

29 October 2010

Alarik Sandrup, +46 8 657 43 14
alarik.sandrup@lantmannen.com

Position Paper from Lantmännen Energi (Lantmännen Agroetanol) on Indirect land use change impacts of biofuels – Contribution to the public consultation

Lantmännen is one of the Nordic area's largest Groups within food, energy, machinery and agriculture. The Group, owned by 37,000 Swedish farmers, operates in 18 countries, has 10,500 employees and a turnover of SEK 35.1 billion.

Lantmännen Energi is one of four Lantmännen sectors. It is involved in different kinds of renewable energy production and is the largest bioenergy company in Sweden. Lantmännen Agroetanol that is located in Norrköping is an important part of Lantmännen Energi. It is the by far the biggest producer of biofuels in the Nordic countries. Lantmännen Agroetanol produces 210 million liters of ethanol and 175,000 MT of DDGS each year. The production is based upon cereals, mainly wheat, and the main part of it is produced in Sweden.

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?

NO, THE WORK REFERRED TO ABOVE DOES NOT PROVIDE A GOOD BASIS FOR DETERMINING THE LEVELS OF ILUC FROM BIOFUELS. THERE ARE SEVERAL FUNDAMENTAL ERRORS IN THE MODELS USED FOR THE COMMISSION WORK, SOME OF WHICH WERE IDENTIFIED IN DG ENER REVIEW AND NEARLY ALL OF WHICH LEAD TO AN OVERESTIMATE OF THE AMOUNT OF ILUC.

THERE IS HOWEVER, OTHER RECENT WORK, WHICH HAS BEEN PEER REVIEWED AND WHICH IS BASED ON SOUND SCIENCE, WHICH PROVIDES A BETTER BASIS FOR DETERMINING ILUC IMPACTS. RECENTLY PUBLISHED MODELING WORK BY E4TECH, SPONSORED BY UK DEPARTMENT FOR TRANSPORT USES A CAUSE AND EFFECT APPROACH TO MODEL ILUC. THIS IS BASED ON DATA AND METHODS, DEVELOPED FROM EXTENSIVE CONSULTATION WITH INDUSTRY, ACADEMIA AND NGOS AND HAS BEEN PEER REVIEWED BY THE UK DEPARTMENT FOR THE ENVIRONMENT (DEFRA) SCIENTIFIC PANEL. THIS ANALYTICAL WORK AVOIDS MOST OF THE PROBLEMS IDENTIFIED IN THE DG ENER REVIEW OF OTHER MODELS REFERRED TO ABOVE. THE E4TECH STUDIES COULD PROVIDE THE BASIS OF MORE ACCURATE ILUC CALCULATIONS WITHIN THE NEXT FEW MONTHS.

MANY OF THE MODELS USED FOR THE COMMISSION WORK WERE NOT DEVELOPED FOR THE PURPOSE OF MODELLING ILUC AND THE APPROPRIATE SCIENCE FOR MODELLING ILUC IS NOT INCLUDED. THE PURVEYORS OF THESE MODELS HAVE BEEN RELUCTANT TO MAKE THE NECESSARY CHANGES TO MODEL STRUCTURE AND METHODS TO PROPERLY MODEL ILUC AND IT IS UNLIKELY THAT THEY COULD MAKE THESE CHANGES IN THE NEXT FEW MONTHS. THE ERRORS IN ILUC MODELS USED FOR THE COMMISSION WORK THAT ARE LIKELY TO BE RELEVANT TO EU BIOFUELS PRODUCTION ARE SUMMARISED BELOW AND DEALT WITH IN MORE DETAIL IN THE ATTACHED ANNEX.

Alarik Sandrup, +46 8 657 43 14
alarik.sandrup@lantmannen.com

1) ACCOUNTING FOR BIOFUEL CO-PRODUCTS

BIOFUEL CO-PRODUCTS USED FOR ANIMAL FEED DISPLACE OTHER CROPS AND PROVIDE A SUBSTANTIAL CREDIT TO THE GHG EMISSIONS FROM ILUC. NONE OF THE MODELS PROPERLY TAKE ACCOUNT OF BIOFUEL CO-PRODUCTS AND THE CROPS THAT THEY DISPLACE. LEITAP DOES NOT ACCOUNT FOR CO-PRODUCTS AT ALL, WHILE MOST MODELS DO NOT RECOGNISE THE PROTEIN CONTENT OF THE CEREAL BIOFUEL CO-PRODUCTS.

- THE LACK OF PROPER ACCOUNTING FOR HIGH PROTEIN BIOFUEL CO-PRODUCTS CAUSES AN OVERESTIMATION OF THE GHG EMISSIONS FROM ILUC.

