Comparison of the organic waste management systems in the Danish-German border region using life cycle assessment (LCA)

This study assessed the management of the organic household waste in the Danish-German border region and points out major differences between the systems and their potential effects on the environment using life cycle assessment (LCA). The treatment of organic waste from households in the Danish-German border region is very different on each side of the border; the Danish region only uses incineration for the treatment of organic household waste while the German region includes combined biogas production and composting, mechanical and biological treatment (MBT) and incineration. Data on all parts of the organic waste treatment was collected including waste composition data and data from treatment facilities and their respective energy systems. Based on that the organic waste management systems in the border region were modelled using the EASETECH waste management LCA-model. The main output is a life cycle assessment showing large differences in the environmental performance of the two different regions with the Danish region performing better in 10 out of 14 impact categories. Furthermore, the importance of the substituted district heating systems was investigated showing an impact up to 34% of the entire system for one impact category and showing large difference between each heating system substituted, e.g. in "Global Warming" the impact was from -16 to -1.1 milli person equivalent/tonne treated waste from substitution of centralised hard coal and decentralised natural gas, respectively.

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