



**The U.K. Government Response  
to the Royal Commission on  
Environmental Pollution's  
Twenty-Second Report  
Energy — The Changing Climate**

February 2003



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Presented to Parliament  
by the Secretary of State for Environment, Food and Rural Affairs  
by Command of Her Majesty  
February 2003

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# I Introduction

The Royal Commission on Environmental Pollution's Twenty-Second Report "Energy — the Changing Climate" was presented to Parliament in June 2000. The report advocates a transformation in the use of energy in the UK to counter climate change. As a contribution to global efforts to prevent excessive climate change, the Royal Commission recommends that the UK should plan to reduce carbon dioxide emissions by some 60% from current levels by about 2050. The Report explores what this will mean for industry and households and highlights how Government policies need to change.

The UK Government is grateful to the Royal Commission for their report, which reminds us that drastic reductions in emissions must be achieved to address the problems of climate change. The UK is well on course to meet its Kyoto commitments, but much remains to be done in the longer term.

In June 2001, the Prime Minister asked the Cabinet Office's Performance and Innovation Unit (PIU) to conduct a long-term strategic review of the issues and challenges likely to determine the UK's future energy policy. In February 2002, the PIU published its Energy Review as a report to Government. The Government welcomed the Review and, in May 2002, launched a full public consultation on the key issues raised and announced its intention to produce the Energy White Paper.

This document provides the Government's formal response to the Twenty-Second Report. The response summarises the action being taken and proposed, and it relates to the Royal Commission's recommendations. Its structure is thematic, rather than being a point-by-point response. This allows the action to be described coherently, but maintains the link with the recommendations.

## Climate Change

### **Recommendation 1**

**Para 5.60**

***The goal of reducing the UK's annual carbon dioxide emissions by 20% from their 1990 level by 2010 is a major step in the right direction. It should become a firm target and the Government should produce a climate change programme that will ensure it is achieved.***

The Government published the UK's climate change programme in November 2000. The programme set out a range of policies that would deliver the UK's Kyoto target to reduce greenhouse gas emissions by 12.5% below 1990 levels by 2008-2012 and move towards its domestic goal to cut carbon dioxide emissions by 20% below 1990 levels by 2010. It is estimated that the policies in the programme could reduce greenhouse gas emissions by 23% below 1990 levels by 2010. This equates to a cut of 19% in carbon dioxide emissions alone. Other policies that we are unable to quantify at the moment — for example, action by local authorities and public awareness campaigns — could enable us to meet the domestic goal.

“The Energy White Paper ‘Our Energy Future—Creating a Low Carbon Economy’ published in 2003 set out a range of further actions which will move us in the right direction.” The Government is committed to reviewing the climate change programme in 2004. This will provide an opportunity to introduce new policies and measures, or to strengthen existing ones, if the conclusion is that they are necessary to keep the UK on track towards the domestic goal of a 20% reduction in carbon dioxide emissions by 2010.

### **Recommendation 5**

**Para 10.10**

***The Government should now adopt a strategy which puts the UK on a path to reducing carbon dioxide emissions by some 60% from current levels by about 2050. This would be in line with a global agreement based on contraction and convergence which set an upper limit for the carbon dioxide concentration in the atmosphere of some 550ppmv and a convergence date of 2050.***

We agree that the UK should put itself on a path towards reductions in carbon dioxide emissions of some 60% from current levels by about 2050. We will work actively with others to encourage them to adopt similarly challenging aims. The Energy White Paper sets out the first steps towards achieving this goal, which equates to emissions of around 65mtC in 2050.

A reduction in carbon dioxide emissions of 60% by 2050 is consistent with the level of reduction likely to be needed by developed countries, in order to move towards stabilisation of carbon dioxide concentrations in the atmosphere at no more than 550ppmv (parts per million by volume), taking

account of a realistic assessment of emissions growth in developing countries. This is set out in more detail in the Defra paper *'The scientific case for setting a long-term emission reduction target'* — available on the Defra website — [www.defra.gov.uk/environment/climatechange](http://www.defra.gov.uk/environment/climatechange).

### **Recommendation 3**

**Para 4.69**

***The Government should press for a future global climate agreement based on the contraction and convergence approach, combined with international trading in emission permits. Together, these offer the best long-term prospect of securing equity, economy and international consensus.***

The Government is keen to establish a dialogue on possible approaches to future target-setting. However, the Global Commons Institute's contraction and convergence approach is only one of a number of potential models for global agreement on addressing greenhouse gas emissions, some of which may be more attractive to developing countries and still promote the objectives that we are striving to fulfil. Other possible approaches include, for example, setting dynamic targets linked to GDP, or setting limits on the basis of countries' historical emissions (the "Brazilian Proposal"). The Government believes that it would be premature to rule out any options at this stage and plans to engage constructively in future debates. There is likely to be an increasing emphasis on the evolution of commitments under the Kyoto Protocol following its entry into force. In any discussion on this matter, it will be important to take into account the views of developing countries since agreements are reached by consensus.

### **Recommendation 21**

**Para 4.47**

***Our view is that an effective, enduring and equitable climate protocol will eventually require emission quotas to be allocated to nations on a simple and equal per capita basis. There will have to be a comprehensive system of monitoring emissions to ensure the quotas are complied with.***

Contraction and convergence is an example of a model for the allocation of emissions quotas "on a simple and equal per capita basis" (see response to recommendation number 3). But, as stated above, contraction and convergence is only one of a number of potential models, some of which may be more attractive to developing countries and still promote our objectives. The Government believes that it would be premature to rule out any options at this stage and will engage constructively in future debates.

The agreement reached on the implementation of the Kyoto Protocol at the Seventh Conference of the Parties (COP7) in Marrakesh (29 October-10 November 2001) establishes a comprehensive system of accounting, reporting and review of greenhouse gas emissions for developed countries. Currently, developing countries are not required to report annual greenhouse gas emissions. The procedures agreed at COP7 could form the basis of a comprehensive monitoring system for developed and developing countries, if quotas were applied. But the basis for international commitments on emissions reductions will, of course, be a matter for negotiation.

**Recommendation 2**

**Para 4.68**

***The UK should continue to play a forceful leading role in international negotiation to combat climate change, both in its own right and through the European Union. The Government should press for further reductions in the greenhouse gas emissions of developed nations after 2012, and controls on the emissions of developing nations.***

The UK has played a leading role at all levels of the international negotiations on climate change since the process began, and the Government agrees that it is important to continue to do so. The Government has always acknowledged that the targets agreed under the Kyoto Protocol for the first commitment period (2008-2012) are only a first step, and that much deeper cuts in emissions will be required in the future. Once the Kyoto Protocol enters into force, there will be an agreed framework within which negotiations on further reductions can take place. The Protocol requires that negotiations on the second commitment period must start by 2005 at the latest. The Government is now working to generate the momentum required to secure the necessary global consensus on the next phase of reductions. The outcome must involve significantly deeper cuts for developed countries than now, but the Government is not looking, at this stage, at trying to negotiate emissions limitations for developing countries.

**Recommendation 20**

**Para 4.32**

***On the basis of current scientific knowledge about human impact on climate, we support the proposal that an atmospheric concentration of 550ppmv of carbon dioxide should be regarded as an upper limit that should not be exceeded.***

The choice of an upper limit for carbon dioxide concentrations in the atmosphere is one for which there is no international consensus or clear scientific guideline, though the EU Member States have agreed that we should be aiming for a maximum global temperature increase of 2 degrees Celsius over pre-industrial levels and a stabilisation of carbon dioxide concentrations below 550 parts per million by volume (ppmv) to prevent the most damaging effects of climate change. Even at this level there will be negative impacts.

The recent assessment of the Intergovernmental Panel on Climate Change (IPCC) notes that the basis for determining what constitutes dangerous anthropogenic interference will vary among regions - depending both on the local nature and consequences of climate change impacts, and also on the adaptive capacity available to cope with climate change - and depends upon mitigation capacity, since the magnitude and the rate of change are both important.

The IPCC Synthesis report notes the range of temperatures that could result for different stabilisation levels. At 550ppmv the range is approximately 2.0 - 5.2°C above 1990 levels depending on the sensitivity of the climate system to the additional radiative forcing due to CO<sub>2</sub>. The IPCC has also assessed the state of knowledge on the impacts of climate change associated with different temperature levels. The scientific uncertainties are such that, for low sensitivity, relatively modest impacts may be found at 550ppmv. At high sensitivity, on the other hand, there are considerable risks that significant damage could be experienced.

While the EU aim is supported, the Government will encourage further research on baseline scenarios, on mitigation and stabilisation scenarios and on adaptation scenarios. IPCC has already held an expert meeting looking into further elaborating the SRES (Special Report on Emissions Scenarios) baseline scenarios. We would welcome additional mitigation analysis for various stabilisation levels to enhance the possibilities of comparing costs and benefits of climate response strategies.

### **Recommendation 81**

### **Para 10.23**

***The sharing out between Member States of the EU's limit under the Kyoto Protocol must now be given a firm legal basis, and effective mechanisms must be established for monitoring compliance with their respective limits, with sanctions for non-compliance.***

The Council of the European Union adopted a decision on 4 March 2002 concerning the conclusion, on behalf of the European Community, of the Kyoto Protocol to the United Nations Framework Convention on Climate Change and the joint fulfilment of commitments thereunder. This places on a firm legal footing the targets that individual Member States have agreed to as their share of the EU's limit under the Kyoto Protocol.

The Council Decision places an obligation on EU Member States to take the necessary measures to comply with the specified emission levels that represent each Member State's share of the EU's Kyoto limit.



**Recommendation 4****Para 10.12**

*While UK carbon dioxide emissions are falling at the moment, they are expected to begin rising again. All but one of the nuclear power stations, the main source of carbon-free energy at present, are expected to close by 2025. The Government should set out, within the next five years, a programme for energy demand reductions and development of alternative energy sources that will prevent this from causing an increase in UK emissions.*

**Recommendation 6****Paras 10.17, 7.106, 6,172, 8.15**

*Absolute reductions in energy demand and a large deployment of alternative energy sources will be needed if the UK is to make deep and sustained cuts in carbon dioxide emissions while protecting its environment and quality of life. Longer-term targets should be set for expanding the contribution from renewable sources well beyond 10% of electricity supplies to cover a much larger share of primary energy demand. A range of targets should be developed for raising energy efficiency in all sectors of the economy. A central policy objective must be a very large reduction in demand for energy for heating and cooling, achieved through much more sophisticated management of heat and much wider use of combined heat and power schemes for both the industrial and the commercial and domestic markets. The resulting heat networks, supplied initially by fossil fuels, could ultimately obtain heat from energy crops and electrically powered heat pumps.*

**Recommendation 15****Para 10.67**

*The need to reduce emissions of greenhouse gases, particularly carbon dioxide, should be taken into account in all Government policies. That is not the case at present.*

The need to reduce carbon emissions is at the heart of the Government's sustainable development policy. The Government's Energy White Paper sets the framework for moving towards a low-carbon economy where higher resource productivity - producing more with fewer natural resources and less pollution - will contribute to higher living standards and a better quality of life.

The Government has recently put in place a range of new measures to deliver our aim for renewables to supply 10% of UK electricity to 2010, subject to the costs being acceptable to the consumer. It is clear that achieving the 10% target over the next seven years will be very challenging. The Government believes that renewable sources of energy will increasingly demonstrate that they can meet our energy needs both economically and in a carbon-free way. The Government expects industry to respond to the framework that it has established and demonstrate that they can deliver our goals at an acceptable cost. On that basis, the Government's aspiration is to double renewable's share of electricity from the 2010 target. The Government will pursue policies to achieve this.

