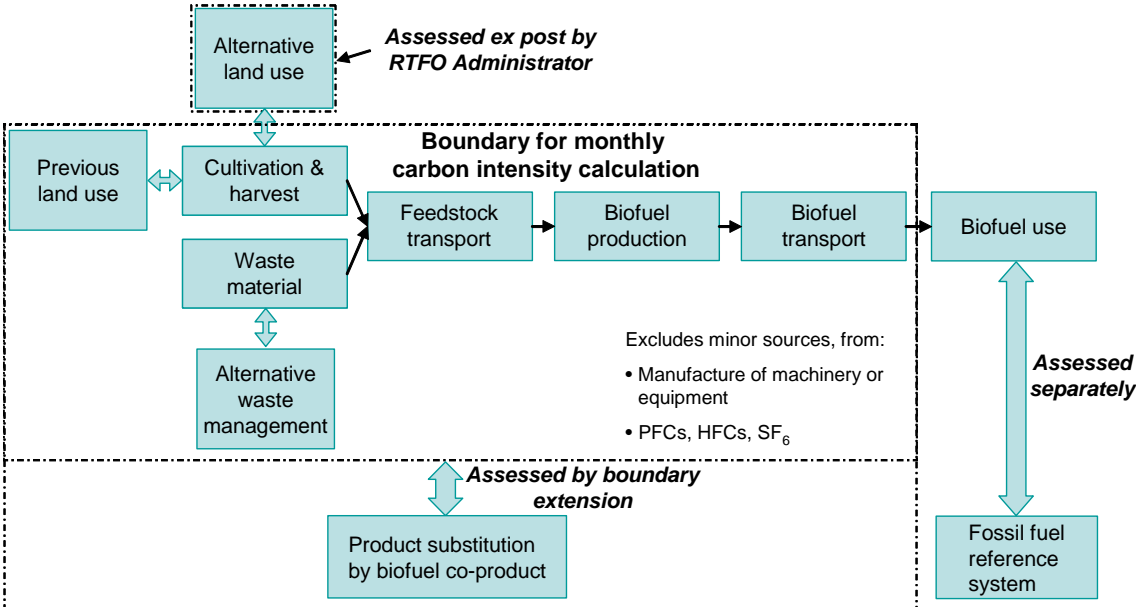
**Hierarchy of default values used**



Where information on previous land use has been supplied, the calculation includes the effect on overall GHG savings. Default values for specific land-use changes are based on Intergovernmental Panel on Climate Change (IPCC) guidelines. Where information is not provided, the calculation does not include any land-use change carbon impacts. It is proposed that the RFA will conduct an *ex-post* analysis of the potential emissions associated with 'unknown' land-use changes as part of its annual report to the Secretary of State.

### 3.4 GHG calculation methodological issues

There is broad agreement on the boundaries and methodology to perform lifecycle biofuel carbon intensity calculations amongst most experts. LowCVP, as part of its work, has previously helped to achieve this consensus and is now working internationally to agree common approaches. The boundary for the calculation employed in the RTFO is illustrated below. It includes all major direct sources but excludes manufacture of machinery and equipment and other very minor sources.



The principal area of difference in the lifecycle calculations performed by a variety of groups arises in the treatment of co-products and how GHG emissions should be attributed to them (such as Dark Distilled Grains and Solids – DDGS, in production of ethanol from wheat). LowCVP is seeking to achieve greater international consensus on this issue through a series of workshops, but there is presently little incentive for experts to agree. The approach used in the RTFO employs a substitution methodology (considered best practice) wherever possible; and market value allocation where substitution is not considered possible.

The key uncertainty for these calculations is N<sub>2</sub>O emissions from soil. An internationally agreed, (IPCC) methodology is available and used as part of the RTFO, but it is recognised emissions vary widely depending upon soil and crop types and timing and application of fertiliser. Recent, well publicised new research, has

cast doubt on previous estimates.<sup>6</sup> However, these estimates are not based upon field measurements but a global calculation of the balance of N<sub>2</sub>O emissions and the study is therefore itself subject to considerable uncertainty and scientific debate.

