MEETING MINUTES

Meeting:	ILUC quantification project – 2nd consultation meeting with ethanol supply
Date:	20 February 2014
Time:	10:00 - 13:00
Attendees:	Carlo Hamelinck (chair, Ecofys), Hugo Valin (IIASA), Maarten van den Berg (E4tech). Nathalie Lecocq (Fediol), Barbaros Corekoglu (Fediol), Marta Zuluaga (Fediol), Jan Knol (Fediol), John Volleman (Fediol), Thomas Gameson (Abengoa Bioenergy), Philippe Dusser (Sofiprotéol), Dieter Bockey (Union zur Foerderung von Oel- und Proteinpflanzen), Julien Coignac (Sofiprotéol), Johannes Daum (Verband der Deutschen Biokraftstoffindustrie), Michael Weber (Saria Bio-Industries), Hans Luttikholt (Archer Daniels Midland Company), Isabelle Maurizi (European Biodiesel Board), Peter Smith (Cargill), Rob Groeliker (Biopetrol Industries)
Minutes by:	Maarten van den Berg, Carlo Hamelinck, Hugo Valin
Number of pages:	8

A consortium of Ecofys, IIASA and E4tech has been assigned by the European Commission to model feedstock-specific ILUC emission values associated with the consumption of conventional and advanced biofuels in the EU. The consortium uses the GLOBIOM model, developed by IIASA. Project results are expected by early 2015.

Using inputs received during the first round of stakeholder consultation meetings (held in November 2013) and through the ILUC@ecofys.com e-mail address, a long list of suggestions for improvements has been compiled. In January 2014 the improvements have been prioritised in consultation with the Advisory Committee and the Steering Group.

In this second stakeholder consultation round the consortium aims to obtain feedback on the shortlist of improvements to be implemented in the course of this project as well as on the draft baseline, scenarios and sensitivity analysis. The consortium will try to address the feedback from this second consultation round and suggest a final shortlist and a final baseline, scenarios and sensitivity analysis to the Steering Group in the week commencing 10 March. After the final changes to GLOBIOM and final baseline and policy scenarios have been agreed upon, IIASA will update the GLOBIOM model and subsequently run the model and perform sensitivity analysis.

General points about the process and main questions/areas of interest to discuss today

- Stakeholder: A certain number of questions remain to be answered so it is difficult to say at this stage of the project if our concerns are being addressed.
- Stakeholder: fuel requirement descriptions are missing in the documents (there are restrictions that are not mentioned so far).
    - E4tech: demand side constraints are not taken into account. Through the scenarios with a cap on conventional biofuels we indirectly model a scenario with lower biofuel uptake. In the baseline we intend to follow the NREAPs as that is the current policy (although still to be discussed with the EC).
- Stakeholder: I still have some questions about the way abandoned land is taken into account. Also I would like more details on the response of production to prices, is it increase in land or increase in yield? And how do the results relate to historical figures?
- Stakeholder: a critical point to me is that if the model is not complete, with some necessary improvements not implemented, then I cannot consider the modelling as correct. If you need one more year you should take that time.
    - Ecofys: We would like to have that time but there are some constraints inherent to the project.
    - IIASA: It remains a modelling exercise and a model is always a simplification of a more complex reality. What is important is to identify what important assumptions need to be represented to give a satisfactory representation of the mechanisms at stake. The model cannot contain all the details but we try to address most important issues that stakeholders raise.
- Stakeholder: you say the model is global, that makes the outcome very blurred. The EU effect is influenced strongly by issues in the rest of the world. Scientifically it would be better to look at regions where you see issues.
    - Ecofys: the concept of ILUC is global because effects of biofuel consumption in the EU are global and that is the focus of this study. We do try to focus more on regions where we see specific issues (Brazil, Malaysia, Indonesia). Stakeholder: We can understand that you have to do this to fill the mandate from the Commission but it remains very theoretical. Real data from EUSTAT shows that the agricultural acreage in the EU has been reduced so there is no ILUC in reality.
    - Ecofys: this also means that in reality agriculture has moved to elsewhere. You cannot just look at the past trend because the marginal impact of the EU biofuel policy cannot be seen. Therefore we have to look at it with models, and with different scenarios we can analyse what can happen with and without biofuels in the EU. In this project, the scope is not to question if ILUC should be modelled but to see how it can best be modelled.
- Stakeholder: We don't see modelling of the possibility that investments in biofuels trigger best practices around the world and actually can make a positive contribution to LUC.
    - Ecofys: we have in the model of response of yields to production incentives but no "trigger" effect. It would be too difficult to measure such an effect and the ILUC modelling will not represent such mechanism.
- Stakeholder: I am worried about this point. A good representation of the world would include the positive effect biofuels have. There are 10 more points that are not addressed. You should take one more year to improve that in the model.

