

ENERGIES TOPIC AREA PAPER

GENERAL OVERVIEW

Access to abundant and instantly available energy underlies our entire way of life and has become viewed as “essential” to the quality of life that is now demanded by the developed world and to which the developing world aspires. From heating and lighting to transport, industry / manufacture and communications, energy is fundamental to almost everything we do and have. We expect it to be available whenever we want, affordable, safe and environmentally sustainable.

The reality is that the impact of energy generation and use on the environment is growing at an increasing rate. All energy supplies have substantial effects on the environment. They all change the natural world to some extent and some have impacts on human health. The world-wide use of unsustainable (non-renewable) sources of energy has two principal identified undesirable outcomes, namely the final exhaustion of available resources probably within the next 100 years and the environmental impacts arising from human induced climate change (global warming). In Europe over 90% of the carbon dioxide emissions arising from human activity can be attributed to energy production and use. UK carbon dioxide emissions contribute about 2% of the world total.

In 2002, the Department of Trade & Industry produced a White Paper entitled “Our energy future – creating a low carbon economy”. This document identifies 3 principal challenges, namely : - **environmental effects** – the impact of “greenhouse” gases on climate change and other environmental effects; **decline in indigenous energy supplies** – by 2020 the UK could be dependent on imported energy for three quarters of its total primary energy needs; **energy infrastructure improvements** – moves away from nuclear power production towards renewables.

The new energy policy proposed in the White Paper will have 4 goals : -

- To put the UK on a path to cut its carbon dioxide emissions by some 60% by about 2050 with real progress by 2020;
- To maintain the reliability of energy supplies;

- To promote competitive markets in the UK and beyond, helping to raise the rate of sustainable economic growth and improve productivity; and
- To ensure that every home is adequately and affordably heated.

During the years 1997 to 2000 the Royal Commission on Environmental Pollution carried out a review of energy prospects for the 21st century and their environmental implications. The results of the study were published in the report “Energy – The Changing Climate” which included 19 key recommendations for the Government to consider.

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WHAT DO WE HAVE IN PEMBROKESHIRE?

Pembrokeshire has a complex relationship with energy in that whilst it is host to major energy producers, the oil refineries and, until recently, a power station, which have played and continue to play a vital role in the economic and employment welfare of the County, it is a net importer of virtually all of its energy needs.

Pembrokeshire is blessed with significant sources of sustainable, natural energy in the form of water, wind and sun. Despite this and its ‘green’ image, the County derives less than 1% of its energy requirements from such ‘renewable’ sources. An energy use study compiled by the Pembrokeshire Energy Agency in 2003 also reports that oil accounts for three-quarters of the energy consumed in the County with the balance being shared out almost equally between gas, electricity and solid fuel. The refineries themselves account for over two thirds of the energy consumption of the County, predominantly oil (An Energy Plan for Pembrokeshire, April 2003, The Pembrokeshire Energy Agency). Energy consumption per capita of the population in Pembrokeshire is above the national UK and the EU average and annual expenditure on energy in Pembrokeshire is estimated at £273 million (£178 million without the consumption of the refineries). The Pembrokeshire Energy Agency study further states that the environmental impact of the County’s energy use is significant with Pembrokeshire’s consumers emitting some 4.5 million tonnes of carbon dioxide into the atmosphere each year.

The Energy Plan for Pembrokeshire suggests that the development and implementation of a sustainable energy strategy based on maximising the efficient use of energy and a

move towards renewable energy supply would be more in keeping with Pembrokeshire's renowned natural environment and green image and would help to address problems of perceived peripherality by increasing self-reliance and local solutions. It would also comply with growing national and international obligations and help Wales to achieve its target for 'greenhouse' gas reductions and renewable energy developments. The aims of the Energy Plan document are to : - "Actively integrate sustainable energy practices into the business, public, domestic and community sectors in order to improve economic and social well-being and to enhance the natural environment in the county, and to help Wales comply with national and international obligations". As a suggested means of achieving these aims it sets out a detailed Energy Manifesto with targets for adoption in the County.

