Cynulliad Cenedlaethol Cymru
National Assembly for Wales

Sustainability Committee

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Carbon reduction by industry and public bodies

This paper provides some background briefing for the next stage of the committee inquiry into carbon reduction in the transport sector.

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1. Introduction

On 13 February 2007, the First Minister stated in Plenary that:

> The main categories of human activity in Wales in emitting carbon dioxide, in order of volume, are: electricity generation, at 40 per cent, manufacturing and construction combined, at 25 per cent, and then road transport and residential sectors at about 10 per cent each[1].

Electricity generation, including microgeneration, is covered in a subsequent part of this inquiry. This section deals with industries whose primary purpose is not the generation of electricity, along with public bodies. These emissions can be calculated as those not related to transport, domestic use, land use, or electricity generation, and they amounted to 18.9 per cent of emissions in 2005 by *end user* (6.6 million tonnes)[2]. By *producer*, the large industrial sector alone accounted for approximately 28 per cent of the emissions in Wales in 2006[3] (11.7 million tonnes).

The contribution of industry to carbon emissions has shown a consistently decreasing trend across the UK, with a reduction of 15 million tonnes of CO2 in the 15 years since 1990, while

[1] RoP, p.46, 13 February 2007, http://www.cynulliadcymru.org/bus-home/bus-chamber/bus-chamber-second-assembly/bus-chamber-second-assembly-rop/57fb7a9ea3e58592d26b15dcb9e9e6ea.pdf?langoption=3&ttl=Y%20Cofnod
[2] Derived from DEFRA, *Local and regional estimates carbon emissions by end user, regional sector totals 2005*, http://www.defra.gov.uk/environment/statistics/globatmos/download/regionalrpt/local-regionalco2emissions2005.xls
[3] Calculated from EUETS submissions (see Table 2)

the commercial and public sector contribution has decreased by 5 million tonnes over the same period[4] (see Table 1). These figures are not available on a Wales-only basis.

Table 1 UK industrial and public sector carbon dioxide emissions (million tonnes of carbon dioxide)

	1990	1995	2000	2005
Non-energy industry	114	107	109	99
Commercial and public sector	51	52	48	46
Total	**165**	**159**	**157**	**145**

The public sector in the UK is responsible for 8 per cent of carbon dioxide emissions[5]. 25 per cent of the public sector's total carbon footprint is accounted for by activities in buildings[6]; 56 per cent of the energy consumed by commercial and public buildings is used for heating, and 15 per cent for lighting[7].

All new buildings funded or built on land disposed of by the Welsh Assembly Government must now meet the Ecohomes Excellent environmental standard[8].

In July 2007, the European Commission unveiled its mid-term review of industrial policy in response to globalisation and climate change[9], which notes that the basic principles of a sustainable industrial policy will be followed up by an Action Plan in early 2008. A policy document due to have been released in autumn 2007 "will address policies to support energy intensive industries reducing their environmental impact whilst staying competitive"[10].

2. Key Issues and Devolved Responsibilities

The biggest driver for reducing the carbon emissions from industry and public bodies is cost, because energy use (the biggest source of emissions) is expensive. Of increasing influence, however, is public opinion and social corporate responsibility, and many organisations, particularly businesses, are using environmental strategies to derive competitive advantage.

There are limited opportunities for devolved legislation in the industrial sector. Currently, the Welsh Assembly Government has responsibility for policy under the following areas:

[4] DEFRA, *UK emissions of greenhouse gases*, http://www.defra.gov.uk/environment/statistics/globatmos/gagccukem.htm#gatb3
[5] DEFRA, *UK energy efficiency action plan 2007*, http://ec.europa.eu/energy/demand/legislation/doc/neeap/uk_en.pdf
[6] *ibid*
[7] Pout C et al, 2002. *Carbon dioxide emissions from non-domestic buildings: 2000 and beyond*. BRE: Watford, England.
[8] DEFRA, *UK energy efficiency action plan 2007*, http://ec.europa.eu/energy/demand/legislation/doc/neeap/uk_en.pdf
[9] European Commission, *Communication from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions: Mid-term review of industrial policy – a contribution to the EU's growth and jobs strategy*, http://ec.europa.eu/enterprise/enterprise_policy/industry/doc/mtr_in_pol_en.pdf
[10] European Commission, *EU renews industrial policy for strong manufacturing base in response to globalisation and climate change*, http://europa.eu/rapid/pressReleasesAction.do?reference=IP/07/1007&format=HTML&aged=0&language=EN&guiLanguage=en

- Economic regeneration and development, including social development of communities, reclamation of derelict land and improvement of the environment.
- Promotion of business and competitiveness.