### **3.5 GHG emissions arising from land-use change**

GHG emissions from conversion of forest or permanent pasture to perennial or annual crops generally eliminate any GHG-benefits from subsequent cultivation of biofuels on converted land (for the foreseeable future). This also applies to use of soils with a high organic content such as peat. For reasons of both GHG-saving and conservation of biodiversity it is therefore important to strongly discourage or prevent these practices – for example by accounting for emissions from land-use change in the calculation of GHG-savings.

The RTFO has proposed a fixed reference date for land-use change of November 2005 which is consistent with the Round Table on Sustainable Palm Oil (RSPO) criteria. The appropriate date is debateable but is intended to make use of idle (or degraded) land not currently in productive use that would discourage further conversion of forest land or displacement of existing agricultural land (indirect effects - see below). Idle (degraded) land has been identified in south-east Asia for example but an internationally agreed definition of idle land is not available and therefore cannot yet be applied universally. A fixed reference date means biofuels cultivated on any land deforested since 2005 would not receive favourable treatment under the RTFO.

## **4 Indirect land-use changes**

A key area of concern is managing indirect land-use change. For example, where a rubber plantation is replaced with one for palm oil and a new rubber plantation is subsequently developed in an area of former natural forest. Such indirect effects cannot easily be managed through a supply chain assurance scheme and require complementary policies to protect remaining high conservation value habitats. The limited effectiveness of policies to discourage deforestation is an important factor in the opposition of some environmental groups to biofuel use and any extension of targets for its use. Stronger incentives are needed to encourage countries conserve these areas of high conservation value.

It is important to recognise that increased biofuel production is not the only or necessarily even the most important factor driving indirect land use changes. For example; biofuels currently represent less than 5% global palm oil production with increased use also for food, cosmetics and other applications. Some environmental groups and academics have proposed accounting for indirect land-use changes within the GHG-calculation for biofuels. However, there is no robust and recognised approach through which to allocate impacts of indirect land-use change to biofuel production.

There is a need to initiate research internationally in partnership with those countries in the areas of key concern (e.g. Brazil, Indonesia, Malaysia) to understand the

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<sup>6</sup> Crutzen *et al* (2007) Atmospheric Chemistry and Physics Discussions, 7, 11191–11205 [available from <http://www.atmos-chem-phys-discuss.net/7/11191/2007/acpd-7-11191-2007.pdf>]

complex relationship between increased demand for biofuels and land conversion. In addition, greater participation by the FCO and DFID working with DEFRA and DfT should assist these countries to identify and develop monitoring and management practices to avoid the adverse effects of indirect land use changes. Key to this will be developing effective mechanisms to encourage biofuel production on idle (degraded) land and supporting effective governance and management of areas of high conservation value. The Taskforce comprising the UK, South Africa, Mozambique and Brazil provides a good initiative through which this can be taken forward.

## **5 Other environmental concerns**

There are a range of wider environmental concerns regarding biofuel production, principally associated with cultivation. The RTFO defines five environmental principles to be met by a sustainable biofuel. These are that biomass production will not:

- Destroy or damage large above or below ground carbon stocks
- Lead to destruction or damage to high biodiversity areas
- Lead to soil degradation
- Create contamination or depletion of water sources
- Cause air pollution.

These concerns can be managed through encouraging good land and agricultural practices through appropriate agricultural assurance schemes.

