INDIRECT LAND USE CHANGE IMPACTS OF BIOFUELS – CONSULTATION
Input from Conservation International

Executive summary

Biofuels have the potential to generate substantial benefits for both producers and users. However, as a new, large source of demand for agricultural commodities, and thus the land required to produce them, biofuels also have the potential to generate negative direct and indirect effects. Most current legislation, including the European Union's Renewable Fuels Directive (RED), include direct impacts. Indirect impacts, though, have the potential to be just as large, and also must be addressed in order to ensure biofuel use mandates truly achieve the intended objectives without provoking unexpected and unwanted negative effects on the global climate, ecosystems, and communities.

To this end, Conservation International (CI) strongly feels that indirect land use change (iLUC) should be addressed by the EU, and included in the RED. More specifically, we believe that:

- Calculations of iLUC-related emissions should be included in lifecycle analyses, in determining whether a biofuel meets required emissions reductions. These calculations should be at a subnational scale for large countries; they should also include feedstock, land management/ processing systems, and processing system specific; and
- Incentives should be provided for practices which reduce the risk of iLUC from feedstock production.

General Comments

The question of indirect land use change related to biofuel feedstock production is one of the most complex and controversial to arise from recent efforts to promote the use of biofuel use in the European Union and indeed, globally. Conservation International congratulates the Commission for choosing to address this issue in a systematic and objective manner, and for considering economic, environmental, and social consequences of biofuel production and use.

Conservation International believes that biofuel production and use can, when done well, generate a host of benefits from rural development and employment to increased foreign investment, reduced emissions from transportation, and greater energy independence and security. Yet unsustainable production of feedstocks also brings a set of risks, including increased emissions from production systems and land use change, degradation of ecosystem services and biodiversity habitat, decreased food security, and destabilized local land rights.

Many of these issues, both positive and negative, are included within the concept of iLUC. ILUC could potentially create benefits for communities and ecosystems – perhaps through increased food production and employment in a region to which production is displaced, for example. However, it may also lead to negative effects including loss of natural ecosystems, carbon stocks and sequestration potential, ecosystem service provision and flows, and biodiversity habitat. These effects, though difficult to estimate, attribute, or model, are nonetheless as important as the direct effects of feedstock production. A policy which ignored them would be incomplete, if not irresponsible.

CI believes that efforts to model iLUC, and to incorporate these models into policy frameworks, are worthy. Such measures are already included in the lifecycle analysis methodologies used in the United States' Renewable Fuel Standard 2, and in California's Low Carbon Fuel Standard. Similarly, we believe that iLUC-related emissions should be included in lifecycle analyses under the RED. Given the near-certainty that the data used in modeling, and the models themselves, will continue to be improved and refined in coming years, we recommend a periodic review of these models with adjustments made as warranted.

We also believe, though, that there are already a set of practical, recognized practices which reduce the risk of iLUC, and which could be stimulated through policy vehicles to begin to mitigate iLUC risk while models and analyses are still being refined. The Responsible Cultivation Areas (RCA) methodology,[1] developed by Ecofys in collaboration with CI and WWF, outlines three of these practices, and details how they might be implemented and eventually verified. Pilots of this methodology were carried out in different feedstock-production contexts in developing countries, and it was shown to be feasible, efficient, and successful[2]:

- Identification of responsible cultivation areas, or areas where feedstocks might be produced with minimal risk of displacement, and minimal negative effects on communities or ecosystems;
- Increases in yields above the business-as-usual scenario, without provoking negative effects on communities or ecosystems;
- Integration of bioenergy feedstocks into existing agricultural landscapes, with minimal risk of displacement, and minimal negative effects on communities or ecosystems.

(The use of true waste products as feedstocks, where it does not displace another use, is another practice which minimizes iLUC risk, and which is currently stimulated under the RED through "double counting.") We believe that providing incentives for these types of practices is a practical first step to ensuring the fulfillment of EU biofuel mandates does not cause unwanted indirect impacts on the global climate, communities, and ecosystems. The Renewable Energy Directive already allows for a "bonus" for biofuels made from feedstocks produced on degraded lands, and allows "double counting" of biofuels produced from waste products. This type of

---

[11] Ecofys. Responsible Cultivation Areas : Identification and certification of feedstock production with a low risk of indirect effects. 2010. http://www.ecofys.com/com/publications/responsible_cultivation_areas.htm

[2] Conservation International, 2010a. Identification of Responsible Cultivation Areas in Pará Brazil – pilot report. A report prepared by CI with support from Ecofys.

