

# Press release

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## **Land use effects influence energy and greenhouse gas balances:**

### **IFEU publishes new study on selected bioenergy paths with a focus on bioethanol**

(IFEU) Rising prices for agricultural raw materials, increasing land use and utilisation competition as well as land use changes counteracting climate and biodiversity protection endeavours have caused the discussion on bioenergy to increasingly focus on the issue of sustainability. As the association of the German bioethanol industry, the LAB e.V., in its desire to confront this discussion, has commissioned the ifeu – Institute for Energy and Environmental Research Heidelberg GmbH (IFEU) with a comprehensive study. The task was to determine energy and greenhouse gas balances for a selection of thirteen bioenergy production paths based on grain and sugar beet, including various combinations of biofuel and bioenergy production (green power and green heat). The results of this study were published on 20 August, 2008.

The primary aim was to investigate which of the selected bioenergy paths contributes most to saving non-renewable energy sources and mitigating greenhouse gas emissions in view of an increasing competition for land. In other words, the key question was which of these paths represents the most favourable land use option under these special aspects. This was to be determined by means of life cycle assessments (LCA).

A special focus lay on the evaluation of the co-products under the aspect of land use. “Co-products and – both positive and negative – land use effects associated with these have always been included in LCAs. What was new in this study is that this evaluation was extended by the option of cultivating energy crops on unoccupied areas”, explains Nils Rettenmaier, the responsible IFEU project manager. Such positive land use effects can be the consequence of using co-products from bioethanol production instead of conventional animal feed, for example beet pulp, vinasse, thick stillage or DDGS (Dried Distiller's Grains with Solubles) instead of barley or soy meal. This reduces the cultivation area needed for the production of the replaced conventional animal feed. This area that is not needed anymore was, up to now, considered as fallow land in LCAs. Within this investigation, such an approach was chosen for the basic scenario. However, this unoccupied area could potentially be used for agricultural purposes, for example to cultivate energy crops for an additional bioenergy provision. This possibility was examined in further exemplary scenarios.

The findings show that, compared to conventional energy provision, all thirteen bioenergy paths that were analysed can help save non-renewable energy sources and contribute to climate protection; this is true for all regarded scenarios and boundary conditions. Compared among each other, however, none of the selected bioenergy paths stands out. In other words, the regarded bioenergy paths are all comparable regarding resource conservation and climate protection. Furthermore, the study reveals that many of the regarded bioenergy paths still have room for improvement.

If land use effects associated with the use of co-products from bioethanol production as animal feed are included in the LCA, this clearly affects the results of the energy and greenhouse gas balances of the regarded bioenergy paths in a positive way. The exact value, however, can vary considerably according to which land use is chosen for the specific case. Thus a conclusive, generally valid interpretation is practically impossible. Dr. Guido Reinhardt, scientific director of IFEU's Renewable Resources Department points out that the bioenergy scenarios which are to be regarded in LCAs must be chosen with great care and

the respective key questions must be precisely formulated. Furthermore, the results are only valid within the scope of this specific analysis. "With this, our study is a very important contribution to the methodological discussion about LCAs on bioenergy in general and specifically on transport biofuels," Reinhardt explains.

### **Contact and downloads**

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