

GBEP Workshop on Indirect Land Use Change (iLUC): Status of and Perspectives on Science-Based Policies
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Workshop Summary

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and the support of the

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Workshop Introduction

The workshop started with brief explanatory notes by Kieran Power¹, indicating the relevance of the issue for the future work of the GBEP Sustainability Task Force in which indirect land use change (iLUC) will be dealt with in the Environment Subgroup, aiming to derive science-based indicators. The Environment Subgroup is co-chaired by UNEP and Germany, the latter being responsible for the iLUC work stream. In that regard, the workshop should be seen as “setting the stage”, collecting available knowledge and thoughts on future work from GBEP partners, observers, and interested parties.

The introduction was followed by a brief report from Nienke Smeets² on the state of LUC-relevant discussion at the ongoing UN CSD-17 meeting, underlining that land use change is covered in the CSD discussion mainly in the context of sustainable agriculture and forestry. The role of bioenergy and biofuels with regard to LUC issues is not taken up explicitly, but two paragraphs of the CSD conclusions are discussed which call upon more sustainable biofuels³.

Summary of the Science Session

The Science Session was chaired by Reinhard Kaiser⁴ who explained the major issues given in the briefing paper⁵, focusing on the two major goals:

¹ Chair of the GBEP Task Force “Sustainability”

² Policy adviser of the Netherlands’ Ministry of Environment (VROM)

³ See http://www.un.org/esa/dsd/resources/res_docucsd_17.shtml

⁴ Head of Sub-Directorate “Renewable Energy” of the German Ministry of Environment, Berlin

1. including ILUC into LCA methodology by quantitative indicators, and
2. limit and reduce negative iLUC effects in practice.

As the complexity of the issue and the impossibility to gain “precise” figures are known, methods to estimate reasonable ranges are needed.

Mr. Kaiser referred to the every-day example of weather forecasts: today’s weather forecast is derived from “hard” science (physics) using increasing amounts of empirical data and observation (including satellites) as well as refined models, but the forecasts maintain a certain level of uncertainty. Still, weather forecasts are needed, and people make decisions based on the information. Also for iLUC, science-based estimates for GHG emissions are needed, upon which stakeholders can base their decisions.

In addition, to science-based estimates of the GHG effects of iLUC, there is a need for a better understanding of “What can we do to reduce the risk of negative indirect effects and to increase the chance of positive indirect effects?”

Next, the four speakers in the Science Session gave their presentations. The presentations can be found on the GBEP website (for links, see speaker footnotes). Key aspects of the presentations are summarized below.

Uwe Fritsche⁶ reported on the iLUC discussion within IEA Bioenergy, focusing on results from the Helsinki (end of March 30-31) and Rotterdam (May 13) workshops.

- IEA Bioenergy considers iLUC a key issue which needs to be resolved, and several IEA Bioenergy Tasks are working/contributing to this (Task 38: GHG Balances of Biomass/Bioenergy; Task 40: Sustainable Bioenergy Trade);
- Tradeoff between “accuracy” (science) and “usability” (policy); focus on minimizing risk rather than being accurate?
- Discussion of models can deliver iLUC results with sufficient accuracy to support risk-reducing policies;
- Proposal to link REDD with bioenergy considered to have potential merit;
- Global cap on LUC as long-term solution, sharing of impacts between all LUC drivers (e.g. agriculture, settlements, bioenergy...) concerned;
- Complexity: integration of different sectors - energy, finance, different policies (climate, biodiversity, social) and different stakeholders: need for dialogue.

Karen Laughlin⁷ reported on the results of the iLUC analysis coordinated by the EPA for the US Renewable Fuel Standard (RFS).

- The US RFS GHG methodology must, according to the Energy Independence & Security Act (EISA) passed by Congress in December 2007, include direct emissions and significant indirect emissions such as significant emissions from land use changes;

5

http://www.globalbioenergy.org/fileadmin/user_upload/gbep/docs/2009_events/Workshop_ILUC_NY_15May_2009/GBEP_Workshop_on_Indirect_Land_Use_Change_Briefing.pdf

⁶ Head, Energy & Climate Division, Oeko-Institut (Darmstadt, Germany), Co-chair of the GBEP Sustainability Task Force Subgroup “Environmental Criteria and ILUC”; presentation:

