Track 1 - The bioresource transition in regions

Title of the proposed paper
Towards a sustainable capacity expansion of the Danish biogas sector

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Text abstract (max. 300 words)
Promotion of bioenergy production is around the world an important contemporary topic. Vast amounts of research are allocated towards analysing and understanding bioenergy systems, which by nature are multi-faceted. Despite the focus on bioenergy systems applying multi-criteria decision-making (MCDM) methods, only little research has been addressing location of bioenergy facilities. In this paper the authors develop a model for sustainable capacity expansion of the Danish biogas sector allowing for an identification and prioritization of suitable locations for biogas production. The model builds on a framework for spatial planning and decision making, applying spatial multi-criteria evaluation (SMCE). The paper is structured around a case study including four Danish municipalities in order to demonstrate the power of the spatial multi-criteria evaluation model. The model allows a two level comparison of suitability, within municipalities as well as between municipalities. Criteria weights for generation of alternatives are obtained through an analytical hierarchy process (AHP) analysis, carried out among a group of Danish central governmental decision makers. The identified alternatives in all four case study municipalities are compared through incorporating economic, environmental and social criteria. The results of this paper can provide decision support to central decision makers, regarding regional allocation of subsidies in the country. Likewise local decision makers can obtain important information for planning and decision support, allowing for a more inclusive and transparent planning procedure.