### **5.1 Environmental reporting within the RTFO**

Environmental reporting within the RTFO focuses on the key risks arising from cultivation. A future evolution of the scheme may encompass the wider supply chain including processing and transportation of feedstock. The environmental reporting scheme makes use of existing voluntary agri-environment schemes to minimise the cost and administrative burden of compliance. These existing standards have been benchmarked against an RTFO Sustainable Biofuel Meta-Standard comprising five environmental principles (listed above) and two social principles (discussed in Section 6). The meta-standard includes a number of criteria and indicators to assess the extent to which the feedstock produced in accordance with each scheme can be considered sustainable. A comprehensive range of existing standards has been benchmarked and it is intended that further standards will be benchmarked by the RFA as they become available. Benchmarked standards that meet the required level of sustainability and audit quality are called Qualifying Standards and are listed below:

- Assured Combinable Crops Scheme<sup>7</sup>
- Linking Environment and Farming Marque
- Roundtable on Sustainable Palm Oil
- Sustainable Agriculture Network/ Rainforest Alliance
- Basel Criteria
- Forest Stewardship Council

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<sup>7</sup> Subject to amendments being agreed that are presently being considered

Companies may report against any standard that has been benchmarked against the RTFO meta-standard and all such feedstock volumes count towards the data capture target set by the Secretary of State. Only feedstock produced in accordance with Qualifying Standards can be considered “sustainable” and count towards this target.

The key limitation of the approach is the absence of standards for all feedstock: notably sugar cane. Under the proposed model, suppliers will also be able to organise additional supplementary checks to demonstrate that feedstock complies fully with the Meta-Standard criteria, but only a limited number of suppliers are expected to make this effort. The mechanism through which companies may report “Not known” will enable suppliers to receive certificates for fuel of unknown provenance but weakens the scheme.

## **6 Social issues**

### **6.1 Managing social issues through RTFO reporting**

The RTFO C&S scheme also defines two social principles that biomass production does not adversely affect:

- Workers rights and working relationships – such as labour rights including use of child and bonded labour, employment conditions and health and safety.
- Existing land rights and community relations.

These can be effectively managed through supply chain management and ensuring that feedstock is purchased from plantations and suppliers operating appropriate controls (such as through the RSPO). Demand for biofuel has undoubtedly led to immoral and illegal practices in some areas. The challenge is for the major corporations sourcing and deploying biofuels to manage its supply chain and reduce demand for, and the value of, feedstock produced unsustainably. The RTFO achieves this through encouraging reporting against social principles as excluding feedstock that fails to meet social criteria is not possible under WTO rules. Reporting against social standards is analogous to those for environmental standards. Defined social Qualifying Standards are:

- Roundtable on Sustainable Palm Oil
- Sustainable Agriculture Network/ Rainforest Alliance
- Basel Criteria

Exceptions for reports on labour standards exist for highly mechanised production where the risks are low compared to non-mechanised production. This is intended to balance the risks against administrative costs.

## **6.2 Food v Fuel**

A wider social debate, beyond the direct influence of suppliers is the impact of increased biofuel production on food prices. The issues are significantly more complex than usually presented, with markets still significantly distorted by agricultural subsidies and surpluses. For example the “tortilla riots” in Mexico blamed on US imports of corn for biofuels arose following price increases that are reported to have resulted from US subsidised grain exports that significantly reduced the commercial viability and production of Mexican corn. Reduced Mexican supply led to increased prices with accusations of corporations (unproven) artificially restricting supply to inflate prices. This year demand for corn ethanol production has led to increased planting in Mexico for the new growing season creating new markets for producers.

Increased commodity prices can also benefit the rural poor by improving income through higher prices. A longstanding complaint of development NGOs has been the dumping of excess subsidised production by developed countries onto the world market depressing prices for agricultural commodities to historically low levels. Biofuel production also creates new employment and opportunities for wealth creation. For the urban poor higher food prices do mean higher costs; however biofuels are not the only or necessarily most important factor driving higher food prices. Major droughts (such as in Australia) and flooding (on the Indian subcontinent) have also devastated production this year. Population growth and changing diet in India and China are also creating new demand for animal feed.

