

Sustainability Committee

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Sustainability Committee Inquiry into Carbon Reduction in Wales

4th October 2007

Environment Agency Wales

Background and Agency Role

Climate change is widely recognised as the major environmental challenge and it is now agreed by the overwhelming majority of scientists to be caused primarily by the emission of green - house gases derived from man's activities. Climate scenarios from the UK Climate Impacts Programme show that by 2080 in Wales temperatures could increase between 1.5 degree to 4.5 degrees, summer rainfall will decline and winter rainfall increase by an extent dependent on future greenhouse gas emissions. There is also likely to be an increase in extreme weather events and a sea level rise of up to 1 metre by the end of the century. Climate change affects other environmental issues such as loss of biodiversity, freshwater availability and air quality.

To prevent 'dangerous' Climate Change will demand significant reductions in green- house gas emissions. Proposals in the Climate Change Bill are to adopt a long-term target of 60% reduction in carbon dioxide emissions by 2050 and to aim for a reduction of 26-32% by 2030.

These targets follow on from those agreed through the Kyoto protocol. Though the UK is likely to meet its Kyoto target comfortably, there is little reason for comfort in this as most of the reductions arose from the 'dash for gas' in the early 1990s.

The current programme is not delivering on the domestic target of 20% reduction in carbon dioxide on 1990 levels by 2010. The energy review consultation confirmed that the existing programme was likely to achieve just a 10% reduction in carbon dioxide across the UK in 2010 compared to 1990- and this could be as little as 3% in Wales.

The Environment Agency's role in reducing greenhouse gas emissions includes:

Limiting climate change is a major theme of activity within the Agency's vision for a clean safe and healthy environment - all parts of the Agency are engaged in making that happen.

We regulate industrial processes which give rise to over 50% of Wales's Carbon Dioxide emissions through the European Union Emissions Trading Scheme (EUETS). We are also statutory consultee in the planning process that covers energy installations.

Methane emissions are being reduced by regulations requiring installation of electrical generation or flaring at landfill sites and through the diversion of biodegradable waste.

We are involved at a Welsh level in partnerships which seek to promote energy saving, waste minimisation and a switch to low carbon technologies.

Active implementation through the Agency's Area Offices of Integrated Pollution Control and Pollution Prevention and Control regimes will reduce industrial emissions. Initiatives with other partners will promote renewable energy and reduce domestic energy consumption.

Through the promotion of good agricultural practice the agency has a role in reducing Nitrous oxide emissions from Agriculture. Land management is also critical to ensure carbon already stored in soils, forests and upland peat is not released.

The Agency may administer the F gas regulations within Wales that will, for example, ensure the efficiency of large refrigerant systems.

This was the subject of a recent consultation on the regulations (started May 2007)

The Agency is also set to be the regulator for the Carbon Reduction Commitment that will bring large commercial retail and public organisations into a trading scheme by 2010.

The Agency seeks to be an exemplar in the reduction of our own Carbon footprint

Indicators of Green- House gas Emissions in Wales

There are two current measures of how Wales performs within the Climate Change Mitigation agenda (reduction of emissions of greenhouse gases). These are total emissions and the ecological footprint. They give a very different perspective on current performance.

Total Emissions (The National Atmospheric Emissions Inventory)

This data is gathered for Wales for all green- house gases but is usually at least 2 years behind the current year. This method attributes all emissions to the point of generation- so for example, emissions generated by electricity exported to England would be credited to Wales. This gives a high net CO2 figure for Wales. This approach shows that Wales has one of the highest per capita emissions from production in the UK (14.31 tonnes/ capita- UK average 10.76)

The Ecological Footprint Approach

The World Wildlife Federation (WWF) report 'Reducing Wales Ecological Footprint' published in March 2005 attributes all direct and

sequestered energy and associated emissions to the point of final consumer regardless of where components of the finished article were made. An item made in Wales but exported to England would attribute all CO₂ generated to England.

In this approach the emissions from consumption are the lowest in the UK at 11.04 tonnes per person (compared with the UK average of 11.81).

There are many other approaches that could be considered and one example is given below.

The Carbon Trust Approach (Wales)

This approach assesses the Carbon Dioxide emissions associated with the end user. The claimed advantage to this is that increases or decreases in energy use by different sectors can be monitored directly through fuel use at the point of use or at the power station. For the base- line study of 2003 the emissions from Wales is almost 9% lower than that reported by method 1.