    - Stakeholder: you should relay this concern to the Commission.
- Stakeholder: I would like to see a more subtle and differentiated picture in your documentation, with reservations on outcomes (the previous assessment had only one figure for all oilseeds).
    - IIASA: we will improve the model and we do not know yet how the results will be like. This being said, you know better than us the level of interactions in the oilseed sector. There will always be some limitations in our representation but we would like to hear from you what should be overcome. We will represent the different oilseeds in this study, with some time spent on refining the description of substitution patterns. That fits in ongoing process of improving data and modelling.
- Stakeholder: will we have access to the data?
    - Ecofys: yes, we will publish a document with main parameters and descriptions of main datasets at a level of aggregation that makes it accessible. You will have opportunity to comment on that.

Improvements

Improvement 1 [Improve the representation of agricultural residues]

- Stakeholder: if you remove straw and reduce yields, how will you allocate that loss? To straw, to wheat or to all biofuels? There are many decisions needed, what do you plan to do?
    - Ecofys: many options are possible, for example that the farmer increases fertiliser use to not compromise on yield loss. A tendency to less straw on the field could also be the possible and the distribution of effects would then be automatically associated to straw by the model responses on the different products and co-products.
- Stakeholder: do you know what the timeline is for the introduction of commercial viable 2G biofuel from straw?
    - IIASA: For most of it, after 2020 but it will depend on the final scenario setting; this question is only relevant for the biofuel mix scenarios. In the other scenarios we test 1% increase of wheat straw to measure what the ILUC would be, whatever its profitability. Ecofys: in the mixed scenarios the contribution will most likely be much smaller.
- Stakeholder: From the perspective of farmers, selling straw is not attractive. We have experience with a project that failed. A harvest index of 1:1 gives dozens of million tonnes, but that does not develop in the field. So in my view, devoting too much effort on these routes is not relevant because they will not materialise in 2020, there is not enough straw. Do you also look at the economic limitations? We should learn from the US, where the second generation incorporation obligation puts a penalty on producers that is similar to a tax.
    - Ecofys: straw is being harvested and a market exists for straw (60-100 €/t in NL) and in some areas all straw is already harvested. Stakeholder: the University of Halle has calculated soil carbon stock for different cropping systems. This should be accounted for in the model. Ecofys: we have to be clear about which elements should be addressed in an ILUC analysis and which should be addressed in a direct GHG calculation. Stakeholder: These two effects are linked. I agree that carbon stock should be included in the direct calculation. If as a results of ILUC policy, rapeseed is to be penalised, that will show the relation between direct and indirect effects is made. We see a decline in rapeseed investment and I would like to see

that you devote time to this. Ecofys: noted, and we indeed take that into account. Stakeholder: Rapeseed is increasing the carbon stock in the ground, whereas wheat is not. So if you reduce the acreage of rapeseed you have to compensate for the loss of carbon stock in the ground by using straw. That effect has to be accounted for in the model.

Improvement 7 [Peat land emissions factors] and improvement 29 [Expansion of plantations into peat land]