These suggestions are not, however, reflected in the Draft Community Plan for Pembrokeshire 2003/08 produced by the Pembrokeshire Community Planning & Leadership Partnership. This community generated document, whilst recognising the necessity of dealing with air and water pollution and waste management generally, does not specifically recognise the relationship between energy use, air pollution and climate change and sets no specific targets for reducing domestic or industrial energy use, reducing 'greenhouse' gas emissions or developing renewable energy generation in the County.

The Joint Unitary Development Plan for Pembrokeshire 2000 – 2016 equally has no specific policies or measures to reduce or control energy use but it does include two policies relating to the circumstances where the development of Renewable Energy generation generally and Wind Energy specifically would be permitted in the County.

The energy production industry in Pembrokeshire has suffered a major decline over the last 20 years with the closure of 2 oil refineries and the Pembroke oil fired Power Station. Despite this, the remaining two refineries, ChevronTexaco and TotalFinaElf, which refine 15% of the UK's oil needs, contribute over £100 million a year into the local economy through their routine operations and support around 1,300 jobs.

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Current Local Initiatives

Petroplus International BV, who operate a tank receptor and storage facility on the former Gulf refinery site on the Haven, has developed plans to re-develop a part of its site at Waterston, Milford Haven to create a terminal for the importation and storage of Liquefied Natural Gas (LNG). An Environmental Impact Assessment Consultation Document has been produced in May 2002. This proposal is in line with the UK Government's long-term energy plan (Energy Review 2002) which has recommended that the private sector should be involved in the development of additional LNG facilities within the UK. The benefits, in addition to the creation of new jobs and the enhanced use of an existing site, would be to provide a secure reinforcement of the local gas distribution infrastructure which is recognised as being of limited capacity and a potential barrier to the economic development of West Wales. The proposal seeks to provide an annual throughput capacity of 4.2 million tonnes in two development stages. It incorporates the modification and reconstruction of Jetty 2 within the Milford Haven Waterway to receive LNG tankers.

Recent trials of a full-sized tidal turbine in the Milford Haven Waterway by local company Tidal Hydraulic Generators Ltd. has demonstrated the feasibility of this approach and the company is now moving towards the development of commercial projects in partnership with another company, Wavegen. No firm proposals have yet been made for tidal power developments in Pembrokeshire's coastal waters.

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How do energy related activities affect the coastal zone of Pembrokeshire?

The oil industry in Pembrokeshire supports local communities through providing much needed employment in areas like Pembroke, Pembroke Dock, Milford Haven and Neyland as well as contributing financially and in kind to local activities, events and fund raising. Revenue derived from the oil industry is a major factor in the success and continuing operation of the Milford Haven Port Authority and the infrastructure which it supports which again has many spin off benefits for local communities in terms of employment and secondary business opportunities. Any future development of the LNG

proposal and of the various coastal and offshore energy possibilities will further add to these benefits to local communities which would otherwise be dependent on a very narrow and fragile business base.

Whilst these benefits are considerable and widely recognised, the presence of the energy industries in the County does carry a price. The ecological footprint created by the industry is considerable in terms of its energy consumption, its release of 'greenhouse' gases and its potential for environmental damage. The "Sea Empress" incident of 1996 was a major and very public example of the potential that the industry has for creating pollution within the coastal zone. Whilst the impact that this incident and the subsequent clean-up operation had on marine ecosystems and on coastal communities is now believed to be largely over, an effect is still being felt through damaged public perception of the quality and cleanliness of the area and the reluctance of investors to establish businesses which depend on clean environments in the area. The threat of future incidents is still real in the minds of many locals and visitors. On the land, the refineries and related structures and the light, sound, smell and vapour plumes that they create are in the view of some, not conducive with the natural, unspoilt ambience of the County.

