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## **Shell Response to the European Commission consultation on Indirect Land Use Change Impacts of Biofuels**

### **Executive summary**

Shell welcomes the opportunity to contribute towards the European Commission's consultation on indirect land use change (iLUC) impacts of biofuels. Shell's views on land use change are informed by the collective expertise of our scientists, agronomists, sustainability advisers and commercial managers, as well as the efforts we have made to work with and learn from a wider group of experts across academic, NGO, agricultural and other industry sectors in Europe and internationally.

Shell's approach is guided by our recognition that future energy demand and climate change pressures dictate an urgent need to decarbonise and diversify road transport fuels. This sector alone accounts for about 17% of energy-related carbon dioxide (CO<sub>2</sub>) emissions. With global transport fuel demand set to rise by 45% between 2006 and 2030<sup>i</sup>, we will need all the sustainable transport fuel options available to us. For Europe to move to a low carbon economy, it is important to remember that the journey is as important as the destination. Electric and Hydrogen Fuel Cell Vehicles will be important in the longer-term but we must also take opportunities to reduce CO<sub>2</sub> emissions from transport today. Sustainable biofuels are one of the only widely available, commercial solutions to reduce CO<sub>2</sub> in the transport sector over the next 20 years, starting now.

Our responses to the consultation questions are set out in this paper. General considerations and policy recommendations:

- Over 65 countries around the world now have some form of biofuel policy but the European Union has demonstrated world leadership by introducing the most ambitious set of mandatory sustainability protections, including that biofuels must deliver substantial greenhouse gas (GHG) reductions and should not come from areas with high conservation value.
- Priority should be given to making EU sustainability requirements work well in practice and to encouraging their uptake elsewhere.
- Indirect Land Use Change (iLUC) is a complex concept which assumes that, in some cases, new crop production may displace existing activities creating indirect emissions elsewhere.
- iLUC is caused by the wider agricultural and forestry sector, not just by biofuels alone. EU initiatives to tackle iLUC should therefore aim to mitigate CO<sub>2</sub> impacts from across the sectors.
- However, we recognise that iLUC can occur in association with biofuels production and that a reliable, well-evidenced solution is needed if Europe is to have a significant biofuels and bioenergy industry.
- Growing evidence shows that iLUC risks can be mitigated or avoided altogether through a range of practices, such as the use of degraded land with no existing utility; yield enhancement; integration of biofuels production with other agricultural production systems; use of co-products and improvements to production or supply chain efficiencies. The effectiveness of some of these practices has been established by Ecofys, WWF and Conservation International<sup>ii</sup>.
- **Introducing a simple market mechanism in the Renewable Energy Directive (RED) to recognise biofuels with low or no risk of causing iLUC, and reward them through assignment of better GHG performance, would drive the uptake of best practices.**

- iLUC mitigations offer European producers, plus other countries and regions, opportunities to demonstrate delivery of sustainable biofuels with a low risk of causing iLUC within a reasonable timeframe.
- Other measures, including recognition of regions or countries that have developed sound, strategic land use planning systems (e.g. Brazilian agri-ecological land zoning), are also available to European policymakers in order to demonstrate that biofuels contribute towards Renewable Energy targets with minimal iLUC risks.
- Much of the iLUC debate so far has focused on the use of ‘iLUC factors’ but there is no reliable evidence available to show how iLUC factors would effectively change production behaviours on the ground. The use of iLUC factors may drive fuel suppliers to blend higher volumes of biofuel components in order to meet GHG reduction targets, thereby – perversely – increasing iLUC risks associated with those biofuel components.
- We are concerned that the incorporation of highly uncertain iLUC factors would do very little to address the underlying problems associated with iLUC but could instead create negative, unintended consequences such as greater iLUC risks and increased costs to consumers.
- An important consequence of increasing the GHG profile of biofuels on paper is that volume demand will increase in order to meet the RED and Fuel Quality Directive (FQD) targets. In turn, this will increase pressures on land use and it could mean that there is not enough sustainable supply for the industry as a whole to meet the 2020 targets.
- Today’s biofuels policies provide the pathway to improving existing biofuel production pathways, as well as commercialising advanced biofuels, which use non-food feedstocks and more efficient processes. The investments needed to enable these transitions need to be supported by sound policies and regulatory certainty in order to assure investor confidence.