- Stakeholder: Expansion of plantations into peatland directly raises the issue of whether basing your trend on the past is relevant or not. The timeline for deforestation you use is 2005-2010. I don't understand why there is not an extension of this timeframe to at least 2012 because a big effort has been made to reduce deforestation from palm oil. Also, more and more palm oil is coming from South-America where there is no peat land.
    - IIASA: we currently take historical data on land use from the global database from FAO. The latest record is 2010 and the next one (2015) will not be available in the course of this project. 2005-2010 is already showing a decline of the deforestation rate. We are in contact with MPOB (Malaysian Palm Oil Board) and we will try to integrate recent developments as well as possible depending on information made available. Stakeholder: There is a large uncertainty about the emissions from peatland. How you are going to address that? IIASA: by presenting ranges and doing sensitivity analysis. Stakeholder: why don't you take a scenario where deforestation doesn't take place? Ecofys: we have a low deforestation scenario included in our list of proposed scenarios. Stakeholder: So you will use 2005-2010 for the baseline even if there is better data? IIASA: no, if better data is available we can extend to 2005-2012/13. But we don't want to have data for only a short period, at least 5 years is needed to represent the trend. Stakeholder: the recent trend is being influenced by current efforts; these should be taken into account. Otherwise you are looking at a hockey stick without the bend. Ecofys: it is very unclear what the impacts of these efforts really are. Stakeholder: this effect (deforestation into peatland) is probably the biggest impact on ILUC for biodiesel. If you don't take account of recent efforts then I think the analysis is flawed. Ecofys: the question is what part of this optimism should be taken into the baseline? Stakeholder: Effects of these efforts will be more and more pronounced. Ecofys: we need a good understanding about how this influences the baseline. Stakeholder: there is policy in place so we should take into account that deforestation is reducing. IIASA: yes, there is strong effective policy already in place in Brazil, but not yet in other regions of the world. What standard to take in particular for Indonesia is not clear yet. We should look at the historic data that are available and be realistic on expected changes. We should discuss about understanding of the underlying drivers. Stakeholder: I don't agree with 2005- 2010 timespan. Last 3 years should be taken into account.
- Stakeholder: how fair is it to allocate deforestation in Malaysia & Indonesia to biofuels instead of to China where the demand is coming from?
    - Ecofys: the principle of ILUC is to look at the marginal effect of the EU policy shock. Marginal expansion is not necessarily the best expansion and that is in the shock attributed to the biofuels. So ILUC modelling is not perfect and may appear unfair for the individual producer that has a very good supply chain.

- Stakeholder: Over the last two years we see a reduction of expansion on peat land and deforestation as a result of REDD+, which currently stopped. Deforestation has a price. To what extent the biofuel policy in the EU has an impact on deforestation in Malaysia & Indonesia is the question.
    - IIASA: yes, that is exactly what we will try to calculate.
- Stakeholder: do I understand correctly that we have different elasticities for conversion costs per crop? And do you also analyse them in the sensitivity analysis.
    - IIASA: we have pessimistic to optimistic bandwidth. Stakeholder: it should be scientific, not optimistic and pessimistic. Ecofys: it does not matter how we call it, as long as it is empirical. We will look at the policies and the experience with their effectiveness. We will produce parameters that you can review and provide feedback on. Stakeholder: are you in touch with other regions of the world? Not directly but via the Advisory Committee we could reach out to other regions and we have datasets that include global data. IIASA: we also have insights from case studies on Congo and Malaysia & Indonesia.

Improvement 30 [Additional drivers of deforestation]

- Stakeholder: topic 30 has medium priority. This preoccupies me. The relationship between deforestation and agricultural production is not necessarily direct. It is often a chain reaction of economic interest that takes forests to agricultural land. Therefore there may be an oversimplification in the model that says agricultural demand results in deforestation. But in fact it could be deforested for logging only. This may lead to different outcomes. Your comment says it is extremely difficult to address this issue but there is an issue with the ultimate assessment, is it really due to biofuels or to something else?
    - Ecofys: this point was also raised at the meeting with ethanol producers. We understand from literature that agriculture is a large driver, but I agree with you that it is not the only driver and not always the most important. Sometimes logging and palm oil demand go hand in hand. The question is to what extent it can be attributed to the one or to the other. We concluded that fully addressing this issue in the model is time consuming. But perhaps it can be dealt with in a simpler way given the interest today and yesterday. IIASA: drivers of deforestation are indeed not represented in the model currently but data is missing. Especially for forest *degradation* logging is the biggest driver (they don't cut the whole forest, economically unattractive trees are untouched). However, for agricultural expansion the forest is cleared completely. This is described in a paper by Hosonuma et al. (paper available here http://iopscience.iop.org/1748-9326/7/4/044009/).

Improvement 9 [Forest regrowth and reversion time]

- Stakeholder: What is the forest reversion period that you use?
    - IIASA: it is 20 years, but this point was raised in the Advisory Committee as well as something to look into. Stakeholder: in reality the reversion time will be longer.