The National Assembly for Wales may seek legislative powers under these matters. However, even following a successful referendum under the *Government of Wales Act 2006*, there is an extensive list of exceptions for which legislative competence could not be gained. These exceptions are listed in Annex A.

Devolved responsibilities are wider for public bodies. In particular, the Welsh Assembly Government has policy responsibility for the powers, duties and financing of local authorities, and for the organisation and funding of the National Health Service.

3. The Situation in Wales

One of the factors influencing Wales' high per capita emissions is the presence of energy-intensive industry. Port Talbot Steelworks, for example, accounts for approximately 16 per cent of all carbon emissions in Wales[11]. Improving the carbon efficiency of the biggest emitters has a large impact on Wales' emissions. The largest carbon dioxide emitters in Wales are captured under the **EU Emissions Trading Scheme** (EUETS), and have carbon reduction targets appertaining to that scheme. A total of 61 installations in Wales are members of the EUETS, representing about 56 per cent of total emissions from Wales, however, only 39 Scheme members emitted carbon dioxide in 2006. Emissions in 2006 were 3 million tonnes in excess of the allowance[12], although the scheme is estimated to have saved 1.3 million tonnes of carbon dioxide per year for each of the three years of the current scheme. The details of the 39 EUETS emitters are shown in Table 2.

Table 2 Welsh emitters captured under the EUETS, with their emissions in 2005 and 2006

Installation Name	Installation Type[13]	CO2 Emissions (tonnes)	
		2005	2006
Aberthaw Power Station	Electricity generation	5,264,973	7,340,340
Port Talbot Steelworks	Industry	6,132,851	6,589,194
Connahs Quay Power Station	Electricity generation	3,434,321	3,158,476
Chevron Limited - Pembroke	Industry	2,320,641	2,251,765
Total Milford Haven Refinery	Industry	1,038,345	1,234,371
Baglan Bay Power Station	Electricity generation	1,104,318	1,142,501
Uskmouth Power Plant	Electricity generation	993,930	866,925
Deeside Power Station	Electricity generation	978,825	640,379
Padeswood Works	Industry	300,016	623,006

[11] Calculated from EUETS submissions
[12] Environment Agency Wales, *Response to an information request*.
[13] Type assessed by MRS

Shotton Combined Heat and Power Station	Industry	542,497	485,252
Barry Power Station	Electricity generation	321,303	237,008
Kronospan Ltd	Industry	82,971	104,287
Celsa Manufacturing (UK) Limited	Industry	56,197	63,051
Point of Ayr Terminal	Industry	57,581	54,992
UPM-Kymmene (UK) Ltd	Industry	51,947	46,010
Airbus UK Ltd	Industry	34,189	35,154
Corus Packaging Plus UK	Industry	39,745	35,111
Pont-y-Felin Insulation	Industry	33,189	31,539
Solutia UK Limited - Newport	Industry	26,765	28,377
Warwick International Ltd - Mostyn	Industry	26,440	23,241
Corus UK Ltd	Industry	22,049	21,625
Alphasteel Limited	Industry	20,978	20,889
Novera Energy Mines Gas Generation Plant	Industry	18,828	15,160
Bridgend Boiler House (Ford)	Industry	12,620	12,040
University Hospital of Wales	Public	9,664	9,548
Visteon Swansea - Boiler House	Industry	8,014	8,074
RF Brookes - Rogerstone Park	Industry	7,319	7,912
District Energy Ltd	Industry	5,697	6,183
Solutia Generating Plant - District Energy Ltd	Industry	5,666	5,597
Corus Colors	Industry	7,189	5,459
Morriston Hospital	Public	5,641	5,386
RAF St Athan	Public	7,542	5,367
Dennis Ruabon Tiles Ltd	Industry	3,320	3,002
Bro Morgannwg NHS Trust - PoW Hospital	Public	2,945	2,889
South Cornelly Power Station	Electricity generation	2,262	2,790
Celsa Manufacturing (UK) Ltd - New Melt Shop[14]	Industry		2,775
Dynevor Arms LNG Storage Facility	Industry	2,552	2,512
Magnox Electric Ltd - Wylfa	Electricity generation	909	640
Cardiff IDC	Industry	57	264
Total		**22,984,297**	**25,129,091**

