

Chapter 4

The

Environmental and other

Benefits of the Proposal

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4.1 – Environmental Benefits

The need for the development of renewable energy generation in the UK, including wind energy, arises from the requirement to reduce emissions of greenhouse gases and acid rain gases, and to move towards a more sustainable future. Wind energy is a means of generating electricity that does not produce emissions of greenhouse gases or acid rain gases, does not produce toxic waste products, and is not dependent on finite reserves of fossil fuels. It is inherently sustainable, and this is explicitly recognised in the Government's approach to the deployment of the technology.

Successive Governments have made progressively more determined efforts to curb emissions of harmful gases through a reduction in dependence on fossil fuels. This has occurred, in part, as a response to the following:

- Acid rain has been identified as contributing towards damage to forests, moorlands, lakes and rivers throughout Europe. For instance, work undertaken by English Nature in 1993 concluded that 600 sites of national ecological importance were under continuing threat from acidification.
- Greenhouse gas emissions cause global warming and climate change. The UK Government White Paper "This Common Inheritance" (1990) described global warming as "*...one of the biggest environmental challenges now facing the world*".

In 1996, a Department of the Environment Newsletter records the Inter-Governmental Panel on Climate Change (IPCC) as indicating that current trends in emissions of greenhouse gases "*...may lead to a warming of the globe by 2°C by 2100 representing an average rate of warming greater than has been seen at any time in the last 10,000 years....Climate change is likely to have wide ranging and mostly adverse impacts on human health with significant loss of life.*"

More recently, in March 2000 the Government launched its draft UK Climate Change Program. The introduction to the document confirm the Government's view that "*Climate change is one of the most serious environmental threats facing the World today. The draft climate change program sets out a*

far-reaching strategy for tackling climate change in the UK. It aims to ensure that the UK moves towards a more sustainable economy. It puts in place policies that give clear signals about the changes that need to be made and it outlines a variety of measures that will deliver cuts in greenhouse gas emissions ...”

Furthermore, a poll commissioned by the Royal Society for the Protection of Birds in October 2001 in order to examine the public's knowledge of the links between fossil fuel use and climate change found that three quarters of the public (74%) are concerned about the effects of climate change.¹

In response to the concerns about Climate Change, the Government has pledged to cut emissions of carbon dioxide, the main 'greenhouse gas', by 20% from 1990 levels and to meet 10% of our electricity needs from renewable sources by the year 2010; wind energy will be required to play a major role in achieving these targets (see Chapter 3 – The National Policy Environment). To this end, the Government is committed to a “new and strong drive” to develop renewable energy.

In contributing to the aforementioned targets, UK wind farms already produce the electricity needs of about 250,000 homes, and annually offset the emission of over three-quarters of a million tonnes of carbon dioxide and over 10,000 tonnes of acid rain gases². Furthermore, the wind energy industry supports thousands of jobs throughout the UK – directly and indirectly³.

4.2 – Benefits – the Local Context

Based on wind turbines of the type indicated in Chapter 2 – Project Description, this proposal would generate a substantial amount of clean, renewable electricity each year, varying in relation to the exact wind turbine specifications and the on-site wind resource. The electricity generation from the proposal would off-set an equivalent amount of electricity from conventional power stations, therefore avoiding Greenhouse Gas (carbon dioxide) and Acid Rain Gas (sulphur dioxide and nitrous oxides) emissions every year of its 20 year plus design life. Figures indicating the 'clean energy' benefits of the proposal are summarised in the following table:

Wind Turbines and their 'Clean Energy' Benefits

'Clean Energy' Benefit	Per 1.3 MW Wind Turbine Benefits	Number of Wind Turbines Proposed	Total 'Clean Energy' Benefit from Proposal
Annual Clean Electricity Production	3 to 4 million units	X 1	= 3 to 4 million units
Equivalent Number of Homes	693 to 924 typical UK homes ⁴	X 1	= 693 to 924 typical UK homes
Annual emission 'savings', Carbon Dioxide	2,550 to 3,400 tonnes ⁵	X 1	= 2550 to 3400 tonnes
Annual emission 'savings', Sulphur Dioxide	33 to 44 tonnes ⁴	X 1	= 33 to 44 tonnes
Annual emission 'savings', Nitrous Oxides	6 to 8 tonnes ⁴	X 1	= 6 to 8 tonnes

4.3 – Construction Phase Benefits

The construction of the proposal would represent a large investment in the local area. The installed cost of each wind turbine of the type proposed is approximately £900,000. Of this sum, about 25% – £225,000 – would typically be spent in the locality of the project, with a range of contracts being placed with electrical and civil engineering companies to fencers and hoteliers.

Using the figures in section 1.9 of Chapter 1, an assessment of employment is possible. For instance, a single 1.3MW wind turbine would provide between 16 and 28 job-years relating to manufacturing and installation in addition to employment relating to operation and maintenance.

Furthermore, in a response to a question in the House of Commons in October 2001, Brian Wilson, the Minister for Energy wrote: "The proportion of wind turbines operating in the UK that were manufactured domestically is estimated to be just under 6 per cent. The proportion containing UK components is estimated to be at least 43 per cent. Much more British manufacturing of wind turbines and components is expected in the future."⁶

4.4 – Operational Phase Benefits

Once the wind farm starts to supply electricity into the local electricity network, the landowner directly involved in the project would benefit from rental payments, thus assisting the rural economy at a difficult time. When landowner

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payments are combined with local authority rates and other expenses, the project would represent a substantial long term investment in the local area.

References:

- 1 RSPB Market research project 0136: "The GB public's views on energy issues", RSPB Market Research, October 2001.
- 2 The British Wind Energy Association (2000) web-site 2001<http://www.dwea.com> July 2001.
- 3 Dr Garry Jenkins (1996) "Jobs in wind energy" Safe Energy Journal 108, March-May issue, p. 16-17.
- 4 Electricity Association (2000) "Electricity Industry Review 4" January 2000.
- 5 Figures extrapolated from Department of the Environment and Welsh Office (1993) "Planning Policy Guidance Note – Renewable Energy: Annex on Wind Energy", Paragraph 9, London: HMSO.
- 6 Commons Hansard Written Answers text for Monday 22 Oct 2001, Volume No. 373, Part No. 34. – House of Commons Written Answers to Questions [22 October 2001].