2) MODELLING OF OILSEEDS MARKET

- MOST OILSEEDS ARE GROWN PRIMARILY FOR THE OIL, WITH A LOWER VALUE MEAL BY-PRODUCT, WHILE SOYBEAN IS PRIMARILY GROWN FOR THE MEAL. IT IS WIDELY ACCEPTED THEREFORE THAT SOYBEAN IS THE MARGINAL SOURCE OF HIGH PROTEIN MEAL FOR ANIMAL FEED. IN MANY MODELS OILSEED CROPS ARE AGGREGATED TOGETHER OR ARE REPRESENTED BY AGGREGATE VEGETABLE OIL AND OILSEED MEALS. IT IS THEREFORE NOT POSSIBLE FOR THE MODEL TO ALLOW FOR SOYBEAN TO BE MODELLED AS THE MARGINAL SOURCE OF HIGH PROTEIN ANIMAL FEED AND HENCE TO MODEL THE LAND CHANGE EFFECTS OF BIOFUEL CO-PRODUCTS THAT SUBSTITUTE FOR OILSEED MEALS.

- THE AGGREGATION OF OILSEEDS WILL THEREFORE LEAD TO AN OVERESTIMATION OF THE ILUC IMPACT.

3) MODELLING LAND AREA AND YIELD CHANGES

- THE CROP DEMAND GROWTH FOR USE AS BIOFUELS AND HENCE HIGHER PRICES WILL LEAD TO AN INCREASE IN CROP YIELD GROWTH. MOST MODELS DO NOT ACCOUNT FOR THE INCREASED YIELD GROWTH DUE TO INCREASED DEMAND GROWTH AND THE YIELD GROWTH ESTIMATE IS OFTEN AN EXOGENOUS VALUE BASED ON HISTORIC DATA. THESE MODELS THEREFORE ASSUME THAT ALL THE INCREASE IN DEMAND ABOVE THE ESTIMATED YIELD GROWTH IS MET BY LAND AREA CHANGE.
- THE LACK OF MODELLING OF THE PROPORTION OF DEMAND GROWTH FROM YIELD GROWTH AND AREA GROWTH WILL CAUSE AN OVERESTIMATION OF THE GHG EMISSIONS FROM ILUC.

4) CHANGE TO TRADE OF BIOFUEL CROPS

FOR CROPS, SUCH AS CEREALS, WHICH ARE WIDELY GROWN LOCALLY, THE TRANSPORT COSTS ARE HIGH COMPARED TO THE VALUE OF THE CROP AND THEREFORE MANY REGIONS MAINTAIN A SELF SUFFICIENCY OF THESE CROPS AND THE CROP OUTPUT IS ADJUSTED TO MEET DEMAND. ANY INCREASED DEMAND FOR THESE CROPS WILL THEREFORE PRIMARILY BE MADE UP BY INCREASED PRODUCTION IN THAT REGION. MOST MODELS USE ARBITRARY ELASTICITY FACTORS TO DETERMINE THE AMOUNT OF INCREASED BIOFUEL CROP DEMAND, THAT WILL BE PROVIDED BY INCREASED IMPORTS OR REDUCED EXPORTS. THESE FACTORS DO NOT TAKE ACCOUNT OF LOGISTICS COST AND THEIR APPLICABILITY TO CEREALS CROPS HAS NEVER BEEN JUSTIFIED. THE MODELS OVERESTIMATE THE PROPORTION OF EU DEMAND FOR CEREALS THAT WILL BE MET BY EU IMPORTS OR REDUCED EU EXPORTS. THIS RESULTS IN THE REPLACEMENT CEREALS BEING MODELLED AS BEING GROWN AT LOWER YIELDS THAN IN THE EU AND GIVES AN OVERESTIMATION OF THE LAND USE CHANGE AND GHG EMISSIONS FROM ILUC.

5) TYPE OF LAND CHANGES

THE METHODS FOR DETERMINING LAND USE CHANGES DETERMINE THE AMOUNT OF PASTURE AND FOREST THAT WILL BE DISPLACED BY EXTRA CROPLAND, BUT RARELY INCLUDE THE RE-USE OF UNUSED AND IDLE LAND IN THE EU AND FSU. WHEN THE RE-USE OF IDLE LAND IS INCLUDED, THE FACTOR USED FOR FOREGONE CARBON SEQUESTRATION IS FAR TOO HIGH SINCE IT IS PRIMARILY BASED ON CARBON ACCUMULATION BY AFFORESTATION, INSTEAD OF BY NATURAL SUCCESSION.