The presence of very large oil and gas transport vessels in Pembrokeshire's coastal waters creates a perception (not verified) that these are the source of some of the litter washed up on the coastline, and that discharges of oil, ballast and bilge waters and storage tank and deck washings are causing environmental damage. The level of 'greenhouse' gas emissions from these vessels is considerable, and their presence in inshore waters constitutes a visual and spatial intrusion for some. The transport and storage of fossil fuels and gases presents a potential threat to the safety of local communities and property through accident or terrorist incident and strict security measures are in place through the Milford Haven Port Authority to minimise the risk.

The potential development of off-shore oil and gas structures and pipelines raises the same issues. Both off-shore development and coastal renewable energy installations, whilst offering the potential of significant economic and strategic benefit, will have the potential for causing environmental impact as well as creating possible spatial conflict

with other marine recreational and commercial users. The extent to which these conflicts may occur is not yet fully known.

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ORGANISATIONS AND OTHER INTERESTS INVOLVED

Environment Agency Wales; Pembrokeshire County Council; Welsh Assembly Government; RSPB; Countryside Council for Wales; Milford Haven Port Authority; Pembrokeshire Coast National Park Authority; The Darwin Centre for Biology and Medicine; Renewable Energy Advice Link; DTLR; Oil Companies; Pembrokeshire Energy Agency; West Wales Eco-Centre; TotalFinaElf; Chevron Texaco; WWF Cymru; Energy Saving Trust; Carbon Trust; Welsh Development Agency; Arena Network; Centre for Alternative Technology; Transco; Western Power; Wildlife Trust of South & West Wales; Solar Wheel; Tenby Consultancy Group; Alternative Wales Ltd.; Hyder Consulting Ltd.; National Assembly Sustainable Energy Group; The Solar Trade Association; The British Photovoltaic Association; The Solar Energy Society; Combined Heat and Power Association; Environmental Services Association; Biogas Association; British Wind Energy Association; British Biogen; British Hydropower Association; Association of Electricity Producers; ORECon Ltd. (Offshore Renewable Energy Conversion); Tidal Hydraulic Generators Ltd.; Wavegen; Qatar Petroleum, ExxonMobil.

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HOW IS IT MANAGED?

The United Nations Framework Convention on Climate Change, 1992, required each country signatory to develop a national programme to slow climate change. Later, the Kyoto Protocol on Climate Change 1997 produced an internationally binding agreement (left unsigned by the USA) to cut 'greenhouse' gas production by 5% from their 1990 levels by the year 2010.

Europe has added to and strengthened this policy framework through the introduction of a number of initiatives including the European Climate Change Programme, which sets a

target of reducing greenhouse gas emissions by 8% from their 1990 levels by the year 2010. The EC's White Paper for a Community Strategy 1997, sets out to double the contribution of renewable energy from 6% to 12% of energy supply by the year 2010 and includes a timetable of actions to achieve this objective in the form of an action plan. The EU Directive on Energy Performance in Buildings requires Member States to set up, by January 4th 2006, a scheme to certify the energy performance of all buildings and to carry out regular inspections of boilers and air conditioning systems. The Intelligent Energy for Europe Action Plan 2003 provides funding of 215 million Euros between 2003 and 2006 by way of support for renewable energy, energy saving and cleaner forms of transport. A useful summary of the state of current EU energy proposals and the procedures followed is provided in the document "State of Play of key EU Environmental and Energy Proposals updated November 2002 produced by the CBI Brussels.

In the UK, the Department of Trade & Industry has overall responsibility for energy policy and regulation and for the implementation of international agreements, protocols and Directives. The UK Climate Change Programme goes further even than the EU and Kyoto by setting a target for 'greenhouse' gas emission reduction of 12.5% on 1990 levels by the year 2010 and of reducing its carbon dioxide emissions by 20% in the same period. The UK Sustainable Development Strategy 1994, The Road Traffic Reduction Act 1998, and the Energy White Paper 2003 are all intended to move the UK towards becoming a low carbon economy and a long term reduction in 'greenhouse' gas emissions of 60%.

