

# Proposal to amend the RED and FQD to account for indirect land use change impacts of biofuels

## Response from the Low Carbon Vehicle Partnership

### 1. Executive Summary

This submission<sup>1</sup> has been prepared by the Low Carbon Vehicle Partnership (LowCVP), in response to the EU proposals<sup>2</sup> to limit indirect land use change associated with meeting the Renewable Energy Directive (RED) and Fuel Quality Directive (FQD). The LowCVP is a UK-based, public-private partnership that works to accelerate a sustainable shift to low carbon vehicles and fuels.

LowCVP members believe that biofuels could play an important role in decarbonising the road transport sector and must deliver greenhouse gas (GHG) savings. Regulatory certainty, clarity and longevity and market stability are identified as being essential to encourage investment in biofuels that deliver credible GHG savings. In order to generate investor confidence mandated targets for advanced (and crop-based biofuels) should be extended to 2030.

LowCVP believes the current EU proposals fail both to sufficiently identify levels of iLUC risk and effectively mitigate these risks. The proposed 5% cap on “food”<sup>3</sup> crop-based biofuels does not have broad support within LowCVP because it does not address iLUC for two reasons:

- a) iLUC ultimately occurs due to use of land, not specifically use of food crops, and could equally apply to advanced biofuels grown on agricultural land, and
- b) some biofuels produce co-products that can be used to substitute animal feed ingredients such as soybean that is currently imported and can be linked to deforestation. Such biofuels could have a positive iLUC impact by increasing the productivity (delivering food, feed and fuel) of existing land in the UK/EU.

The proposal to apply or report specific iLUC factors derived from economic models is not considered a robust basis for policy and suffers from a number of weaknesses including key assumptions regarding agronomic yields and co-products. Most significantly, LowCVP stakeholders are not persuaded that the complexity of agricultural markets can currently be adequately modelled to estimate future land use changes with sufficient accuracy. LowCVP is concerned that the application of iLUC factors is only being considered for biofuels and not across other sectors of the renewable energy market that could have land use change impacts. A more equitable approach should be taken for regulating iLUC impacts.

LowCVP members favour an approach that a) improves the identification of risk levels for iLUC beyond iLUC factors derived from economic models and b) defines a framework for risk mitigation that is absent from the current proposal. A risk-based framework has a number of advantages over the current proposals:

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<sup>1</sup> This response has been prepared by the LowCVP, whilst the UK Government is engaged in discussions regarding iLUC, this position paper may not fully reflect their policy position on this matter.

<sup>2</sup> [http://ec.europa.eu/energy/renewables/biofuels/land\\_use\\_change\\_en.htm](http://ec.europa.eu/energy/renewables/biofuels/land_use_change_en.htm)

<sup>3</sup> This term may be misleading in that some “food” crops used for biofuels are actually animal “feed” crops e.g. feed wheat as opposed to milling wheat used for bread etc.

- It is based on sound science but can operate flexibly to account for inherent uncertainties – for example in the way thresholds for risk levels are defined
- It can account for uncertainty in assumptions and future scenarios by assigning ranges to the iLUC risk and assigning classes of risk - which is more realistic than seeking to quantify a precise iLUC factor for each feedstock
- It does not alter the current RED and FQD targets or sustainability criteria maintaining a degree of regulatory certainty
- It incentivises low risk feedstocks and provides a mechanism through which high risk feedstocks can meet the criteria through adopting appropriate mitigation measures
- It has an element of continuous improvement and has some time incorporated to allow feedstock suppliers to begin to adopt appropriate mitigation measures

Development of a reliable well-evidenced solution is considered essential to addressing iLUC. Significant delays, or ineffective interventions, will continue to erode public confidence in biofuels increasing the uncertainty in markets and undermining the investment needed to ensure RED and FQD targets are delivered and that liquid fuels are de-carbonised as far as possible in the short to medium term.

## **2. Introduction**

This submission has been prepared by the Low Carbon Vehicle Partnership (LowCVP), in response to the EU proposal to limit indirect land use change associated with meeting the Renewable Energy and Fuel Quality Directives.