Alarik Sandrup, +46 8 657 43 14
alarik.sandrup@lantmannen.com

THE LACK OF INCLUSION OF UNUSED AND IDLE LAND AND HIGH FACTORS FOR FOREGONE CARBON SEQUESTRATION WILL CAUSE AN OVERESTIMATE OF THE GHG EMISSIONS FROM ILUC OF BIOFUEL CROPS GROWN IN THE EU.

IMPORTANCE OF CO-PRODUCTS

TAKING THE CO-PRODUCT ISSUE IN MORE DETAIL, DG ENER STATES IN ITS LITERATURE REVIEW THAT:

"...IT IS CLEARLY IMPORTANT, THEREFORE, FOR MODELLING EXERCISES TO INCORPORATE A CORRECT TREATMENT OF CO-PRODUCT QUESTIONS... THERE IS MUCH GREATER DIVERGENCE BETWEEN STUDIES IN THE RATE AT WHICH BIOFUEL CO-PRODUCTS ARE ASSUMED TO SUBSTITUTE FOR OTHER TYPES OF ANIMAL FEED, AND FOR THE TYPES OF ANIMAL FEED THEY ARE ASSUMED TO REPLACE. (THE TYPE MATTERS BECAUSE THE PRODUCTION OF SOYA MEAL IS MORE LAND INTENSIVE THAN THE PRODUCTION OF CEREALS, AND AN INCREASE IN SOYA PRODUCTION IS MORE LIKELY TO TRIGGER CONVERSION OF FOREST LAND IN BRAZIL THAN IS AN INCREASE IN CEREAL PRODUCTION.)"

DG ENER IS REFERRING TO THE PROBLEM THAT MANY MODELS FAIL TO ACCOUNT FOR THE HIGH PROTEIN VALUE OF EUROPEAN BIOFUEL CO-PRODUCTS AND ITS SUBSTITUTION OF IMPORTED SOY MEAL. INSTEAD, THEY SIMPLY COMPARE THE CO-PRODUCT WITH A HOME-GROWN ANIMAL FEED, SUCH AS WHEAT OR MAIZE, ON A WEIGHT BASIS. THE SIGNIFICANCE OF THIS CAN BEST BE SUMMARISED BY TWO PEER REVIEWED SCIENTIFIC PAPERS THAT TAKE INTO ACCOUNT THE PROTEIN CONTENT OF THE CO-PRODUCT OF WHEAT BIOETHANOL GROWN IN THE UK AND EUROPE:

A PAPER BY ENSUS LIMITED SHOWED THAT THE NET LAND REQUIREMENT FOR GROWING WHEAT IN EUROPE IS ONLY 4% OF THE GROSS WHEAT AREA AFTER TAKING INTO ACCOUNT THE CROPS DISPLACED BY CO-PRODUCT.

A PAPER OF ADAS UK LIMITED, PUBLISHED AFTER THE RELEASE OF THE DG ENERGY LITERATURE, HAS ESTIMATED THE GREENHOUSE GAS (GHG) CREDIT OF 82G CO₂e/MJ FROM THE REDUCED SOY MEAL DEMAND. ADAS NOTES THAT THIS IS ALMOST DOUBLE THE DIRECT GHG SAVINGS FROM THE BIOETHANOL ITSELF (OF 45 GCO₂e/MJ, STATED IN THE RENEWABLE ENERGY DIRECTIVE).

IN CONCLUSION, THE DAMNING CRITIQUE OF DG ENER OF THE EXISTING ANALYTICAL WORK, COMBINED WITH THE CONTINUING EMERGENCE OF NEW WORK, TELLS US THAT THE CORRECT RESPONSE TO THE FIRST QUESTION OF THE CONSULTATION IS THAT THE EXISTING WORK DOES NOT PROVIDE A GOOD BASIS FOR DETERMINING THE SIGNIFICANCE OF INDIRECT LAND USE CHANGE FROM THE PRODUCTION OF BIOFUELS.

OUR ANSWER TO THIS QUESTION IS THEREFORE NO.

2) ON THE BASIS OF THE AVAILABLE EVIDENCE, DO YOU THINK THAT EU ACTION IS NEEDED TO ADDRESS INDIRECT LAND USE CHANGE?

ON THE BASIS OF WHAT IS STATED UNDER Q1 THE ANSWER TO QUESTION 2 IS THEREFORE NO.

