

## **Annex 2A**

### **The “green component” of energy prices**

#### **Introduction**

2A.1 Recent years have seen an increase in the use of economic instruments to tackle environmental problems and encourage more sustainable and environmentally aware approaches to resource usage. Such instruments include amongst others, taxation, trading schemes, deposit schemes, and subsidies and tax credits<sup>1</sup>.

2A.2 The Government<sup>2</sup> has set out the key environmental challenges that these kinds of measures are designed to address, namely:

- tackling climate change, and reducing emissions of greenhouse gases in line with domestic as well as international targets;
- improving air quality, to ensure that air pollutants are maintained below levels that could pose a risk to human health;
- improving waste management, so that resources are used more efficiently and waste is reused or recycled to deliver economic value and;
- protecting the UK’s countryside and natural resources, to ensure they are sustainable economically, socially and physically.

2A.3 Environmental taxes are designed to encourage efficient resource use and discourage business practices that damage the environment. Throughout this annex it is clear that a delicate balance needs to be drawn between human aspirations – our need for expansion, economic growth, and satisfaction of personal ambition, and the environmental consequences of our actions. Instruments adopted to achieve this balance are inevitably absorbed into the price of the energy to which they relate.

2A.4 For many groups and individuals, so called environmental or “green” taxes represent a way forward, in that they are designed to make individuals think more about the energy they are using, and deter excessive use of environmental resources. In the domestic context, it has been recognised (Ekins and Dresner, 2004)<sup>3</sup> that many households have little or no incentive to reduce their energy usage while energy prices remain at relatively low levels, so it may

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<sup>1</sup> Advisory Committee on Business and The Environment (ACBE) 2003, Business and Environmental Economic Instruments available to view at [www.defra.gov.uk/environment/acbe/pubs/pdf/acbe-greentax-final.pdf](http://www.defra.gov.uk/environment/acbe/pubs/pdf/acbe-greentax-final.pdf)

<sup>2</sup> [www.hm-treasury.gov.uk/media/AA7/59/bud05\\_chap07\\_171.pdf](http://www.hm-treasury.gov.uk/media/AA7/59/bud05_chap07_171.pdf)

<sup>3</sup> Paul Ekins and Simon Dresner (2004), Green Taxes and Charges: Reducing their impact on low-income households, London, Joseph Rowntree Foundation and Policy Studies Institute.

be that adding an extra “green” element to those prices may have a range of benefits.

2A.5 While taxation can add to the cost of the resource being used, other schemes are more incentive-based, and reward “good” energy efficient or greener choices. These include tax credit schemes, and exemption from payments.

## Measures in Place

2A.6 Energy taxation currently accounts for the largest proportion of environmental taxation measures, with transport coming second. However, taxation is not the only way in which greener energy choices are encouraged, and nor is it the only addition to the cost of energy used either industrially or domestically.

### Direct Taxation

2A.7 Direct Energy taxes in the UK currently consist of duty on hydrocarbon oils (including unleaded petrol, ultra low sulphur petrol and ultra low sulphur diesel), VAT on domestic and industrial fuels, and the Climate Change Levy. VAT on duty is calculated as a fixed proportion (in most cases 17.5 per cent) of the duty paid on hydrocarbon oils. In practice much of this VAT is reclaimed by business, although the total will eventually be paid when the final product or service is purchased.

2A.8 Further information on hydrocarbon duty can be found on the DTI website<sup>4</sup>.

**Table 2A.1 Current rates of hydrocarbon duty**

Fuel	Current duty rates (pence per litre)
LRP (Lead Replacement Petrol)	50.19
ULSP (Ultra Low Sulphur Petrol)	47.10
Super Unleaded	50.19
ULSD (Ultra Low Sulphur Diesel)	47.10
Fuel Oil	4.82
Gas Oil	5.22

<sup>4</sup> [http://www.dti.gov.uk/energy/inform/energy\\_prices/index.shtml](http://www.dti.gov.uk/energy/inform/energy_prices/index.shtml)

## Reducing Emissions and Encouraging Greener Choices

2A.9 Introduced in April 2001, the Climate Change Levy (CCL)<sup>5</sup> is a tax on the use of energy in industry, commerce and the public sector, with offsetting reductions in employers' National Insurance Contributions. Regulated by HM Customs and Revenue (formerly HM Customs and Excise), the levy is one of a number of measures in the UK's Climate Change Programme to tackle climate change by encouraging energy efficiency across business as a whole, which will lead to lower greenhouse gas emissions.

