



Composting green waste saves as much CO₂ as energy recovery

Recycling green waste as compost could match the environmental benefits of converting it into renewable energy, in terms of CO₂ savings, according to new German research. It suggests that the two forms of waste management should be seen as complementary and both should receive subsidies.

Green waste is biodegradable waste, usually from gardens and parks, and includes grass, hedge trimmings, leaves and tree trunks. It can be used to produce energy in biomass power stations and receives a renewable energy subsidy in Germany. It can also be recycled as compost, which reduces the extraction of peat – an important sink for CO₂. However, composting does not receive financial support in Germany. The EU is currently developing policy to encourage composting and develop standards for composting across the EU¹.

The research compared the environmental benefits of energy recovery from green waste and of recycling green waste using 81 samples. It analysed the CO₂ balance of each system by estimating the release and savings of CO₂ at the different stages of the process chain. For energy recovery this included the transport, shredding, incineration and the CO₂ saved from the renewable energy produced. For recycling this included stages such as transport, composting and CO₂ saved by replacing peat. Four different types of green waste were considered that differed in their amount of wood, herbaceous/grassy material and soil.

The results demonstrated that waste with a high percentage of wood produced the most CO₂ savings for both composting and energy recovery whilst those with only herbaceous and soil components produced the least savings. The CO₂ savings from energy recovery varied from 126 to 1040kg of CO₂ saved per tonne of green waste, depending on the type of waste and its composition. The CO₂ savings from recycling varied from 259 to 1193kg of CO₂ per tonne of green waste, again depending on the type of waste. This indicates that the environmental gains, in terms of CO₂ savings, were similar for both energy recovery and recycling of green waste.

Notably, green waste with a high percentage of herbaceous/grassy content and soil content had twice the CO₂ savings from recycling as from energy recovery. This is probably because this type of waste has low heating values, due to high water and ash content, and is therefore better for composting purposes.

The researchers suggested that energy recovery and recycling of green waste should be judged as complementary systems. It is unlikely that one method on its own will achieve the desired reduction in CO₂ levels and a combination is more likely to lead to a significant decrease in greenhouse gas emissions. As such they recommend that recycling of green waste be awarded equivalent financial support as the use of green waste to produce renewable energy.

1. See <http://ec.europa.eu/environment/waste/compost/index.htm>

Source: Kranert, M., Gottschall, R., Bruns, C. & Hafner, G. (2010). Energy or compost from green waste? A CO₂-based assessment. *Waste Management*. 30: 697-701.

Contact: martin.kranert@iswa.uni-stuttgart.de

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