The total carbon dioxide emissions by sector for Welsh installations captured by the EUETS are:

Electricity generation – 13,389,059 tonnes
Industry – 11,716,842 tonnes
Public – 23,190 tonnes

[14] Joined Scheme in 2006 as a 'New Entrant'

For the EUETS establishments, more than half of the industrial output of carbon dioxide is accounted for by Port Talbot Steelworks, and more than half of the output of carbon dioxide from electricity generation is accounted for by Aberthaw power station. Together, these two installations account for approximately 33 per cent of Welsh emissions.

It is worth noting that although most public bodies fall below the EUETS limits, local authorities and health trusts are large emitters relative to domestic consumers: the public sector in the UK is responsible for 8 per cent of carbon dioxide emissions[15].
The Carbon Reduction Commitment (CRC) is a scheme proposed in the 2007 Energy White Paper[16]. It is intended to deliver carbon savings of 1.2MtC[17] per year by 2020 from large commercial and public sector organisations (such as supermarkets, hotel chains, and government departments), focusing on organisations for which energy efficiency benefits would outweigh administrative costs. The UK Government launched a 15-week consultation on its proposals in June 2007. The response to the consultation, and the analysis of responses, is due in early 2008[18]. The main features of the CRC are:

- A reliance on self-certification of emissions, backed up by third-party verification
- Allowances issued via auction, following an introductory phase of fixed price allowances
- Auction revenue will be recycled to participants by means of an annual payment proportional to the average annual emissions since the scheme's inception, with a bonus/penalty according to the organisation's position in a CRC league table

4. Improving Carbon Efficiency

One of the most important precepts in reducing carbon emissions is that reduction of energy demand is the first step in the carbon efficiency hierarchy. This is because the energy losses that happen as a result of the production, generation and transmission of energy mean that for every unit of energy not used by the consumer, as much as two to three units of energy are saved at the production stage[19]. Despite its crucial role in reducing carbon emissions, reducing energy demand tends to receive less attention than some of the alternatives:

> "You can easily imagine people wanting to show off their micro-wind turbines to their friends and neighbours… but it's a lot harder to conceive of anyone wanting to show off their cavity wall or loft insulation"[20].

[15] DEFRA, *UK energy efficiency action plan 2007*, http://ec.europa.eu/energy/demand/legislation/doc/neeap/uk_en.pdf
[16] DTI, *Meeting the energy challenge: A White Paper on energy*, May 2007, http://www.dti.gov.uk/files/file39387.pdf
[17] MtC = Megatonnes of carbon equivalent = 1,000,000 tonnes of carbon equivalent. 1 tonne of carbon equivalent equates to 3.66 tonnes of carbon dioxide
[18] DEFRA, *Action in the UK: Carbon Reduction Commitment*, http://www.defra.gov.uk/Environment/climatechange/uk/business/crc/index.htm
[19] Kevin Anderson, Research Director: Tyndall Centre for Climate Change Research, *Drinking in the last chance saloon: The challenge of climate change and 'sustainable' energy*, http://www.naseg.co.uk/presentations/Nov2007/TCCCRKA_Nov_2007.ppt
[20] Professor Paul Ekins, Head of Environment Group, Policy Studies Institute, *A hundred thousand points of light: The local energy revolution*. In: Green Futures Special Supplement in association with the Ashden Awards for Sustainable Energy and Defra.

Many of the demand reduction means for industry and public bodies are the same as those in other sectors, and are either related to physical modifications (draught-proofing, insulation, energy-efficient light bulbs etc), or behavioural change (switching appliances off when not in use, wearing slightly warmer clothing instead of using more fossil fuel heating etc).

The main currently used means of reducing the carbon emissions from industry and public bodies are the following:

- **Improving the environmental efficiency of working** – through the promotion of tele- and video-conferencing and more flexible working patterns, and by encouraging home-working.