We have:

- introduced a Renewables Obligation for England and Wales in April 2002<sup>1</sup>. This will incentivise generators to supply progressively higher levels of renewable energy over time. The cost is met through higher prices to consumers. By 2010, it is estimated that this support and climate change levy exemption will be worth around £1 billion a year to the UK renewables industry;
- exempted renewable electricity from the climate change levy (CCL);
- created a renewables support programme worth £250m from 2002-03 to 2005-06;
- drawn up a strategic framework for a major expansion of offshore wind;
- created a new organisation within Government - Renewables UK - to help our renewables industry grow and compete internationally.

In addition, from 2005 onwards, the EU emissions trading system will provide a further incentive for renewables. The Energy White Paper outlines measures to provide further encouragement for renewable energy.

We are pushing forward these programmes in consultation with industry. A new Renewables Advisory Board - comprising representatives of the relevant industries, the Government and the Devolved Administrations - has been set up with a remit to provide expert independent advice to the Department of Trade and Industry on renewables issues.

The UK's climate change programme stresses the need for climate change to be taken into account in all areas of Government policy, and for action to be taken in each sector of the economy. It includes details of policies and measures that should reduce emissions from the energy supply, transport and agriculture sectors.

Energy efficiency is a key part of achieving the targets laid out in the Climate Change Programme, but we recognise that not all the necessary measures are yet in place for achieving the Climate Change Programme's energy efficiency aims. The EWP therefore outlines measures that have the potential to achieve further substantial carbon reductions by 2010. Existing and new measures include:

- The CCL introduced on 1st April 2001. Virtually all UK businesses and public sector organisations pay this levy via their energy bills.
- The climate change agreements (CCA) between energy-intensive sectors of industry and the Secretary of State for Environment, Food and Rural Affairs, a new policy mechanism to increase energy efficiency, introduced in April 2001.
- The UK Emissions Trading Scheme, launched in April 2002. We will be working to see how the UK ETS, the Renewables Obligation, the energy efficiency commitment, the CCL and the CCAs can dovetail with the new EU ETS from 2005.

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<sup>1</sup>The Scottish Executive launched the Renewables Obligation Scotland on 1 April 2002.

- Measures set out in the Government's draft CHP Strategy of May 2002, and in the EWP, to benefit CHP (power plants designed to produce both electricity and usable heat) to reduce significantly greenhouse gas emissions and energy costs. The Community Energy programme was introduced in April 2002 to provide grant funding for development of community heating networks.
- The Energy Efficiency Commitment (EEC) was introduced in Great Britain 2002 and will run until 2005. The Government has also announced that it will consult on an extension of EEC from 2005 to at least 2008. EEC places an obligation on gas and electricity suppliers to achieve targets for improvements in household energy efficiency.
- In England the Home Energy Efficiency Scheme (HEES), now marketed as Warm Front, is designed to tackle fuel poverty among those households most vulnerable to cold-related ill health; typically, families with young children, the long-term sick or disabled and those over 60 years old, in receipt of certain benefits. Other schemes exist in Northern Ireland, Scotland and Wales. The Government's Fuel Poverty Strategy was launched in November 2001, see responses to the fuel poverty recommendations.
- Revision of the energy provisions of the Buildings Regulations with the aim of bringing these into effect in 2005. We will use the Regulations to further raise the standard required for new and replacement boilers to the level of the most efficient boiler types - new A and B rated condensing boilers. We have also signalled our intention to further raise standards over the next decade.
- The Market Transformation Programme - intended to improve the availability, adoption and use of domestic appliances, and other energy consuming goods, which use less energy and other resources. We will work proactively with the EU to influence and speed the delivery of higher energy efficiency standards for household products.
- Supporting the work of the Energy Saving Trust (EST) and the Carbon Trust (CT), which promote energy efficiency to households, businesses, and public sector bodies.

All Government departments were required to provide a sustainable development report as part of their bids for Spending Round 2002. These reports assessed proposals for their impact on a range of sustainable development criteria, including greenhouse gas emissions. Defra has produced guidance for all Government departments on estimating the social cost of carbon emissions. This emphasises the need for consistent appraisal of all policies and projects that are likely to affect greenhouse gas emissions. It provides illustrative values of the damage costs associated with carbon dioxide emissions to use in appraisals and it explains how these can be incorporated into policy appraisal. The recently updated guidance for regulatory impact assessments includes a provision to consider environmental impacts as part of delivering the Government's commitment to sustainable

development. A carbon impact assessment will in future be an integral part of assessing environmental impact. Defra, in liaison with other Government Departments, has developed guidance on integrated policy appraisal which, among other things, helps policymakers to take account of climate change in the development of policies.

**Recommendation 22**

**Para 4.64**

***We urge Government to facilitate and encourage the creation of a national trading scheme, to help position the City of London — which has the necessary skills and capacity — as the world centre for international trading emission permits when that emerges from the negotiations on implementing the Kyoto Protocol.***

The UK Emissions Trading Scheme, launched in April 2002, created the world's first economy wide, greenhouse gas emissions trading scheme. The scheme is expected to deliver over 4MtCO<sub>2</sub>e (millions of tonnes of carbon dioxide equivalent) in annual emission reductions by 2006, and is giving UK business and the City of London the opportunity to gain early experience of trading ahead of a European Scheme and wider international trading. There has been an encouraging start to trading, enabling the City of London to develop the infrastructure to become a centre of expertise. The scheme is already having an impact in the drive towards a low carbon economy. For the companies participating in the scheme there is now an economic cost to every tonne of carbon they emit and this is crucial in ensuring that environmental effects are factored into the financial and investment decisions of companies into the future.

## **Tax Issues**

**Recommendation 8**

**Para 10.26**

***The UK should introduce a carbon tax, replacing the climate change levy which is due to begin next year. It should apply upstream and cover all sectors.***

**Recommendation 9**

**Para 10.27**

***The first call on the revenue from this carbon tax should be to further reduce fuel poverty by benefit increases and more spending on household energy efficiency measures.***

**Recommendation 10**

**Para 10.28**

***The remainder of the revenue should be used to raise investment in energy efficiency measures in all sectors, to increase the viability of alternative energy sources, and to reduce the impact of the new tax on UK industrial competitiveness.***

**Recommendation 11****Para 10.32**

*The UK should press for a carbon tax within the European Union, but proceed on its own if agreement cannot be reached within the next few years.*

**Recommendation 23****Para 6.169**

*A carbon tax should be announced at least a year in advance of its introduction, be set at a modest level initially, and be preceded by or launched alongside the other measures we recommend for raising energy efficiency, reducing energy consumption and reducing fuel poverty.*

**Recommendation 44****Paras 6.159 and 6.160**

*The Government is mistaken in keeping domestic fuel cheap for all households in order to help a minority of households who suffer from fuel poverty, when there are growing concerns about the environmental damage caused by indiscriminate, inefficient consumption of fossil fuels. There should not, therefore, be a blanket exemption for households from taxation measures aimed at limiting climate change. At the very least, however, the numbers of people suffering fuel poverty should not be allowed to increase when a carbon tax is introduced. We urge the Government to adopt a programme with the aim of eliminating fuel poverty over a specified time period.*

The climate change levy (CCL) was introduced in April 2001 following extensive consultation and in accordance with the recommendations of Lord Marshall's 1998 report, 'Economic Instruments and the Business Use of Energy'.

As recommended by Lord Marshall, the Government believes that a downstream tax on energy (such as the CCL) is the best approach to take to the taxation of energy products, as it allows the Government to balance the need to encourage improvements in energy efficiency with other policy considerations. In particular, much is known about the extent of fuel poverty in the UK, and the Government is not currently attracted to introducing tax measures which may impact on energy prices in the domestic sector. The CCL also allows a level playing field to be maintained between different fuels. The Government continues to keep all taxes, including the CCL, under review.

The CCL package includes a range of measures to reduce carbon emissions and improve energy efficiency, including:

- an exemption from the levy for most forms of renewable energy;
- an exemption for fuel used by good quality combined heat and power systems and for electricity from such systems (the extension of the exemption to electricity sold via licensed electricity suppliers is subject to EU state aid approval);

- 80% discounts from the levy for energy intensive businesses which enter into climate change agreements with the Secretary of State for Environment, Food and Rural Affairs to increase energy-efficiency and reduce emissions;
- a scheme of 100% enhanced capital allowances for investments in qualifying energy efficiency measures; and
- support for advice for business and the public sector development of new low-carbon technologies, through the Carbon Trust.

The Government recognises the importance of improving household energy efficiency. However, recycling revenue from a carbon tax in the way proposed would lead to an increase in the overall burden of taxation and would not contribute to the objective of moving the burden of tax from 'goods' to 'bads', as set out in the 1997 Statement of Intent on environmental taxation. There would also be distributional issues between business and the domestic sector to take into account, with revenue from a tax across all sectors being used to support benefits and spending aimed at households. The climate change levy package has been designed so that it is broadly revenue neutral to business as a whole. The considerations involved in recycling revenue from environmental taxes are discussed further in 'Tax and the environment: using economic instruments' (HM Treasury, 2002).

Some of the revenue from the CCL helps to fund the Carbon Trust, which was set up in April 2001 and aims to help the UK move towards a sustainable, low carbon economy whilst maintaining competitiveness. The Carbon Trust supports businesses and the public sector in the take up of new, and emerging, low carbon technologies and measures.

A proposal for an EU Energy Products Directive is due to be considered by the Council of Ministers (Ecofin) in March 2003. If adopted, this Directive would require all Member States to introduce taxes on energy products (gas, coal, oil and electricity). The UK has played a constructive role in the development of the proposals for this Directive. The UK's CCL and fuel duty are broadly consistent with the requirements of the proposed Directive.

Member States have not been attracted to a Directive requiring a carbon tax for a number of reasons, including the difficulties in taxing imports and exports of electricity. For the UK, a system based on carbon taxation would also have the drawback of potential impacts on domestic consumers, particularly low-income groups.

### **Recommendation 86**

### **Para 10.30**

***If there is not to be an EU-wide carbon tax, EU law ought to be amended to enable Member states which wish to impose internal carbon taxes to levy reasonable shadow carbon taxes on imported electricity.***

According to EU Treaty principles, imports must not be subject to a tax in excess of that applied to similar domestically produced products. As an

illustration, in the UK electricity from certain renewable sources is exempted from the climate change levy. This applies equally to UK-produced energy or that imported from, for example, France. Similarly, electricity generated from conventional sources is subject to the climate change levy at a uniform rate, regardless of whether it is generated in the UK or imported. However, if a carbon tax were applied to fuels used for electricity generation, it would not be possible to apply the tax to imported electricity as there would be no basis for applying such a tax (the UK authorities would not be able to tax fuels consumed in other Member States). If electricity were subject to a 'downstream' tax based on the fuel used to produce the electricity, imported electricity would need to be subject to the lowest rate in order to avoid unfairly discriminating against such imports unless a workable system of certification of the fuel used to generate electricity could be introduced.

### **Recommendation 87**

**Para 6.171**

***We urge the Government to press for changes in EU VAT law that would enable VAT to be reduced to 5% for sales of energy saving equipment direct to consumers.***

The Government has introduced a 5% rate of VAT for energy efficient equipment installed through grant schemes, including installations of central heating systems and heating appliances, factory-insulated hot water tanks, micro combined heat and power units and other systems that use renewable sources of energy.

The Government has also introduced a reduced rate for contractor installations of a range of energy-saving products in all homes, including insulation, draught stripping, hot water and central heating system controls and solar panels.