Conservation International, 2010b. Identification of Responsible Cultivation Areas in São Paolo Brazil – pilot report. A report prepared by CI with support from Ecofys.

Budiman, A.; Smit, H. (2010). Identification of Responsible Cultivation Areas in West Kalimantan Indonesia - Phase I: Preliminary Assessment. A report prepared by WWW with support by Ecofys

Smit, H.; Budiman, A.; Yaya, A.(2010). Identification of Responsible Cultivation Areas in West Kalimantan Indonesia - Phase II: Desk-based analysis. A report prepared by WWW with support by Ecofys

Smit, H.; Budiman, A.; Yaya, A. (2010). Identification of Responsible Cultivation Areas in West Kalimantan Indonesia - Phase III: Field verification. A report prepared by WWW with support by Ecofys incentive measure could be easily applied to feedstocks produced under the practices listed above.

We at Conservation International offer to provide our science, policy, and market-related expertise to the Commission as it evaluates all possible options, and as it moves towards implementation of whatever framework is ultimately designed to address iLUC stemming from biofuel feedstock production.

1) No comments.

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

Yes. We strongly feel that the risk of iLUC is real, and that at the scale implied by EU mandates, could ultimately counteract the EU's stated climate change mitigation objectives, as well as the safeguards put in place to protect global biodiversity and carbon-rich ecosystems from negative effects related to feedstock production. The EU's Renewable Energy Directive will be a driving source of demand for biofuels, and thus for both the direct and indirect impacts of feedstock production globally. Negative effects must be avoided where possible, and addressed where not, in order to secure the primary objectives of the RED without provoking unintended consequences of potentially substantial magnitude.

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:

We feel that one of the most practical means of mitigating the risk of iLUC is to give preference based on whether practices that minimize the risk of displacement of existing productive activities have been used. These practices are applicable across feedstock type and geographic location; they focus on site selection and production and management practices. Several are outlined in the Responsible Cultivation Areas methodology, and the potential for verifying or certifying these practices is already addressed. The benefit of this practice-based approach is that it allows for the selection and/ or reward of production systems that are in actuality mitigating iLUC risk, rather than depending on the probability of iLUC based on broad and uncertain calculations. (The use of waste as a feedstock, if not displacing another use, is another practice which might be included here.)

We also believe that iLUC should be included in the lifecycle analyses used to determine whether biofuels meet greenhouse gas emissions reduction criteria. Of course, these are most accurate when calculated on a case by case basis. However, we recognize that this is not always feasible. If broad categories of biofuels are used to determine default values for lifecycle analyses and factor calculation, such categories must be feedstock and location specific, and should ideally take into account both land management/ production systems, and the type of processing used. Each of these factors determine the risk of iLUC posed by a specific biofuel or blend; examining one without the others, or addressing them only at a very coarse scale, creates severe gaps in analysis.[3]

• **feedstock type?** Feedstock type should be addressed. In particular, the yield of a given crop per area, given local production, management, and land use scenarios should be considered, and should be analyzed in comparison to possible substitutes. (For example, palm oil produced by a large plantation in Indonesia may have three times the yield of oil produced by neighboring smallholders. Palm oil produced on plantations in Indonesia might have very different yield values than oil produced on similarly-sized plantations in Honduras or Liberia.) In general, feedstocks with a higher energy yield per unit of land are preferable to mitigate iLUC risk.[4] The probability of expansion into a certain type of land (for example, secondary forest or peat swamp for oil palm, productive pasture for sugarcane) should be addressed (see below).