2A.10 There are provisions in the legislation for the levy to be charged at the full rate, at 50 per cent for horticultural producers, and at 20 per cent of the full rate for energy intensive users that have committed to challenging energy saving targets in negotiated Climate Change Agreements with the Government. Energy intensive industries entering into Climate Change Agreements, which set challenging targets for improving energy efficiency or reducing carbon emissions, are able to receive an 80 per cent discount from the Levy. The Government has also implemented a special package of measures for the horticulture sector, including a temporary 50 per cent discount on the levy for a period of up to 6 years, given that this sector is relatively energy intensive.

2A.11 The full amount of the levy is shown in table 2A.2 below. However, there are also several energy sources exempt from the levy, including:

- Electricity generated from renewable energy (e.g. solar and wind power)
- Fuel used by good quality combined heat and power schemes ("Good Quality CHP" as certified by the CHPQA programme)
- Fuels used as feedstock
- Electricity used in electrolysis processes, for example, the chlor-alkali process, or primary aluminium smelting.

**Table 2A.2 Current Climate Change Levy Rates**

Fuel	Levy
Gas	0.15p/kWh
Electricity	0.43p/kWh
Coal and coke	11.7p/Kg equivalent to 11.70 £/tonne
LPG	9.6p/Kg equivalent to 9.60 £/tonne

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2A.12 Allied to the Climate Change Agreements is the UK Emissions Trading Scheme (UKETS), operational since 2002. This scheme was the first economy-wide greenhouse gas emissions trading scheme in the world. It has 32 Direct Participants who have agreed emissions reductions targets in return for a share of Government incentive money. They have pledged to deliver 11.88 million tonnes of additional carbon dioxide equivalent (tCO<sub>2</sub>e) emission reductions over the five years of the scheme. The Scheme aims to provide cost-effective emissions reductions and to give UK businesses a head start in emissions trading ahead of future international trading schemes through learning by doing.

2A.13 Companies holding Climate Change Agreements can use the scheme either to buy allowances to meet their targets, or to sell any over-achievement of these targets. Anyone can open an account on the registry to buy and sell allowances.

2A.14 The EU Emissions Trading Scheme works on a similar basis. The Scheme commenced on 1 January 2005. The first phase runs from 2005 to 2007 and covers some 12,000 installations, representing close to half of Europe's emissions of CO<sub>2</sub>. Over 1000 UK installations are subject to the Scheme. The aim is to help EU Member States achieve compliance with their commitments under the Kyoto Protocol. Emissions trading does not imply new environmental targets, but letting participating companies buy or sell emission allowances provides a cost-effective means of complying with existing targets under the Kyoto Protocol. Under the Scheme, each EU Member State is required to produce a National Allocation Plan (NAP) setting out the total quantity of allowances that it intends to allocate for each phase of the Scheme. The UK's approved NAP<sup>6</sup>, published in May 2005, is set to help reduce CO<sub>2</sub> emissions by around 65 million tonnes (8 per cent) below predicted emissions of the installations covered by the Scheme over the next three years. Emissions trading started in the UK when the UK Registry became operational at the end of May 2005, allowing operators participating in the scheme to access their allowances.

2A.15 A further measure which also encourages a “greener” approach to energy usage is the Renewables Obligation. Unlike the measures outlined above, it cannot be considered a tax, as it is revenue neutral, and domestic consumers are not shielded from its impact. Introduced in 2002, the Obligation is designed to encourage year on year growth in production and usage of energy from renewable sources, thereby reducing emissions and helping the UK to meet its European targets set out in EU Directive 2001/77/EC on the Promotion of Electricity from Renewable Energy Sources in the Internal Electricity Market.

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<sup>6</sup> [www.defra.gov.uk/environment/climatechange/trading/eu/nap/approved.htm](http://www.defra.gov.uk/environment/climatechange/trading/eu/nap/approved.htm)

2A.16 The Renewables Obligation requires licensed electricity suppliers to supply an increasing proportion of their electricity from renewable sources. Suppliers can meet their obligation by presenting Renewable Obligation Certificates (ROCs); by paying a buy-out fund contribution equivalent to £32.33/MWh (for the year 1 April 2005 to 31 March 2006); or a combination of the two. ROCs are issued to renewable generators for each 1 MWh of electricity generated, and these are then bought by supply companies, or traded openly. The cost of the Obligation is expected to be equivalent to an increase of some 5 per cent in electricity prices by 2010 over actual 1999 prices. In a recently published report entitled *Ofgem: The Social Action Plan and the Energy Efficiency Commitment*, the Public Accounts Committee<sup>7</sup> quotes Ofgem's estimate that this currently represents a cost of £5 per year to the consumer.