[http://www.globalbioenergy.org/fileadmin/user_upload/gbep/docs/2009_events/Workshop_ILUC_NY_15May_2009/Fritsche - GBEP ILUC workshop NY 1505.pdf](http://www.globalbioenergy.org/fileadmin/user_upload/gbep/docs/2009_events/Workshop_ILUC_NY_15May_2009/Fritsche_-_GBEP_ILUC_workshop_NY_1505.pdf)

⁷ Office of Transportation and Air Quality, US Environmental Protection Agency (EPA); presentation:

[http://www.globalbioenergy.org/fileadmin/user_upload/gbep/docs/2009_events/Workshop_ILUC_NY_15May_2009/EPA_L_CA - GBEP ILUC workshop NY 1505.pdf](http://www.globalbioenergy.org/fileadmin/user_upload/gbep/docs/2009_events/Workshop_ILUC_NY_15May_2009/EPA_L_CA_-_GBEP_ILUC_workshop_NY_1505.pdf)

- GHG emissions from iLUC are needed for the RFS to determine in which biofuel category a certain biofuel pathway falls. The RFS distinguishes four biofuel categories based on the feedstock type and GHG emissions;
- EPA's work used
 - LCA models (GREET)
 - Economic models (CARD/FAPRI and FASOM) specifically to model iLUC
 - Satellite image analysis to estimate the types of land likely to be converted
 - Carbon stock analysis based on IPCC and Winrock to estimate the impact of iLUC on GHG emissions
- The analysis used two different time horizons: 100 years horizon with a 2% discount rate, and a 30 years horizon with a 0% discount rate;
- Results: GHG emissions from iLUC range from zero (residues) to almost 90% of emissions from fossil fuel (corn ethanol at 30 year time horizon);
- Next steps include a 60 day public comment period, peer review and public hearings - more info on: <http://www.epa.gov/OMS/renewablefuels/#regulations>.

Bart Dehue⁸ presented several existing iLUC approaches in Europe.

- LEITAP: This CGE model is based on GTAP and was developed by the Dutch LEI institute, and has been used to analyze the impact of the EU 10% biofuels target. Key model modification compared to GTAP:
 - Land supply curves (based on IMAGE model)
 - Modified land allocation tree
 - Modified nesting structure for energy to better fit biofuels
- Future focus areas include co-products/residues and biofuel conversion technology;
- IIASA: Combining PE with biophysical models. Used to analyze effects of biofuel policies, deforestation policies, etc. Key characteristics
 - Detailed modeling of other land-intensive sectors, co-products, agricultural residues
 - Results include GHG emissions from (i)LUC and agricultural practices
 - EEA/JRC initiated work to compare different models and assumptions;
 - UK/Gallagher Review. The review found biofuels can lead to high iLUC but there remain uncertainties due to feedstock choice (residues), co-products and yields;
 - Spreadsheets: pro: simple, transparent, quick rough estimates. Con: many simplifications cause inaccuracy. Example: iLUC factor;
 - Work on practical solutions for companies (int. consortium led by ECOFYS), NGO (e.g. IUCN, WWF), private sector (e.g. Neste Oil, Shell).

⁸ Biofuels Project Manager, Ecofys (Netherlands); presentation:
http://www.globalbioenergy.org/fileadmin/user_upload/gbep/docs/2009_events/Workshop_ILUC_NY_15May_2009/Dehue_-_GBEP_ILUC_workshop_NY_1505.pdf

Thelma Krug⁹ about the iLUC approaches and issues considered in Brazil

- Detailed annual satellite monitoring of sugar cane expansion in Brazil;
- Monitoring of harvesting with and without burning;
- Field burning of all sugarcane is banned from 2021 on flat, from 2031 also otherwise;
- Sugar cane expansion has taken place mostly on pasture lands and existing agricultural land. Very little expansion of sugar cane into forest areas;
- Difficult to attribute deforestation to single cause such as biofuels;
- Increase in productivity of pasture may reduce LUC.

Key Points from the Discussion

- In order to have correct interpretations and to evaluate land use change models, data resolution has to be taken into account and there is a need of exchange and improve data together with model assumptions;
- A dominantly indirect land use change drivers is often pasture, which should be addressed by national policies;
- Data and models need to be provided for big and for small countries as well not to incur in market barriers;
- Data alone will not be a final solution, as iLUC per se is not country specific but is a global effect.