Energy policy in Wales is not devolved to the Welsh Assembly Government but is retained by the DTI. The Welsh Assembly Government is consulted by the DTI on any consent applications for power installations over 50MW capacity but the Assembly has no powers of its own. The Assembly is currently considering its future role in the consenting procedure for offshore power generation installations under 50MW. The National Assembly for Wales became a world leader when adoption of the principles of sustainable development was enshrined in the Government of Wales Act 1998 (S. 121). The Assembly's Review of Energy Policy – Renewable Energy, 2003, recommends a move towards a zero carbon electricity system and that renewable energy generation should supply just over 10% of Wales' energy production by the year 2010. Further documents which include the Review of Energy Policy – Energy Efficiency consultation

paper, December 2002, the WAG's Fuel Poverty Commitment for Wales and the Transport Framework for Wales 2001 are all steps towards meeting the national and international goals that have been set.

On a local level, Pembrokeshire County Council as a local authority is required under the Home Energy Conservation Act 1995 to set and meet a target of a 30% improvement in energy efficiency in the residential sector between 1997 and 2007. Other initiatives which will contribute to local delivery of these targets are the Local Agenda 21 Action Plan arising from the Rio Earth Summit of 1992, the Local Transport Plan 2000-2005 and the Objective 1 Local Strategy. The duties of Pembrokeshire County Council in relation to Housing and Energy are set out in detail in the Energy Plan for Pembrokeshire 2003 produced by the Pembrokeshire Energy Agency, one of a number of local and national groups working on energy issues in the County which include the Carbon Trust, the Energy Saving Trust, Arena Network, the Welsh Development Agency and the West Wales Eco-Centre.

Prevention and control of pollution from the energy industry is principally effected under the Environmental Protection Act 1990, Part 1 of which established two pollution control systems, a local air pollution control (LAPC) system enforced by local authorities in England and Wales and an integrated pollution control (IPC) system enforced by the Environment Agency in England and Wales. LAPC came into force in Wales in 1991 and superseded the powers given to local authorities (county, district and county borough councils and port health authorities) under the Clean Air Acts 1956 and 1968 (now consolidated into the Clean Air Act 1993) and their statutory nuisance powers under Part III of the EPA in relation to prescribed processes. In many respects the EPA has been superseded by the Pollution Prevention and Control (PPC) Act 1999 and the Pollution Prevention and Control Regulations 2000, SI 1973. Three detailed papers relevant to the operations of the Fuel Production and Combustion Sector in relation to IPC are the Chief Inspector's Guidance Notes Series 2 (S2) Processes Subject to Integrated Pollution Control Nos. S2 1.09 Gasification Processes : Refining of Natural Gas and S2 1.10 Petroleum Processes : Oil Refining and Associated Processes and Technical Guidance IPC S3 1.02 Oil and Gas Processes – Supplementary Guidance Note. Additional relevant legislation includes the Water Resources Act 1991.

