Geophysical Research Abstracts
Vol. 15, EGU2013-4125, 2013
EGU General Assembly 2013

Limitation of Biofuel Production in Europe from the Forest Market

Sylvain Leduc (1), Elisabeth Wetterlund (2), Erik Dotzauer (3), and Georg Kindermann (4)

(1) International Institute for Applied System Analysis (IIASA), A-2361 Laxenburg, Austria (leduc@iiasa.ac.at), (2) Linköping University, SE-581 83 Linköping, Sweden (elisabeth.wetterlund@liu.se), (3) Mälardalen University, SE-721 23 Västerås, Sweden (Erik.Dotzauer@mdh.se), (4) International Institute for Applied System Analysis (IIASA), A-2361 Laxenburg, Austria (kinder@iiasa.ac.at)

The European Union has set a 10% target for the share of biofuel in the transportation sector to be met by 2020. To reach this target, second generation biofuel is expected to replace 3 to 5% of the transport fossil fuel consumption. But the competition on the feedstock is an issue and makes the planning for the second generation biofuel plant a challenge. Moreover, no commercial second generation biofuel production plant is under operation, but if reaching commercial status, this type of production plants are expected to become very large. In order to minimize the tranportation costs and to takle the competetion for the feedstock against the existing woody based industries, the geographical location of biofuel production plants becomes an issue. This study investigates the potential of second generation biofuel economically feasible in Europe by 2020 in regards with the competition for the feedsstock with the existing woody biomass based industries (CHP, pulp and paper mills, sawmills...).

To assess the biofuel potential in Europe, a techno-economic, geographically explicit model, BeWhere, is used. It determines the optimal locations of bio-energy production plants by minimizing the costs and CO_2 emissions of the entire supply chain. The existing woody based industries have to first meet their wood demand, and if the amount of wood that remains is suficiant, new bio-energy production plants if any can be set up.

Preliminary results show that CHP plants are preferably chosen over biofuel production plants. Strong biofuel policy support is needed in order to consequently increase the biofuel production in Europe. The carbon tax influences the emission reduction to a higher degree than the biofuel support. And the potential of second generation biofuel would at most reach 3% of the European transport fuel if the wood demand does not increase from 2010.