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## **THE CONTROVERSIES OVER BIOENERGY IN DENMARK: ‘BIO’ IS NOT THE SAME AS ‘SUSTAINABLE’**

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### **Abstract**

Based on the approach of ‘arena of development’ controversies over bioenergy in the shaping of a Danish climate strategy are analyzed as a contribution to a sustainable transition perspective on bioenergy in industrialized societies with substantial agricultural production. Bioenergy plays a prominent role in several Danish climate and energy plans, alongside with wind and solar energy, and energy savings. There are major controversies about targets for bioenergy with respect to acceptable types, sources and amounts of biomass. Strong path dependency is identified. Energy companies in Denmark convert coal fired power plants to biomass in order to sustain the role of these power plants. Their increasing use of imported wood pellets is criticized for increasing greenhouse gas emissions because of fast logging of years of forest growth. A Danish biotech company is developing enzymes for processing of biomass for biofuels. The alignment with the private car regime is strong, because biofuel enables continuation of fuel-driven vehicles as dominating transportation mode. Danish farmers see manure as important source for biogas while arguing for reduction of climate impact and nuisances from digested manure. Such biogas is questioned by some NGOs who fear manure-based biogas is used as argument for increased animal husbandry. The bioenergy controversies concern also methodologies for environmental assessments, including for indirect land use changes (ILUC), and reliability of certification schemes. The mapping of controversies identifies issues that probably need to be taken into account in shaping of Danish bioenergy strategies if these strategies should gain substantial legitimacy among environmental NGOs.

*Key words:* Arena of development, bioenergy, controversy, path dependency, sustainability

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