ECN Policy Studies

Amsterdam, July 31, 2009

Note to : DG TREN iLUC consultation

From : Elobio team

Subject : Comments and suggestions to the 'indirect land use change (ILUC) consultation document'

In the IEE-co-funded project Elobio (www.eleobio.eu), a consortium of seven EU research institutes and consultants[1] aim at formulating low-disturbing policy options, enhancing biofuels but minimising the impacts on e.g. food and feed markets, and markets of biomass for power and heat. The project consists of a review of current experiences with biofuels and other RE policies and their impacts on other markets, iterative stakeholder-supported development of low-disturbing biofuels policies, model supported assessment of these policies' impacts on food & feed and lignocellulosic markets, and finally an assessment of the selected optimal policies on biofuels costs and potentials.

Based on the gained knowledge during this project and the expertise of the project partners we present our views on the iLUC consultation document.

This document was compiled on the basis of contributions from Sylvia Prieler (IIASA), Ayla Uslu, Tjasa Bole and Marc Londo (ECN).

Consultation on indirect land use change (iLUC)

The aim is to design policies encouraging biofuel chains that avoid or minimize (indirect) land use conversions resulting in greenhouse gas releases. No land use change impacts occur with biofuels produced from waste products or when dedicated energy crops are grown on land that would otherwise be unproductive. Using appropriate species and management techniques may result in even carbon positive effects of biofuel feedstock production. This will most likely happen with ligno-cellulosic feedstocks required for the 2nd generation biofuel production chains.

1. Land use change general

ad Policy element A and B

Policy elements A and B address land use change in general and seek to limit land use changes with detrimental environmental effects.

Both elements A and B are valuable and should be promoted even in the absence of biofuel feedstock production. Another approach here could refer to the role of agriculture in greenhouse gas (GHG) balances.

1: ECN (NL), IIASA (AT), VITO (BE), Chalmers University (SE), COWI (DK), CIEMAT (ES), IPiEO (PL)

Policy element A proposes to extend land use restrictions to other commodities/consulting countries by encouraging other administrations to adopt the same restriction; encouraging industries to apply them on voluntary bases; labelling the goods sold in the EU in respect of their compliance with these requirements. As the definition of nature protected area or high biodiversity grassland varies among various countries Policy element A without Policy element B is not likely to function. Thus, introducing international agreements on protecting carbon-rich habitats through financial mechanisms shall be the ultimate goal (Policy element B). Also indicated in the consultation document, these elements require longer time frames and might be better treated in other forums (i.e. REDD, CBD).

Newly proposed policy element (EU agricultural support for GHG saving management)

About a third of anthropogenic GHG releases can be attributed to the agricultural sector including land use change. Yet at the same time agriculture has a major potential for enhancing carbon sinks. The EU policy support schemes for agriculture could introduce measures geared at enhancing soil carbon and thus strengthen the role of agriculture as a carbon sink while minimizing its GHG releases. A system of either only credits or credits and penalties could be developed. With respect to biofuel feedstocks such a policy would favour feedstocks like grasses or trees, especially when produced on degraded land.

2. Indirect land use change addressed specifically

Policy element C to G

Policies C to G acknowledge the effect of indirect land use change (iLUC) and seek for measures to account for iLUC in the overall assessment of individual biofuel production chains.

Several analyses have been conducted to determine the level of indirect land use change emissions and indeed the level of understanding on iLUC has increased. Nevertheless, the complexity of the issue remains, and this area requires further research. The current aim, therefore, shall be focusing on policies, which are easy to implement and at the same time effective in decreasing possible iLUC. Approaches will need to be revisited and adjusted depending on the improved scientific knowledge.

ad policy C

Insufficient to counteract the effect of iLUC because life cycle analysis applied so far explicitly excluded iLUC. As a result biofuel targets would achieve considerable lower levels of GHG savings than those required by current legislation.

ad policy D, E and F

When the required GHG savings in policy targets' D (increase minimum required GHG savings) are set sufficiently high, certain feedstocks will have to be phased out. Since there is a close correlation between achievable GHG savings and land use efficiency of the feedstocks, policy element D will likely have some positive effect on reducing iLUC. For example maize for ethanol and rapeseed for biodiesel have relatively low land use efficiencies in terms of achievable energy per hectare and rank among the biofuel production chains with lower GHG savings.

A gradual increase in required GHG savings is essential for the biofuel industry to adapt and potentially change to alternative feedstocks.