Concluding Remarks of the Science Session Chair

Reinhard Kaiser underlined that there is a time gap between policymaking and science, with the latter trying to catch up. It is good news that science is supported in this by various governments, and intense transatlantic exchange is already taking place. Still, the discussion showed that developing country perspectives on LUC and iLUC need better reflection and inclusion.

The way ahead for GBEP will be to actively play its role to promote such exchange on an intergovernmental level, focusing on available results from science and considering jointly possible policy responses, but not to start negotiations.

GBEP will come up with indicators that are scientifically well discussed, and will make an effort to harmonize approaches.

This will be formally discussed further in the next GBEP Sustainability Task Force meeting on July 9, 2009 in Paris.

The way ahead will have to take into account the rapid developments in the USA (EPA and California rulemaking), and the preparations and outcome of the UNFCCC meeting in Copenhagen. At the same time the EU Commission's preparations for the report on iLUC (expected in March 2010) will have to be taken into account.

⁹ Head, International Affairs Office, Instituto Nacional de Pesquisas Espaciais (INPE), Brazil; presentation: [http://www.globalbioenergy.org/fileadmin/user_upload/gbep/docs/2009_events/Workshop_ILUC_NY_15May_2009/Krug_Rudorff - GBEP ILUC workshop_NY_1505.pdf](http://www.globalbioenergy.org/fileadmin/user_upload/gbep/docs/2009_events/Workshop_ILUC_NY_15May_2009/Krug_Rudorff_-_GBEP_ILUC_workshop_NY_1505.pdf)

Summary of the Policy Session

Martina Otto¹⁰ chaired the Policy Session. The presentations can be found on the GBEP website (for links, see speaker footnotes). A brief summary of the key points of the presentations is included below.

Michael O'Hare¹¹ presented on the California Low Carbon Fuel Standard (LCFS)

- GHG emissions from iLUC are included in the GHG methodology of the LCFS;
- iLUC is a diffuse market response and cannot be observed in a specific location;
- As iLUC effects take place internationally, difficult for individual countries to control;
- Exogenous yield increase does *not* “make up” for iLUC, but it does reduce iLUC;
- Endogenous yield increases are possible, but are they likely?
- Policy makers must make decisions under uncertainty – risk of promoting biofuels to reduce GHG emissions, while they may in fact increase emission;
- Time horizon is key: main emissions from iLUC at the start, reductions over time.

Györgi Gurban¹² presented on the work the European Commission is doing on iLUC

- The EU Renewables Directive and Fuel Quality Directive contain a joint GHG methodology and GHG reduction criteria for biofuels;
- Emissions from iLUC currently not included, but report from EC in spring 2010 with proposal on potential inclusion of iLUC in GHG methodology plus possible measures to reduce iLUC;
- The proposal shall be based on best scientific evidence and shall include safeguards for investments. A decision is expected around 2012;
- Issues the EC needs to solve:
 - How large is iLUC?
 - Different iLUC-effects of different crops?
 - What is the appropriate policy response to iLUC?
- For this purpose, the EC is comparing different model results with emphasize on co-products, yields, sustainability policies such as REDD;
- Process: analysis of policy options based on model results, consultation, impact assessment, proposal (Spring 2010).

Karen Laughlin¹³ presented the policy development around the US RFS:

¹⁰ Head, Policy Unit, Energy Branch, Division of Technology, Industry & Economics (DTIE), United Nations Environment Programme (UNEP), Paris

¹¹ University of California/Berkeley; presentation:

[http://www.globalbioenergy.org/fileadmin/user_upload/gbep/docs/2009_events/Workshop_ILUC_NY_15May_2009/O_Hare - GBEP ILUC workshop_NY_1505.pdf](http://www.globalbioenergy.org/fileadmin/user_upload/gbep/docs/2009_events/Workshop_ILUC_NY_15May_2009/O_Hare_-_GBEP_ILUC_workshop_NY_1505.pdf)

¹² EU Commission, DG Environment, Brussels; presentation:

[http://www.globalbioenergy.org/fileadmin/user_upload/gbep/docs/2009_events/Workshop_ILUC_NY_15May_2009/Gurban_EC - GBEP ILUC workshop_NY_1505.pdf](http://www.globalbioenergy.org/fileadmin/user_upload/gbep/docs/2009_events/Workshop_ILUC_NY_15May_2009/Gurban_EC_-_GBEP_ILUC_workshop_NY_1505.pdf)

- RFS includes mandates for biofuels up to 36 million gallons in 2022;
- Increase mostly from cellulosic biofuels;
- 4 categories of biofuels based on feedstock and GHG emission savings;
- Other key provisions
 - Grandfathering of existing installations
 - Land must have been cleared or cultivated before December 2007
 - Tradable certificates issued to renewable fuel producers. Proposal that certificates must stay with fuel
 - But only for fuels that meet the requirements -> tracing of feedstock origin.