The LowCVP is a UK-based, public-private partnership that works to accelerate a sustainable shift to low carbon vehicles and fuels. A multi-stakeholder forum with approaching 180 members, the partnership includes transport fuel suppliers (including energy companies, biofuel and feedstock suppliers); vehicle and component manufacturers; major fleet operators; environmental and consumer groups; academics; and, government departments. The Partnership undertakes activities to encourage the supply and raise demand for low carbon vehicles and fuels. The organisation's depth of expertise and breadth of membership makes it well placed to provide balanced, expert advice.

## **3. Context**

The Renewable Energy Directive requires a 10% share of renewable energy in the transport sector by 2020; the Fuel Quality Directive set a target of a 6% greenhouse gas (GHG) reduction for fuels used in the transport sector in 2020. Biofuels are expected to make a significant contribution to meeting these targets and are required to deliver a minimum of 35% GHG savings compared to the fossil reference (increasing to 50% in 2017). Both directives impose sustainability criteria that biofuels need to satisfy in order to be counted towards the targets. As well as delivering GHG savings, the criteria are intended to prevent the direct conversion of forests and wetlands and areas with a high biodiversity value for biofuel production.

Recent studies have illustrated that increased demand for biofuels in the EU could displace some existing agricultural activities contributing indirectly to land use changes (iLUC) which are not covered by the sustainability criteria. Land use changes can impact upon local environmental quality (e.g. biodiversity and water) and create (GHG) emissions. The scale of this indirect (or consequential) land use change and the resulting GHG emissions is uncertain but there is evidence to indicate that

the net GHG benefits of biofuels could be nullified. GHG savings are one of the key benefits of biofuels and one of the reasons behind the introduction of the RED and the FQD.

In October 2012, as required by Article 19(6) of the RED and Article 7d (6) of the FQD, the Commission published a proposal that aimed to:

- limit the contribution that conventional biofuels (with a risk of ILUC emissions) make towards attainment of the targets in the Renewable Energy Directive;
- improve the GHG performance of biofuel production processes (reducing associated emissions) by raising the GHG saving threshold for new installations subject to protecting installations already in operation on 1<sup>st</sup> July 2014;
- encourage a greater market penetration of advanced (low-ILUC) biofuels by allowing such fuels to contribute more to the targets in the Renewable Energy Directive than conventional biofuels;
- improve the reporting of (GHG) emissions by obliging Member States and fuel suppliers to report the estimated indirect land use change emissions of biofuels.

The proposed changes to the RED and FQD include:

- An increase in the minimum GHG saving threshold for new installations to 60% (produced in installations starting operation after 1st July 2014);
- A 5% limit on the amount of food crop-based biofuels that can be counted towards the EU's 10% target for renewable energy in the transport sector by 2020;
- Inclusion of specific indirect land use change factors for sugar, starch and oil based crops in the reporting by fuel suppliers and Member States;
- Multiple counting for biofuels with no or low indirect land use change emissions, in particular advanced biofuels.

#### **4. LowCVP response to specific proposals**

LowCVP Members believe that biofuels must deliver GHG savings in order to decarbonise the transport sector. However, the current proposals do not sufficiently address nor mitigate iLUC risks.

##### **4.1 To limit the amount of food crop-based biofuels (to 5%) that can be counted towards the EU's 10% target for renewable energy in the transport sector by 2020.**

A cap on “food”<sup>4</sup> crop-based biofuels appears to have several limitations:

- a) it does not address the concept of iLUC, which occurs due to use of the **land** not specifically the use of food crops. A non-food crop such as miscanthus could produce iLUC if it displaced existing agricultural production onto other land.
- b) it does not recognise and therefore may inhibit the potential GHG benefits of producing biofuels from some food crop-based biofuels. For example, some biofuel co-products (e.g. from the production of wheat and sugar beet based bioethanol and oil seed rape based biodiesel) can be used to substitute animal feed ingredients that are currently imported (such as soybean) and therefore reduce pressure on land. Analyses from Weightman et al (2010)<sup>5</sup>

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<sup>4</sup> This term may be misleading in that some “food” crops used for biofuels are actually animal “feed” crops e.g. feed wheat as opposed to milling wheat used for bread etc.