Global agricultural production is balanced, to some degree, with supply. With new markets for agricultural commodities created through biofuel policy production will increase. For example; set-aside land within the EU is likely to be significantly reduced in the coming year bringing land back into agricultural production, partly in response to increased demand from biofuel markets. Biofuel production on idle (degraded) land can also provide a range of benefits. The idea of rich car drivers in the north taking food from the mouths of starving populations in the south to feed our insatiable appetite for energy is a highly emotive and powerful image – the reality is far more complex. It will however be essential that the EU monitors the impacts of increased demand for biofuels on supply of agricultural production for food and ensures biofuel demand and targets do not create indirect consequences for the most vulnerable groups in society.

## **7 Verification**

To establish the accuracy and to validate C&S reports a chain of custody must be established from the feedstock producer to the fuel supplier. Where the existing assurance scheme does not operate its own chain of custody the RTFO C&S reporting model operates a mass balance approach. This requires suppliers in the supply chain to account for their product on a units in - units out basis but does not require physical separation of certified feedstock or fuel from uncertified. This ensures that for every unit of sustainable biofuel sold the corresponding feedstock entered the market.

The model requires suppliers throughout the chain to keep input and output records of the feedstock characteristics entering and leaving the plant or process stage. The feedstock or fuel sold will describe, on an invoice or related document, the carbon and sustainability characteristics of the product sold.

It is proposed that the reliability of claims made in annual C&S reports should be demonstrated through an independent verification (or assurance engagement) that must be completed by the 30<sup>th</sup> September. Initially it is considered that assurance engagements should aim to provide at least 'moderate' assurance (from a limited assurance engagement). It is proposed that suppliers engage auditors who are qualified to carry out audits against the International Standard on Assurance Engagements (ISAE 3000), which defines requirements for limited-scope engagements. It is likely that the verifier's statement, with the annual report, will be made available on the Administrator's website.

## **8 Trade rules**

In designing schemes to exclude unsustainable biofuels from obligation schemes or provide preferential tax treatment for better biofuels (such as those with a higher GHG-saving or from sustainable supplies) it is essential to account for WTO rules. Distinguishing between products on environmental grounds is permissible under trade rules – subject to certain conditions being met. However, rules are complex, case-law very limited and outcomes highly uncertain.

The UK, in proposing its reporting requirements as part of the RTFO, adopted a conservative view of the trade rule issues to ensure it would be able to launch its Obligation on time and without being encumbered by the need to make representation to WTO, inform affected countries and manage responses. Accordingly the UK mandatory reporting scheme issues renewable transport fuel certificates so long as the fuel is of renewable origin and allows "not known" reporting.

A key issue in trade terms is whether biofuels are like products. Trade rules can allow distinctions between products based upon how they are produced. It may therefore be possible to distinguish between biofuels based upon their life-cycle GHG emissions – particularly since this is a global issue that biofuels are designed to address and international standards operate for life-cycle assessment. Excluding a fuel on the basis it has been grown on land that since, to say 1990, was virgin forest is more uncertain. Why 1990? Why do deforestation requirements only apply in developing countries and not the EU where land was historically deforested? Such exclusions may be possible but are more liable to successful challenge.

How biofuels are defined will affect the way the rules are applied. As an agricultural product treatment is less onerous than industrial products. If biofuels were classed as environmental products there would be still fewer issues. This is still under consideration at the WTO. The objectives and design of any measure will also influence its appropriateness. For example, since the policy is designed to achieve GHG-savings it is probably acceptable to reward fuels with a higher GHG-saving. However, excluding fuels that fail to meet a minimum level of GHG-saving (say 30%) is less likely to be acceptable due to the arbitrary nature of the threshold. An

approach that rewards fuels in a linear manner depending upon its GHG-savings, with a cut-off at 0% saving is less liable to challenge. It may also be possible to take account of carbon emissions associated with direct land-use change since established international methodologies are available from IPCC. Accounting for indirect land use changes is more uncertain in the absence of robust, internationally agreed methodologies.