2A.17 The income generated from buy out payment receipts is recycled proportionally among those suppliers who were able to demonstrate compliance through ROCs. Thus, while consumers pay slightly more as a result of greater use of the relatively more expensive renewable energy sources, suppliers are given an extra incentive to increase investment, which should in turn improve knowledge and reduce the costs involved.

2A.18 Introduction of the Renewables Obligation has meant that the cost of encouraging renewable energy is effectively spread across all consumers. This has made it more of a challenge for suppliers to encourage uptake of so-called “green tariffs”, where the consumer pays a premium price for the supply of theoretically green energy. Suppliers now have to be upfront in declaring that any premium paid is over and above what they are doing under the terms of the Renewables Obligation.

## **Encouraging more Energy Efficient Choices**

2A.19 In an attempt to improve domestic energy efficiency, the Government has taken a more incentive-based approach, introducing a broad range of measures, such as reduced VAT rates for small-scale renewable energy installation and energy saving materials. The Landlord's Energy Savings Allowance (LESA) was introduced in 2004 to encourage investment in cavity wall and loft insulation, while solid wall insulation has latterly been added.

2A.20 With a similar aim, the Energy Efficiency Commitment (EEC) is another obligation on energy supplies, requiring them to achieve targets for installing energy efficiency measures in the household sector. The Government has set a target for the next phase of the EEC, over 2005-08, roughly to double activity,

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<sup>7</sup> [www.publications.parliament.uk/pa/cm200405/cmselect/cmpublic/442/442.pdf](http://www.publications.parliament.uk/pa/cm200405/cmselect/cmpublic/442/442.pdf)

and deliver savings of around 0.7 million tonnes of carbon a year by 2010. This target also includes incentives for energy services and support for the development of innovative products.

2A.21 The Public Accounts Committee<sup>8</sup> suggested that EEC is expected to cost around £8 per consumer in 2004/05. It is also reasoned that around 3 per cent of the average domestic consumer's bill for 2004/05 relates to both EEC and the Renewables Obligation. Once the second round of EEC is fully up and running (and the EU Emissions Trading scheme fully operational), Ofgem estimates that the cost to the consumer could rise further. When all environmental measures are taken together, Ofgem estimates that they will account for as much as £33 or 6 per cent of an average energy bill from 2005/06.

2A.22 At a local level, one Local Authority, Braintree District Council, has adopted an incentive scheme to encourage homeowners to install cavity wall insulation. In partnership with British Gas, 500 homeowners have been offered a £100 Council Tax rebate. Such an incentive-based approach is discussed by the Energy Saving Trust<sup>9</sup>, who suggest that fiscal incentives are necessary to engage domestic consumer interest in energy efficiency and sustainability more generally.

## Non-Energy Measures

2A.23 Other environmental taxes or additives have similar aims to those already outlined above, but are applied to non-energy settings, encouraging more responsible approaches to transport, waste and the use of other utilities that may have an environmental impact.

2A.24 For transport, a range of measures have been introduced which take into account the fact that this sector is the UK's second largest source of carbon emissions – these include duty on fuel, vehicle excise duty, the lorry road-user charge, air passenger duty and company car tax. While these measures are largely prohibitive in nature and actually add to the costs involved in using transport, the Government's Alternative Fuels Strategy sets out to encourage greater use of cleaner fuels, such as biofuels, through reductions or fixed price guarantees on duty levels, while the concept of a Renewable Transport Fuels Obligation is actively being considered.

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<sup>8</sup> [www.publications.parliament.uk/pa/cm200405/cmselect/compubacc/442/442.pdf](http://www.publications.parliament.uk/pa/cm200405/cmselect/compubacc/442/442.pdf)

<sup>9</sup> Energy Saving Trust 2005, Changing climate, changing behaviour, Delivering household energy savings through fiscal incentives.

2A.25 At local level, the Congestion Charge in London is a further example of how motorists pay more for using their cars, an additional expense that may make them look at more efficient and environmental means of transport.

2A.26 While the Renewables Obligation indirectly encourages more advanced approaches to waste management, there are many other elements to the Government's waste management strategy, including elements of taxation that incur extra costs for those involved in the production and use of waste, such as the Landfill Tax, while other measures such as the Aggregates Levy and Contaminated Land Tax Credits encourage a more sustainable approach to the use of the earth's resources.