<sup>5</sup> R . M . Weightman, B . R . Cottrill., J . J . J . Wiltshire, D . R . Kindred and R . Sylvester-Bradley. *Opportunities for avoidance of land-use change through substitution of soya bean meal and cereals in European livestock diets with bioethanol coproducts*. GCB Bioenergy (2011) 3, 158–170, doi: 10.1111/

and Hazzledine et al (2011)<sup>6</sup> indicate that there is substitution potential for soybean meal and the implication is that bioethanol produced from wheat and sugar beet in the EU27 has the ability to make more efficient use of existing arable land within Europe than at present, while reducing the pressure on high carbon stock land outside Europe.

There is a concern from some members that the proposed cap will pose an unnecessary and disproportionate risk to current UK investment in biofuels and damage investor confidence in future investment for advanced biofuels.

A number of members do however support a cap on “food-based” biofuels as a means to reduce the risk of ILUC emissions where GHG emissions savings are already small.

#### **4.2 To provide market incentives for biofuels with no or low indirect land use change emissions, and in particular advanced biofuels.**

LowCVP members welcome the incentivisation of advanced biofuels that can demonstrate no or low iLUC risk. Regulatory certainty, clarity and longevity and market stability are identified as being essential to encourage investment in advanced biofuels. In order to generate investor confidence mandated targets for advanced (and crop based biofuels) should be extended to 2030. However, most members do not support multiple counting (in particular 4 times counting) as this limits the extent to which the use of fossil fuels can be substituted by genuinely low carbon biofuels and therefore limits the GHG savings that can be achieved. Further, some research (Lywood, 2013)<sup>7</sup> shows that in many cases the indirect GHG effects of non-food crops are no better and in some cases are worse than those of biofuels from food crops. If multiple counting is intended to incentivise innovation LowCVP believes a different approach may be warranted that maintains the longevity and stability of the incentives.

#### **4.3 To include indirect land use change (ILUC) factors in the reporting by fuel suppliers and Member States of greenhouse gas savings of biofuels and bioliquids;**

There is a broad consensus amongst LowCVP members against the inclusion of iLUC factors in the RED and FQD. A significant proportion of LowCVP members believe the science of iLUC is very much in its infancy and requires a greater level investigation and refinement. The prediction of iLUC emissions is considered as being complex and uncertain because iLUC is dynamic and will vary (perhaps substantially) over time as market conditions vary and as different national and/or local policies change.

The proposal to apply or report iLUC factors derived from economic models is not considered a robust basis for policy and suffers from a number of weaknesses including key assumptions regarding agronomic yields and co-products. Most significantly, LowCVP stakeholders are not persuaded that the complexity of agricultural markets can currently be adequately modelled to estimate future land use changes with sufficient accuracy to generate accurate values. When uncertainties in the location and size of converted land are combined with those of the arising GHG emissions the resulting iLUC emission or factor must be treated with considerable caution.

A number further weaknesses have been identified by LowCVP members regarding the proposal to include iLUC factors:

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<sup>6</sup> Hazzledine, M; Pine, A; Mackinson, I; Ratcliffe, J; Salmon, L. Estimating Displacement Ratios of Wheat DDGS in Animal Feed Rations in Great Britain. A report commissioned by the International Council on Clean Transportation. Working Paper 2011-08.