FROM OTHER ANALYTICAL WORK, DRAWING ON AVAILABLE SCIENTIFIC EVIDENCE, WE DO NOT BELIEVE THAT INDIRECT LAND USE CHANGE REPRESENTS A MATERIAL RISK ARISING FROM THE PRODUCTION OF BIOETHANOL FROM CEREALS AND SUGAR BEET, AS LONG AS THE CO-PRODUCTS ARE USED FOR ANIMAL FEED.

Alarik Sandrup, +46 8 657 43 14
alarik.sandrup@lantmannen.com

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?
- LAND MANAGEMENT?

IF SO, PLEASE SAY WHICH, AND INDICATE THE EVIDENCE USED TO REACH YOUR CONCLUSION.

INDIRECT LAND USE IMPACTS FOR BIOFUELS USED IN THE EU ARE PRIMARILY DETERMINED BY FEEDSTOCK TYPE AND THE USE OF THE CO-PRODUCTS. THIS IS BECAUSE THE FEEDSTOCK TYPE IS THE MAJOR DETERMINANT OF NEARLY ALL THE FACTORS THAT CAUSE HIGHER OR LOWER ILUC.

THESE FACTORS ARE:

- THE LAND USE CHANGE EFFECTS OF THE BIOFUEL CO-PRODUCTS.
- THE PROPORTION OF THE INCREASE IN DEMAND FOR A FEEDSTOCK THAT IS MET BY YIELD INCREASES VERSUS LAND AREA INCREASES.
- WHETHER THE EXTRA LAND REQUIREMENT WILL BE MET FROM UTILISING RECENTLY ABANDONED LAND OR BY LAND USE CHANGE FROM NATURAL VEGETATION.
- THE TYPE OF NATURAL VEGETATION AND HENCE THE CARBON STOCK OF THE LAND THAT IS CONVERTED TO MEET INCREASED DEMAND.

WITH REGARD TO GEOGRAPHICAL LOCATION, CEREALS AND SUGAR BEET USED FOR BIOREFINING IN THE EU ARE PRINCIPALLY GROWN IN THE LOCAL MARKET WHERE THEY ARE USED. ANY INCREASE IN DEMAND WILL PRIMARILY BE MET MAINLY BY INCREASED GROWTH WITHIN THE COUNTRY OR LOCAL REGION. THEREFORE FOR BIOFUEL FROM EU CEREALS AND SUGAR BEET, THE ILUC IMPACT WILL ONLY RELATE TO CULTIVATION IN THE EU.

LAND MANAGEMENT HAS SUBSTANTIAL ENVIRONMENTAL BENEFITS BUT IS MAINLY AN ISSUE FOR DIRECT LAND USE CHANGE. IT IS ONLY RELEVANT TO INDIRECT LAND USE CHANGE FOR LAND MANAGEMENT CHANGES AT AN INTERNATIONAL SCALE. IT IS ASSUMED THAT ANY BIOFUEL SUPPLIER THAT INCLUDES THE DIRECT LAND USE CHANGE FOR A CONSIGNMENT OF BIOFUEL WILL NOT ALSO INCUR AN ILUC PENALTY. IT MAY WELL BE POSSIBLE TO REDUCE DIRECT LAND USE CHANGE IMPACTS BY GOOD LAND MANAGEMENT PRACTICES, BUT THIS IS NOT AN ILUC ISSUE.

4) BASED ON YOUR RESPONSES TO THE ABOVE QUESTIONS, WHAT COURSE OF ACTION DO YOU THINK APPROPRIATE?

THE COURSE OF ACTION WE CONSIDER TO BE JUSTIFIED IS A: TAKE NO ACTION FOR THE TIME BEING, WHILE MONITORING IMPACTS INCLUDING TRENDS IN CERTAIN KEY PARAMETERS AND, IF APPROPRIATE, PROPOSING CORRECTIVE ACTION AT A LATER DATE. DUE TO THE INADEQUACY OF THE MODELS, INSUFFICIENT DATA, AND LACK OF KNOWLEDGE CONCERNING THE COMPLEXITY OF ECONOMIC PROCESSES, MONITORING AND FURTHER RESEARCH AS WELL AS ANALYSIS AND EVALUATION OF THE IMPLEMENTATION OF RED IN THIRD COUNTRIES ARE NECESSARY. IN ADDITION, THEORETICALLY DERIVED RESULTS MUST BE SUBJECT TO A BETTER EMPIRICAL REVIEW.

Alarik Sandrup, +46 8 657 43 14
alarik.sandrup@lantmannen.com

Yours sincerely

Alarik Sandrup
Director Economic Policy
Tel +46 8 657 43 14
alarik.sandrup@lantmannen.com