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Local public opinion of a proposed 21.5 MW(e) biomass gasifier in Devon: Questionnaire survey results

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Abstract

This paper presents the results of a postal questionnaire survey of local public opinion on a proposal to build a 21.5 MW(e) integrated combined cycle biomass gasifier on an old Royal Air Force airfield on the outskirts of the rural village of Winkleigh, Devon, England. To all households in Winkleigh Parish 1200 questionnaires were distributed in June 2004 and were returned by 573 people, representing 40% of all adults in the parish. Opinion was found to be overwhelmingly against the gasifier. The concerns of local people were varied, but the highest levels of shared concern were truck movements and associated pollution and nuisance, doubts about the developer's credibility, and gaseous emissions from the plant, including odour. In general, local people felt that they were being asked to accept an industrial scale development that would lead to deterioration in their quality of life. The grey and academic literatures on analogous cases anticipate some of the specific findings.

Keywords: Bioenergy; Perceptions; Opinion; Public; Planning; Community; Environmental impact; Gasifier

1. Introduction

This paper takes as its starting point the need to reduce the greenhouse gas emissions associated with energy use in a manner that engages with, rather than alienates, communities that may be affected by zero- or low-carbon initiatives. The focus here is on the controversy associated with a particular proposed development in Winkleigh, Devon. The project context and detailed reports on which this and related papers are based can be freely downloaded at: http://www.supergen-bioenergy.net/?_id = 339. The questionnaire survey report, which includes a copy of the questionnaire, is also available in annex 1 of the electronic version of this paper. The present paper reports quantitative results of a questionnaire survey of Winkleigh Parish conducted in June 2004, together with a short summary of contextual grey literature on public opinion of bioenergy in the UK. The regional governance issues raised by the case, together with related opinion survey results, are reported separately [1], as are the qualitative results of additional focus groups and interviews [2].

The UK's recent experience of wind power development illustrates the importance of public perceptions and local opinion in progressing or hindering renewable energy proposals. At the level of Council planning authorities, between 1999 and 2002, only 40% of wind farm planning applications were given definite approval [3]. Previous research on UK bioenergy siting controversies has also highlighted local public opposition as a key factor in hindering bioenergy development, with key public concerns including damage to the rural character of locations, traffic impacts, and various forms of pollution (gaseous, noise and visual) [4].

The UK government's Energy White Paper confirmed the target of 10% electricity from renewable sources by 2010, and set the aspiration, by 2020, to double renewables' share of electricity from the 2010 target and to pursue policies to achieve this [5]. Accordingly, Regional Planning Guidance (RPG) for the South West (SW) region of England (where the proposed development would be sited)

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has set a target of a minimum of 11–15% of its electric power capacity (as distinct from production or consumption) from renewable energy by 2010 [6]. The South West Regional Development Agency (SWRDA) also has a stated intention to fund demonstration projects for biomass, wave and tidal renewable energy technologies [7].

In terms of the potential resource for 2010, the overview of regional UK renewable electricity potential by energy consultants OXERA, in a 'high' supply scenario for the SW region, estimates that biomass (50% of renewable MWe capacity) and onshore wind (30% of renewable MWe capacity) would potentially constitute the largest fractions of renewable electricity supply, followed by landfill gas (10% of renewable MWe capacity) [8]. In terms of bioenergy only, OXERA's indicative 2010 target range for 'biomass' installed capacity in the SW was 55–141 MW(e), with a target of 8 MWe for anaerobic digestion and 2–18 MWe for 'energy from biodegradable waste' [9]. The top end of the target range involves new coppice and agricultural waste combustion schemes, but there is no specific reference to energy grasses. A more recent resource assessment study for the regional government office (*Revision* 2010) provides 2010 electrical generating capacity targets for energy crops (willow and *miscanthus*) and forestry residues as 73 MWe, taking account of landscape sensitivity. The anaerobic digestion target would add 15 MWe, poultry litter 10 MWe and straw 0 MWe, all accounting for landscape sensitivity [10]. In aggregate, while these estimates lie in the middle of OXERA's earlier target range, they remain ambitious given the timescale and low baseline of bioenergy use in the region.

Understanding the reasons why people object to a relatively large (21.5 MWe) bioenergy proposal should help to inform bioenergy policy and help developers to avoid the delays and refusal of planning consent that can be associated with adverse local opinion. While we found that many of the issues identified here are actually foreshadowed in the 'grey' renewables siting literature of the UK and SW England, this study adds a considerable level of detail regarding public understanding and perceptions of large-scale bioenergy. (By grey literature we are referring to documents and reports that are not formally published in the formal and academic literature.)

2. Previous studies of public opinion of bioenergy (UK and SW England)

Earlier studies of public perceptions of bioenergy in relevant geographical regions provide an indication of the type of concern that developers and regional decision-makers may need to anticipate when proposing a sizeable bioenergy powerplant. These issues can be identified in both national and regional opinion surveys.

2.1. National opinion surveys for DTI (2003)

MVA Ltd conducted 20 discussion groups with members of the public across England, Scotland and Wales during November 2002 [11].[1] These groups were intended to be socio-economically representative of the entire population and included people living both near to and away from renewable energy developments. Participants were favourable to, and supportive of, renewable energy in general. However, people questioned the 'environmental friendliness' of bioenergy, though were more accepting in areas in which a bioenergy plant was operating. Concerns included the size of the plant and its chimney and how this would affect local landscapes. There was some confusion as to whether bioenergy plants could burn household waste and concern that burning animal waste would be odorous. Participants found it difficult to distinguish between bioenergy and incineration and raised concerns about the amount of fuel a bioenergy plant would require. Straw was recognised as readily available but participants wondered how much land would need to be given over to *miscanthus* or other energy crops if there were many bioenergy power plants around the country.

Participants were also concerned about emissions and odours from bioenergy power plants. There was some discussion as to whether 'smoke' would be 'cleaned' within the plant, so reducing emissions. Many participants found it difficult to understand how biomass was a renewable fuel, as they perceived it as having features of traditional fossil fuel energy sources (e.g. combustion and fuel transport). In general, while all of the renewable energy sources were perceived as environmentally friendly, many participants had doubts about bioenergy. On the positive side, bioenergy schemes were seen as the most likely to provide employment, both within the power plant and in providing business for farmers growing the material. Growing bioenergy crops was seen as a useful diversification for farmers who had lost traditional markets, allowing them to grow crops rather than sell their land for house building [13].

2.2. SW England renewable energy resource assessment (2001)

Regional stakeholder opinion and position statements on renewables were documented as part of the regional renewable resource assessment for UK Government Office South West [14]. For position statements, Terence O'Rourke consulted energy management groups, local and regional government authorities, government agencies, interest groups, industry bodies and companies and academic institutions in the region. Respondents were principally local government, interest groups and government agencies. Of relevant comments, Lloyds Register (risk assessment consultants) stated that they had experienced

[1] A similar study was also conducted in Northern Ireland [12].