## **Responses to consultation questions set out in the European Commission’s consultation on Indirect Land Use Change Impacts of Biofuels**

### **1) Do you consider that the analytical work referred to above, and/or other analytical work in this field, provides a good basis for determining how significant indirect land use change resulting from the production of biofuels is?**

No. Shell believes that the analytical work referred to in this consultation is sufficient to recognise that indirect land use change (iLUC) is an issue but we do **not** believe that analytical work to date provides a sound basis to determine or quantify the significance of iLUC associated with biofuels production.

From the evidence presented<sup>iii</sup>, there continues to be wide variation in scope of models, baseline scenarios, data, land use types for conversion (and associated carbon stocks), calculations and assumptions. Individually or collectively, these factors yield widely varying results. The Commission’s Literature Review (July 2010) concludes that:

*“...results show that various modelling exercises have not managed to present definite and detailed conclusions on whether or not to prefer certain feedstocks, feedstock-growing regions or fuel types. There can be large ranges of uncertainty within studies and partly contradicting results across studies.”<sup>iv</sup>*

Such wide margins of error and uncertainty do not provide an adequate basis for reliably determining the significance of iLUC as a result of agricultural expansion to meet biofuels demand specifically, rather than that caused by the effects of a range of other increasing demands e.g. for coffee, tobacco, cosmetics, crisps, candies etc.

The Directives require that any proposal must be based on the “best available scientific evidence”. Evidence about assessing iLUC risks associated with biofuels is relatively new, and so far uncertain. It is also important not to ignore the body of agricultural science that has been evolving for decades and which underpins the efficacy of iLUC mitigation approaches such as yield improvement measures.

**2) On the basis of the available evidence, do you think that EU action is needed to address indirect land use change?**

Shell recognises that iLUC is an issue. However, Shell believes that the available evidence for determining the significance of iLUC is **not** sufficiently advanced or robust to reliably establish iLUC impacts for regulatory purposes.

To ensure the credibility of biofuels as a significant contributor to the reduction of greenhouse gas emissions in transport fuels in the short to medium term, Shell believes that regulators need to address indirect impacts including iLUC relating to bioenergy and agriculture in general – not just biofuels. Shell supports EU policies that would promote the adoption of iLUC mitigation measures, as outlined in section 4D.

**3) If action is to be taken, and if it is to have the effect of encouraging greater use of some categories of biofuel and/or less use of other categories of biofuel than would otherwise be the case, it would be necessary to identify these categories of biofuel on the basis of the analytical work. As such, do you think it is possible to draw sufficiently reliable conclusions on whether indirect land use change impacts of biofuels vary according to:  
Feedstock type?  
Geographical location?  
Land management?**

No, Shell does not believe that there is sufficient, reliable information to assess iLUC impacts according to the categories given. The same inconsistencies and variances outlined in the response to question (1) apply. The example categories given are judged to be too broad. Within each, there are wide variations in production practices and associated impacts – real or perceived – that make it unrealistic to aggregate biofuel production in this way.

Shell does not consider ‘blanket’ type promotion or exclusions of biofuel components by feedstock, geography, or land management as a workable policy option as these approaches can unfairly advantage or disadvantage selected producers, restrict supply options and distort markets.

Instead, we recommend the adoption of policy frameworks that prevent or mitigate the potential for iLUC occurring and that are biofuel neutral. Such policies would ensure that a range of feedstock options for meeting biofuel mandates are maintained while promoting the responsible growth of the biofuel industry (and more responsible expansion of the agricultural industry as a whole).

**4) Based on your responses to the above questions, what course of action do you think appropriate?**

***A. Take no action for the time being, while monitoring impacts including trends in certain key parameters and, if appropriate, proposing corrective action at a later date***

Shell considers that it is important to address iLUC. Our recommendations to address iLUC are outlined in section 4D. At the same time, Shell supports the proposal to monitor impacts and trends from biofuels so that, where opportunities for improvement are identified, corrective action can be taken. Conclusions and lessons from this monitoring work should be used to develop and refine policies and to encourage replication of better practices and actions that will minimise direct and indirect impacts. This monitoring should include GHG, social and environmental aspects.