Scheme design characteristics that are more likely to be acceptable include:

- Being based upon robust science
- Being based upon internationally agreed standards
- Rules are applied consistently to all feedstocks
- There is flexibility in the manner in which countries may comply.

Negotiation with affected parties, allowing time for exporters to adapt to new requirements and operating appropriate due practice are positive attributes that reduce the risk of successful challenge. The UK Government, through the EU, should urgently embark on discussing its proposals with affected countries to reduce the risk of successful challenge. This will be particularly important in seeking to exclude fuels that do not meet wider environmental standards, for example causing impacts on biodiversity or soil degradation (since reducing GHG-saving is the purpose of the RTFO and maintaining biodiversity is not an explicit objective).

The ability to provide incentives for a fuel on the basis it is so-called “second-generation” or “advanced” would be questionable since there is no accepted definition of a second-generation fuel. In addition some first generation Brazilian sugar-cane ethanol achieves equivalent GHG-savings and land productivity.

The absence of case law makes it impossible to reach firm conclusions on what WTO rules permit under such schemes. General principles do however indicate design characteristics that are more or less liable to successful challenge. Ultimately, the Government will need to balance the risk of successful challenge against the benefits of the proposed measure.

## **8 High blend biofuels**

Some stakeholders support the development of an increased market for high blend biofuels<sup>8</sup>, in appropriately designed or adapted vehicles, in addition to their use in low blends for all vehicles. Whilst all stakeholders anticipate the RTFO will be an effective mechanism to stimulate supply of biofuels for road transport, most believe that the current implementation of the RTFO is unlikely to provide a stimulus to develop the market for high blend biofuels that offer the potential to deliver further reductions in GHG emissions. This is because:

- The target level has been set at the level of the current Fuel Quality Directive and European Fuels Standards (5%) - obligations can be met largely through supply of low blends.

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<sup>8</sup> Major oil companies remain concerned about the value and cost of such an approach

- At current duty rates low blends are more attractive economically than high blends. In addition, the Treasury has indicated it intends, over time, to increase the buy-out price and reduce the duty differential for biofuels, further reducing the stimulus for high blends.

Many LowCVP members believe an increase in RTFO targets beyond the level of the current fuel quality standard for low blends; and raising the buy-out price - to encourage fuel suppliers to invest in refuelling infrastructure for high blends – is desirable. Some members also support mechanisms outside the RTFO to stimulate high blends.<sup>9</sup>

All LowCVP members recognise that vehicles operating on high blends represent just one element of a much wider portfolio of technology solutions aimed at reducing CO2 from road transport. Robust carbon and sustainability assurance is a key element of this market going forward along with specific measures and support to facilitate market introduction for low carbon fuels and vehicles going forward. It will also be essential to ensure the market for biofuels does not cause significant indirect effects on land-use or food production. A niche market for high blend vehicles is nevertheless feasible without causing wider sustainable issues.

Within the passenger car or commercial sector of the market, depot-based fleets and those operating in a limited area are seen as the key early adopters, initially avoiding the need for extensive refuelling infrastructure. Current Fuel Quality Standards and most vehicle manufacturer warranties limit the biofuel component within the fuel to 5% in the case of FAME biodiesel.

A number of heavy duty vehicle manufacturers now provide warranties for high level blends up to B100. HGVs such as trucks and buses are also often depot based, or travel on restricted routes suited to use of niche fuels with limited refuelling infrastructure. About 440,000 goods vehicles over 3.5 tonnes and 100,000 buses represent less than 2% of the vehicle population yet produce approximately 24% of the CO2 from road transport. The use of high blends in the HGV sector could make significant contributions to GHG reductions e.g. the use of B30 within the existing HGV and LDV fleet offers potential GHG-savings of up to 1.5 million tonnes<sup>10</sup>, greater than the 1 million tonnes currently forecast for delivery within the RTFO.

In order to achieve these savings an appropriate, long-term fiscal framework would be needed that ensured a small cost saving for operators of commercial vehicles. One approach would be to use the Alternative Fuel Framework and restructure the current fiscal incentive (20ppl) to apply to the fuel, rather than to the blend component.