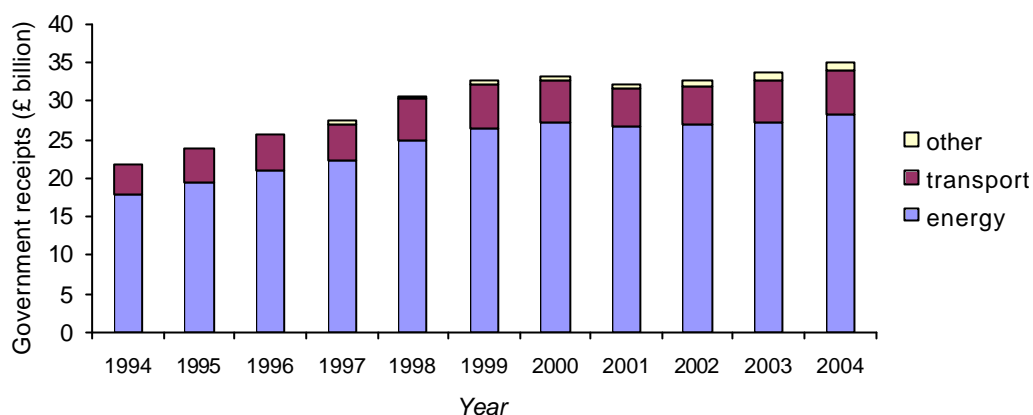
## **Revenue Generated**

2A.27 The Total revenue received by the government in 2004 from environmental taxation was £35.0 billion. Environmental taxes, as a percentage of GDP, followed a trend of small increases between 1993 and 1999. Since 1999, however, this trend has reversed, although the absolute revenue has stayed around the same. In 2004, the proportion fell to 3.0 per cent of GDP, compared with 3.6 per cent in 1999.

2A.28 Similarly, environmental taxes as a percentage of total taxes and social contributions increased to a maximum of 9.8 per cent in 1999, but in recent years have fallen. In 2004, they stand at 8.3 per cent. This is down from 8.6 per cent in 2003. Energy taxation has actually fallen slightly from 8 per cent of total taxation in 1994 to 7 per cent in 2004, while transport has experienced a similar percentage fall from 2 per cent of total taxation in 1994 to 1 per cent in 2004. Duty on hydrocarbon oils such as petrol and diesel accounted for 66.9 per cent of total environmental taxation in 2004, a share that has remained broadly unchanged since 2000.



**Chart 2A.1 Government Receipts from environmental taxes (1994 – 2004)**



Source: Office for National Statistics

## The Impact on Society and the Environment

2A.29 While taxation measures are in themselves an important source of revenue, and a deterrent in that they increase costs associated with negative aspects of resource usage, arguably the most important impacts of these kinds of measures are those that they have on the environment, and society at large. A full assessment of the potential impact of the Government's environmental fiscal measures is provided in the Government's Budget 2005 Report, Investing for our future: Fairness and opportunity for Britain's hard-working families<sup>10</sup>.

2A.30 That report details the results of an independent evaluation of the Climate Change Levy, and concludes that it should deliver an estimated annual carbon dioxide savings of over 3.5 million tonnes of carbon (MtC) in 2010, significantly more than the 2 MtC that had been forecast at the time of the measure's introduction. It is also known to have reduced energy demand in the commercial and public sectors, and acted as a boost to both renewable energy and CHP.

2A.31 Some of those environmental taxes can have unwanted side effects (e.g. flytipping or illegal dumping of old fridges). Ironically, the fuel poor are most at risk from taxation measures with a direct impact on the price of domestic energy. However, the Government's commitment to improving energy efficiency and incomes, as well as increasing awareness of how to obtain the best deals from suppliers, as detailed in Chapter 4 on [http://www.dti.gov.uk/energy/environment/energy\\_impact/seib2005ch4.pdf](http://www.dti.gov.uk/energy/environment/energy_impact/seib2005ch4.pdf), could mitigate the worst impact of any such additions.

<sup>10</sup> [www.hm-treasury.gov.uk/budget/budget\\_05/budget\\_report/bud\\_bud05\\_report.cfm](http://www.hm-treasury.gov.uk/budget/budget_05/budget_report/bud_bud05_report.cfm)



## **The Future**

2A.32 As the need to combat Climate Change becomes more urgent, it is likely that the kinds of measures outlined above will become more common. Already this year has seen the introduction of an expanded Energy Efficiency Commitment, as well as an ongoing review of the whole Climate Change Programme. Similarly, in April 2005 the level of the Renewables Obligation was extended from 10.4 per cent by 2010/11 to 15.4 per cent by 2015/16. A review of the Obligation is taking place during 2005 with any changes likely to come into effect from 1 April 2006. Care will have to be taken to ensure that these measures deliver their anticipated environmental benefits, without having an excessive impact on the most vulnerable in society.