However, while we support efforts to encourage continual learning and improvement, this should not translate into an unreliable regulatory framework, which makes it unattractive or even impossible for investments to proceed with sufficient market confidence. In the case of biofuels, this point is vital for the development and commercialisation of advanced biofuels, which use non-food feedstocks and more efficient processes. Today's biofuels policies provide the pathway to improving existing biofuel production pathways, as well as commercialising advanced biofuels, which use non-food feedstocks and more efficient processes. The investments needed to enable these transitions need to be supported by sound policies and regulatory certainty in order to assure investor confidence.

***B. Take action by encouraging greater use of some categories of biofuel (Please say which biofuels, why and what sort of encouragement should be given.)***

Shell does not consider 'blanket' type promotion of some categories of biofuel components (for example by feedstock or geography) as a workable policy option because:

- Encouragement of some biofuel categories could lead to isolated, poor production practices (that fall within the selected category and that have a high risk of causing iLUC) being advantaged.
- Promotion of some biofuel categories could be perceived as an artificial trade barrier restricting the opportunity for impacted producers or geographies to compete.
- Encouraging some biofuel supply options could lead to pressure being concentrated on particular feedstock/geographical combinations, thereby creating the potential for more local land use change and increasing the associated risk of iLUC occurring.
- Differentiating selected biofuel types can lead to unnecessary movement of biofuels from one jurisdiction to others where the differentiator does not apply.

***C. Take action by discouraging the use of some categories of biofuel by***

***i) increasing the minimum greenhouse gas saving threshold for biofuels***

Shell does not support increasing the minimum GHG threshold of biofuels to reflect iLUC because:

- Raising the minimum GHG threshold bears no correlation with iLUC and does not reflect the risk of iLUC associated with the biofuels.
- Raising the threshold would not address iLUC on the ground. For example, a biofuel that does not meet the increased threshold would be excluded, regardless of whether its production was causing iLUC. Similarly, a biofuel that met the increased threshold would qualify but could still be causing iLUC to occur in practice.
- This approach will further restrict biofuel options for blenders in the short-term, which could increase the costs burdens associated with the policy and hamper the industry's ability to meet the mandates.

***ii) imposing additional sustainability requirements on certain categories of biofuel (these could, for example, require the use of practices that can help mitigate indirect land use change impacts)***

Shell believes that biofuels from all parts of the world should meet agreed sustainability requirements (including, for example, those set out in Article 17 of the EU RED). As the EU has the most ambitious biofuels sustainability standards in the world, priority should be given to making these standards work well in practice and hence encouraging their uptake elsewhere.

While Shell recognises the opportunity for a risk-based approach to categorise biofuels and mitigate iLUC impacts, we would urge caution in how such a requirement might be adopted in order to avoid unintended consequences.

For example, the imposition of additional sustainability requirements on selected categories of biofuels to mitigate iLUC could, if too burdensome, result in producers electing to not supply the biofuels market, thereby further constraining supplies, distorting markets and threatening the viability of EU targets. Similarly, a compulsory approach (while assuming that all blenders strive to support effective implementation rather than allow natural supply constraints to demonstrate that the policy

and targets were not viable in the first place) will simply result in a race by blenders to achieve minimum compliance as cheaply as possible, rather than inspiring producers to race towards better performance. As such, a compulsory approach is unlikely to yield a significant reduction in iLUC itself.

Instead, policy should provide a signal for producers to adopt practices that mitigate iLUC impacts. An example of such an approach, which promotes market based practices to mitigate indirect land use change impacts, is given in paragraph 4D below.

*iii) attributing a quantity of greenhouse gas emissions from indirect land use change to all biofuels that use land. If the latter, please say how this should be calculated, and demonstrated – for example:*

- a factor based on the estimated (modelled) land use change from a marginal extra quantity of crop production;*
- a factor based on the average land use change from crops over some recent period;*
- a factor based on any other consideration.*

*Please also say:*

- whether it should be reviewed and if so how often*
- whether it should be implemented with any accompanying measures*

Shell does not support any proposal that attributes a quantity of GHG emissions from iLUC (an ‘iLUC factor’) to all biofuels that use land because:

- There is no consensus on how iLUC factors are determined and current methodologies are not sufficiently advanced to be relied upon for regulatory purposes. Furthermore, the application of uncertain iLUC factors serves only as a carbon accounting measure at the blend point.
- iLUC factors offer no incentive to growers and producers to improve their production systems in order to reduce indirect impacts on the ground.
- Shell is also concerned that the application of uncertain iLUC factors for regulatory purposes could lead to some significant unintended consequences. For example, if the current, wide margins of error result in overly conservative (high) iLUC factors, this will require fuel suppliers to blend higher volumes of biofuel component(s) in order to meet GHG reduction targets under the EU’s Fuel Quality Directive (FQD). This increased demand for biofuel components and associated feedstocks will put further pressure on land, inadvertently increasing the likelihood of iLUC impacts. The need to blend higher volumes of biofuel components may also mean exceeding existing specification limits that are designed to ensure compatibility with the existing vehicle fleet and fuel infrastructure.
- In requiring more biofuel component to be blended (as above), attributing an iLUC factor is likely to further increase the cost of the blended biofuel, resulting in unnecessarily increased transport fuel prices for consumers.
- Under the EU RED’s minimum qualifying threshold for WtW GHG performance, the adoption of iLUC factors could result in the unnecessary exclusion of certain biofuel components, which will further constrain options for blenders to meet mandates. As noted above, this is likely to lead to unnecessarily increased biofuel prices for consumers. It could also lead to concentration on selected feedstocks, potentially causing more land use change and increasing the risk of iLUC occurring.

In addition, Shell does not consider ‘blanket’ type exclusion of some categories of biofuels (for example by feedstock or geography) as a workable policy option because:

- A framework that excludes certain categories of biofuel might unfairly exclude responsible suppliers that may not be causing iLUC.
- Exclusion of some biofuel categories could be perceived as artificial trade barriers and restrict the opportunity for impacted producers or geographies to compete.
- By excluding biofuel supply options, pressure is then diverted to preferred biofuel categories (for example from selected feedstocks and/or regions/countries) thereby creating the potential for more local land use change and increasing the associated risk of iLUC occurring.

#### ***D. Take some other form of action***

Shell recognises that iLUC can occur in association with biofuels production and that a reliable, well-evidenced solution is needed if Europe is to have a significant biofuel and bioenergy industry. Growing evidence shows that iLUC risks can be mitigated or avoided altogether through a range of land stewardship and crop husbandry practices that enable additional, sustainable crop production for biofuels use while minimising the risk of iLUC. Several such practices have been identified by Ecofys, WWF and Conservation International in their recent report *Responsible Cultivation Areas*<sup>ii</sup>. iLUC mitigation practices have also been recognised by E4Tech in their recent report<sup>v</sup>.

Shell recommends that regulators recognise and reward these best practices. An example of how this could be achieved using the scope of the EU RED and FQD, is suggested as follows:

- The RED already addresses direct impacts from increased biofuel production through Article 17, which prohibits production of bio-components from land of high carbon or biodiversity value. The EU Commission's implementation guidance also supports the use of multi-stakeholder, voluntary standards (e.g. the Better Sugarcane Initiative).
- Priority should first be given to making the EU RED and FQD's existing sustainability standards work well in practice and hence to encouraging their uptake elsewhere in the world.
- In order to address indirect impacts, policy should be directed at preventing the displacement of economic activity (which then needs to be compensated for, creating the indirect 'ripple effect') by encouraging crop production that minimises the risk of iLUC occurring in the first place.
- Opportunities include: implementation iLUC mitigation options such as those highlighted in the *Responsible Cultivation Area* methodology developed by WWF International, Conservation International and Ecofys (e.g. the use of degraded land with no existing utility, yield enhancement, integration of agricultural production systems); use of co-products; strategic land use planning and improvements to production or supply chain efficiencies.
- Some of these iLUC mitigation opportunities are ready to implement today, given the right market conditions. Others are not widely adopted, partly because they present a significant, additional cost and/or burden to producers.
- Even with growth projections taken into account, the EU biofuels market still only represents a small minority of the current marketplace for agricultural commodities and demand is also growing elsewhere. It is still also the only sector that already requires producers to comply with mandatory sustainability standards.
- Producers require a price signal in order to invest in implementing additional sustainability practices. Without an increase in associated product value linked to implementation of sustainable agricultural practices, there is no incentive for producers to adopt such practices and hence iLUC from agricultural expansion continues.
- The EU RED could formally recognise and reward a range of iLUC mitigation practices through application of a greenhouse gas reduction 'bonus' in order to account for the avoidance of greenhouse gas release associated with iLUC.
- This could be done by expanding the qualifying requirements for the EU RED's existing bonus of 29gCO<sub>2</sub>eq/MJ that today applies to production from severely degraded or contaminated land<sup>vi</sup>.
- When coupled with regulations that promote carbon intensity reduction, (like the EU FQD), bio-components with an iLUC 'carbon/GHG bonus' would deliver a better WtW value. This approach would give growers and producers a clear signal that iLUC mitigation practices are worth investing in because the resulting biofuel/bioenergy feedstocks should command a higher price in the market, enabling early payback for initial investments and ongoing production costs to be recouped.
- Note that the additional value to crop growers and biofuel producers must cover the additional costs that they would incur to implement the better practices – and hence any iLUC mitigation requirements should not be too burdensome or complex for producers.
- Policy requirements designed to encourage iLUC mitigation practices need to be as simple as possible so as not to serve as an unintended barrier to implementation and effective auditing/verification.

