



# National renewable energy policy and local opposition in the UK: the failed development of a biomass electricity plant

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## Abstract

Biomass energy developments in the UK are supported by central government but face considerable opposition from the public. The purpose of this study is to explore the causes and consequences of public opposition to biomass energy development in North Wiltshire where Ambient Energy Ltd. proposed the development of a 5 MWe wood gasification plant near the town of Cricklade. The case study was conducted through in-depth interviews, content analysis, person to person questionnaire survey, focus group discussion and participatory appraisal methods. Though biomass energy plants in general have fewer environmental impacts than plants which use fossil fuel, there could still be local impacts which give rise to concerns and local opposition to the development. The opposition could be partially explained by the fact that the general public is relatively unfamiliar with biomass energy. Public acceptance or rejection was mainly based on the public trust or mistrust. The case study demonstrates two distinctly rigid characteristics among the key stakeholders of biomass energy development. These are the 'not-in-my-back-yard' attitude from the public and the 'there-is-no-alternative' attitude of the developers. These rigid stances were widely contributing to the failure of the project to gain planning permission. The environmental justification of biomass energy at the national level is not always sufficient to convince the local residents. Winning public support to promote biomass energy requires an alternative approach of planning and action through interactive communication, public participation and collective learning among all the stakeholders.

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## 1. Introduction

This paper examines the causes and consequences of public opposition to the development of the North

Wiltshire Biomass Energy Plant in Cricklade. The paper documents the main concerns of the public, causes of mistrust, the reasons for the rejection of planning permission and the dismissal of the appeal. The paper examines the communication strategies of the developer and the roles of environmental organisations and the local media in relation to this development.

Following the summits in Rio (1992) and Kyoto (1997), the UK Government has pledged to address Global Warming and Climate Change through a

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number of initiatives, including the aim to achieve the target of 10% electrical power generated from renewable sources by 2010 [1]. The Renewables Obligation (RO) and a system of capital grants are the key policy instruments to facilitate the growth of renewable energy [2]. Succeeding the Non-Fossil Fuel Obligations (NFFO) which were awarded on a competitive basis, the RO is a long-term obligation (25 years) for all licensed electricity suppliers in England and Wales to supply a certain portion of their electricity supply from renewable sources [3]. However, obtaining planning permission has emerged as one of the major difficulties in developing biomass energy [4]. To date, 27% of the fibrous biomass plants with a NFFO contract had their planning application rejected in the first round, and only 1 project won planning permission on appeal [4].

## 2. Biomass energy developments and siting controversy; a brief review of the literature

Previous research shows that the rejection of planning permission was mainly due to public anxiety about the perceived adverse impacts or risks of biomass projects [5,6]. Due to anticipated adverse impacts at the local level, the local community is less likely to reinforce the government's good intentions to reduce the effects of greenhouse gases [7].

This problem can be seen as a conflict between national needs and local interests, as siting issues can become increasingly contentious when the development decisions are based on policies and ideas from the top [8,9]. The development of renewable energy schemes in the UK for example, has largely been driven by the central government's target of 10% energy from renewables. The government has subsidised the development of such technologies to achieve the target. The whole process was in one way or another driven by elite and forced onto risk bearers [10]. As Susan Owens summarises [9, p. 1], "*The problem of finding sites is frequently construed as meeting some national need whilst ensuring justice for local communities who bear the brunt of environmental hazards and costs*".

The top-down risk communication approach of most developers can also cause problems. Risk research shows that the public perception of fairness

can play a crucial role in determining whether a proposed facility receives planning permission or not [11]. The public in the UK are increasingly distrustful of government policy makers, industry and other public bodies, while environmental non-governmental organisations (NGOs) and other types of pressure groups are seen as more trustworthy [11,12]. The public feel alienated from decision-makers, believing that industry puts profits over their welfare [13]. The trust literatures show that the more the developer can win public trust, the more likely that the developer will get his/her development sited [14]. To gain public trust, transparency is important and secrecy must be avoided [15]. Another question is how risks are communicated. The social amplification of risk has some kind of substantive or hypothetical reality [16]. Social amplification depends on the factors which determine what society actually defines as a risk, what society does not define as a risk, and the resulting rationality of the public's response to the risk-related event [15,17].