These reductions are allowed under Annex H of the EC Sixth VAT Directive, which allows Member States to introduce reduced rates on services related to "housing provided as part of a social policy". In this case, the reduced rates were introduced to further the Government's social policy of reducing health problems caused by insufficiently heated homes. However, Annex H does not permit a reduced rate on DIY installation.

The Government recognises the potential environmental benefits of a reduced rate of VAT for the purchase of energy-saving materials for DIY installation, and has pressed the European Commission to bring forward early legislative proposals to allow such a change to be introduced under EU law. The renegotiation of Annex H is expected during 2003 and the Government has committed to negotiating for the inclusion of DIY installation of energy saving materials under Annex H. Any change would require the unanimous approval of Member States.

## Energy Use in Buildings

### **Recommendation 16**

**Paras 6.100, 10.68**

*The UK Government and devolved administrations should launch a long-term programme to bring about major reductions in the energy requirements of buildings. As well as reducing wastage, this will embrace wide use of technologies that enable occupiers of buildings, including householders, to obtain their own heat and electricity from renewable or energy-efficient sources such as solar heating, solar electricity, heat pumps, and small-scale combined heat and power plants. It will also require the large-scale construction of district heating networks, so that advantage can be taken of larger-scale combined heat and power schemes.*

### **Recommendation 30**

**Para 10.14**

*Both for the building stock and for other capital assets, maximum advantage must be taken of new construction and the replacement cycle in order to make major improvements in energy efficiency.*

### **Recommendation 31**

**Paras 6.97, 6.43**

*We recommend that Government revise the Building Regulations to mandate much higher standards of energy efficiency in new homes and commercial and public sector buildings. That should include more demanding criteria for the energy efficiency of lighting and introduce rigorous standards for air conditioning systems as well as heating systems, thereby encouraging architects and engineers to find less polluting ways of keeping buildings adequately lit and at comfortable temperatures.*

### **Recommendation 32**

**Para 6.44**

*We recommend that Government join with the construction industry to find an effective way of increasing the awareness and understanding of energy-saving technologies among architects, engineers, surveyors and the building trades. We mean this recommendation to apply as much to the house building sector as to larger commercial, industrial and public buildings.*

### **Recommendation 35**

**Para 6.6**

*Major improvements in the energy efficiency of UK housing are required.*

Compared with the 1990 building regulations, the latest revisions introduced in 2002 have reduced the energy needed for heating a new home by half. Similar improvements have been achieved in new commercial and public sector buildings. In the existing stock, which will continue to account for the vast majority of energy consumed in buildings for decades to come, regulations also cover major changes - for instance, higher standards for



replacement boilers and windows in England and Wales were introduced in April 2002. Similarly in Scotland, higher standards were introduced in March 2002. A new Building Bill will be enacted in 2003 to enable future Scottish Building Regulations to make further improvements broadly in line with those intended for England and Wales.

We will therefore start work immediately on the next major revision of the building regulations, which we aim to bring into effect in 2005. We will also use the Regulations to further raise the standard required for new and replacement boilers to the level of the most efficient boiler types - A and B rated condensing boilers. We will also make a start on developing the new provisions that will be needed to introduce and then to implement the Directive's independent certification and inspection requirements such that our large stock of public buildings and those buildings that are sold or tenanted every year can be certified within the period permitted.

Achieving these bigger and faster changes will require the concerted effort of all parts of the industry - customers (particularly in industry, business and the public sector), architects and designers, the construction industry, manufacturers and other suppliers, the professional bodies, energy companies and Government itself. The shift to far greater energy efficiency is also an ideal opportunity to intensify the efforts already being made to improve the productivity of the construction industry.

In February 2003, we launched the Communities Plan '*Sustainable Communities: Building for Our Future*'. The Communities Plan is a major opportunity to encourage sustainable construction and maximise the potential that energy efficient technologies can play in the planned new housing developments. We will therefore bring together representatives of housebuilders, the Housing Corporation, the construction industry and others in a new working group to consider how best to improve the sustainability of all aspects of construction and design, including off-site construction and low carbon technologies (such as photovoltaics or CHP). We will also bring together representatives of all the key players in a Better Buildings Summit, which will be jointly convened and chaired by Ministers from ODPM, Defra and DTI.

Tighter building regulations will also encourage developers to use low carbon solutions such as solar water heating and photovoltaics. These technologies are currently being encouraged through a £20million large-scale PV demonstration programme.

### **Recommendation 28**

**Para 6.100**

***An integrated approach to heat management should become a central feature of the design of all new houses and other buildings wherever practicable, and building control legislation and the Building Regulations should be amended to bring that about. (See also recommendation 31).***

The amendments that came into effect in April 2002 introduced a new system of showing compliance with the Building Regulations based on estimations of the annual carbon emissions that would accrue from e.g. space heating, hot water, air conditioning and lighting for the whole building when it is in use. The Government will be considering in future how the use of this more integrated approach can be encouraged and widened to be applicable to more types of buildings. For new buildings other than dwellings we have indicated that it is necessary to produce an energy log book so that building owners are more able to manage their energy consumption.

**Recommendation 33**

**Para 6.48**

***We recommend that Government join with major property owners to develop means of tackling the 'landlord-tenant' problem which plagues attempts to raise energy efficiency in the services sector. We propose that Government work with the property and energy industries to devise an incentive scheme which would encourage both landlords and tenants to move to individual meters for each tenant.***

**Recommendation 34**

**Para 6.49**

***Where tenants cannot be individually metered, the landlord should be required to inform them of their building's overall annual energy consumption and fuel bill. At the same time, the landlord should be required to inform existing tenants and prospective tenants of the energy consumption and fuel bill for the average building with the same function and floor area as the one in which they rent, or propose to rent, space, as well as the equivalent figures for a high efficiency 'good practice' building of similar function and floor area.***

Some information is likely to be needed to meet the requirements of the "Directive of the European Parliament and of the Council on the energy performance of buildings" (EU Directive 2002/91/EC 16 Dec 2002, published 04 Jan 2003). Article 7 of the Directive requires that when buildings are constructed, sold or rented out, an energy performance certificate is made available to the owner, or by the owner to the prospective buyer or tenant.

Commercial buildings have a great variety of plant and equipment serving them and the configuration of the building will affect thermal losses and may dictate a need for air conditioning/forced ventilation. Two major impacts on energy consumption are the number of hours a week the building is used and the type of major office equipment installed in it. These cannot be factored into standard calculations. The Buildings Research Establishment

proposals for the provision of benchmark energy consumption figures could aid transparency and ease comparison of different buildings' energy consumption; but the difficulty lies in achieving a suitable system that produces meaningful figures at reasonable cost. In particular, it would be necessary to ensure that like is compared with like, and the industry would need to be convinced that this approach is practical. Costs could be significant, as the number of commercial tenancies in England and Wales runs into hundreds of thousands.

Separate metering for heat and air conditioning is complicated and could be costly to retrofit into existing buildings. Separate metering of heating/air conditioning will only be of real value to occupiers if their systems are sufficiently controllable and flexible to enable them to vary environmental conditions in the demise so as to achieve savings. The occupier/tenant will still be unable to change the building fabric and will be stuck within the parameters of the original design construction of the building, which will constrain the scope for improvement. Similarly, the users are constrained by the plant provided at the time of construction, as well as its subsequent history of maintenance, alteration and renewal by the landlord.

Service charges are not usually fixed in cash terms, particularly in the office sector. What does tend to be fixed is the proportion of the total charge that the tenant pays; this is often fixed pro rata, according to floor area occupied. In the absence of technical means to separately meter heating/air-conditioning, or to bill accordingly, the methods used to calculate charges are often not sophisticated. For example, where one occupier wishes to work outside the building's prescribed times of service provision, he may be charged with the cost of heating the whole building for the excess hours. Often there are no means of separately heating individual floors or other units of occupation.

## Energy Use by Industry

### **Recommendation 47**

**Para 6.23**

***We recommend that a body with a degree of independence from Government, such as the Environment Agency or the new Sustainable Energy Agency we recommend, undertake or audit the monitoring of negotiated agreements to reduce energy use and be given adequate funding to do so. We also endorse the House of Commons Environment, Transport and Regional Affairs Committee's recent recommendation that draft negotiated agreements be made publicly available.***

The Climate Change Levy was introduced in April 2001. Forty sector associations entered into forty four different agreements with the Government, through which operators have committed to meet challenging energy reduction targets in return for an 80% reduction in the climate

change levy. Over 5,000 companies and 12,000 individual sites are now covered by agreements. All forty four sector level agreements are published on the Defra website, along with supporting technical analysis of the targets.

The agreements are expected to achieve reductions in carbon of over 2.6MtC per annum by 2010 above Business As Usual. As the RCEP recognise, firms and sectors will differ in the ease with which they can make energy efficiency gains, depending for instance on how much progress they have made already and the nature of their industrial processes. The targets were negotiated on an individual sector by sector basis, with GAD estimates<sup>2</sup> as the starting point where available, backed up by cases studies. In total, the agreements will lead to 60% of the gap between the estimates of savings from all possible cost effective measures and business as usual, where all cost effective measures assume no constraint on the availability of capital or management time. The expected savings from the agreements is over 10 times the expected effect of the price effect of the levy in these sectors.

The indications are that the combination of the levy and the agreements has achieved a step change in energy management in energy intensive industries. Energy management is increasingly recognised as a board level finance issue, not a technical operational issue. Firms are finding financial benefits from the energy savings, as well as the reduction in the levy.

The agreements provide a mechanism for operators to report on their energy performance every two years, and the first such target period has ended. If operators have met the target set out in their agreement, through energy efficiency measures and emission trading, they will continue to benefit from the 80% reduction in the levy. The Government recognises the importance of ensuring that carbon savings can be validated and is considering whether independent monitoring might be appropriate in the operation of the Agreements.

#### **Recommendation 48**

**Para 6.30**

***Government must encourage and enable the Environment Agency to raise industry's baseline standards of energy efficiency in implementing the European Community Integrated Pollution Prevention and Control (IPPC) Directive.***

The Environment Agency, in consultation with the Scottish Environment Protection Agency (SEPA) and the Northern Ireland Environment and Heritage Service (NIEHS), produced for consultation in 2001 the guidance note, *'Integrated Pollution Prevention and Control: Energy Efficiency'*. This document is available on the Environment Agency's web site at: <http://www.environment-agency.gov.uk/yourenv/consultations/138129/?version=1>.

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<sup>2</sup>Independent annual assessments of energy savings achievable by individual industry sectors, carried out by ETSU and commissioned by Defra's Global Atmosphere Division.

Consultation closed in September 2001 and the Environment Agency is keeping the guidance under review in the light of comments and developing understanding of the energy efficiency requirements of the IPPC Directive. The guidance provides information relevant to all the industrial sectors covered by the IPPC Directive, and supplements the more detailed energy efficiency requirements set out in sector-specific guidance documents produced by the Environment Agency (also available on its web site) in consultation with SEPA and N1 EHS.

In particular, the guidance provides:

- descriptions of the basic principles of energy efficiency and energy efficiency techniques;
- information on the requirements for costs and benefits appraisal of energy efficiency options according to the Regulators' preferred methodology of using discounted cash flow techniques, with appropriate discount rates and project lifetimes;
- conversion factors for assessing the environmental impact of the energy consumption.

This guidance has been produced with the full encouragement of the Government. Its production will enable the UK to make a significant input into the development of the European "BREF" document<sup>3</sup> on energy efficiency which — as announced in the European Commission's Communication on the implementation of the first phase of the European Climate Change Programme — is to be prepared by an IPPC technical expert group, co-ordinated by the European IPPC Bureau in Seville. This group is expected to start work in mid-2003.