Comment

To measure the effectiveness of policy and activity good data is needed together with indicators that reflect areas of activity within the scope of the Assembly. At present there is little control on siting of new factories or power stations and the total emission is not a particularly useful indicator at the Wales level. An indicator that assesses end user demand may be of more use as might the overall efficiency of power generation within Wales in terms of CO₂ release.

Greenhouse gas Emissions in Wales

While the Inquiry only specifies Carbon reduction in the brief we have included in our analysis all green- house gases in Wales- although the emphasis is very much on Carbon.

Fig 1 shows the relative contribution to total emissions from all green- house gases in Wales.

CO₂: 2. Non Combustion CO₂: 3. Methane: 4. N₂O: 5. F gases

Carbon Dioxide

Data available from DEFRA (2005) shows that the total CO₂ emissions for 2003 in Wales were 42. 5Mtonnes: Carbon Dioxide emissions account for 82% of the greenhouse gas emissions in Wales during that year. The figures show that individual companies in Wales emit equivalent or greater amounts of CO₂ than the total emitted from road transport or domestic sources in Wales. Wales is unusual within the UK context in this as it has a far larger industrial sector and this should not obscure the significant contribution from both domestic and transport sources.

The chart gives a slightly more detailed break- down.

Source	M tonnes CO ₂	% of CO ₂ emissions
power generation	13.73	32.3%
manufacturing	10.37	24.4%
road transport	5.95	14.0%
residential	4.59	10.8%
petroleum refining	3.30	7.9%
Emissions from soils	1.20	2.8%
Commercial	1.02	2.4%
cement	0.43	1.0%

Solid fuels	0.34	0.8%
Total	42.50	

Methane

Welsh methane emissions in 2003 were 3.7m tonnes CO₂ equivalent (7% of the total Greenhouse gas emissions). The largest source of methane emissions in Wales is agriculture (73%) via enteric fermentation in livestock. The next largest emission sources are waste (11%) and a combined emission of 10.9% from coal mining, coke production and natural gas distribution.

Nitrous Oxide

Agriculture was responsible for 78% of N₂O emissions in Wales in 2003, with road transport accounting for 7.5% and power generation 5.7%. The total emissions were 3.3 million tonnes CO₂ equivalent. (6.5% of the total greenhouse gas emissions).

F Gases

Hydroflourocarbons. - Refrigeration is the largest source followed by aerosols. Perfluorocarbons - nearly all arise from the Aluminium Industry in Wales and Sulpur Hexafluoride - from magnesium production. There are F-Gas regulations on the way which the Agency is involved in regulating. This will primarily involve ensuring the efficiency of refrigeration systems.

Impact of Agency Regulation and Activity

Emissions covered by the EUETS scheme

The emissions covered by the EUETS scheme in its first year (2005) represented 54% of the total CO₂ emissions in Wales (on the basis of 2003 total emission results). This included 37 sites within the Power Generation, Steel, Oil and Cement sectors. Each installation was given an allocation based on previous emissions and they then needed to surrender on a yearly basis allocations to cover their total emissions. If they were over they needed to buy more allocations and, if under, they were able to sell and profit from their energy efficiency. The Agency regulation ensures compliance with this trading scheme- but the allocations were determined by the then Department of Trade and Industry in consultation with WAG.

For the first year of the scheme within Wales the emissions exceeded the allocation by 1.1Mtonnes. The results from the 2nd year of operation of the EUETS in Wales indicate that a total of 25.1 Mtonnes of CO₂ was released from 39 companies. This is up by 2.1 Mtonnes on the verified figure for 2005 and exceeds the allocations by 3.4 Mtonnes.

All companies have verified returns and have submitted appropriate allocations to cover their emissions and the regulation has been good. However the results in terms of carbon reduction are disappointing and reflect the greater use of coal to generate electricity due to the higher gas

price prevailing during the winter of 2005-2006. The low price of carbon on the market and the ability of the Electricity Supply Industry to pass on costs both act against long term investment in efficiency measures. The impact may be more positive in smaller companies- 24 of the 39 companies managed to reduce their emissions. The top 11 sites in Wales are 98% of the total emissions from the sites and we are discussing with them possible ways of reducing their emissions.