<sup>7</sup> Warwick Lywood, 2013. *Indirect effects of “advanced” biofuels.*

- The production of crop-based biofuels is associated with a range of GHG emissions impacts. The proposal to only include a limited number of iLUC factors is considered too simplistic and potentially erroneous for some biofuel pathways that could provide iLUC benefits through production of a co-products.
- There is no indication in the proposals as to how often the iLUC factors proposed will need to be up-dated to remain relatively accurate. It is not possible to scientifically calibrate and validate the different approaches for modelling iLUC and developing iLUC factors. These matters present further weakness in the application of iLUC factors.
- The application of iLUC factors is only being considered for biofuels and not across other sectors of the renewable energy market that could have land use change impacts. A more equitable approach should be taken for regulating iLUC impacts.

### ***An alternative approach to address iLUC***

LowCVP members support the adoption of appropriate measures to address iLUC. The introduction of iLUC factors fails to address the mitigation of iLUC risks. Since iLUC is related to use of land, risks can be minimised through a range of good land stewardship and crop husbandry practices. These would enable additional, sustainable crop production for biofuels use while minimising the risk of iLUC. It is essential that a policy response to iLUC encourages these practices.

As an alternative to the current proposals LowCVP proposes a more dynamic risk-based approach as the best way to meet the identified policy objectives. This approach would ensure that biofuels produced in a manner that had a significant risk of causing net GHG-emissions (when iLUC is taken into account) would not meet RED and FQD sustainability criteria unless adequate mitigation measures were adopted. Further details of the risk based approach proposed can be found in LowCVP’s previous position paper addressing iLUC, prepared in 2011.<sup>8</sup>

Figure 1 illustrates how the categorisation of the iLUC-risk for different feedstocks determines the mitigation requirements in order that the feedstock complies with the proposed iLUC RED criteria.

**Figure 1 – Requirements on feedstock depending upon the risk that the iLUC-criteria is exceeded**

iLUC-risk	Criteria for supply 2014-17	Criteria for supply 2018-20
<b>Very High</b>	Mitigation to reduce risk to <u>Medium</u>	Mitigation to reduce risk to <u>Low</u>
<b>High</b>	Mitigation to reduce risk to <u>Medium</u>	Mitigation to reduce risk to <u>Low</u>
<b>Medium</b>	No requirements or incentives	Mitigation to reduce risk to <u>Low</u>
<b>Low</b>	No requirements or incentives	No requirements or incentives
<b>Very Low</b>	Incentivise – 1.25 certificates / l?	Incentivise – 1.25 certificates / l?

<sup>8</sup> <http://lowcvp-isleint4.isledev.co.uk/assets/reports/iLUC%20response%20final%20-%20LowCVP-2011.pdf>

In accordance with the precautionary principle, the greater the risk the iLUC-criterion is exceeded the greater the level of mitigation which should be adopted. Figure 1 illustrates how these requirements are progressively strengthened overtime.

Different feedstocks have different iLUCrisks and different mitigation options have entirely different efficacy. Since the impact of different options is difficult to measure, a simple framework should be adopted in which a range of mitigation options are defined as either:

- Very effective mitigation, or
- Moderately effective mitigation

“Effectiveness” would be measured based upon the extent to which the adopted mitigation measure reduces iLUC and the risk of net GHG-emissions. Figure 2 illustrates this concept and identifies the level of risk reduction needed (based on bands) to achieve an acceptable level of risk. For example; a 1 band reduction would be required for a High risk feedstock to achieve a Medium risk level; but a 2 band reduction would be needed for the same High risk feedstock to achieve a Low level risk (as would be needed by 2018).

**Figure 2 – Illustration of mitigation requirements related to reducing iLUC risk levels**

Number of bands reduction	Example Assigned risk → Required Risk	Requirements
3	Very High → Low Risk	1 Very Effective mitigation measure
2	Very High → Medium Risk High → Low Risk	1 Very Effective mitigation measure
1	Medium → Low Risk High → Medium Risk	1 Moderately Effective mitigation measure

The efficacy of mitigation measures is related to the local context – no single approach can be globally considered ‘very effective’<sup>9</sup>. Further work is needed on the efficacy of alternative mitigation approaches. To date most work undertaken on mitigation options has focused on tropical crops. The European Commission, including DGAgri, should further examine options for rotational crops and mechanisms to ensure production from the most efficient producers is not inadvertently disadvantaged.