However, as long as Europe does not succeed in economically feasible alternatives to current generation biofuels, increased biofuel demand through mandates will likely be satisfied via imports of sugarcane ethanol and biofuel consumption will contribute little to EU's energy security and rural development. Furthermore, increased imports of sugarcane ethanol may trigger land use conversions in the sugarcane producing countries. It depends on the type of land that is used for sugarcane expansion whether sugarcane ethanol can be regarded as avoiding or contributing to indirect land use change emissions. If produced on land that would otherwise be unproductive (e.g. wasteland or certain types of marginal land) iLUC may be minimal.

Policy E (use of bonuses) has several positive effects since it fosters the more sustainable biofuel chains including biomass derived from agricultural, forestry or other waste streams. In addition feedstocks with low nutrient input and high per hectare energy yields could receive a bonus. Bonuses could also be awarded to feedstock producers that brought back idle land into productive use.

However, a careful definition and identification of degraded land and idle land is a pre-requisite both for Europe and Globally. Furthermore, a system of GHG bonuses for the biofuels that do not cause iLUC will not prevent other chains to cause detrimental iLUC effects. Thus, policy E shall be coupled with other policy measures to avoid iLUC.

Policy F may have several positive effects provided it can be enforced. It could for example in Indonesia foster palm oil production from degraded areas and avoid deforestation.

Policy F tackles a core problem of iLUC, i.e. insufficient increases in agricultural yields. In Europe land abundant Eastern Europe with substantial potential for yield increases could benefit from this policy.

However both policy E and F can only effectively contribute to limiting iLUC induced GHG releases, if they are combined with relatively high levels of required GHG savings as proposed in policy D.

ad policy G

The difficulty in policy G relates to uncertainties in the calculation of e_{iluc} . The evaluation of e_{iluc} depends heavily upon assumptions and boundary conditions set. Annualizing emissions associated with land conversion further complicates the matter. Especially future land use policies and their enforcement are difficult to predict. The more precise e_{iluc} is required to be calculated, the more likely it is that the policy fails to gain acceptance for reasons of uncertainty in calculations.

Nevertheless, differentiated additional factors e_{iluc} determined on the basis of classes and possibly by locations of biofuels (i.e vegetable oil, sugar crops, and cereals) combined with the policy element F could serve to minimize the impact of indirect land use change in the short term. Once the scientific knowledge is more advanced those values and the approach could be updated.

Newly proposed policy element H (compensate iLUC)

Depending on the stringency of the detailed policy formulation, policy D to G is likely to exclude many of feedstocks currently used in Europe for biofuel production. Moreover in the long run it is very unlikely that indirect land use change can be avoided due to a genuine mismatch of demand and supply. Irreversible trends including population growth, urbanization and economic growth in less developed countries with associated shifts in diet will continue. Any additional demand for crop including biofuel feedstocks will add to the demand and some of the additional output will have to come from land use conversions with associated additional GHG releases for a considerable time.

To reflect this unavoidable iLUC an additional policy element H is proposed here. *"Compensate ILUC with investments in yield increasing measures, especially in developing countries, or with afforestation".*

To a large extent a core problem of ILUC is the inability of the current agricultural system to boost yields in poor countries. The potential for higher yields is greatest and achievable in a more sustainable manner where they are currently below their technological potential. This is especially true for Africa, but also for large areas of Eastern Europe including Ukraine, as well as Russia.

Moreover, it appears that the food price increases in 2007/2008 did not trigger yield increases in developing countries. "Almost all the increase in cereals output in 2008 came from rich countries: the harvest in those nations increased 11%. In developing countries, the rise was a mere 1%; if you exclude China, India and Brazil, grain output in poor countries actually fell" (The Economist, 2nd July 2009).

If a country pursues biofuel production from feedstocks likely to cause indirect land use changes, the country is requested to compensate for iLUC related GHG releases. Possible measures include investments in agricultural development or foster land use management resulting in additional carbon sinks (e.g. support for afforestation, agro-forestry, measures enhancing soil organic carbon, zero-tillage management).

Another alternative for compensation is afforestation, especially in tropical areas, a relatively cheap option for increasing carbon sinks.

One potential drawback of this element, however, could be that there is no clear and straightforward link between investments in agricultural development and actual increase in agricultural output. Historically, many well-intended initiative to improve agricultural productivity in e.g. Africa have failed, mainly because of the complexity of the issue with its technical, institutional, social and economic dimensions. Only when such investments are embedded in a broader context that tries to address all relevant barriers to agricultural development, there is a change of success.

Thus, while proposing this policy element we recognise that it will require a sensible policy process that takes into account those complexities. This policy element H is proposed for an intermediate period of up to 20 years as the ultimate goal should be to divert biofuel production to feedstocks specifically dedicated to energy crop production with the aim of a high energy output per unit of land and little competition with the food and feed sector.