## 3. Research methods

The selection of the research methods was guided by the objective to explore the feelings, experiences and concerns of the local people with regards to the development. Investigating the public perception of biomass energy requires research methods that have the ability to document the perception, interpretation and response strategies of the public towards the development. This typically requires a qualitative research approach [18]. The following qualitative research methods were used:

1. In-depth interviews were conducted with a local councillor, the planning officer, the developer, environmental NGOs, leaders and active members of the local opposition group, in order to explore their opinions and concerns about the development of the biomass plant. These interviews focused on the reasons why the public supported or opposed the proposed biomass plants and what should have been done to minimise public opposition. The weaknesses and strengths of the public relations (PR) strategy of the developer were also explored.

2. The relevant policy documents were analysed in order to explore the public opinion about the proposed plant, including those prepared by governmental organisations, the planning application files held by the North Wiltshire District Council and the Environmental Statements prepared by the developer, Ambient Energy Ltd.
3. A content analysis was conducted of the main local newspapers, covering the issues related to the plant for the period of May 2000 to August 2001 when it was of public concern.
4. A person-to-person questionnaire survey was conducted with 43 people from the areas surrounding the proposed site of the plant. The questionnaire was designed to explore the understanding of the respondents on the environment, renewable energy, biomass and other specific issues related to the plant.
5. Participatory Appraisal (PA) was used in this study to appraise and analyse public opinion on biomass energy development in their area. PA is a process of appraisal, analysis and action taken by local people on particular issue [19]. PA creates a cycle of gathering data, reflection and learning, where participants look at their perception on the current situation, identify barriers and propose areas for change. It is exploratory in nature which aids its transparency to outsiders [20].

#### 4. Description of the proposed biomass power plant

South Western Electricity plc., a major utility, won a number of NFFO contracts for biomass, wind and hydro electricity but lost interest in developing these. Ambient Energy was established in January 1998 as an acquisition of the renewable energy business from South Western Electricity plc., including all NFFO contracts. Ambient Energy<sup>1</sup> submitted the planning application (Ref.00/01204/EIA) to North Wiltshire District Council in May 2000 with a detailed Environmental Statement. The 5.5 MW project, located on Kingshill Farm near Cricklade, was to generate

electricity under a NFFO 3 contract. The NFFO contract specified that the plant had to be using gasification technology (rather than conventional combustion), and the fuel had to be wood. The required 36,000 t of dry wood were to be supplied from forestry residues and Short Rotation Coppice (SRC) grown on 3000 ha within a 30-mile radius of the power station. The plant was big enough to provide power to over 10,000 homes. According to Ambient Energy, the original site selection of the plant was based on the following criteria:

- (a) the surrounding area was suitable for growing short rotation energy crops;
- (b) it has good access to sources of forestry residues;
- (c) it had good road connections for the delivery of fuel supplies;
- (d) it provided good access to the electricity distribution network;
- (e) it delivered electricity to the national grid in a decentralised location which would help to reduce grid maintenance costs and the reinforcement costs associated with accommodating the peak electricity demand.

The developer pointed out the local benefits of the plant, which were local employment (15 permanent jobs, 68 additional jobs and work for 75 people during construction) and opportunities to diversify local farming industry by growing SRC [21].

The plant was designed to operate for approximately 25 years. The size of the proposed buildings was 126 m long and 46 m wide. About two-thirds of the building is woodchip storage [21].

#### 5. Local opposition to the development

A wide range of individuals and organisations opposed the development. They expressed various concerns, including the following:

- inappropriate location selected for the power plant,
- close proximity to local residents,
- emission of greenhouse gases and water vapour,
- unpleasant odour,
- emission of light at night,
- vibration and noise from the power plant,

<sup>1</sup> Throughout this paper we refer to Ambient Energy as the developer, though technically speaking it was Ambient's daughter company, North Wiltshire Biomass Power Ltd., which developed the plant.

