



SUPERGEN Bioenergy Hub

1.1 Emissions from Solid Biomass Combustion



Objectives

To explore achievable emissions levels from domestic-scale biomass combustion and develop the cost/benefit case for enhanced emission abatement.

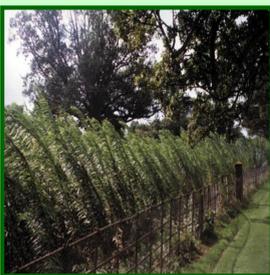


Background

This project will address the major issue of concern over emission levels from biomass combustion, particularly at a domestic scale. It builds upon previous work which identified the importance of the supply chain and transportation as major sources of airborne emissions for large bioenergy plants, but that significant point source emissions occur at smaller scales.

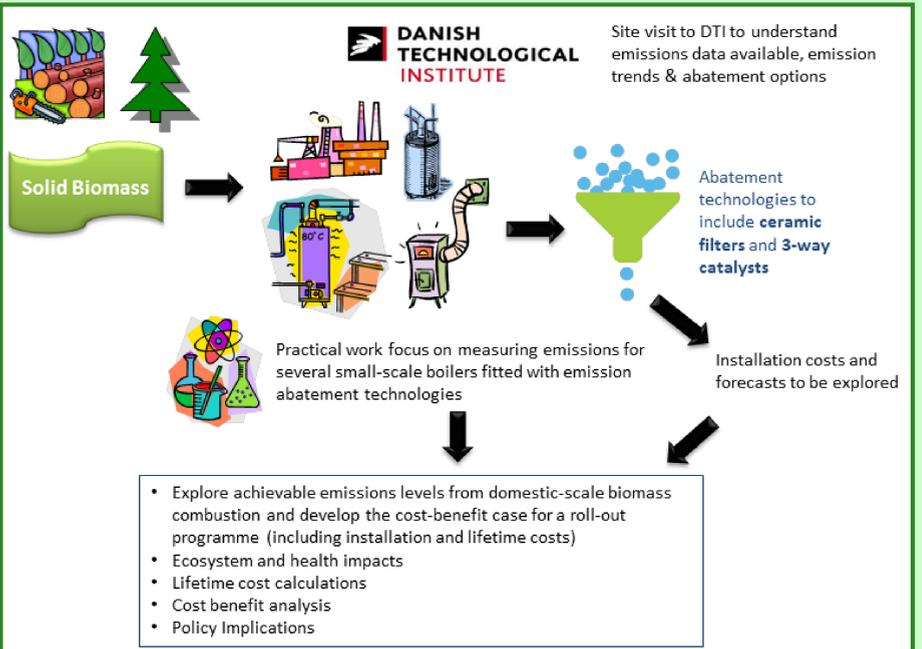


Small scale facilities can offer particularly valuable rural development opportunities but may become uneconomic with additional costs. Therefore this project will evaluate the costs and benefits of enhanced emission control at small scales.



Partners

- Newcastle University (Lead)
- University of Bath
- Aston University
- University of Manchester
- Danish Technology Institute



Method

The work will commence with a study visit to the Danish Technological Institute, who have 20 years' experience of type-testing boiler emissions profiles, facilitating an assessment of existing data availability, emission trends and abatement options at different scales.

Practical work will then focus on measuring emissions from a selection of small-scale boilers fitted with different emission abatement technologies (anticipated to include ceramic filters and 3-way catalysts) and measuring the reduction in emissions achieved, particularly focusing on fine particulates. The installation costs of such measures are normally considered prohibitive at small scale and cost forecasts at small (domestic) scales will be explored with industrial partners. The ecosystem and health impacts of the reductions achieved will be quantified, and lifetime cost calculations carried out. The cost-benefit case for encouraging lower emission levels will then be assessed, taking account of the emission limit proposals for the UK's Renewable Heat Incentive.



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