#### **Recommendation 49**

#### **Para 6.31**

***Emissions of carbon dioxide and other greenhouse gases from a site should be considered as pollutants in authorising processes subject to IPPC. As soon as it can be confirmed that disposal of carbon dioxide into deep geological strata is environmentally and legally acceptable, consideration should be given to designating technology for removing carbon dioxide from the emissions from large combustion plants as the best available technique for the purposes of IPPC.***

As required by the IPPC Directive, regulators have to consider all pollutants, including carbon dioxide, emitted — or likely to be emitted — in significant quantities from an installation when considering an application for a permit. In determining whether to issue a permit, and if so with what conditions, the regulators have to consider whether all the appropriate preventative measures against pollution are being taken — in particular through the application of best available techniques (BAT).

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<sup>3</sup>A reference document on Best Available Techniques.

The determination of BAT for the various industrial sectors covered by the IPPC Directive is guided very largely through the work of the European IPPC Bureau in developing "BREF" documents, under the information exchange provisions in Article 16 of the IPPC Directive. This is the process through which developing technology can be incorporated into a Europe-wide consensus on what constitutes BAT. To be "available", a particular technique has to have been developed on a scale which allows implementation under economically and technically viable conditions. See response to recommendation 67 regarding carbon capture and sequestration.

## Household Energy Use (including appliances)

### **Recommendation 36**

### **Para 6.78**

***We recommend that SAP (Standard Assessment Procedure) survey findings should be part of the information packs provided by sellers to house buyers, together with basic information explaining the SAP and general advice on making energy efficiency improvements.***

The Building Regulations 2000 require that builders produce a SAP Rating whenever a new dwelling is created by new construction, or by the material change of use of an existing building. The Regulations further require that the SAP Rating should be notified to the Building Control Body, posted as a notice in the new dwelling along with advice on getting more energy performance information, and given to the new householders. These provisions are explained in DETR Circular 7/2000.

The Government currently envisages that the seller's pack will include an energy efficiency report constituting the SAP rating plus information on measures to improve the energy efficiency of the dwelling. It will also contain a contact number for local Energy Efficiency Advice Centres — thus facilitating 'one stop shop' information and advice. Providing such information could save substantial amounts of energy—around two terrawatt hours per year (based on 1.3 million transactions per annum). Legislation to introduce the seller's pack will be published shortly as part of a draft Housing Bill. Depending on the passage of legislation, seller's packs could become compulsory from late 2005 or 2006.

### **Recommendation 37**

### **Para 6.79**

***We recommend that purchasers who can demonstrate that they have raised the SAP rating of their property by 20 points should be entitled to a stamp duty rebate (up to a maximum of 1% of the purchase price).***

The Chancellor considers the case for all tax proposals in the context of the budget. The Government has consulted on economic instruments to promote household energy efficiency in June 2002. The Government intends to consult further on specific measures during 2003, as the Chancellor announced in his Pre-Budget Report, in November 2002.

However, the proposed rebate would have a number of drawbacks. It would not offer any benefit to purchasers of properties below £60,000 (£150,000 in the 2000 Enterprise Areas), the threshold at which stamp duty is introduced. Similarly, it would not assist lower income households who are not likely to buy properties, and even if capped at 1% of the purchase price, it would be of a greater benefit to those buying more expensive properties.

The rebate would also be a poorly focused incentive, as the level of energy saving reflected by the SAP rating is not related to the purchase price of the property. Therefore the value of the discount received would bear little relation to the environmental improvement delivered. Such a rebate would be administratively costly and complex, as it would require significant monitoring and assessment. SAP ratings of existing properties are also not a very robust measure on which to base a fiscal instrument given the significant level of error in such ratings.

**Recommendation 38**

**Para 6.86**

***We urge UK manufacturers and retailers to take a lead in marketing more energy efficient products, and Government to encourage them to do so. Government Departments, local authorities, the NHS and Government agencies should bulk purchase the more energy efficient products, expanding their market and helping to bring down costs.***

**Recommendation 85**

**Para 6.85**

***We urge the Government to take a lead within the EU in pressing for a broader range of household and office appliances to have mandatory labels and minimum energy efficiency standards.***

The Government agrees that manufacturers, retailers and public bodies all have a role to play in developing a market for more energy efficient products. Procurement practices could certainly contribute more to this development, but the process of market transformation is most effective when a number of policy instruments are used together. The most effective balance of policy instruments at any one time or in any particular product sector will depend on a number of factors including market structure and underlying trends in technology and market demand.

In the areas of domestic appliances, non-domestic equipment, lighting and heating, EU product information (energy labels), minimum standards and

negotiated agreements are increasingly important in providing the structured policy environment which is needed to drive up environmental standards of traded goods and to encourage competition by manufacturers and service providers. The Market Transformation Programme (MTP, see [www.mtprog.com](http://www.mtprog.com)) works with businesses, consumers and other stakeholders, to produce and help to deliver the detailed strategies that are needed in the UK.

We agree that the public sector has a key role in setting an example by procuring more energy efficient equipment. We will set new targets in 2003 for the energy performance of the Government estate. Our review of Government procurement has identified a number of areas where Government purchasing could more strongly support sustainable development goals. The review considered how to build energy efficiency into Government procurement and contract strategies, and identified some specific categories where products are already available which meet high energy efficiency standards. We have made central arrangements for departments to purchase goods with high energy efficiency standards and which provide value for money in areas such as IT equipment, boilers, lights and lighting systems, refrigeration equipment, televisions and washing machines.

The Energy Saving Trust is actively involved in seeking to increase the sales of energy efficient products via measures such as its Energy Efficient Endorsement Scheme, which provides information to consumers of the energy efficient household appliances and details of retailers who stock these. Endorsed products carry the Trust's Energy Efficiency Recommended logo.

In England the Home Energy Efficiency Scheme (HEES), now marketed as Warm Front, has used innovative tendering procedures to encourage manufacturers, suppliers and installers to use efficient condensing boilers. This has contributed to a general increase in the level of products available to the ordinary householder.

The Government has consistently argued at EU level for a broader range of household and office appliances to have mandatory labels and minimum energy efficiency standards and we agree this is a priority policy area. We have consistently and actively supported EU policy which seeks to establish and to raise energy efficiency standards for lighting, heating, household appliances and other end use equipment via a mixture of policy instruments — including mandatory energy labelling, minimum energy performance standards, procurement standards and industry self-commitments. We are encouraged by indications that the European Commission intends to bring forward new measures that will enable energy efficiency requirements to be set for a wide range of products. The Government supports this strategy and will work proactively to influence and speed its delivery. We will also



continue to press the Commission to revise the current mandatory energy labelling regime (Council Directive 92/75/EEC on labelling and standard product information about the energy and other resources consumed by household appliances) and to take other steps to ensure appropriate performance measurement standards and labelling regimes are established for non-domestic, as well as domestic, appliances and equipment.

The Government has also supported the development of a range of EU-wide voluntary policy measures and industry self-commitments which complement or act in parallel with mandatory requirements. These include the Energy Star regulation, which establishes a voluntary regime to identify and promote the most energy efficient office equipment available in the EU, and the EU code of Conduct on the Energy Efficiency of Digital TV Services which establishes effective minimum energy efficiency requirements for a range of household DTV equipment. We will continue to support similar measures where appropriate.

### **Recommendation 39**

**Para 6.97**

***For new housing Building Regulations that deliver a SAP 80 rating should be introduced forthwith. We further recommend that Government announce its intention to move to a higher standard, based on achieving a SAP 100 rating, by 2005. We also recommend that the practice cease of rounding down very high SAP ratings to 100, in that a growing number of homes can exceed that level, or that SAP formula be revised to take higher standards better into account.***

### **Recommendation 40**

**Para 6.98**

***We support the introduction of a new energy efficiency index for housing based on carbon dioxide emissions, and urge Government to make this change as quickly as possible. But there is a strong case for retaining a rating based on energy costs when homes are sold because prospective purchasers wish to know about likely energy bills.***

We are unable to introduce a minimum SAP Rating for new housing because it would discriminate against those that live in colder places and who are not connected to the mains gas network. We have in the 2001 amendments to the Building Regulations switched from the SAP Rating to a Carbon Index to more directly reflect the regulatory aims, but we have left the carbon index as only one way of showing compliance. The pass level we have set does mean that for an average semi-detached dwelling using gas central heating the SAP Rating would be around 100. Builders can use the target U-value or Elemental Methods as other options or indeed seek their own way of proving they have made reasonable provision for the conservation of fuel and power, but the intention for average circumstances is that the net effect of the changes that came into effect in 2002 should reduce the need for energy for space heating and hot water by around 25%.

Despite dropping the SAP Rating as a way of showing compliance with the energy efficiency provisions in Part L of the Building Regulations we have retained the separate administrative requirement that for new dwellings, whether new build or created as a result of a material change of use, a SAP Rating should be provided and that it should be displayed or in some other way made available to the prospective purchaser or new owner.

#### **Recommendation 41**

**Para 6.101**

***We recommend that Government provide greater incentives for the installation of small-scale combined heat and power plants in existing and new blocks of flats.***

There are a number of firms working towards the launch of micro or domestic CHP units in the UK, and we are working actively to help them achieve efficiency ratings for inclusion in the Boiler Efficiency Database ([www.sedbuk.com](http://www.sedbuk.com)) and compliance with the EU Boiler Directive, which currently does not take account of these technologies. The Government will support field trials designed to evaluate the benefits of micro-CHP.

For high-density housing, the Government operates the £50million Community Energy capital grant programme to refurbish and install community heating schemes. The Government is keen to promote the use of CHP whenever possible, and to achieve its targets of 10,000mwe of good quality CHP capacity by 2010.

## **Fuel Poverty**

#### **Recommendation 42**

**Para 6.73**

***We recommend that Government set up a nationwide scheme which enables medical practitioners who believe their patients' health is being put at risk by fuel poverty to put their names forward for prompt attention under the Home Energy Efficiency Scheme (HEES) and its counterparts.***

#### **Recommendation 43**

**Para 6.74**

***We further recommend that Government fund epidemiological research aimed at establishing how effective home energy efficiency measures are in terms of improving health and reducing overall health service expenditure.***

*There is a pressing need for further expansion of Government programmes for raising energy efficiency and increasing warmth in low income homes, going beyond the existing Energy Efficiency Standards of Performance and enhanced HEES schemes. This should be integrated with programmes for urban regeneration and for more general renovation or replacement of run-down housing.*

*We recommend that maximum grant levels in other parts of the UK should be raised to those applying under the new HEES in England.*

The Government is committed to eradicating fuel poverty and has a legal obligation under the Warm Homes and Energy Conservation Act 2000 in England and Wales and the Housing (Scotland) Act 2001 in Scotland to specify a target date by which, as far as practicable, this will be achieved. The UK Fuel Poverty Strategy, published in November 2001, sets out policies for ending fuel poverty in vulnerable households in England — older households, families with children and householders who are disabled or have a long term illness — by 2010. A further aim is that, as far as reasonably practicable, no household should be living in fuel poverty by 2016-18.

Ensuring the sustainable eradication of fuel poverty, particularly for vulnerable households, requires positive action. In England, the Warm Front programme provides energy efficient insulation and heating measures to households in receipt of certain benefits. Government is carrying out a review of the programme to evaluate the impact of eligibility criteria and delivery of the programme. Other schemes exist in Northern Ireland, Scotland and Wales. The Energy Efficiency Commitment (EEC) requires that 50% of the energy savings are directed at these priority groups. Policies on sustainable communities and targets to improve the standard of social housing all contribute to tackling fuel poverty.