• **geographical location?** Geographic location must be addressed, but in many cases this must be done at a subnational scale. The iLUC risk posed by the same feedstock grown in different parts of a large country is substantially different. For example, in Brazil sugarcane produced in the Northeast, where the crop has been cultivated for more than 400 years, has low risk of displacement; what displacement exists is a displacement of sugar production for alcohol, potentially expanding the needed land base to supply both markets. In expansion areas such as São Paulo, Mato Grosso and Goiás states, expansion is largely occurring onto pastureland, with lesser expansion into orange groves and other cropland. The production of cattle in these areas is decreasing, with a commensurate increase of cattle production at the forest frontier, along the so called "Arc of Deforestation."[5] This risk of displacement is much greater, with the indirect effects occurring in areas of high carbon and biodiversity value.

We feel that for large countries, geographic location must be calculated at most at the regional level, with state or even municipal level being preferable. For smaller countries, for example Suriname or Guatemala, calculation at a national level may be sufficient.

• **land management?** As noted above, we believe that site selection and land management practices are key issues, and must be addressed. However, it may be difficult to do this in broad categories, as individual cases are so unique, and the decisions made under each situation have substantial implications for iLUC risk. It may be that a few categories of land management/ site selection types could be identified, for example large plantation, plasma or "associated" smallholder, or independent smallholder. Former land use should also be included here: degraded land, peatland, forest, pasture, cropland, etc.

We would also add a fourth category:

---

[3] The Inter-American Development Bank's biofuels scorecard, developed with input from CI, might be a useful example of which categories to consider. It is available at: http://www.iadb.org/biofuelsscorecard/

[4] A commensurate effort should be made to secure conservation of natural habitats as well, or higher yields and higher profits actually provide incentives to further expand production.

[5] Conservation International, 2010b.

• **processing method?** Biofuels produced using different methods will have different fuel yields from the same amount of feedstock. For example, cellulosic ethanol produced from sugarcane is likely to yield higher energy content per hectare than ethanol produced using more traditional technologies. As with yield, this should be considered, as higher yield per hectare (with appropriate conservation measures in place) could reduce iLUC risk.

In all cases, if broad categories are used to define default values for factors, we believe individual producers or blenders should be able to prove that their iLUC risk is lower that the default value provided for their feedstock/ location/ land management system/ processing method. Individual producers or blenders may have implemented a number of practices to reduce iLUC risk below the baseline or default value, and this should be recognized. However, in no case should an individual be allowed to avoid including iLUC risk in their calculations, either based on default values or actual numbers.

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
Please say how the monitoring should be done and what these parameters should be.

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.

C. Take action by discouraging the use of some categories of biofuel
Please say which biofuels and why, as well as what sort of measure should be taken, for example:
- increasing the minimum greenhouse gas saving threshold for biofuels
- 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)
- attributing a quantity of greenhouse gas emissions from indirect land use change to all biofuels that use land[2]

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

D. Take some other form of action
Please say what action and why

We believe that a combination of Options B and C is warranted. As was noted above, certain practices which are known to reduce or mitigate the risk of iLCU , with minimal negative environmental or social impacts, should be stimulated or rewarded. These might include:

- Production of feedstocks on responsible cultivation areas (RCAs, carefully defined “underutilized” or :degraded” lands);
- Increases in yields above business as usual;
- Integration of bioenergy feedstocks into existing agricultural landscapes without displacement;
- Use of waste streams and residues as feedstocks, without displacement of other uses.

Other practices might also be applicable. The existing RED already provides an incentive for the use of waste streams and residues through “double counting,” as well as a current bonus for biofuels produced from feedstocks produced on “degraded lands; ” as “degraded lands” is currently being defined, it could easily include displacement risk as well as physical, ecological, and social criteria, as responsible cultivation areas do. The other practices could be promoted through similar measures, as outlined in the RCA methodology.

We also feel that lifecycle analyses used to assess compliance with greenhouse gas emission requirements should include iLUC-related emissions calculations. Where default values are used, these should include both feedstock and geography (subnational for large countries), as well as site selection, management, and production categories where possible. However, it is important that individual producers or blenders be able to “opt-out” of these defaults, and calculate their own values based on actual practices.

Because models, and the data behind the models, will improve over time, we recommend that these models and the underlying data be reviewed and adjusted periodically as warranted. A period of five years would be reasonable.

Please contact Chris Dragisic for any clarifications:
cdragisic@conservation.org