Fuel quality standards are key to the high and low blend market. Out of specification fuel risks disruption for consumers and therefore most LowCVP members also

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<sup>9</sup> Such as continued support to address infrastructure costs and further fiscal incentives for vehicles able to operate on these fuels.

<sup>10</sup> Assuming a GHG saving of 40% and no significant land use change. Figures based on DfT Statistics (2003) refer to total Carbon eq emissions from total road transport sector: 32.5 million tonnes. Passenger cars account for 19.8 million tonnes, HGVs incl buses 8.2 million tonnes, LDVs 4.4 million and other 0.1mt.

believe that RTFO certificates should be linked to fuels that meet quality standards. Support for the high blend market must therefore recognise and balance the potential benefits, costs and risks.

Development of a market for any vehicles operating with high blends is only supported so long as the fuels are sustainable, achieve good levels of GHG-savings and do not significantly worsen air quality<sup>11</sup>. Members also only support the use of high blend fuels for appropriately adapted or warranted vehicles.

## **9 Conclusion**

The evidence indicates that modest amounts of biofuels used in road transport can be sustainable and make a worthwhile contribution to reducing road transport greenhouse gas emissions. However, targets for biofuel introduction need to recognise the wider consequences of increased global consumption (particularly indirect land-use changes and impacts on food prices). The UK Government has shown leadership in the development of a robust assurance scheme but has not to date engaged in developing an approach to address these wider issues such as indirect land use change. Monitoring of the impacts of increased demand for biofuels and an appropriate policy response to any serious consequences identified are essential.

The sustainability and GHG-savings of biofuels currently marketed are highly variable depending upon the location and manner in which they have been produced. Some biofuels undoubtedly cause more harm than good. UK industry has recognised the environmental, social, political and reputational risks arising from supplying unsustainable feedstock and that these must be managed. It supports the introduction of robust assurance schemes operated by suppliers and sees the C&S reporting within the RTFO as an important first step.

The proposed C&S reporting within the RTFO has undergone extensive stakeholder consultation and been successfully piloted. It has limitations but is recognised as the most advanced national scheme for managing biofuels sustainability and is a model for other schemes. Key design constraints arise from WTO considerations and the challenge of passing data through the supply chain. To strengthen the C&S scheme further development of assurance schemes for key biofuel feedstocks (such as sugarcane) are needed, similar to that developed for palm oil by the RSPO. Obligated companies only represent about 40% of retail market; but LowCVP is investigating the feasibility of voluntary kitemark scheme that all fuel suppliers can use to demonstrate the sustainability of product.

The C&S guidance will be finalised imminently and should be issued by the RFA in November providing 4 months for companies to establish their systems. A longer period of preparation was not possible given the rapid introduction of the RTFO but extensive consultation with all stakeholders throughout the development process has ensured there are unlikely to be major surprises for businesses that have kept abreast of developments.

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<sup>11</sup> The use of high blend biodiesel in HGVs can lead to a considerable increase in NOx emissions, however the use of bio-ethanol in vehicles can offer improved emissions with respect to air quality compared to petrol.

The C&S reporting is an important first step but most stakeholders recognise the need to move to the provision of incentives for biofuels linked to GHG-savings (although there are a range of views how quickly this should happen). Robust methodologies are available to calculate GHG-savings although there are uncertainties regarding emissions of nitrous oxides from soils and a range of view how to allocate benefits from co-products. A key challenge will be for supplying companies to obtain data from the supply chain and establish robust verification practices to demonstrate claims.

Excluding unsustainable fuels is also supported by most stakeholders, although there are issues to resolve to ensure this can be done in a manner that will not be subject to successful challenge through WTO. Further work is needed in this area, including discussions with countries that are most likely to be affected by Government proposals, to reduce the risk of successful challenge under WTO rules.