Next steps: 60 days public comment starts from publication of draft; there will be a public hearing and workshops for better understanding of the LCA (www.epa.gov/OMS/renewable).

In the questions to the US speakers it was clarified that the Californian LCFS and the Federal RFS are not necessarily aligned.

Summary of the Roundtable Discussion

- iLUC has international consequences, which calls for an international debate. Involvement of developing countries in this is crucial as to include their perspectives in terms of risks and opportunities related to biofuels;
- iLUC has come up as an issue of concern in the context of biofuels, but is not limited to them. Efforts should be made to take the topic also to other fora;
- A number of methodologies have been developed to help identify the risks related to iLUC. They do substantiate sufficiently that there is a problem that requires urgent attention, and they help to ask the right questions. However, they are insufficient, at this stage, to make them a building block for policy decisions;
- Accuracy is crucial, and applying the precautionary principle doesn't suffice;
- Decisions should be made on a case-by-case basis, and be self-decided by each country. In this, all three pillars of sustainable development should be taken into account;
- GBEP could play an important information role, as international discussion forum, regarding policies related to iLUC.

Conclusions from the Discussion

What are the points that have to be taken into consideration for future work on iLUC?

- The approach should not only focus on the negative indirect impacts but also on potential positive indirect impacts;
- It should be recognized that indirect effects are not only an issue for biofuels, but for all sectors with additional land requirements;

¹³ Office of Transportation and Air Quality, US Environmental Protection Agency (EPA); presentation: http://www.globalbioenergy.org/fileadmin/user_upload/gbep/docs/2009_events/Workshop_ILUC_NY_15May_2009/EPA_RS_Update_-_GBEP_ILUC_workshop_NY_1505.pdf

- The best available information should be used. Some parties noted that better data is available than is currently being used by some of the modeling initiatives;
- Current views on iLUC are still very diverse. A continued international dialogue is important to build a better common view on indirect effects

Summary of the Panel Discussion

Several GBEP partners reflected on the role of GBEP in iLUC.

- On the way forward, more ideas and participation are needed, especially of developing countries;
- GBEP should not do technical work on iLUC, but bring the work of different parties together and stimulate international debate and information sharing. Thereby GBEP could form an important driver for a common international view on iLUC and how to respond to this;
- Work should not only focus on quantification of the problem but also on practical measures that can be taken to minimize the risk of negative indirect effects;
- Improved international monitoring of LUC can help improve our understanding of iLUC;
- GBEP could also compile experiences of existing and planned national policies (stocktaking) on iLUC to provide greater transparency in what different countries are doing on iLUC;
- iLUC is the last controversial issue of biofuels where not enough data exist. Dealing with it is a learning process for all.

Conclusions from the Policy Session and Way Forward

The chair concluded that

- GBEP will seek for wider participation, particularly from developing countries, and invite them more actively and ask for their input and contributions. Meetings back to back with already planned activities in the different regions should be organized;
- GBEP's role in terms of iLUC is to help prepare a common knowledge ground and increase transparency by:
 - helping with data collection and sharing
 - helping with stocktaking, including on existing policies
 - providing a forum to discuss methodologies
 - supporting monitoring activities
 - engaging in pilot projects to help build capacity
- The work carried out in the three sub-groups of GBEP's Sustainability Task Force should take iLUC into consideration;
- Active collaboration on the working level should be sought for with GBEP partners and outside;
- The workshop on biodiversity mapping and degraded land organized at UNEP's offices in Paris on 7/8 July back to back with the next meeting of the Sustainability Task Force is one step to establish such collaboration and linkages.

The co-chairs of the GBEP Sustainability Task Force's Environment Subgroup thanked for all the excellent presentations, contributions and interventions, and the lively discussion which draw from all participants. They especially thanked the GBEP Secretariat for the crucial and effective support in organizing the workshop.