- fear of public health hazards,
- nuisance from traffic,
- increases in traffic movement and flow of high goods vehicles (HGV),
- accidents and noise,
- fear of negative impacts to wildlife and ecosystems, aquatic environment and rural buffer zone,
- negative effect on the local weather system,
- undermining openness,
- visual effects resulting from the relative height of chimneys and other associated structures,
- negative effects on cultural heritage and archaeological significance,
- low benefits to local community compared to associated social and environment costs,
- negative effect on tourism and business,
- no compensation to local people,
- negative effect on property prices,
- no significant employment opportunity for local people.

Local people formed an action group called BLOT (Biomass Lumbered On our Town) to oppose the proposed development. BLOT was well organised and developed a strong opposition against the development. BLOT created a home page on the Internet<sup>2</sup> to facilitate debate, express opinions and reactions from the residents. They conducted also studies and produced reports. The main issues raised by BLOT were:

- The proposal would set a precedent for further industrial development and deters people moving into the area.
- It would contradict local designation policies, namely the Area of Special Archaeological Significance and the Rural Buffer Zone.
- It would lead to a huge increase in daily Heavy Goods Vehicles (HGVs) on the A491 trunk road.
- Six chimneys of the proposed plant are very tall and thus affect the view from afar.
- 117 million litres per year of water would be steamed into the atmosphere.
- The plant would give rise to odour, dust, noise and emissions nuisances.
- There may be long-term uncertainties about the general health impacts caused by the plant.

- There could be unquantifiable damage to Cricklade's south east meadows, flora, fauna and unique water systems.
- It was not clear if there would be any compensation to those affected, if anything would go wrong in/with the plant.
- There would be negative effects on property prices in the area.

The local MP, Mr. M. Wills and Cricklade Town Councillor, Mr. M. Kirkbride also opposed the plant. There were 439 letters submitted by local people to NWDC opposing the plant whereas only one letter was submitted in support of the development (sent by a willow growing farmer). In addition to the letters of objection, local people also submitted a petition signed by 861 people. Cricklade Town Council and Purton, Blunsdon and Castle Eaton Parish Councils had also objected to the proposal based on potential negative effects to local people and the environment. In the midst of the conflict between the developers and the public, BLOT asked Oxford Scientific Services Ltd. to examine the environmental impacts of the development. The findings of the research [22] stated that, "*Emissions of water vapour from the proposed Biomass Power Plant will cause mist and fogs to develop nearby, and in particular, will constitute a serious road safety hazard on the A419.*"

In the view of Councillor Mr. Brian Atfield of the North Wiltshire District Council, who also opposed the development, the siting of the plant was inappropriate with glaring inconsistencies in the developer's approach. He further highlighted that from a scientific point of view, the plant may be mostly beneficial, but that in people's perception this development is harmful to the local environment. He acknowledged that the development of biomass plant is a good thing in principle but it should not conflict with local policies such as the Rural Buffer Zone or the Cricklade's 11th century church which is of archaeological significance. Both the church and the Buffer Zone can be disturbed by the development. He pointed out that in north Swindon (the nearest larger town where many inhabitants of Cricklade commute to work) there is a large industrial estate on brown field land, which would have been a much more suitable location for such a development. He argued that the developers should have consulted with the public before making

<sup>2</sup> [www.cricklade.com](http://www.cricklade.com)

the definitive site selection. In his view the developers also failed to respond sufficiently to requests for information by the public who needed it to make their value judgements.<sup>3</sup>

Mr. Charles Uzzel, Planning Officer of the Development Control Division of NWDC agreed with most of the issues raised by the Councillor. He concluded that the proposed site was inappropriate. The site selection process should be more robust and match the local plan. He pointed out that the NWDC has designated an area for developments which generate employment, and that the developer should have considered siting in that area.<sup>4</sup> However, he did admit that Ambient Energy made sincere efforts, far more than other developers, to give information to the public but the opposition was so strong that their information did not convince people.