Policy should be not be prescriptive about allowable mitigation options but prescribe boundary conditions for mitigation measures. In considering which options should be allowable to mitigate high risk iLUC feedstock a range of criteria should be considered including whether the approach is:

- Politically, economically and technically feasible
- Very or moderately effective
- Performance-based and measureable
- Based on evidence/science

<sup>9</sup> For example, increasing yield per unit area increases water requirements. In some water-constrained areas this is not an appropriate response and illustrates that local context is key.

- Verifiable

The determination of iLUC risk could be based upon a range of scenarios that include policy interventions. The elements of a risk-based approach have already been developed (E4Tech, 2010<sup>10</sup>; Ernst & Young, 2011<sup>11</sup>). By using a range of models, assumptions and scenarios it is possible to develop a profile of which feedstocks present the greatest risk of causing net-GHG emissions and which deliver the likelihood of the greatest GHG savings and to what extent policy interventions are likely to mitigate the risk. The risk-based framework outlined has a number of advantages over the current proposals that include iLUC factors and caps or incentives for specific biofuels:

- It can account for uncertainty in assumptions and future scenarios by assigning ranges to the iLUC risk and assigning classes of risk - which is more realistic than seeking to quantify a precise iLUC factor for each feedstock
- It does not alter the current RED and FQD targets or sustainability criteria maintaining a degree of regulatory certainty
- It focuses on the high risk feedstocks and therefore minimizes market disruption by having no impact on medium or low risk feedstocks
- It is based upon sound science but can operate flexibly to account for inherent uncertainties – for example in the way thresholds for risk levels are defined
- It incentivises low risk feedstock and provides a mechanism through which high risk feedstocks can meet the criteria through adopting appropriate mitigation measures
- It has an element of continuous improvement and has some time incorporated to allow feedstock suppliers to begin to adopt appropriate mitigation measures
- It groups mitigation measures into classes ('very effective' and 'moderately effective') which is simpler and more realistic than requiring quantification of every mitigation measure.

## 5. Conclusions

LowCVP believes that biofuels must deliver GHG savings and be delivered sustainably. The current proposals for a food crop-based cap and iLUC factor reporting does not adequately address nor mitigate the risk of iLUC. LowCVP members welcome the incentivisation of advanced biofuels and see these playing an important role in the progression of sustainable biofuels for road transport. Regulatory certainty, clarity and longevity are identified as being essential to encourage investment in advanced biofuels. However, there is little support within LowCVP for multiple counting as this limits the extent to which the use of fossil fuels can be genuinely substituted by genuinely low carbon biofuels and some evidence suggests the feedstocks intended to benefit from double-counting still generate iLUC risks. It is critical to recognise that iLUC is a phenomenon based ultimately on land requirement and advanced biofuels are not inherently low iLUC risk.

The current proposals should be revised and:

- Be based on the best available scientific evidence of the scale of the effects and contribution of biofuels produced from different feedstocks and cultivation and production processes.
- Encourage approaches which sufficiently minimise the risks of iLUC.
- Treat both EU indigenous production and imported biofuels or feedstock in an equitable manner based upon the level of risk presented.
- Incorporate the need for continuous improvement to progressively lower risks over time.

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<sup>10</sup> E4tech,2010 A causal descriptive approach to modelling indirect land use change impacts of biofuels

<sup>11</sup> <http://www.endseurope.com/docs/111005a.pdf>

The majority of LowCVP members favour a risk-based approach to iLUC based on levels of iLUC threat and identification of appropriate mitigation actions outlined in this proposal. Development of a reliable well-evidenced solution is considered essential to addressing iLUC. Significant delays, or ineffective interventions, will continue to erode public confidence in biofuels increasing the uncertainty in markets and undermining the investment needed to ensure RED and FQD targets are delivered and that liquid fuels are de-carbonised as far as possible in the short to medium term.

## **6. Further information**

If you require any further information regarding this submission please contact:

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July 2013