General Comment

The first phase of the EUETS lasts from 2005-2008 and the allocations are the same each year.

The allocations for phase 2 have also now been set (2008-2012). While these across the UK as a whole are projected to give a decrease (on the basis of the allocations) of 3.5 % during the 5 years of the phase the impact in Wales is far less at around 1%. This is a small contribution to a possible 3% per year target- and shows that reliance for reductions in the near future should be placed more on the demand management side. The EUETS is the great hope as a forerunner for a global agreement, however, and the Agency would urge continued support for the long term success of the scheme.

Impact of Pollution Prevention and Control Regulations

For companies outside the EUETS and Climate Change Agreements the Agency has the duty within PPC to ensure that the installations apply Best Available Techniques (BAT) to their energy use. Landfill sites are also subject to BAT and over the last few years electrical generation from landfill gas has become BAT. This has contributed to a reduction in methane emissions registered on the Agency Pollution inventory in Wales of nearly 3 million tonnes a year of Carbon Dioxide.

Input to planning

The Agency has provided briefs on the impacts of Climate Change to the spatial planning groups throughout Wales. We also comment

on the individual siting of installations with regard to energy efficiency. A recent example is the consultation for planning at Pembroke power station where we suggested that the site may not be the most appropriate for inclusion of combined heat and power (CHP).

Agency footprint and impacts of Policy

Environment Agency Wales have worked with the Carbon Trust to identify their own carbon Footprint. The following was the first assessment 2005/ 2006.

Category	Annual tonne CO ₂
Badged vehicles	1,154
Lease cars and casual users	947
Buildings	275
Hire cars	46
Rail transport	22
Air transport	5

This gives a total of 2449 tonnes in which road transport overall accounts for 86% of the CO₂ emissions.

Within our Internal Environmental Management policy we now have targets to reduce these emissions and each area has been asked to reduce their emissions by at least 10% within the next year. We are also developing a green procurement policy and within Wales we are currently involved in trials using 22% biodiesel in vehicles and plant. We also have a fund within the Agency to invest in renewables to ensure our whole business is as near as possible to carbon neutral.

Some of our policy decisions do impact on others. For example the treatment required for some water company effluents is relatively energy intensive and we are seeking to minimise the impact of such requirements by working with the water companies for energy sensitive solutions.

Future Regulation

The Agency is preparing to regulate the F- Gas regulations which will ensure efficient use of refrigerant systems. We also are expecting to be the regulatory authority for the Carbon Reduction Commitment procedure. This will give financial incentives to commercial, retail and public bodies to reduce their carbon emissions and is expected to commence in 2010.

Current limitations of Policy

The Environment Agency believes there are weaknesses in the current package of policy measures. In particular:

The unambitious approach to energy efficiency despite considerable evidence that this is economically beneficial, regardless of the environmental and energy security benefits.

The speed at which Government reacts when policy does not deliver the level of benefits expected.

The weakness of policies to address energy-related emissions in the heat and the transport sector.

A new approach would emphasise energy efficiency and establish a market to reward low carbon technologies in energy supply.

Conclusions and recommendations.

General

We support the proposals in the Climate Change Bill to adopt a long-term target of 60% reduction in carbon dioxide emissions by 2050 (as recommended by the Royal Commission on Environmental Pollution) and to aim for a reduction of 26-32% by 2030. We support fully the stated aim in One Wales to aim for reductions of 3% per annum in devolved areas of competence by 2011 and would urge the Welsh Assembly Government to consider setting statutory targets in these areas where possible.

There is considerable uncertainty at present as to how the Climate Change Bill will impact Devolved Administrations. The Agency has responded to the Climate Change consultation requesting that Government should guarantee that carbon targets are met, first through

purchasing international credits up to a certain percentage of the target and from then on investing in a fund to be made available to domestic carbon reduction projects. At present we are not clear if this has direct applicability in Wales.

We recommend that green-house gas emissions associated with all relevant plans in Wales and the reductions expected from policies designed to them are identified.