The Chairlady of the BLOT Action Group Mrs. Gerdie Schaffer argued that Cricklade is a country conservation area with a clean and peaceful rural character which would be disturbed by the proposed development. The developer selected the wrong site and totally ignored public opinion. She pointed out that it would establish a precedent to build such a big plant in the Rural Buffer Zone. She thought that the developer's motive to develop power plant in the Rural Buffer Zone would be related to the cost of the land, as land is very cheap in the Buffer Zone. In her view, Ambient Energy used a very top-down decision process when they declared that they want to build the plant on Kingshill Farm. They did not consult local people before selecting the site and did not listen to the opinion of the general public. "*The label 'green' does not always mean green*".<sup>5</sup>

Out of a total 43 respondents<sup>6</sup> to the questionnaire survey, 58% felt there were environmental problems in their area. They were more seriously concerned about the local effects of the development than about its contribution to reduce green house effects at a

wider level. Their immediate environmental concerns were related to traffic, water and air pollution and negative effects on farming, the rural buffer zone and wildlife. These were the reasons for their opposition to the development.

Organisations which opposed the development included The Council of Protection of Rural England, Cricklade Business Association, English Heritage, FoE North Wiltshire and Cricklade Action Partnership.<sup>7</sup> The Highway Agency expressed road safety concerns. Environmental organisations questioned the credibility and legitimacy of the Environmental Statement.

The Wiltshire and Gloucestershire Gazette, the Evening Advertiser, the Herald and Western Daily Express were intensively covering traffic and pollution issues related to this development.<sup>8</sup> The issues relating to public concerns were also covered by the BBC 'Look West' Programme. These media all highlighted the potential risks. Distrust over the integrity of Ambient Energy was very high. The public perceived that the plant was designed solely for financial gain, ignoring the concerns of local people and therefore their attitude became substantially negative. The developers' simplistic arguments of economic benefits to local communities strengthened the opposition instead of winning their support. Environmental debate in the UK has also exemplified this situation at wider scale [17,23].

## 6. Rejection of planning permission and dismissal of the appeal

North Wiltshire District Council (NWDC) rejected the application on 26th of September 2000 for the following reasons [24]:

- "*The Biomass Power Station is a major development proposal which would, if allowed, seriously undermine the openness of the rural landscape, resulting in a loss of countryside creating an inappropriate form of major development in the Rural*

<sup>3</sup> Interview with Councillor Atfield on 24 October 2001 at the North Wiltshire District Council Office.

<sup>4</sup> Interview with Mr. Uzzel on 24 October 2001 at the North Wiltshire District Council Office.

<sup>5</sup> Interview on 27 October 2001 in Cricklade.

<sup>6</sup> The questionnaire survey was conducted in Cricklade from 23 to 27 October 2001. A total of 43 respondents from Swindon, Cricklade, Chippenham, Blunsdon, Cotswolds, Hook and Callow Hill participated in the survey.

<sup>7</sup> The details of the response of NGOs and other organisations are available on the Report No. 27 of the North Wiltshire District Council dated 26 September 2000.

<sup>8</sup> <http://www.thisiswiltshire.co.uk/wiltshire/archive/>



*Buffer, contrary to the Wiltshire Plan Review and Policy DP 13 of the Wiltshire County Structure Plan 2011 Proposed Modifications”.*

- “*The Biomass Power Station, if allowed, would cause demonstrable harm to the amenity and rural character of the countryside, significantly impacting on the open landscape of the area by virtue of the proposal’s scale and design contrary to the provisions of Policy C6 of the North East Wiltshire Structure Plan, Policy C7 of the North Wiltshire Local Plan, Policy RC9 of the Wiltshire local Plan Review and Policy DP15 of the Wiltshire County Structure Plan 2011 proposed Modifications”.*

Ambient Energy appealed against the decision of the NWDC on the following grounds [25]:

- Though the proposed site is within the rural buffer, they believed that the development is appropriate because it is inextricably linked to the forestry and agriculture sectors.
- Redesign the building to reduce footprint or to change shape or dimensions is not appropriate (according to engineering and architectural investigations) because changing one aspect of the design would affect another part. Hence, it is not technically feasible to change the size or shape of the proposed plant.
- The awarding of the contract between government and Ambient Energy is to develop a specific renewable energy scheme at a specific location. Both the DTI and the Office for the Gas and Electricity Markets have not approved Ambient Energy’s request to move the contract. Ambient Energy cannot therefore, move the contract to another site.

