

Track 1 - The bioresource transition in regions

Title of the proposed paper

Spatial information for balancing bioenergy production and ecosystem services

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Text abstract (max. 300 words)

Energy from biomass may contribute to sustainability in energy production. It also may not. Compliance to sustainability criteria formulated to avoid unsustainable biomass production is one thing. But we can do more. Progress is made in technically improving the conversion of biomass into various energy carriers (electric power, heat, biogas, pyrolysis oil etc). There are, however, many land use issues to consider such as the type and origin of the biomass or the whole set of ecosystem services provided by this biomass. Spatial impacts and planning as well as seasonality in biomass availability are frequently forgotten or not well understood by people who claim that bioenergy is sustainable. We need to look at biomass production and extraction from ecosystems in a wider context. Geoinformation is indispensable in doing so.

This paper will show examples of quantifying different biomass types and ecosystem services in space and time. It will focus on spatial data, methods and assumptions in mapping the supply of biomass resources (wood, grass, manure, organic waste etc.). It also will illustrate how geoinformation is used in quantifying sustainability criteria and ecosystem services. For example, maintenance of green areas (man-made as well as nature areas) may be aimed at leisure activities or nature conservation. But it may also be a source of biomass from which we can tap energy. However, the availability is likely bound to seasonality. Another consideration that we need to make is where to place the energy production sites. Transport of heavy and bulky material should be avoided to guaranty an energetically highest possible production efficiency. Impact maps, suitability maps and sustainability maps are powerful analysis and communication tools in the process of optimizing bioenergy production chains.