It is recognised that the health sector should play an important role in identifying and referring those patients likely to be living in fuel poverty:

- The 2002 Cross-Cutting Review on Tackling Health Inequalities acknowledged that fuel poverty, as a result of living in cold damp homes, was likely to be a contributor to poor health, especially among vulnerable groups.
- A toolkit, due to be launched by the National Heart Forum in March 2003, has been produced to provide information for health practitioners to help identification of patients who may be in fuel poverty and recommended actions to obtain help.

- A health impact study is currently underway, to assess the merits energy efficiency measures have on the health of recipients of the Warm Front programme, and their use of health care services. Results are expected in late 2003.

## Renewables

### **Recommendation 19**

**Para 10.72**

*A comprehensive strategy is needed for developing renewable energy sources offshore. This should cover assessment of environmental impacts, designation of appropriate areas, and the possibility of combining more than one technology within a single installation.*

### **Recommendation 64**

**Para 7.98**

*We recommend that DTI commission studies of the feasibility of combining different offshore power generation technologies in a single structure so that, if the findings are promising, further development of the technologies can take place on that basis.*

### **Recommendation 75**

**Para 7.38**

*We recommend that DETR, in conjunction with the Crown Estates Commissioners, bring forward proposals for giving authorisation to, and regulating the environmental impact of, generating plants using renewable energy sources offshore; and that corresponding arrangements are made in other parts of the UK.*

In November 2002 the Government published the Future Offshore consultation document, which proposes a strategic planning framework to harness the significant potential of offshore wind. This document includes proposals for the provision and regulation of offshore infrastructure for transmitting electricity. A second round of wind farm site allocations is planned for Spring 2003, focusing on three strategic areas of the sea within territorial waters, informed by a strategic environmental assessment (SEA).

All proposals for wind farms require Government consent before being allowed to proceed. The environmental impact of individual developments is an important factor which is taken into account in assessing proposals and an Environmental Impact Assessment must be submitted for each project to support the application for consent. In England, developers must obtain a licence from Defra under the Food and Environmental Protection Act 1985. The SEA report will provide clear guidance to assist developers to prepare cost-effective Environmental Impact Assessments for individual wind farms; and establish criteria to assist the competent authorities and other agencies make decisions regarding applications for consents.

The Government agrees that the strategy should consider the possibility of combining one or more technology within a single location, and would ensure that any strategic planning processes that are proposed should not preclude or jeopardise future possibilities for combined offshore renewables technologies.

To enable further rounds to extend the opportunity for developers to exploit areas beyond the UK 12-mile zone the Government will also bring forward legislation as soon as possible to enable the granting of licences for offshore windfarm developments beyond territorial waters. In addition, the Government will identify and assess the difficulties that might be posed for aviation and other military and civil interests before offering areas of the sea to the wind industry for development.

The Scottish Executive would want to be satisfied that any new procedures did not override existing legislation. Of specific interest to the Executive would be the extent to which new procedures would overlap with existing Harbour Authority areas (provided for by statute) and existing arrangements for navigational safety, which they administer under section 34 of the Coast Protection Act 1949.

#### **Recommendation 57**

**Para 7.114**

***We recommend that the Government provide part-funding for demonstration projects for those renewable technologies which have major long-term potential but are unlikely to attract support from electricity suppliers under the new Renewables Obligation; and should use for that purpose some of the £50 million a year for carbon-saving measures that is being made available from the revenue raised by the climate change levy.***

The Government has increased the funding available to Research Councils and our research and development programmes to drive forward innovation and to promote renewable technologies at the early stages of development.

The DTI has also put in place a substantial renewables support programme worth £250 million from 2002-03 to 2005-06. But we recognise that further funding is needed to give us the best chance of reaching the 2010 target. The Energy White Paper has therefore announced that we will increase funding for renewables capital grants by a further £60m within this period. This is additional to the extra funding announced in the 2002 Spending Review, which allocated an additional £38 million for energy policy objectives in 2005-06, compared with 2002/03. This funding will enable us to increase momentum and to take forward a broad strategy for renewables including creating medium-term funding for offshore wind.

Approximately a third of the £50 million from the climate change levy has been allocated to renewable technologies (including £4m allocated for Energy Crops). The purpose of the revenue raised by the Climate Change Levy

is to enable business to respond by taking initiatives to increase energy efficiency and the use of renewables. Since there is more scope for most businesses to increase energy efficiency, the majority of the revenues are allocated for this purpose.

**Recommendation 58**

**Para 7.29**

*We recommend that a full investigation be made of the scope for increasing electricity generation by upgrading existing inland water power schemes and by adapting reservoirs constructed for other reasons which are now redundant or have substantial spare capacity.*

**Recommendation 59**

**Para 7.30**

*In view of the large amounts of energy that would be available, we recommend that construction of tidal barrages be kept under consideration as an option for the long term.*

**Recommendation 60**

**Para 7.30**

*We recommend that, if barrages have to be constructed to prevent flooding, full consideration be given to the possibility of incorporating plant to generate electricity on a significant scale.*

**Recommendation 61**

**Para 7.30**

*We recommend that DTI commission a desk study to determine whether there are credible combinations of estuary barrages that would overcome, at least in part, the problem of intermittency of supply.*

The Government has arranged a new deal for hydro allowing refurbished hydro generation with a capacity of up to 20MW to qualify for support under the Renewables Obligation. The Government is currently exploring whether any further steps may be needed in this area.

Large-scale tidal barrages have the potential to make a significant contribution to carbon reductions in 2020 or beyond. But such schemes have a very substantial impact on the local and regional environment and are very expensive, though some of the costs could be offset by other benefits. It is clear that plans for a Severn Barrage would raise strong environmental concerns and we doubt if it would be fruitful to pursue it at this stage. Tidal barrages may be capable of offering major renewable projects which will help us reach our goals and we will continue to explore opportunities.

**Recommendation 62****Para 7.35**

***We recommend that investigations be carried out to identify brownfield sites which have sufficiently consistent wind speeds to be suitable for wind farms and would be suitable in planning terms.***

The Government will consider this recommendation in the redrafting of PPS22 which we are currently preparing and which will be consulted on shortly. This will encourage local authorities to adopt a strategic approach to the deployment of renewable projects in regional planning guidance and development plans. A separate guide containing advice on best practice will also be prepared to provide guidance to local planning authorities and developers about the best way to promote renewables through the planning system. As set out in the Energy White Paper the Government will also be consulting on a new regional level strategic approach to energy issues, including renewables, which should incorporate regional targets.

**Recommendation 63****Para 7.42**

***We recommend that, to facilitate recycling of materials used and to avoid hazards from their disposal, manufacturers and importers of photovoltaic cells should be required to take back arrays removed from buildings.***

The Government believe that the imposition of a requirement for UK manufacturers and importers of PV cells to take back arrays from buildings would represent a considerable burden and could adversely affect the competitiveness of this fledgling industry. However, there may be a case for encouraging the collection of those arrays containing hazardous materials such as cadmium, but this might better be achieved through voluntary action via the “producer responsibility” route. BP Solar have already produced a cradle to grave policy for their Cadmium Telluride modules, though these contain only a very small amount of cadmium which is sealed into the module. The waste arisings are likely to be very small and there is a practical difficulty in requiring take-back of arrays that are integrated into the fabric of the building and may not be replaced for 50+ years. The Government intends to consult formally with both the PV and construction industries.

**Recommendation 65****Para 7.100**

***We recommend that stronger support be given to wave power and tidal stream technology, which have considerable promise. Support can take the form either of funding research and development or of awarding contracts for electricity generated by these methods.***

The Government has allocated £5m for the demonstration and testing of wave and tidal technologies as well as over £4m to R&D spend for wave and tidal. The Government is also supporting, along with the Scottish Executive

and others, the establishment of a marine test centre off the coast of the Orkney Islands. This centre, a first in Europe, is expected to open later this year. While wave and tidal have considerable promise, the technologies are in the early stages of development, and, as any of them get to the prototype or demonstration stage, additional funding will be required. However, at present there is a need to develop and test the technologies before going further.

## Energy Crops

### **Recommendation 18**

**Para 10.71**

***Growing crops for energy purposes should be regarded as a primary use for agricultural land, and policies and support measures should reflect that.***

### **Recommendation 26**

**Para 8.11**

***Energy crops and wastes should be regarded in the medium to long term as having a premium role in supplying heat. They should be used in plants providing both heat and electricity to an urban area, and located close to the sources of the fuel in order to minimise transport.***

### **Recommendation 77**

**Para 7.75**

***We recommend that, in co-operation with farming organisations and the nature conservation agencies, Agriculture Departments produce a Code of Good Environmental Practice for the growing of energy crops.***

The cultivation of energy crops, which can be used for electricity, heat and biofuels, could be an important use for agricultural land. Support for solid biomass crops is provided in England and Northern Ireland under the Rural Development Regulation. These crops also have access to set-aside payments. Crops for liquid biofuels are supported through the Arable Area Payments Scheme. Proposals for reform of the Common Agricultural Policy were published in January 2003 which would remove access of non-food crops to set-aside land. Non-food crops would need to compete with mainstream commodity crops in a more market-orientated framework. Discussion of these proposals will continue during 2003.

The Government has allocated £66m of funding to develop markets in heat, combined heat and power and power generation. The Countryside Agency's Community Renewables Initiative will stimulate community-based partnerships to develop renewables in their localities. Working with the devolved administrations and the Forestry Commission Defra is setting up a £3.5m Bio-energy Infrastructure Scheme to help develop supply chains for energy crops and biomass.



Defra's Energy Crops Scheme, which encourages production close to the end use in order to minimise transport impacts, provides assistance for farmers through establishment grants for crops and funding for short rotation coppice producer groups. The Scheme aims to ensure that the environmental impacts of energy crops are managed and Defra has produced codes of best practice for planting and growing short rotation coppice and miscanthus, the crops eligible for support. Energy crops grown under forest conditions are subject to the requirements of the UK Forestry Standard. Information from various sources already exists in Northern Ireland for the establishment and management of short-rotation coppice willow in an environmentally sensitive way; and the Northern Ireland Executive have indicated that they could produce a code of good environmental practice for this Region.

The development of Energy from Waste (EfW) plants takes place within the local authorities' waste management strategies. These should be drawn up in full consultation with the key stakeholders, including the public. In addition, following the guidance in Waste Strategy 2000, the Best Practicable Environmental Option (BPEO) for waste management needs to be established in each case. BPEO takes account of the waste hierarchy, the proximity principle and self sufficiency. The waste hierarchy places waste minimisation as the most preferable waste management measure, followed by re-use, recycling, composting, EfW, incineration without energy recovery and landfill. Where options higher up the waste hierarchy do not form the BPEO, EfW can be considered. The principles of proximity and self-sufficiency mean that waste should be disposed of as close to the point of generation as possible, and that regional self-sufficiency in waste management should be aimed at. As far as is practicable, EfW plant should therefore be sited close to the source of the waste, and close to the community it is to serve.

## Land Use

### ***Recommendation 7***

***Para 10.20***

***The targets in the UK's long-term strategy should cover protection and expansion of carbon sinks through tree planting and appropriate land use policies.***

The United Nations Framework Convention on Climate Change already commits the Government to protection and enhancement of greenhouse gas sinks and reservoirs, notably carbon sinks. The UK's Climate Change Programme describes relevant policies on sustainable forestry and agriculture, and makes it clear that the UK supports the long-term use of sustainable, environmentally sound sinks as part of a low carbon economy. Carbon sink enhancement should be seen as part of a broad policy to deliver environmentally sustainable forestry and agriculture. This view is reflected in the UK's devolved forestry and woodland strategies and policies, the EU forestry strategy, and in the UK's approach to negotiations on reform of the EU's Common Agricultural Policy.

