



CH-3003 Berne, FOEN, CRL

**by email**

European Commission  
ec-land-use-change-biofuels@ec.europa.eu

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Your reference:  
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Contact person: CRL  
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## INDIRECT LAND USE CHANGE IMPACTS OF BIOFUELS - CONSULTATION OF THE EUROPEAN UNION

Dear Madam or Sir,

Thank you for giving us the opportunity to comment on the work and the reports on Indirect Land Use Change (ILUC) concerning the production of biofuels.

Switzerland is vividly interested in the ILUC problematic. The current Swiss regulation allows for biofuel producers and importers to apply for tax exemption of the mineral oil tax if fuels comply with certain ecological and social criteria. At the moment, the Swiss Parliament is discussing an initiative that aims at introducing additional criteria for taking indirect effects of biofuel production into account.

We gladly submit our comments as follows:

**Question 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?**

There are two aspects that are important when addressing ILUC: energy efficiency and land limitation. The documents by OECD and FAO "*Agricultural outlook 2007-2016*" and "*BIOFUELS: prospects, risks and opportunities*" give evidence that ILUC is significant in this regard. Converting biomass into energy offers the lowest energy efficiency and requires the largest area of land compared with solar energy or fossil fuels. For instance, in order to replace 1 unit of fossil fuel, 1.5 units of plant-derived ethanol would be needed. This must be reflected in the extent, cost and operations of the required infrastructure. Both energy efficiency and land availability limit the extent to which biofuels can ever replace fossil fuels.

Other reports (Hoogwijk et al, 2003) have suggested high-quality arable land to be reserved for food production, whereas energy crops should be cultivated on land of lower quality, including set-aside land in Europe and poorly managed and degraded land elsewhere. However, this option will be severely limited by the shortage of water resources in some regions and the increase of land degradation and desertification. Water supply is already under stress (Brown, 2007). There is a limited potential for the expansion of irrigation onto land unsuited for rainfall cultivation, as large volumes of water would be needed and many regions in dry zones are already experiencing water shortages. The practicability of giving priority to food production on high-quality land should also be questioned as land allocation for marketable commodities will follow the principle of maximizing net private benefits for the land users (WWF, 2006).

The presented documents are based on assumptions and parameters with high uncertainty. Regardless of any change in the underlying assumptions, the risk remains that ILUC could undermine the environmental viability of biofuels. Switzerland encourages that further studies with lower levels of uncertainty be carried out.

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

The EU reports show that increased biofuel production would lead to slightly stronger ILUC effects through deforestation outside the EU. Switzerland agrees that action is needed to address this issue.

**Question 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 and land management?**

Feedstock type and geographical location are important factors. Crop type yield, value of biodiversity and carbon stock of the location significantly influence the results of ILUC GHG emissions. The Commission reports conclude that the use of more efficient biofuels results in an improved CO<sub>2</sub> emission balance (see also annexed EMPA report). In 2008, bioethanol was the most significant biofuel worldwide. 75 countries produced a total of roughly 65 billion liters. In Brazil's production, of which around 20% is being exported, has tripled between 2004 and 2009. This growth could be sustained with appropriate land management. Good land management could avoid indirect environmental and social effects, but necessitates the development of appropriate legislation and instruments.

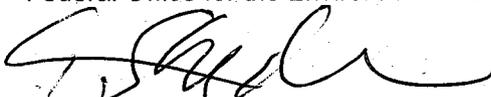
**Question 4) Based on your responses to the above questions, what course of action do you think appropriate?**

Switzerland already participated in the consultation concerning the document "Indirect land use change – Possible elements of a policy approach – preparatory draft for stakeholder/expert comments" on 27 July 2009. We are in favour of using a factor modelled in relation to the land, region and crop type to take account of the ILUC. We think it best to take action by discouraging the use of some categories of biofuel and to attribute a quantity of GHG emissions from ILUC to all biofuels. This methodology is closest to the Swiss approach of assessing the aggregate environmental impact of biofuels. This factor should be calculated based on the land use change generated by a marginal extra quantity of crop production. Higher prices lead to extra pressure on the total of the commercially used land area. This creates strong incentives for land that previously was not used for agriculture (commercial forest, rainforest, peat land, rangeland, savanna) to be cleared and converted into agricultural land. This in turn very often leads to a reduction in the land's carbon-storage capacity and a loss of bound carbon that will take many years to be compensated through use of bioenergy. In their study, Banse *et al* (2008b) found that compared to 2001 the global agricultural area will increase by 17-19% by 2020 under the current EU biofuels target and high oil price. Without the target and the higher oil price, the increase would still be about 16% due to demographic and macroeconomic changes. The difference of 1-3% could be a good basis for the marginal extra quantity.

As a general conclusion, the four EU reports do cover the subject of ILUC and emission modelisation. However, there are many uncertainties and the different approaches come to contradictory results. It appears to be difficult to take action on this basis; further research would in our view contribute to reducing uncertainty. Switzerland is interested to be kept informed about the ILUC calculation issues and is willing to share its experience and knowledge.

Kind regards

Federal Office for the Environment FOEN



Thomas Stadler  
Head of Economics and  
Environmental Monitoring Division

Annexes: "LIFE CYCLE ASSESSMENT OF ENERGY PRODUCTS", EMPA, 2007