For the appeal against the decision of the NWDC, the public inquiry was conducted between 9th May and 13th July 2001. In determining the appeal the Inspector considered effects on amenity, character and landscape, the application of renewable Energy Policies and the Rural Buffer Zone Policy. He gave significant importance to visual harm the proposal would create within the countryside. In assessing the amenity, character and landscape he concluded, “*I think the scheme would have a noticeable harm on the character and amenity of the landscape*” [26]. Based on the inquiry he dismissed the appeal.

## 7. Discussion

The case study demonstrates that the opposition surrounding the issue of ‘siting’ is a reflection of wider problems such as the characteristics of NFFO, the public consultation process and public perception of risk and mistrust with developers.

### 7.1. Public consultation

The case discussed above indicates that public consultation in the planning process was one of the main issues contested in this development. In in-depth discussions, local people highlighted that they were not consulted in advance. The siting decision was top down and imposed on them at social and environmental costs. They believed that biomass plants have negative local environmental and social impacts such as emission of unpleasant odour, vibration and noise, traffic pressure and related accidents, visual impacts and negative effects on property prices. In order to minimise public opposition when selecting a site for the development, it is important to ensure full consultation in advance with local public, community leaders, planners and all other relevant stakeholders [4,27]. This can be done through local situation analysis; exploring what are the potential problems, who are the influential people, what are their concerns, how they see the proposed development, how they can be mobilised to persuade the general public and how local interests can be effectively represented in the proposed development.

### 7.2. Characteristics of NFFO

NFFO contracts were awarded for the cheapest bids (£/MWh) to produce certain types of renewable electricity. Each of the five NFFO rounds was open to a different set of predefined fuels and technologies. The bidders had to specify the location of the plant, and winning bids were tied to that location. This left developers with a difficult position with regards to siting [7]. Because the NFFO procedure was highly competitive, it had to be secretive. If a developer would start siting discussions publicly prior to winning the bid, other competitors could claim the same site and propose a similar plant for a lower per kWh price and win the bid. Secondly, it would have been costly

and time-consuming for the developer to engage with the local stakeholders without knowing if they would win the bid.<sup>9</sup> Therefore, developers were inclined to keep their applications secret until the outcome of the bidding round. Ambient Energy, who were not even the original developers but had taken over the NFFO contract from South Western Electricity, had therefore little option but to present the site as a *fait accompli*. The fixed siting problem was clearly presented by Ambient Energy in their justification to appeal.

This institutional barrier of fixed siting is a thing of the past now. In March 2001 the government declared that the outstanding NFFO contracts are no longer tied to the original location. However this solution came too late for Ambient Energy who had already launched their appeal.

The fixed-siting problem does not apply to the RO, the successor of NFFO, as it is free of the competitive dimension which encouraged secrecy and a top-down site selection process.

### 7.3. Public perception of risks and mistrusts

Lack of understanding of the long-term environmental advantages of biomass energy to reduce greenhouse gas emissions, general lack of knowledge of biomass technologies and misunderstandings which arose during the planning process due to lack of full information and interaction or have contributed to the development of risk perception. Public assessment of risk involves judgements about behaviour and trustworthiness of organisation in question (Ambient Energy in this case) and its relation with the public [28]. The apparent rigidity of Ambient Energy to stick to their original design of the buildings fuelled further suspicion. There is a difference between local perception of the risks related to emissions, environment, pollution, traffic generation, and the technical assessment and the perception of developers or experts' [22]. Even if the plant is technically and environmentally sound, and initial negative perception can create suspicion. When the local media amplify environmental and social risks then mistrust can grow stronger still [12].

This problem underlines yet again the need for interaction and dialogue with public, proper information dissemination from the beginning and awareness raising in order to reduce public perception of risk. That can be done in collaboration with local environmental NGOs, local concerned groups and resident committees. As Mary Edward, from FoE said, there is a misconception about burning biomass to generate electricity. People see biomass plants similar to waste incinerators.<sup>10</sup> Waste incinerators received a lot of bad publicity in the past due to the emission of pollutants such as dioxins. It is important to make the public aware of the differences.<sup>11</sup> There needs to be a lot of preparatory communication work before lodging an application for planning permission.