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ISSUES

1. Contamination of land at refinery sites is an obstacle to future development of the sites until remediation has taken place
2. Potential environmental impacts arising from the closure of the Gulf Oil Refinery, Waterston, Milford Haven require assessment
3. Restoration of the contaminated land at the former Pembroke Power Station site needs to be completed before the environmental threats are removed and the land can be redeveloped
4. Odour problems persist at the Elf Oil Refinery, Milford Haven
5. The condensing water vapour plumes above the Texaco Oil Refinery, Pembroke, reduce the aesthetic value of the landscape
6. There is a public perception in some quarters that air quality in Pembrokeshire is poor as a result of refinery gaseous emissions
7. Impact of litter, oil, atmospheric emissions, etc. from existing oil carrying shipping
8. The proposed development of LNG holding and distribution facilities in the Milford Haven area are perceived to pose a significant threat to public safety through the risk of accidental and terrorist related incidents on land and/or sea
9. The potential contribution of greenhouse gas emissions from offshore oil and gas installations to climate change is unknown and requires evaluation
10. An Environmental Impact Assessment is required for wave / tidal energy proposals to enable concerns to be addressed
11. The adverse environmental and social impacts arising from “energy” transport need to be evaluated and, where possible, minimised
12. Limited information is available to the general public on alternative energy opportunities and grants
13. The development of proposed LNG facilities would increase large vessel traffic in the Milford Haven Waterway and its approaches with resulting potential impacts on safety, activities and interests of other users.
14. Light pollution from refineries can impact on the tranquil enjoyment of the Pembrokeshire countryside
15. LNG development plans carry no proposals for improving / expanding the local domestic gas supply network which is deficient in or absent from many parts of the County

16. Run-off from energy industry sites can cause pollution and increase flooding risk
17. The perception of poor water quality and high pollution risk, particularly in relation to the oil industry, in Milford Haven discourages development of high quality fin fish aquaculture development
18. Oil on beaches, particularly Marloes, West Dale, Freshwater West and Broadhaven North, causes environmental damage and is an aesthetic problem and a nuisance
19. There is a need to review and establish best practice for the prevention and management of hydrocarbon spillages on land and at sea
20. Discharges of ballast and bilge waters and tank and deck washings from tankers can create environmental damage
21. Airborne pollution from refineries, particularly sulphur compounds, can cause smell problems and can contribute to environmental pollution and climate change
22. Noise pollution from refineries particularly at night and early morning
23. Imbalance of penalties imposed by courts proportionately more onerous on small polluters than large polluters – oil companies get off lightly
24. Rationalisation of mechanisms for resolving insurance claims following major pollution incidents is required
25. Improvements are required to minimise environmental damage caused by oil clean up operations
26. The use of toxic anti-foulants on vessels results in environmental damage
27. There is likely to be spatial conflict between offshore energy developments and other water users, e.g. fishermen, shipping, aggregate dredgers, recreational boatmen, etc.
28. Jetties in the Haven are perceived to be hazardous obstacles to recreational boat users
29. Offshore energy installations are perceived to be a visual intrusion in the seascape
30. In the light of increased risk of terrorist activity and the carriage of potentially dangerous cargoes by some vessels, high level security at ports and harbours is increasingly required.
31. Perception of illegal dumping of effluent and sewage from tankers moored in Milford Haven and St. Brides Bay
32. Perception of high pollution risk from the oil industry in the Milford Haven area has made aquaculture business virtually uninsurable

33. There is inadequate data on the true water quality status in the Milford Haven Waterway
34. There is a perception that wind turbines pose a hazard to birds in flight
35. There is a lack of public understanding of the realities of issues surrounding the energy industry and of LNG in particular
36. There is concern over a perceived lack of integration within and between the National Park's and the County Council's strategic approaches to energy generation and use and to waste management
37. Personal energy consumption levels in Pembrokeshire are too high
38. There needs to be more rigorous application of C.O.M.A.H. in relation to the operations of the energy industry in the County
39. The incineration of rubbish and waste loses the potential for energy generation and creates damaging 'greenhouse gases'
40. There are apparent inconsistencies in planning considerations, e.g. the refusal of the National Park Authority to allow solar panels on roofs
41. The visual impact of wind farms is unacceptable to some
42. The public health implications of refinery emissions are not widely known
43. The potential for marine energy installations to create a hazard or disturbance to marine fauna is not well understood
44. The presence of gas / oil installations and pipelines presents potential for accidents and resulting environmental damage
45. Energy transportation carries its own significant environmental impact
46. Gas / oil exploration practices can have detrimental impacts on the environment and wildlife populations

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Last amended August 2003