Improvement 8 [Expand inclusion of soil organic carbon (SOC) to rest of the world]

- Stakeholder: the effort for addressing this improvement dropped from 5 to 2 points. How will you manage to address all the tillage practices around the world?

- IIASA: the current thought is to not take them into account at all. It may be not satisfactory but the countries where we can improve the figures are limited. Stakeholder: recently there are big improvements and it seems wrong to ignore that. IIASA: we have to make assumptions about the average tillage that we observe. Ecofys: so we do include tillage but not in a very spatially explicit distribution. Stakeholder: when default values were produced by the commission for the first time they received a lot of feedback from other countries showing tillage practices have a huge impact. Data is somewhere but I'm not sure if they want to share that. IIASA: point taken, we will check if we can improve the data we are using for some important countries (US and Brazil). Stakeholder: how are tillage practices currently included? IIASA: currently we do assume normal tillage for expanded agricultural land. Stakeholder: can you apply data from Brazil to Argentina? IIASA: we'll look at what can be done for Argentina too. Stakeholder: it is a good suggestion to contact the countries, they have the best data. Stakeholder: INTA in Argentina should have the data on tillage.

Improvement 11 [Improve protein and energy content representation to refine co-product Substitution] and improvement 12 [Introduce additional constraints on co-products related to contents of aminoacids, fibers, etc.]

- Stakeholder: improvements 11 (high importance) and 12 (low importance) can be put together. I'm surprised about 2 effort units for both of them. The feed industry can give you the data. They have a cost based model (least cost formula). I'm sure you can use that.
    - Ecofys: can we contact you for that? Stakeholder: I'm sure we can find someone who can help you.
- Stakeholder: we have seen overconsumption of animal feed in the modeling. It is true that the animal feed industry has some minimum requirements but from an overall point of view you have to put a maximum for components such as protein. If you do not include price driven functions in the model then you should also maximise the uptake. The assumption that the price of the protein is too high so that farmers change management type seems to be an option in your model but that is wrong. They don't change that easily.
    - IIASA: yes, that will not happen in the short run on the individual farm but in the sector there can be these types of changes in the long run. We have seen intensification as a long term trend. This is incorporated in the model. PD: if you use long term trends you have to apply that to everything, so also to the yield increase response and the effects of environmental governance that we have just talked about. In 30 years from now there may be no more deforestation, lowering the ILUC for biofuels by 10 times. IIASA: on the particular point of livestock there seems to be a long term stable trend. Related to your remark: a part could be based on prices but not everything. Our model is not that flexible so it will not switch from one production system to another overnight.
- Stakeholder: improvement 11 is identified as "high importance". First, what do you take as allocation method? Second, how is it going to have an impact on ILUC? We have seen less soy meal and more rape meal. What would that imply for the ILUC factor?
    - Ecofys: we are not applying allocation with this methodology (a Partial Equilibrium model). You only have to allocate in an LCA study. The RED has energy allocation, often economic allocation is used. In the PE model there is no allocation because substitution will result in lower land use for the main product, due to simultaneous

production of the coproduct. E4tech: in theory there could be a positive ILUC. Stakeholder: there are so many issues with LCA and you say you can solve them? E4tech: we do not solve the allocation issues in LCA but when you use an economic model you simply do not *have* to allocate impacts between products and co-products because all causal relationships are included in the analysis.

- Stakeholder: what if you assume that biofuel is a co-product of the meal? Ecofys: that is an interesting question. The ILUC issue should also be discussed in the animal feed sectors – the ILUC debate should be expanded to other sectors. But we look here at the demand shock from biofuel policy.
- Stakeholder: ethanol production worldwide has resulted in DDGS that were not there 50 years ago. You do not know how things will change in the future.
    - Ecofys: we would like to receive empirical information from the past from you on substitution patterns. Stakeholder: it is extremely difficult to model that in detail. With all these issues, price is the only differentiator. Ecofys: we do a proposal and if you think it is too simple then let us know. Stakeholder: please look at our website where we have many recommendations for farmers.

Improvement 15 [Include effect of Multi-cropping]

- Stakeholder: multiple cropping should be in the baseline. Effort unit dropped from 10 to 1 (improvement 15), what is the simplification?
    - IIASA: we take a certain cropping intensity increase into account in the baseline only, other yield responses in the scenario will be capture by the standard intensification features of the model.

