

## Small bioelectricity plants dirtier than large ones, says study

May 13 2008

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Small-scale community based bio-power plants produce higher levels of emissions per unit of electrical output than large facilities, according to new research presented at a major sustainable energy conference today.

Dr Patricia Thornley from The Tyndall Centre for Climate Research at The University of Manchester, will present her findings at the United Kingdom Energy Research's Centre's Sustainable Energy UK conference in Oxford.

Dr Thornley says that while small facilities do have their plus points – for example, transport impacts are lower and local communities tend to like and support them – their environmental performance is usually inferior to that of larger plants.

However, she will also stress that the overall pros and cons of different types of bioelectricity generating facilities cannot be judged on just one parameter.

“There is a need to look at emissions, carbon savings, costs and jobs all side by side – and that is what we have done in this study,” she said.

Dr Thornley will also tell the conference that while the biopower generating systems studied all showed substantial reductions in greenhouse gas emissions compared to conventional grid electricity, using the most efficient technology available in bioelectricity plants does not necessarily result in the lowest carbon emissions.

The research, conducted by Dr Thornley and Dr Paul Upham from the Tyndall Centre Manchester in conjunction with academics from The University of Ulster and Aston University, is designed to support future decision-making when it comes to developing new types of bioenergy resources.

The work – as part of the SUPERGEN Biomass and Bioenergy Consortium – assesses the impact of 25 complete bioelectricity systems, from crop establishment to energy demand servicing.

It is the most comprehensive UK-focused study of biomass electricity generation systems ever conducted.

For the research, four key airborne pollutants – carbon monoxide, nitrogen oxides, particulates and volatile organic compounds (VOCs) – have been tracked across every step in the bioenergy system from field to power plant.

Other key findings include:

- \* The energy consumption, greenhouse gas emissions and environmental pollutants associated with haulage lorries visiting bio-electricity plants is not significant

- \* Pulverized fuel (pf) co-firing systems – where biomass is burned at the same time as coal at established power plants – generally perform very well in terms of emissions, cost and carbon emissions, despite the technology's perception as an unsophisticated and unclean.

Dr Thornley said: “Power generation from biomass is a sustainable energy technology which can contribute to substantial reductions in greenhouse gas emissions.

“It is not, however, emission free and, when account is taken of airborne emissions, ecological and other impacts there is arguably greater potential for direct environmental impact than is the case for most other renewable energy technologies.”

“These factors make it particularly important to consider the whole system – including crop production and transport – and to choose an appropriate scale, technology and type of biofuel.”

Source: University of Manchester

Citation: Small bioelectricity plants dirtier than large ones, says study (2008, May 13) retrieved 25 April 2024 from <https://phys.org/news/2008-05-small-bioelectricity-dirtier-large.html>

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