We recognise that carbon capture and storage has the potential to significantly cut emissions during the production and use of fossil fuels. It may be particularly important in countries likely to have high coal burn. However, before it is used on a commercial scale carbon capture and storage must achieve high standards of safety and environmental performance and a sound regulatory framework must be put in place. Unfortunately Wales is not well placed to utilise this new technology, as there are few identified sites for storage. A small facility utilising the gas fields of the Dee may provide experience from which Wales could benefit from technology sales to coal dependent economies.

Energy Issues: (Energy Supply, Domestic and Commercial Energy)

The major focus of future energy policy should be to reduce demand, and increase the use of renewable energy and Combined Heat and Power. (CHP).

We agree with the assessment of the Performance and Innovation Unit (PIU) Energy Review that climate change objectives must be achieved through the energy system, and "where energy policy decisions involve trade-offs between environmental and other objectives, then environmental objectives will tend to take preference." We believe this will mean for example, that Ofgen should be instructed to give greater priority to environmental concerns in its decision-making.

There is a need for a "step change", high profile energy productivity programme to deliver the 40% improvement in domestic energy efficiency.

We support the Wag recommendation that 15 TWhr of electricity should come from renewable sources by 2020. We will be investigating how we do not create regulatory barriers that might constrain this development. In addition, a long-term 2050 target for renewable energy to supply 50% of the UK's energy needs should be considered.

Sustainable energy will require more than supply changes in the energy sources of our energy system. It will require a total change in the way the energy system operates, particularly to encourage more efficient use of heat and more decentralised forms of renewable energy.

The transition to sustainable energy will not necessarily incur economic costs, and in fact, it is likely to deliver substantial employment and competitiveness benefits.

We support an improved approach to planning for renewables, which cascades down from all Wales targets to community level with increased public participation and welcome the recent proposals within the consultation on planning on microrenewables.

Carbon reduction should be made a boardroom issue by introducing minimum mandatory reporting standards for companies.

Market and institutional barriers to combined heat and power, and renewable energy, should be removed.

We think that an assessment of the role, if any, to be played by nuclear power must take full account of the financial and economic costs of the management and storage of radioactive waste and the regulatory framework. The Agency would question the commissioning of new nuclear generating capacity in the absence of a sustainable long-term strategy for radioactive waste management. Until this issue is resolved and public concern properly addressed, then any major changes of policy to encourage the construction of new nuclear generating capacity would appear to us premature.

We recognise the potential for energy generation from the Severn. The legal reservations associated with the Habitats Directive and these proposals have been well documented. We will respond to the SDC report as soon as possible.

We are concerned about the displacement effect that a large programme of investment in one capital-intensive technologies like Nuclear and the Severn Barrage may have on energy efficiency, CHP and other renewable technologies.

Industry and Commerce

We are working to improve industrial energy efficiency through Climate Change Agreements and the Integrated Pollution Prevention and Control procedure and we will use the review process to maintain progress.

We will work with the Sustainable Development Commission, the Carbon Trust and the Energy Savings Trust to develop delivery of a low carbon economy.

We are discussing the emissions from our top CO₂ emitters in Wales with a view to identifying possible reductions.

EUETS- we have been working with the UK government to influence the EU to set overall allocations for the scheme which reflect the required reductions in emissions rather than being controlled by member states.

Transport

The development of a coherent environmental transport strategies that are consistent with their stated aims to reduce greenhouse gas emissions. If this is not achieved there is a serious danger that emission cuts in other sectors will be undermined by the forecasted growth in transport emissions.

Any credible strategy must make use of all elements of the Government's Sustainable Development diamond including fiscal incentives to influence behaviour and manage demand.

Action must be taken to reduce the growth in emissions from aviation. At a Wales level this could entail opposition to Airport expansion and domestic flights.

Promotion of sustainable biofuels is important but care needs to be taken to ensure sources are sustainable.

The possibility of speed limits to reduce CO₂ emissions could be investigated.

Agriculture

Agri-environment schemes that protect existing carbon sinks or encourage carbon sequestration should be promoted.
Agri- environment schemes to reduce nitrogen fertilizer should be promoted to reduce nitrous oxide emissions.
The growth of second-generation biofuels should be encouraged where possible and facilities provided in Wales to process them. These crops primarily utilize waste from food crops and so do not compound the conflict between food and fuel. Biofuels should be grown in areas where environmental impacts are minimal.
Biofuels requiring little fertilizer should be encouraged to restrict the possibility of increased nitrous oxide emissions.

-Ends-