Scenarios

- Stakeholder: on imperfect substitution: I understood there will be no inclusion of UCO and tall oil.
    - Ecofys: yes correct, so we cannot say anything about them. However, in the mix scenarios they have to be included but we don't know yet which volumes.
- Stakeholder: I cannot understand you will use the unrealistic values from the NREAPs as your 2020 biofuel demand. They were constructed in a rush and have no scientific basis. It will not happen, as illustrated by E4tech's recent report.
    - E4tech: I appreciate the concern but this is the current political proposal. Other values will lead to discussion as well. Ecofys: it is not an issue per se. We have different scenarios to address a range of possible futures.
- Stakeholder: take into account the 2020 fossil fuel demand (split) and national developments that are real, not theoretical NREAPS. The 10% target is not for biofuels, it is for energy. What feedstock mix will be used for 2020 is unknown. That is an economic question. There will be no more palm oil in Europe because rapeseed oil is so cheap.
    - Ecofys: economic drivers are addressed in the model, point taken.
- Stakeholder: on scenario A and A1: can you explain what the feedstock groups are?
    - IIASA: they correspond to the 3 crop groups of the EC proposal (cereals, sugar crops, oilseeds). We don't know yet what the shares of feedstock within 1 group will be. It could be the shares of today or we could let up to the model to optimise on the basis of profitability. In any case, want to compare our results with the previous analysis that had 3 feedstock groups.

- Stakeholder: the scenarios have to be expanded with more use of unused land and lower deforestation trends.
    - Ecofys: policies that are already in place are in the baseline. We have such an alternative scenario with scenario C.
- Stakeholder: in the EU 20 million hectares are set aside today and there is a reducing trend of unused land, perhaps slightly tempered by biofuel use. So for me that should be in the baseline.
    - Ecofys: there are different drivers for taking land out of production. Economic drivers could be tempered by demand for biofuels. This should be visible in the baseline. The model searches for that available land. At the same time there are national and EU policies that take land out of production (reforestation, CAP) and these are related to policy choices that also have effects today.
- Stakeholder: what do you need outside the baseline that impacts the set aside land? Stakeholder: reforestation is policy, rest of idle land change is not.
    - IIASA: to be clear: set aside land is both in baseline AND the scenarios. How this set aside land is used will depend on the scenario. But set aside land use dynamics occur in the baseline too.
- Stakeholder: what are your suggestions with respect to the rate of deforestation?
    - IIASA: you can have a scenario with less deforestation and to balance that we can have a scenario with more deforestation, for instance a policy that triggers off more land grabbing. In the baseline we want a realistic middle of the road assumption based on recent trends..
- Stakeholder: I don't see how there could be a policy scenario with more deforestation. In a realistic scenario you need to have drivers that make land grab possible represented to support this option. And not make up legislation that cannot exist.
    - Ecofys: we will refine the scenario stories, we want to be as realistic as possible.
- Stakeholder: on the 5% scenario: we already have this today, don't we?
    - IIASA: we have a fixed 3.3% in the baseline, which corresponds to the level from 2008. BC: where does the 1.7% difference come from, from which land? It would be interesting to compare with what happened between 2008 and now. Ecofys: that is exactly what we will model;
- Stakeholder: in the introduction you mentioned a comparison with fossil fuel. However, the methodology for calculating ILUC is very different from the methodology for fossil fuel carbon accounting. I may be wrong but I understood you would have some kind of assessment of this.
    - Ecofys: no, there is no overarching methodology for biofuels and fossil fuels, it was mentioned for contextualisation. In theory ILUC could also be applicable to other sectors. We are not going to assess that in this project.
- Stakeholder: I welcome that you address idle cropland in Europe. But why not address it beyond Europe? Recent reports show there is lots of idle land elsewhere. Your analysis is global and idle cropland is the elephant in the room. I wish to stress that for 3 units you can do much more. For this please use the 2 units from the wheat straw (improvement 1), a sector that didn't exist 2 years ago and has only 1 idle plant.
- Stakeholder: could you provide a list with input data needed from the stakeholders?
    - Ecofys: we are preparing a document that contains the most important parameters. That will show the type of data we need. We will try to do that as good as we can.