Action to increase uptake by UK terrestrial carbon sinks could offset a few percent of 1997 CO<sub>2</sub> emissions by 2050, but it is unlikely to be possible to increase sequestration by forestry and agriculture to offset a significant fraction of a 60% cut, especially as by 2050 sink enhancement measures taken early on will be approaching saturation. Forestry and agriculture will also contribute to a low carbon economy via biomass renewable energy schemes, some of which will also help increase carbon stocks in vegetation and soils.

**Recommendation 71**

**Para 10.21**

*We welcome the start the Government has made in developing policies to minimise consequential damage in the UK as a result of climate change.*

**Recommendation 72**

**Para 6.106**

*We endorse the impetus to higher densities and greater use of urban brownfield sites given in England by the revised Planning Policy Guidance on housing, and urge the devolved administrations to adopt similar policies.*

In Northern Ireland, Planning Policy Statement 12 (Housing) introduces a series of processes for allocating housing land, through the preparation of development plans, which are the main vehicle for the delivery of housing growth, to ensure that the full range of housing needs are met. It also contains detailed guidance on the carrying out of urban capacity studies and the sequential approach to identifying suitable housing sites which will ensure that 60% target in existing urban areas outlined by the Regional Development Strategy is met. The statement also includes measures to be contained in development plans to integrate housing and transportation, encourage higher densities and promote more compact settlements.

In Scotland, this issue is already covered by National Planning Policy Guideline (NPPG) 3, 'Land for Housing', published in 1996, which supports a priority being given to the re-use of derelict and vacant land, in preference to greenfield sites, for the development (or redevelopment) of housing. Furthermore, NPPG 3 is currently being reviewed to consider issues of brownfield development and appropriate densities, and it is likely to encourage the development of the highest densities at the most accessible locations. These are likely to include infill and inner city brownfield sites, particularly those close to transport interchanges. The finalised Scottish Planning Policy 3 is expected to be published in late February 2003.

The Scottish Executive has committed £8 million in 2004/05 and £12 million in 2005/06 to return to productive use 100 hectares of vacant and derelict land.

Planning Policy Wales, March 2002 (PPW) is underpinned by the Assembly's commitment to promote sustainable development throughout Wales. PPW gives comprehensive policy guidance on re-use of brownfield land, including urban brownfield sites, and sets this in a sustainable context.

***Renewable energy assessments, and in particular any targets they contain, should give full weight to landscape character and should be subject to a strategic environmental assessment.***

All the English regions have been carrying out assessments of the potential for renewable energy generation with the benefit of regional stakeholder consultation. Arriving at possible targets in their assessments has involved, for instance, excluding the most environmentally sensitive areas from searches, considering landscape issues, impact on local amenity and the environment more generally.

***We recommend that all proposals for new generating plants and overhead transmission lines should in future be considered under land use planning legislation, and that planning applications for generating plants should be required to cover all the transmission lines and other infrastructure that will be needed for their operation.***

The powers contained in the Electricity Act 1989 are an important tool for achieving energy policy objectives and for ensuring that all relevant considerations are taken into account in planning decisions.

The powers concerned are set out in sections 36 and 37 of the Act and comprise specialised procedures for handling development consent for power stations over 50 MW, and overhead electric lines, respectively. The rationale for this involvement is the public interest in an effective electricity supply system. It enables planning decisions about power stations and overhead lines to be addressed within a national framework, albeit with proper consideration of issues specific to the localities affected by the developments. In the Government's view, sections 36 and 37 remain valid instruments of energy policy.

The section 36 and section 37 processes are comprehensive, enabling the views of not only the developer but also local planning authorities, relevant statutory bodies and the public to be taken into account in a comprehensive assessment. Local planning authorities have a key role to play: they can cause a public inquiry, they can draw appropriate planning conditions to the attention of the Secretary of State or Scottish Ministers, and they can advise on how a development fits in with local and regional structure plans. Planning policy guidance and other Government policies will also be borne in mind by the Secretary of State or Scottish Ministers before a decision is taken. Section 36 and section 37 processes therefore incorporate all the considerations that prevail with land use planning legislation and the Government sees no justification for altering the current position.

But the Government believes that, whilst applications for power stations under section 36 of the Electricity Act 1989, and overhead lines under section 37, should continue to be kept as separate procedures; where projects were related, a concurrent decision would be taken on them.

Administratively, the Government would expect developers to agree extensions to the statutory timescale for a local planning authority to express its view on a power station case if the overhead line application was not yet before the local planning authority, and it would seek to delay taking any decision itself on a power station proposal if the local planning authority's view on the related overhead line was not yet available. We are therefore seeking to better orchestrate the two key elements where they arise with a power station development.

Associated underground gas pipelines raise less environmental concern, since they have no visual intrusion, and orchestration is limited to ensuring that no approvals are given in advance of approval of the power station itself.

We have published legislative proposals to streamline the public inquiry process for Major Infrastructure projects in the planning process in England, by allowing lead inspectors to appoint further inspectors to share the work and allowing issues to be considered concurrently rather than sequentially. We have announced in the Energy White Paper that we will also apply these principles to decision making for major energy infrastructure projects under the Electricity Act.

## Radioactive Waste

### ***Recommendation 55***

### ***Para 7.19***

***Indefinite storage above ground of high-level and intermediate-level wastes from the existing use of nuclear power has become policy by default. We recommend that action is taken to design and construct an effective long-term repository as soon as practicable.***

In their 1999 report into the management of nuclear waste, the House of Lords Select Committee on Science and Technology recommended that, ultimately, radioactive waste should be disposed of in deep underground repositories. In their view, however, such repositories would not be needed for 50 years; and they also recommended that the Government should first undertake an extensive consultation exercise, in order to build a public consensus in favour of whatever option is chosen for the management of radioactive waste.

The Government and the Devolved Administrations responded to this recommendation by publishing, on 12 September 2001, a consultation paper on the management of radioactive waste. The main aim of the paper was to propose a programme of research and public debate to identify the best way to manage radioactive waste in the long term, and how the views of the

public will contribute to the policy-making process. On 29 July 2002, the Government and the Devolved Administrations announced the results of the consultation and the next steps of the programme, including the establishment of a new independent body to oversee a review of all management options for long lived radioactive wastes. Arrangements are currently being made to establish the body as soon as possible, and a further announcement will be made when those arrangements have been finalised.

The Government is continuing to commission research to feed into the debate. It is only when the Government has a clear scientific and public consensus on a management option, or combination of options that it will implement it as policy.

### **Recommendation 56**

**Para 7.19**

***Consideration of inter-generational equity embedded in the concept of sustainable development demand the solution of the waste management problem, to the satisfaction of both the scientific community and the general public, before new nuclear power stations are constructed.***

The Energy White Paper has said that while nuclear power is currently an important source of carbon free electricity, the current economics of nuclear power make it an unattractive option for new generating capacity and there are also important issues for nuclear waste to be resolved. The White Paper does not contain proposals for building new nuclear power stations. However the Government does not rule out the possibility that at some point in the future new nuclear build might be necessary if we are to meet our carbon targets. Before any decision to proceed with the building of new nuclear power stations, there would need to be the fullest public consultation and the publication of a White Paper setting out the Government's proposals. In the meantime, whatever the future of nuclear energy, most of the waste that we have now, or that will be created, will come from existing nuclear facilities as they reach the end of their lives. So we need to identify and implement the best long-term management strategy as soon as we can, because we want to achieve long-term protection for our people and our environment.

## **Energy Research and Development**

### **Recommendation 14**

**Para 10.59**

***We recommend that the fall in Government spending on energy research and development should be reversed, and annual expenditure as a proportion of gross domestic product quadrupled over the next decade to bring the UK up to the present EU average.***

*Like the joint working group of the Royal Society and the Royal Academy of Engineering, we have been struck by 'a disjuncture between the magnitude of the problem and the research resource devoted to its solution'. They saw this as different in kind to the research funding issues normally encountered. We agree with their conclusions that strategic research over the long time-scales involved will not be funded by the private sector, that the funding must therefore come predominately from Governments, and that this should be through international collaboration. We support the proposal for an international body to fund research, development and design in the energy field. The working group suggested such a body might have an eventual budget of the order of \$25 billion a year, representing about 1% of annual global expenditure on energy; on the basis of gross domestic product, the UK's share of that might be about \$450 million a year. The European particle physics research organisation, CERN, provides an excellent example of what can be achieved through international collaboration, and should be taken as the model for the structure of a new energy research organisation. Neither the supply technologies incorporated in the scenarios presented in chapter 9, nor the assumptions made about possible reductions in energy use over the next half-century, depend on any advances in fundamental science, but such advances could be essential in creating viable energy systems for the even longer term.*

The Government is increasing public spending on energy research, development and innovation. DTI spent around £40 million supporting sustainable energy related research and technological development in 2001/02. We have also put in place a substantial renewables support programme worth £250 million from 2002/03 to 2005/06. But we recognise that further funding is needed to give us the best chance of reaching the 2010 target. The Energy White Paper has therefore announced that we will increase funding for renewables capital grants by a further £60m within this period. This is additional to the extra funding announced in the 2002 Spending Review, which allocated an additional £38 million for energy policy objectives in 2005/06, compared with 2002/03. This funding will enable us to increase momentum and to take forward a broad strategy for renewables including creating medium-term funding for offshore wind.

The Carbon Trust was set up in April 2001 to lead on low-carbon technology and innovation. They are funded by Defra and the Devolved Administrations. Funding for energy-related technology has also been available via the DTI's Innovation and Business Support programmes and through various European programmes. The Research Councils will spend over £11m on energy related research in 2002/3. They have been allocated an additional £28m under spending review 2002 for further research in support of a sustainable energy economy.

A new Energy Research Network is being developed by the Research Councils to establish interdisciplinary teams with expertise in the scientific,

technological, social, economic and health impacts of energy, providing much needed coordination and cohesion. Key to this network will be a new UK Energy Research Centre which will act as the 'hub', providing a national and possibly European focus to integrate and accelerate research in this priority area. It is intended that it will play a key role in co-ordinating research, facilitating collaboration with industry and UK participation in international projects, as well as being a centre of excellence in its own right. The centre will also signal the importance the UK attaches to energy research, helping to attract high-calibre scientists and graduates to the sector.

Science and technology are key to resolving climate change. We are promoting an international initiative to develop the link between them, initially through the G8. We will also continue to collaborate in International Energy Agency work in areas such as renewables, end use and fossil fuel technologies, fusion and the exchange of scientific and technical information on energy technology. In our relations with the United States we will build on the Memorandum of Understanding on energy R&D between the DTI and the US Department of Energy to develop a more strategic collaboration on energy technologies.

**Recommendation 66**

**Para 10.54**

***Adequate long-term programmes of research and monitoring are vital to improve scientific understanding of the carbon cycle and the greenhouse effect, the consequences for the climate, and the repercussions those in turn will have, as well as of other environmental impacts of obtaining and using energy.***

The UK's programme of research on these items is reported in its 3rd National Communication to the United Nations Framework Convention on Climate Change. In particular, Defra's programme of research covers a substantial policy-relevant body of work at the Hadley Centre (in conjunction with the Southampton Oceanographic Centre and the Centre for Ecology and Hydrology) on feedbacks in the global carbon cycle, the response of the atmosphere to greenhouse gases and the global impacts of climate change. The Research Councils provide a large body of underpinning research to complement the work of Government Departments and the UK participates in the European CarboEurope programme.

Soil management affects soil carbon storage and greenhouse gas emissions. Carbon sequestration in soil and vegetation has the potential to moderate the increase of atmospheric carbon dioxide concentrations during the next fifty years. During this time alternative energy options can be put in place. Defra and the Devolved Administrations conduct research on soil organic matter, carbon content and greenhouse gas emissions, including some monitoring, and are evaluating future monitoring and modelling needs and the best framework for delivery in the context multiple soil functions.

**Recommendation 67****Para 10.58**

***Research and monitoring are needed to establish that disposal of carbon dioxide into deep geological strata will be effective and not give rise to any new environmental hazards.***

Disposal in geological formations has the potential to deal with CO<sub>2</sub> emissions from fossil fuels used in electricity generation and other large centralised sources. Carbon capture and storage could also be linked to enhanced oil recovery. Geological formations can contain gas for very long periods of time, but the accessing them for disposal purposes would entail disturbance and hence the potential for leakage. The Government recognises that the acceptability of geological disposal depends on convincing analysis of safety and environmental risks associated with any release of CO<sub>2</sub>, whether sudden or gradual, and the need to develop monitoring methods to detect any leakage. Disposal in submarine strata would also depend on the resolution of legal issues under the London and Oskar Conventions. An initial assessment of risk is being conducted under the DTI's Cleaner Fossil Fuels Programme and the UK is participating in the preparation of a Special Report by the InterGovernmental Panel on Climate Change that will cover risks, and the British Geological Survey is participating in the monitoring of the full scale demonstration project in the Norwegian Sector of the North Sea, which entails CO<sub>2</sub> disposal into a deep aquifer.

**Recommendation 13****Para 10.50**

***We recommend that the Government should take the lead in a fundamental review of how electricity networks can best be financed, managed and regulated in order to stimulate and accommodate large contributions to energy supplies from combined heat and power plants and renewable sources, while maintaining reliability and quality of supplies.***

**Recommendation 68****Para 8.54**

***We recommend that the Government takes responsibility for promoting, and ensuring sufficient funding is available for, research into technologies that solve the problems of controlling electricity networks in which there is a high proportion of embedded and intermittent generation, and into the economic and institutional issues that will need to be resolved***

**Recommendation 69****Para 8.65**

***We recommend that the Government promote research and development into new technologies for large-scale energy storage, possibly on a collaborative basis in Europe.***



The Government accept that intermittency causes additional system costs. And as the proportion of intermittent generation increases, the cost of maintaining stable supplies also increases. These costs need to be managed and new ways found to minimise them. The Government is already funding research into this through the DTI's Renewable Energy and the Engineering and Physical Sciences Research Council's (EPSRC) SUPERGEN programmes. As part of its current capital grant programme the Government allocated in 2002 an additional £4m to facilitate the demonstration of new control, storage and metering technologies.

The DTI and OFGEM created and jointly chair the Distributed Generation Coordinating Group. The Group is concerned with a wide range of issues related to the connection and operation of distributed electricity generation in Great Britain. The Group is also considering recommendations made by an earlier group (Embedded Generation Working Group) on how to encourage DNOs to connect higher levels of distributed generation. We are establishing with OFGEM a joint working group on environmental issues modelled on the successful joint working group on security. One of the key priorities for the group will be to monitor network operators' progress in modernising the transmission and distribution networks to meet our carbon aims.

## Networks and Heat Management

### ***Recommendation 24***

***Para 8.6***

***The UK must develop a comprehensive strategy for the supply and use of heat.***

### ***Recommendation 25***

***Paras 8.9, 6.102***

***We recommend that the UK Government and devolved administrations carry out detailed studies to identify the most effective ways of promoting and facilitating the large-scale growth of heat networks. They should examine the institutional, economic and social barriers that might prevent that; consider, in conjunction with plant manufacturers, consumers and potential investors, what incentives could overcome such barriers; and support demonstration schemes.***

The Government recognises the importance of heat networks and community heating. It has set up the Community Energy programme to refurbish and install community heating schemes across the UK, primarily using CHP. £50million capital grants are available in 2002/3 and 2003/4, and the programme which aims to attract up to £200million from a variety of other sources. The programme is now managed by Carbon Trust and the Energy Saving Trust on behalf of Defra.

Community heating networks are not as widespread in the UK as for instance in some parts of continental Europe. But where they do exist they are most efficient where they use CHP; there is still potential for conversion of existing heating networks. There is also significant potential for installing district heating in existing buildings, where there is high heat demand density - the Action Energy project *'The Potential for Community Heating in the UK'*, published 12 September 2002, shows that substantial potential exists.

The maps produced as part of this report show heat demand density for every UK postcode sector. These maps and the economic modelling carried out as the main part of the study, suggest that heat networks can indeed have a significant role to play in certain locations. Specifically, where heat demand density is high, district heating is likely to be a viable option; in areas of lower density micro-CHP (when commercially available) and high efficiency boilers are likely to be preferred options.

Although heat loads for individual buildings and processes are expected to decrease over the years, due to improving energy efficiency, this is likely to lead to a smoother seasonal profile (because it is space heating requirements rather than domestic hot water profile which can be reduced) and an increased need for cooling, which heat networks can serve through heat-driven absorption.

Community heating provides an effective way of distributing and using waste heat, including the waste heat from thermal power generation. It constitutes a long-term option because heat networks can distribute almost any source of waste heat: in particular as renewable sources become increasingly available, their integration into a heat network means their benefits are readily supplied to all the buildings on the network. In practical terms, its applicability relies on a combination of high density housing and nearby heat sources, otherwise infrastructure costs may make this option less economical than alternative carbon saving measures.

### ***Recommendation 27***

### ***Para 8.12***

***Combined heat and power plants should be regarded primarily as a source of heat. It may be desirable to keep a large part of their capacity to generate electricity in reserve, so that it can be used at those times at which there is a shortfall in supply from other sources.***

CHP's efficiency lies in its dual purpose of generating electricity while putting to use the heat produced in that process which would normally be wasted to the atmosphere, rivers or seas. Separating out its two purposes can diminish its value. For example, it is not necessarily the cheapest or most efficient way to produce heat. Nor are the economics of using CHP as standby generation capacity favourable, since CHP plant is much more expensive than boilers as a source of heat alone, and does not have a quick response capability for switching to electrical generation. If the CHP were sized to the continuous

heat load, ignoring electricity generation, then supplementary heating would be required when the electrical output is called upon. If sized to cope with both loads, it will be under-utilised most of the time. Open-cycle gas turbine standby generators would be a cheaper and more effective solution in the general case.

**Recommendation 29**

**Para 6.101**

***To improve energy efficiency, Government should promote use of heat pumps wherever electricity has to be used to supply low-grade heat (8.14). Government should investigate the carbon-saving potential and cost effectiveness of heat pumps and solar water heating at the level of individual homes and larger buildings, with a view to devising subsidy arrangements, both for existing and new buildings, should the findings prove favourable.***

The cost effectiveness and carbon saving potential of both heat pump and solar water heating are well established, indeed heat pump applications have and continue to be promoted under the Energy Efficiency Best Practice Programme, now Action Energy. The UK Government has supported heat pump technology and the industry through the establishment of the Heat Pump Network and membership of the IEA's Heat Pump Centre. Under the Energy Efficiency Commitment — OFGEM has recently given clearance for the financial support of some 1000 ground sourced heat pump installations in social housing outside the gas supply area. In addition, DTI's Clear Skies Programme offers financial support for the installation of a number of renewable technologies, including non-reversible ground sourced heat pumps and solar water heating.

## **Transport Issues**

**Recommendation 17**

**Para 10.69**

***Reducing carbon dioxide emissions should continue to be a central objective of transport policy.***

The Government and the devolved administrations, in partnership with the private sector and local authorities, are developing a clear, strategic framework of action for reducing emissions from the transport sector.

The Transport Ten Year Plan sets out a comprehensive programme of investment and innovation. This will promote increased use of public transport and a shift of goods traffic from road to rail, and will also help to improve the carbon efficiency of the transport system. The Plan will be reviewed in 2004. The review will roll forward the Plan, setting out the Government's proposals for transport up to 2015. It will continue to take full account of the objective to reduce the environmental impact of transport. Measures in the Plan are expected to reduce transport CO<sub>2</sub> emissions by over 1 million tonnes of carbon a year by 2010.

Continued improvements in vehicle efficiency will have an essential part to play in reducing transport's carbon emissions. The EU's voluntary agreements with car manufacturers are very important in this respect, and the Government has been supporting the agreements with complementary fiscal measures linking vehicle excise duty and company car tax to the CO<sub>2</sub> performance of cars. The Government will work with the EU in developing further agreements, or similar arrangements, beyond 2008. Biofuels also offer lower carbon emissions. Duty incentives have been introduced for biodiesel and are planned for bioethanol to encourage the adoption of these fuels.

These and other measures for promoting a shift to low-carbon vehicles and fuels are brought together in the Government's 'Powering Future Vehicles' strategy published in July 2002. In the foreword to the strategy, the Prime Minister spelled out his objective that the UK should lead the global shift to the low-carbon economy, building competitive advantage for the UK's automotive industries as well as providing cleaner and better transport. Targets have been set for one in ten new cars sold in the UK within the next decade to be low-carbon vehicles with emissions of 100 g/km carbon or less, and one in five new buses to be low-carbon. The UK is the first country to set itself targets for shifting its mainstream transport fleet to low-carbon technologies.

In the longer-term hydrogen fuel cell vehicles could greatly reduce carbon emissions, if current technological and cost barriers can be overcome. So also could prospective new technologies for conversion of biomass and waste vegetable materials into biofuels. The Government is already actively involved in supporting research, development and demonstration programmes (including vehicles and fuelling infrastructure) to overcome the initial market barriers to the development of this technology. The Government will over the next year produce an assessment of the overall energy implications of both a 'hydrogen economy', and of large-scale use of biomass-based fuels, and develop roadmaps of the possible transition to these new fuels and vehicles.

### **Recommendation 50**

**Para 6.121**

***If road congestion charging and workplace parking charges are to be introduced on a scale that can make a significant national contribution to reducing transport's rising carbon dioxide emissions, local authorities which are considering implementing them will need sustained political and financial support from the UK Government and devolved administrations. Progress will also depend on adequate Government support for other aspects of local transport plans.***

The permissive nature of the congestion charging powers available in the Transport Act 2000 means that introduction of road user charging or workplace parking levy schemes depends upon decisions by individual local

authorities. Some English local authorities, which are working with the Department for Transport through the Charging Development Partnership (CDP) to examine the feasibility of congestion charging in their particular areas, are well advanced in the development of charging schemes.

The Government recognises that there is a need for local authorities, which may be planning to introduce congestion charging schemes to improve the quality of public transport, and to encourage wider travel choice, before charging starts. It is envisaged that these improvements would be funded through the major scheme and block provisions of the Local Transport Plan process. Charging schemes are themselves also likely to stimulate new funding opportunities, and these are being assessed by the CDP.

A local authority which formally endorses a decision to introduce a congestion charging scheme, and submits costed proposals in support of the scheme, will be able to seek additional funding at any time for capital costs directly related to the scheme's introduction. They will not need to wait until the annual submission of progress reports on their Local Transport Plans to bid for assistance from this funding.

In Scotland there are no workplace parking levy powers but the Transport (Scotland) Act 2001 enables Local Authorities to introduce congestion charging schemes. Support for Local Authorities is not conditional on the adoption of a congestion charging scheme. The Scottish Budget 2003-06 makes provision for significant increases in central Government support for transport infrastructure and Local Authorities are able to access this Integrated Transport Fund." has been shortened to "In Scotland there are no workplace parking levy powers.

The Northern Ireland Executive have undertaken preliminary investigations into whether road user charges and workplace parking levies could have a role to play in Northern Ireland. Some initial consultation was undertaken within the development of the Regional Transportation Strategy and the issues will be further investigated. New primary legislation would be required to provide powers to levy road user charges or workplace parking levies.

### **Recommendation 51**

**Para 6.122**

***We urge a wide differential in vehicle excise duty between the highest and lowest bands and an increase in the number of bands or a sliding scale. We endorse the House of Commons Environment, Transport and Regional Affairs Committee's proposal for a revenue-neutral graduated purchase tax on new cars, with subsidy for low emission vehicles financed by tax on high emission vehicles.***

The Government has implemented a number of measures that aim to encourage the purchase of more fuel-efficient vehicles.

The Government introduced reforms to vehicle excise duty (VED) for new cars in March 2001. The new system levies VED according to carbon dioxide emissions and fuel type. The UK is the first EU member state to implement such an innovative system. For simplicity, and to facilitate consumer awareness, the Government opted for a few tax bands rather than a more complex array of different bands. An additional AA band was introduced in 2002 to encourage low carbon cars with emissions below 120g CO<sub>2</sub>/km.

The Government's reform to the company car tax system also mean that the level of tax is now related to carbon dioxide emissions. With charges varying between 15% and 35% of the list price, company car drivers have a strong financial incentive to switch to cars with lower emissions, and this is being borne out in recent car sales figures with a shift to smaller vehicles and diesel cars.

The Government will keep both systems under review and evaluate them regularly to assess their influence on car purchasing decisions and any potential need for further refinement.

The Government is also evaluating forms of 'energy labels' (similar to those required for some domestic appliances) for vehicles, supporting the European Commission's interest in this issue.

### **Recommendation 52**

**Para 6.126**

***We welcome the Transport White Paper, which adopted policies in line with much of the Commission's thinking. But we continue to be disappointed at the slow progress in implementing the measures required and the delay in introducing the necessary legislation.***

In July 2000 the Government published its 10 Year Plan for transport which provided a long-term spending plan to deliver the resources required to modernise and improve the country's transport systems. It is based on the policy framework set out in the Integrated Transport White Paper.

The first progress report on the 10 Year Plan, published in December 2002, set out what has been achieved since the transport plan came into effect.

The commitment to legislate has been honoured through the Transport Act 2000. The Act put in place the new structures and powers needed to deliver the goals set out in the White Paper.

### **Recommendation 53**

**Para 6.127**

***We particularly regret that successive Governments have not devoted more of the revenues from the fuel duty escalator to improving alternatives to car use. We welcome the recent increases in investment in public transport and hope these will be further enhanced.***

The Government's 10 Year Plan — published in July 2000 — announced that transport would benefit from greatly increased public and private funding, totalling £180 billion across the decade from 2001/02 to 2010/11.

In the 1999 Pre-Budget Report, the Chancellor announced that the revenues from any real term increases in fuel duties would in future go straight into a ring-fenced fund for improving public transport and modernising the road network.

**Recommendation 54**

**Para 6.131**

***The Government should press for an international tax on aircraft fuel while maintaining or increasing its own taxes on aviation. If, as seems likely, global agreement proves impossible in the current decade, then the Government should use its best efforts to secure an OECD aviation fuel tax or, if that also proves impossible, a harmonised climate change levy on landing fees. Either of these could be applied solely within the EU if a wider agreement cannot be negotiated.***

The Government announced its intention to press the International Civil Aviation Organisation (ICAO) for the removal of the exemption of aviation fuel from tax in its White Paper on the Future of Transport (1998, para 4.155). The 33rd Assembly in September/October 2001 did not reverse ICAO's long-standing opposition to such a tax. The ICAO Assembly did confirm a number of other measures to limit emissions from international aviation and the UK is working to ensure ICAO reaches decisions on the introduction of these as soon as practicable.

The Government has made it clear that it is committed to a sustainable future for aviation in which environmental considerations are properly balanced with economic and social ones. It is consulting extensively on how best to achieve this in preparation for its forthcoming White Paper on air transport. The RCEP has contributed a Special Report *The Environmental Effects of Civil Aircraft in Flight* (2002) looking particularly at the impact on climate change. Eventual decisions announced in the aviation White Paper will also be informed by the outcome of discussions with stakeholders on the appropriate use of economic instruments at the international, European and domestic level for addressing the environmental impacts of aviation, as announced in the Pre-Budget Report.

**Recommendation 82**

**Para 6.123**

***It is crucial that manufacturers comply with the agreements negotiated with the European Commission on reducing carbon dioxide emissions from new cars; and that, if they do not do so, mandatory standards are introduced rapidly.***

The Government agrees that compliance with the voluntary agreements is crucial, and is supporting the aims of the agreements through taxation, including CO<sub>2</sub> based reforms of Vehicle Excise Duty and Company Car Tax. The agreements with the European, Japanese and Korean manufacturers are already producing results. They have provided manufacturers with a stable

long-term framework within which to plan, research and introduce innovation. This approach, which focuses on the levels of carbon emitted rather than on dictating particular technologies, gives manufacturers the flexibility to develop the best and most cost-effective solutions. The agreements are on course to reduce emissions from the average new car from 190 grammes per kilometre (g/km) in 1995, the base year for the agreements, to the target of 140 g/km by 2008. European manufacturers have already achieved the 2003 intermediate target of 165-170 g/km, with a fleet average across Europe in 2001 of 165 g/km. Japanese and Korean manufacturers have made less rapid progress (with emissions of 179 and 186 g/km in 2001 respectively), but are expected to achieve their 2003 intermediate target of 175g/km (at least in the case of the Japanese). The UK fully supports the voluntary agreement approach, but mandatory standards would be one option to be considered should it become clear that the commitments were not being honoured. There will be a review of progress by ACEA and the European Commission in 2003.

**Recommendation 83**

**Para 6.128**

***We urge the Government to do all it can, through the EU, to ensure further substantial reductions in carbon dioxide emissions from vehicles for the period beyond 2008.***

The UK will participate in the full review of the European Automobile Manufacturers Association's (ACEA) agreement with the EU in 2003. ACEA, JAMA and the EU Commission will review the potential for additional CO<sub>2</sub> reductions beyond 2008. The Government will work with the Commission in developing further voluntary agreements, or other arrangements with the same objective, to continue the reduction in average new car emissions.

**Recommendation 84**

**Para 8.20**

***We recommend that increased efforts should be made to develop and bring into general use methods of reducing substantially emissions of particulates and nitrogen oxides from diesel engines. The European Commission should promote this by setting technology-forcing standards for these pollutants.***

Emissions of particles (PM<sub>10</sub>) and NO<sub>x</sub> from road transport have fallen by around 50% since 1990, despite continuing traffic growth. Emissions from all vehicle types are expected to fall by another 25% over the next five years, as a result of more stringent European standards. The UK will continue to participate fully at a European level in the development of new vehicle emission standards. These should continue to be based on limit values, rather than dictating technologies, to give manufacturers flexibility to be innovative and develop the best and most cost-effective solutions.



## Institutional/Devolved Administrations

### **Recommendation 12**

**Para 10.46**

***We recommend that a Sustainable Energy Agency should be set up to promote energy efficiency more effectively in all sectors and co-ordinate that with the rapid development of new energy sources.***

The Government is keen to ensure that it has the institutions to deliver the challenging long term agenda for change set out in the White Paper. We set up the Carbon Trust in April 2001 to lead on low-carbon technology and innovation, and to provide advice to business and the public sector.

We will review low-carbon delivery programmes and associated support bodies before the end of 2004 in the context of a review of low-carbon instruments more generally in advance of the introduction of the EU Emissions Trading scheme.

We want to concentrate on following through our commitments, not on creating new Government machinery. To this end we will strengthen departmental analytical and strategic capabilities in the field of energy policy. The DTI's Energy Strategy Unit will take the lead as the focal point of a Sustainable Energy Policy Network of departmental policy units that will be involved in delivering the white paper's commitments. The primary task of the network will be to ensure that the aims we have set out in the white paper are delivered. This will require the network, acting as a virtual unit, to ensure that Government as a whole pursues effectively the policies and programmes that we need to deliver all our objectives, including a significant stepping up of our international capability.

To provide a clear line of accountability for the network, we will also put in place a new, ad hoc, Ministerial group which will oversee the delivery of the commitments in the White Paper. To support the Ministerial group we will establish a Sustainable Energy Policy Advisory Board, made up of senior, independent experts and stakeholders.

### **Recommendation 76**

**Para 10.52**

***We recommend that the devolved administrations should review and improve their arrangements for promoting energy efficiency and renewable energy, taking into account our recommendation that a Sustainable Energy Agency should be established, and if necessary should seek additional powers in this field.***

In Scotland, the Scottish Executive is pursuing this, seeking the practical integration of the Carbon Trust and Energy Saving Trust in Scotland. The Executive has set a target of 18% of electricity generated in Scotland to be by renewable means by 2010 and has recently consulted about a new target for 2020. Scottish Ministers intend to announce in March 2003 what that target

will be and the actions that will be needed if it is to be achieved. The Executive has also set itself a target to reduce by 20% between 2002 and 2006 the number of domestic properties that are rated as poor using the NHER scale.

In Wales, as part of its sustainable development obligations, the Welsh Assembly Government is fully committed to the reduction of the emission of carbon dioxide.

A new Energy Strategy for Northern Ireland is currently being prepared and should be finalised shortly. This Strategy will outline a framework for future promotion and development of energy efficiency/renewable energy technologies in Northern Ireland.

### ***Recommendation 78***

***Para 7.111***

***We recommend that new arrangements for supporting renewable energy sources should also be introduced in Northern Ireland.***

The Northern Ireland Executive has recently brought forward an Energy Bill containing provisions to introduce a Northern Ireland Renewables Obligation.

### ***Recommendation 79***

***Para 6.51***

***The Government should consider introducing to the rest of the UK the energy saving loan schemes which the Energy Saving Trust runs in Northern Ireland and Scotland.***

In July 2002 the Carbon Trust took over the non-domestic part of the Energy Efficiency Best Practice programme, and relaunched it as Action Energy. As part of their new Action Energy programme the Carbon Trust have launched the Action Energy Loan Scheme. The scheme offers SMEs in England and Wales access to loans of between £5,000 - £50,000 for energy efficiency projects. The Carbon Trust are in the process of taking over the loan scheme in Northern Ireland.

### ***Recommendation 80***

***Para 10.24***

***The Government should continue to press for thoroughgoing integration of environmental considerations into EU policies, both in the energy field and in other fields.***

The "Cardiff Process" for integrating environment and sustainable development into the core business of the various Council formations (e.g. Transport Council, Agriculture Council) was initiated under the UK Presidency in 1998. By providing expertise and advice, the UK Government has played an active role in supporting the development by Energy Councils,

and other designated Councils, of sectoral strategies under this process. The Government will continue to support the development, implementation and review of these strategies, to ensure that environmental and sustainable development considerations are increasingly integrated into EU policies.

The Government has also actively supported the development of the EU Sustainable Development Strategy, which was agreed by EU Heads of Government in Gothenburg in June 2001. We will continue to work to ensure that implementation of the Strategy contributes to a coherent approach to EU policy making which integrates environmental, economic and social considerations across the range of policies. To that end, we support the introduction of the European Commission's integrated impact assessment system as a way of strengthening the evidence-base of policy making in the EU.



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