- Encouraging the **implementation of Environmental Management Systems** – such systems are usually based on continuous environmental improvement, and can lead to substantial carbon and cost savings. Green Dragon is a Wales-based scheme that is supported by the Welsh Assembly Government, Environment Agency Wales, and Welsh local authorities. A total of 931 organisations in Wales are currently certified[21]. The Welsh Assembly Government has a role in encouraging the uptake of energy efficiency and carbon reduction schemes.

- Changing the **energy source** for space and water heating to more carbon-efficient sources. This can be achieved by:
    - Changing to the use of **combined heat and power**, which local authorities such as Woking have taken great strides to develop. When the Climate Change Bill becomes law, Welsh Ministers will be required to produce a climate change measures report, which local authorities will have a duty to 'have regard to'. Such a report may be a means of encouraging the development of combined heat and power by Welsh local authorities.
    - Improving the penetration of the **gas network** throughout Wales. Gas is a more carbon-efficient way to heat space and water than solid fuel or electricity. Since the gas network is maintained by private companies, a business case may need to be established for further extension of the network.
    - Improving the supply infrastructure and increasing consumption of **biomass for heating**. The Welsh Assembly Government has a role through marketing and grant aid for biomass, and one of the means it currently uses to achieves this is through Woodfuel Wales (www.woodfuelwales.org.uk).

- Increasing the use of **renewable energy** in new developments. The minimum level (currently nil throughout Wales) is determined by:
    - The UK Government under Building Regulations for new build and refurbishment. Negotiations are under way to devolve Building Regulations to Wales.

http://www.ashdentrust.org.uk/PDFs/green_futures.pdf
[21] As of 5 December 2007

- Local authorities through local development plans. Local authorities can stipulate a minimum level of renewable energy to be provided in all new developments (subject to certain conditions), as the London Borough of Merton has done.

The UK Government also operates the Low Carbon Buildings Programme that arranges grants for the installation of renewable energy. The streams for businesses and SMEs have now closed. The stream for the public sector is still available for funding of up to £1 million per organisation[22].

- The public sector (in particular the Welsh Assembly Government and local authorities) has a role in stimulating the market for environmentally beneficial products through its **procurement** activities.

Annex A

Exceptions under Field 4 (Economic development) of Schedule 7 of the *Government of Wales Act 2006*.

- Fiscal, economic and monetary policy and regulation of international trade.
- Regulation of anti-competitive practices and agreements, abuse of dominant position and monopolies and mergers.
- Intellectual property, apart from plant varieties.
- Creation, operation, regulation and dissolution of types of business association.
- Insolvency.
- Product standards, safety and liability, apart from in relation to food (including packaging and other materials which come into contact with food), agricultural and horticultural products, fish and fish products, seeds, fertilisers and pesticides (and things treated by virtue of any enactment as pesticides).
- Consumer protection, including the sale and supply of goods to consumers, consumer guarantees, hire purchase, trade descriptions, advertising and price indications, apart from in relation to food (including packaging and other materials which come into contact with food), agricultural and horticultural products, fish and fish products, seeds, fertilisers and pesticides (and things treated by virtue of any enactment as pesticides).
- Financial services, including investment business, banking and deposit-taking, collective investment schemes and insurance.
- Financial markets, including listing and public offers of securities and investments, transfers of securities, insider dealing and money laundering.
- Telecommunications, wireless telegraphy (including electromagnetic disturbance), internet services and electronic encryption.

[22] DBERR, *Low carbon buildings programme Phase 2*, http://www.lowcarbonbuildingsphase2.org.uk/

- Postal services, post offices and the Post Office, apart from financial assistance for the provision of services (other than postal services and services relating to money or postal orders) to be provided from public post offices.
- Generation, transmission and supply of electricity, apart from pollution.
- Energy conservation, apart from the encouragement of energy efficiency otherwise than by prohibition or regulation.
- Coal, including mining and subsidence, apart from land restoration and other environmental matters.
- Oil and gas, apart from pollution.
- Units and standards of weights and measurement and the regulation of trade so far as involving weighing, measuring and quantities.
- Industrial Development Advisory Board.