Concerns of environmental pressure groups and local action committees come from their values and belief system. When an external development poses threats to their values and expectation, people develop mistrust [6]. Once they have developed a negative attitude to the proposed development, they are likely to strengthen their arguments with emotive or graphical arguments, such as the risks of children being run over by the lorries servicing the plant, or the visual effect of the chimney being higher than the spire of the local church [29]. It is clear that different stakeholders had interpreted this biomass development differently. The developers interpreted this development as being environmentally advantageous to all and blamed the opposition of is engaging in typical NIMBY behaviour. However, the general public interpreted the development as solely serving the economic benefit of the developer. These interpretations promoted misunderstanding.

The confidence crisis and mistrust were prominent characteristics of this biomass energy proposal. Trust is a bond of society [17]. If there is trust, one party relies on another, based on the belief that the other is competent, open, fair, concerned and reliable [30]. In this case people were suspicious with the developers from the beginning. Building trust through rational dialogue should be an important concern in a project like this [4,30]. The risk of public opposition

<sup>9</sup> In one occasion, the developer did just that, had the planning application rejected and then failed to win a NFFO contract [6].

<sup>10</sup> Interview with Mrs. Mary Edward on 9th November 2001.

<sup>11</sup> Wood is low on chlorine, the essential ingredient for dioxins, and a wood gasifier cannot switch to dirtier fuels without extensive modifications.

increases if the benefits of the proposed biomass development are not clear to the local people. That is further fuelled by uncertainties, lack of information and media amplification [17]. Public attitude towards the project had hardened into scepticism and even hostility across all concerned people in Cricklade. Consistent with findings elsewhere [30], the environmental assurances by the developer were not trusted as the developer was thought to be guided by commercial motives only. The local public were unconvinced by the ‘more local jobs’ justification which was typically mentioned by the developers. Most notably, the plant was viewed as a factory with smoking chimneys rather than a small, state of the art, environmentally friendly facility to produce green electricity to benefit all. With the exception of the visual impacts, the negative social and environmental impacts perceived by the local people did not hold sway in the official planning decision. This demonstrates yet again that perceived environmental risk is primarily a social construction and depends upon the moral commitments of community and social and cultural dimensions [17]. But these ‘scientifically erroneous’ perceptions remained important as they did add further fuel to local opposition, which made it more difficult for councillors to ignore the local opinion.

## 8. Conclusion

There were a series of factors that were affecting the siting and building biomass-to-energy plant in Cricklade. Public relation strategies by developers, role of the media in amplifying risks, lack of proper information and communication, and a lack of understanding in the general public about biomass energy have played greater role in the failure of this development. One primary policy reason why the developer had difficulty in gaining planning permission has to do with the NFFO process that encourages secrecy and fixes the site. The future promotion of biomass energy depends on a proactive response to these issues as well as regulatory flexibility, market condition, technological development. When local people perceive risks from the development, they go beyond the argument of national interests. Macnaghten and Urry [17] show that public concerns about and engagement in environmental issues result from specific contestation and

reflect aspiration for more meaningful collective engagement. So the focus of such a development should look at the interrelationships between social, environment and economic aspects in a holistic way. Both the developers and the public were not able to give sufficient attentions to this issue.

Environmental contributions of the biomass are not yet well understood at the local level. Local people see ‘industrial-scale’ biomass energy plants as a threat to the local environment. One of the important tasks in biomass energy development should be to start constructive dialogue between all stakeholders that establishes mutual trusts and wins public support to effectively implement biomass projects. However, this needs widen the current practice of public consultation. It became clear from the case that public acceptance and support is crucial to get planning permission. Hence it is in the interests of all stakeholders to opt for a consensual approach that goes well beyond the minimum level of consultation currently defined in the planning regulations.<sup>12</sup> The basis for a consensual approach is the early establishment of effective communication and public relation strategies by the developers. Listening, acknowledging, respecting and valuing the views of community members would help developers and the government to identify more appropriate biomass energy developments. The UK government needs to create a greater level of public awareness of the environmental benefits of biomass energy. The provisions of capital grants and regulatory reforms alone are not sufficient to make biomass energy development successful.

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<sup>12</sup> The shortcomings of the English planning system are widely recognised. The recent Green Paper on Planning [31] addresses some but appears to lack an environmental focus and integrated approach [32].



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