## Concluding summary

To mitigate the risk of iLUC associated with biofuel and bioenergy production, EU policymakers should consider the following approach:

- Sustainability certification to provide direct protections (already required by EU RED)
- Additional – or supplements to existing – certification schemes to recognise production systems that mitigate iLUC impacts
- A regulatory framework for biofuels and bioenergy that both requires sustainability compliance (as already in the EU RED) **and** also rewards agricultural practices that mitigate iLUC impacts, via a “carbon/GHG bonus” that supports compliance both with the EU RED and the carbon intensity reductions required by the EU FQD.

Shell believes that by adopting such measures, as outlined in section 4D, policymakers can constructively address the risk of negative land use change occurring and mitigate any associated GHG release. This would also provide long-term certainty for biofuels investments and further encourage responsible growth of an emerging biofuel industry. We believe that this approach would also:

- Help to ensure that the EU RED and FQD targets are met, rebalancing supply and demand towards a challenging yet realistic, more sustainable goal.
- Help to spread better environmental practices for the wider benefit of the food, feed and other industrial sectors, which are not mandated to deliver on even the very basic sustainability criteria.
- Introduce an additional stimulus for investing in rural economies and improving agricultural developments within Europe and beyond.

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<sup>i</sup> Shell calculations based on data from International Energy Institute and PIRA

ii The recent report, *Responsible Cultivation Areas*, (September 2010), by Ecofys, WWF International and Conservation International presents a methodology for practical and field-tested measures to reduce the risk of iLUC effects. Shell was one of the supporters of this work, along with the UK Renewable Fuels Agency, BP, Neste Oil and the Packard Foundation, which provided funding for Conservation International and WWF. See: [http://www.ecofys.com/com/publications/Responsible\\_Cultivation\\_Areas.htm](http://www.ecofys.com/com/publications/Responsible_Cultivation_Areas.htm)

iii Shell scientists have reviewed and analysed a wide range of available evidence relating to land use change and various studies that have attempted to model or investigate iLUC. These include: DG Energy’s Literature Review (*The Impact of Land Use Change on Greenhouse Gas Emissions from Biofuels and Bioliquids*, July 2010); the IFPRI study for DG Trade (*Global Trade & Environmental Impact Study of the EU Biofuels Mandate*, March 2010); the JRC Institute for Prospective Technological Studies’s work for DG Agri (*Impacts of the EU Biofuel Target on Agricultural Markets and Land Use*, July 2010) and the JRC Institute for Energy’s study for DG Climate (*Indirect Land Use Change from Increased Biofuels Demand*, July 2010.)

<sup>iv</sup> See page 197 of Literature Review: *The impact of land use change on greenhouse gas emissions from biofuels and bioliquids*, July 2010

<sup>v</sup> E4Tech’s report: *A causal descriptive approach to modelling the GHG emissions associated with the indirect land use impacts of biofuels* (October 2010)

<sup>vi</sup> See Annex V.C.8 of Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources