

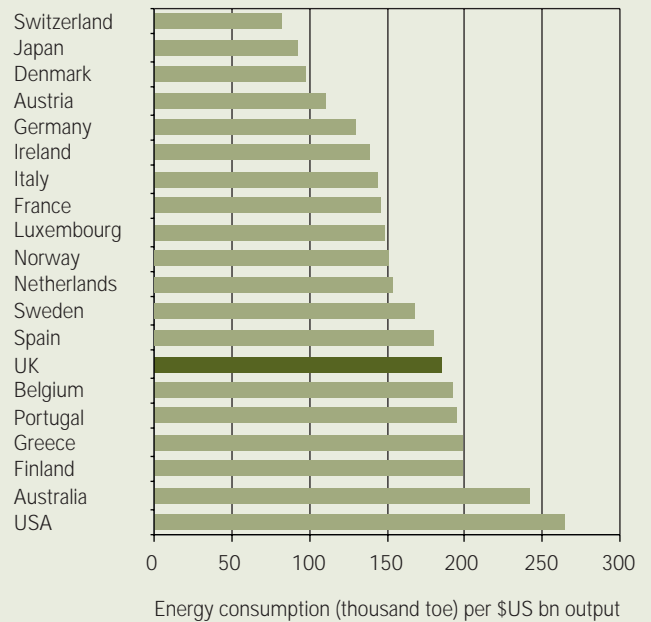
Chapter 3 Energy Efficiency

3.1 Over the last thirty years, our economy has doubled in size, while energy use has barely increased¹. Nonetheless, we are still using far more energy than we need, in particular because we are using it inefficiently. Energy is often wasted because of poorly insulated buildings or where heating, ventilation, air conditioning and lighting are poorly controlled. Products are less energy efficient than they could be - for example, the average upright freezer on the market today uses nearly three times as much energy as the most efficient one. Energy saving light bulbs² use less than a quarter of the energy of ordinary light bulbs, and also last ten times longer. Businesses and householders may not know how to cut energy use, which is just one of many demands on their time and capital.

3.2 The cheapest, cleanest and safest way of addressing our energy policy objectives is to use less energy. The financial benefits of doing so are clear. Better insulated buildings and more energy efficient workplaces cut energy bills for householders and businesses. Reducing demand puts less pressure on energy supplies.

3.3 Over the last 30 years the economy's energy intensity³ - the ratio of energy consumption to GDP - has improved by around 1.8% each year. Without this, home heating, for example, would use more than twice the energy it uses today. But simply continuing previous rates of change is not enough. We have to improve energy efficiency far more in the next twenty years than in the last twenty if we are to meet our goals. Many other industrialised countries already do far better than the UK.

Chart 3.1
Energy intensity ratio in "top 20" OECD countries, 2000⁴



3.4 This chapter sets out how we will achieve the necessary step change in energy efficiency across our economy. Our policies have to tackle barriers to the uptake of energy efficiency across all energy users, and provide the framework for continuing, and accelerating, the rate of improvement in the UK's energy intensity. We must also promote innovation to find new ways to save energy in the future.

The savings we need...

3.5 We expect more than half the emissions reductions in our existing Climate Change Programme - around 10 MtC per annum by 2010 - to come from energy efficiency.

1 See paragraph 2.16

2 Compact fluorescent lamps (CFLs)

3 Energy intensity for the UK as a whole is total energy consumption divided by total GDP. It is normally expressed as Mtoe/\$USbn, to enable international comparison.

4 Source: IEA

Energy efficiency savings to 2010⁵

Households account for around 5MtC of the expected savings. We have put in place measures to deliver 1.5 MtC, and this white paper sets out key measures which have the potential to deliver the remaining 3.5 MtC. The following targets for individual items, but illustrate where savings might be achieved:

- progressively raising efficiency standards to that of the most efficient boiler type, condensing boilers, and installing around 5 million, saving around 0.6MtC;
- insulating around 4.5 million cavity walls from 2005-2010, saving around 1.2 MtC;
- installing an extra 100 million energy saving lights, beyond the 60 million already anticipated by 2005, saving around 0.5MtC;
- faster improvements in the standards of new household appliances and significantly increasing the uptake of A-rated appliances, which could save around 0.4MtC; and
- other insulation measures, improved heating controls, improved standards of new build and refurbishment through revisions to the building regulations, and community heating with CHP, saving around 1MtC.

The Climate Change Programme anticipates savings of around 6MtC by 2010 from **businesses and the public sector**. The climate change levy, the associated climate change agreements, and the UK's own voluntary emissions trading scheme already put us on track to deliver these savings.

- 3.6 Further ahead, **we believe that energy efficiency can contribute around half of the additional 15-25 MtC savings we are likely to need by 2020** (see chapter 2 table 2.1).

⁵ These savings are already anticipated in the 135 MtC baseline emissions to 2020 explained in chapter 2.

- **by 2020, a further 4-6MtC of annual savings can come from households.**

This will require further uptake and development of insulation, including in homes that current technologies cannot tackle cost effectively, such as the 7 million homes with solid walls. Building standards, heating systems, lighting and appliances must continue to improve, in some cases through technologies yet to reach the market, such as LED⁶ lighting. We will need more innovative developments, which combine energy efficiency with measures such as micro CHP, small-scale renewable heat such as solar water heating, or renewable power such as solar electricity; and

- **by 2020, a further 4-6 MtC can be delivered annually from the business and public sectors.** The source of savings, and the types of policy to encourage them, would build on those to 2010, with progressively tighter emissions caps under the EU emissions trading scheme being a key measure to stimulate further savings.

- 3.7 Savings of this magnitude would need roughly a doubling of the rate of energy efficiency improvement seen in the past thirty years.

Delivering the savings...

- 3.8 To deliver these savings, we need a mixture of measures, addressing key areas of our economy - including energy used for heating, lighting and powering buildings and appliances in them, which accounts for around half of the UK's total energy consumption. Different policy instruments - emissions trading, the energy efficiency commitment, tax incentives, a greater

⁶ Light emitting diodes

emphasis on energy services, building and product regulations, advice and information - will be designed to reinforce each other.

- 3.9 As chapter 2 explains, the new EU emissions trading scheme will play a central role from 2005. By setting strict limits on carbon emissions, it will spur large energy users to find cost-effective ways to reduce emissions. We will press for the scheme to develop so that other sectors can be added or linked to it wherever possible. **The energy efficiency commitment (see paragraph 3.32) will have a major role to play in homes, and we will consider whether to extend it beyond the household sector.** Higher efficiency standards for products and buildings will be required.
- 3.10 Tax measures will also have a role to play. Lower taxation on lead-free petrol helped to shift consumer demand to the point where leaded petrol was phased out. The Chancellor announced in the 2002 Pre-Budget Report that we would consult further on specific measures to promote greater energy efficiency in households.

Through higher building standards...

- 3.11 Compared with the 1990 building regulations, the latest revisions introduced last year 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, including for replacement windows, and the Building Bill will be enacted in 2003 with the aim of further improving standards.

- 3.12 But standards elsewhere remain higher, particularly in Northern Europe. A detached house built to the latest standards in England and Wales consumes nearly 20% more energy than an equivalent home in Denmark⁷. **We will raise standards over the next decade, learning lessons from the standards achieved in other comparable European countries.**
- 3.13 **We will also use the regulations further to raise the standard required for new and replacement boilers to the level of the most efficient boiler types - A and B rated condensing boilers.** Over 1 million boilers, heating and hot water systems are replaced each year, and we believe around 5 million condensing boilers need to be installed by 2010. Currently, our performance falls well short of what has been done elsewhere, as the table below illustrates.



⁷ *Putting Climate Change at the Heart of Energy Policy*; EST submission to the energy white paper, 2002 (www.est.org.uk/est/index.html)

Condensing boilers - a case study⁸

The Netherlands

1980-1987: Subsidies for condensing boilers and a widespread information campaign.

Mid 1980s: Demand outstripped supply so manufacturers launched intensive installer training programmes.

1990: Subsidies relaunched: government funding matched by funding from energy companies through a customer levy. Housing policy promoted condensing boilers.

1995: Building regulations require new build to meet standards of energy efficiency only achievable with condensing boilers.

1996: Long term awareness campaign started, plus energy efficiency labelling.

1996: Energy tax introduced with hypothecated revenue for energy efficiency.

2000: Subsidies (25%) for energy audits introduced.

2002: Condensing boilers account for ~75% of Dutch market.

UK

1980s: Development and demonstration of technology under the Government's Energy Efficiency Demonstration Scheme.

1989-today: Promotion under the Government's Energy Efficiency Best Practice Programme.

1993-4: British Gas-funded cashback scheme.

1996-9: Government-funded cashback schemes.

1997 onwards: 'Energy Efficiency'⁹ awareness-raising campaign with labelling of condensing boilers.

2000 onwards: EESoP/EEC¹⁰ and Government fuel poverty programmes installing condensing boilers; Energy Saving Trust working with manufacturing industry.

2002: Condensing boilers account for ~12% of UK market.

To achieve much higher levels is likely to require measures such as:

- a communications campaign raising awareness of links between climate change and household energy use;
- training of heating engineers and gas fitters;
- voluntary agreement with industry on condensing boilers; and
- higher boiler standards required by building regulations for existing and new dwellings.

8 Ibid

9 www.saveenergy.co.uk

10 EESoP - the Energy Efficiency Standards of Performance;
EEC - the Energy Efficiency Commitment.

- 3.14 A new EU directive on the energy performance of buildings is now in place¹¹. This covers homes alongside business and the public sector. It requires EU member states to set minimum standards for building work on new and existing buildings, to review building standards at least every five years, to introduce energy certificates for all buildings to show how efficient they are, and to test the efficiency of boilers and air conditioning systems in commercial and business premises.
- 3.15 We already have minimum standards for building work and a building certification system for dwellings and welcome the impetus the directive will give to these. We also welcome the challenge the directive presents to extend certification to all buildings and to introduce boiler and air conditioning inspection systems, or similar, that mean these can be operating more efficiently. The Office of the Deputy Prime Minister will take the lead in responding to the directive, as it has responsibility for most of the legislation that can be used to transpose it into law; however, DTI and Defra will also play a full part.
- 3.16 **We will start work immediately on the next major revision of the building regulations, which we will aim to bring into effect in 2005.** Tighter building regulations will also encourage developers to use low carbon solutions such as solar water heating and photovoltaics.
- 3.17 We will also make a start on developing the new provisions that will be needed to implement the directive's certification and inspection requirements, so that public buildings and those buildings that are sold or tenanted each year can be certified within the timescale required.
- 3.18 There is also a huge opportunity to deliver improvements through our public investment in schools, hospitals and other public services. In February 2003, we launched *Sustainable Communities: Building for the Future*¹², a long-term programme to increase housing supply in high demand areas such as the Thames Gateway. This includes a commitment that, from April this year, the Housing Corporation will require that the new homes they fund achieve the Building Research Establishment's EcoHomes¹³ standard for sustainable residential development.
- 3.19 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. Our sustainable communities action 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 and refurbishment of existing 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

¹¹ The EC directive on the energy performance of buildings came into force on 4 January 2003. Member states have three years to implement the directive with an additional three years if needed to implement requirements on building certification and inspection of boilers and air conditioning systems. See www.europa.eu.int/eur-lex/en/dat/2003/l_001/l_00120030104en00650071.pdf

¹² www.communities.gov.uk

¹³ www.products.bre.co.uk/breeam/ecohomes.html

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.

- 3.20 We will also work with local authorities and their building inspectors to see whether and how enforcement of the regulations can be cost-effectively improved to achieve better correlation between design and built performance.

And higher product standards...

- 3.21 Today's homes contain more household appliances than our grandparents ever dreamt of - cookers, microwaves, washing machines, fridges and freezers, TVs and videos (with multiple sets in many homes), computers and game machines. UK households spend around £5 billion each year on electricity to power lights and appliances, which account for around a quarter of UK electricity consumption. And as these basic products achieve near universal take-up, new, energy-hungry services such as digital TV and broadband communications pose a new challenge.
- 3.22 Not only are these new gadgets energy-hungry, but as users most of us are also energy-lazy. Each year, video recorders and televisions in the UK consume around £150m worth of electricity while on standby, and our homes have increasing numbers of power supplies and chargers permanently plugged in. Consumer education can only have a limited effect in this area. Instead, we need to raise

the standards of the products themselves to give us the best technological answers for cutting energy consumption. Overall, faster improvements in the standards of new household appliances and greater uptake of A- rated appliances can bring about significant carbon savings and could save around 0.4MtC by 2010, relative to the business as usual baseline.

- 3.23 Similar issues arise in industry and commerce, where the speed of information and communications technology leads to new demands. At the same time, smart control systems can significantly cut usage and waste. Again, we need the best possible standards to ensure that equipment is as energy efficient as possible.
- 3.24 Overall, we need to remove the least efficient products from the market, encourage competition to bring forward improved products, and make it easier for people and businesses to choose the best. Ways to do so include minimum standards, voluntary agreements with industry, fiscal measures, procurement policy, and better information on product performance.
- 3.25 Provided manufacturers are given adequate time to change their product specifications, higher standards should not damage our industrial competitiveness. Indeed, properly designed, they can help British and other European manufacturers to anticipate and meet rising consumer expectations in other parts of the world. We will continue to consult closely with UK industry, including manufacturers, dealers and service providers, and with the European Commission and other member states, on how best to deliver low-cost improvements in product standards.

Our Market Transformation Programme¹⁴ already works at national and EU level with Governments, industry, retailers and others.

3.26 We are already encouraged by industry's response to this agenda, especially in its self-commitments to improve efficiency standards and targets for such things as electric motors, televisions, video recorders, digital TV services, power supplies, water heaters and washing machines. The European code of conduct on digital TV services has enabled the UK to avoid additional energy consumption equivalent to around 0.4MtC a year. We will encourage and support such industry self-commitments when these will deliver earlier or higher standards than mandatory measures alone.

3.27 The UK's membership of the single European market means that product standards on tradable goods and equivalent industry voluntary agreements usually have to be set or agreed at the EU level. Mandatory standards to remove inefficient boilers, fridges and fluorescent lamp ballasts¹⁵ from the market are already in force and are very effective. For example, even the least efficient new fridge freezer in the EU now consumes only half as much energy compared to products that were still on the market 5 years ago. The standard for lamp ballasts alone will save nearly 0.25MtC a year in the UK.

3.28 The Commission is now proposing a new framework directive¹⁶, to set standards for a wider range of products, and to revise the energy labelling regime which currently deals only with household appliances.

It has estimated that such measures could save around 10% of total EU energy consumption by 2020¹⁷. **We support these proposals and will work proactively to influence and speed their delivery.**

3.29 In particular, our analysis and consultations suggest that we should press for urgent action in the EU to raise standards in air conditioning, boilers and water heaters, power chargers, consumer electronics, office equipment, motors, fans and pumps, washing machines, fridges and other white goods and lighting, including significant reductions in standby power.

3.30 We will also reinforce other measures to promote the sale of products above current EU minimum standards, including fiscal instruments, information tools such as the EU energy label, the Energy Saving Trust's Energy Efficiency Recommended logo and the Energy Star label for IT equipment.

In the home...

3.31 Tougher building regulations will have an impact on new homes, alterations to the existing stock and all replacement windows and boilers. But they will not deal with long-standing problems like the 15 million homes with inadequate wall insulation - either solid walls or unfilled cavities.

3.32 We have already introduced - in April last year - an energy efficiency commitment (EEC) for domestic energy suppliers, which runs until 2005. Each supplier¹⁸ has an energy saving target, which they can meet by encouraging

14 www.mtprog.com

15 A 'lamp ballast' controls the current passing through fluorescent lighting tubes

16 Proposal for a framework directive on the eco-design of end use equipment

17 European Commission background and discussion paper on a draft proposal for a framework directive on energy efficiency requirements for end-use equipment, April 2002. (This proposal is now integrated with the proposal in footnote 16).

18 Applies to licensed energy suppliers with at least 15,000 electricity and/or gas customers.

householders to install energy saving measures, for example by subsidising the cost of installing a condensing boiler, wall or loft insulation, energy efficient lights and appliances either directly or through retailers. At least half the target must be met in households whose occupants are either on a low income or disabled. It is already accelerating the uptake of energy efficiency measures, reducing the cost of measures to the consumer, and encouraging the heating and insulation industries to build up their capacity to meet the increased demand. But by 2005, when the current EEC ends, there will still be around 6-7 million homes where cavity wall insulation would be relatively easy to install. Filling 4.5 million of these by 2010 would save around a further 1.2 MtC.

3.33 Energy suppliers have responded positively, and are working hard to meet their targets. We want their good work to continue, and for it to become an integral part of their long-term business strategies. So, **we will consult on an expansion of the EEC to run from 2005 to at least 2008, at possibly twice its current level of activity.** This will allow energy suppliers and the energy efficiency industries to plan the level of EEC activity over the medium and longer term. It will require energy suppliers to take up a substantial proportion of the potential for higher energy efficiency in homes, and deliver carbon savings of around 1 MtC by 2010, primarily by encouraging better home insulation. As we introduce the new EU emissions trading scheme, we will consider how the EEC can be best dovetailed with it. Looking to the future, a continuation and further expansion of EEC, or some successor mechanism, could deliver a further 3 MtC of savings by 2020.

3.34 While energy suppliers are selling energy saving measures under EEC, few have sought to develop new markets in energy services. Rather than simply selling electricity and gas, energy services focus on the outcome the customer wants - such as warm rooms and hot water - and offer the most cost-efficient way of achieving it. Under an energy services contract a supplier might, for example, install insulation or a more efficient boiler in a customer's home, and recoup the investment through the quarterly bill over, say, 3 to 5 years. The householder uses less energy as a result, and the savings on the energy bill are used to repay the cost of the measures. So, worthwhile home improvements are installed with no upfront cost to the householder, who benefits from a warmer, more comfortable home and lower energy bills for years to come once the initial investment has been repaid. Some have called this approach selling 'negawatts' instead of 'megawatts'.

3.35 Energy services could help to overcome consumers' reluctance to invest in energy efficiency improvements. However, since the energy markets were opened up to competition in the late 1990s, householders can switch supplier by simply giving 28 days' notice. Energy suppliers have little incentive to offer energy service contracts if customers can switch at short notice. **We will therefore establish a working party with OFGEM, energy suppliers and others to explore how to create an effective market in energy services.** This will address, among other issues, the barriers caused by the current 28-day notice period while maintaining adequate freedom of choice and consumer protection for customers. It will report initial conclusions later this year.

3.36 We will also continue to tackle poorly insulated and inefficiently heated homes through our **fuel poverty and social housing programmes** (see chapter 8). Because these focus on helping people heat their homes adequately, in the short term their contribution to carbon savings is relatively small. But they will help to ensure that we have a much more energy efficient housing stock in coming decades.

At work...

3.37 In businesses and the public sector, there are many ways to reduce energy use. Improving insulation, heating, lighting and equipment are important, particularly in the commercial and public sectors. There are also many other opportunities in day-to-day operations and production processes. Many savings can occur at the time of investment in new or replacement plant. Technologies include more efficient motors, variable speed drives, heating and cooling plant and proper pipe insulation. Savings can also come through making productive use of otherwise 'waste' heat and cooling, and avoiding unnecessary heating and cooling through better design and control.

3.38 As chapter 2 explained, we have already put in place a range of actions to promote energy efficiency in business. The climate change levy (CCL) is a levy on business and public sector energy use. Receipts (around £1 billion a year) are recycled back to business, mainly through reduced National Insurance but also through £50 million for tackling business energy efficiency. Within the CCL, climate change agreements (CCAs) have been negotiated with energy intensive industries. Participants pay only 20% of the CCL in

return for agreeing to meet challenging energy efficiency targets over a 10-year period. The CCAs alone are expected to achieve savings of around 2.5MtC by 2010.

3.39 We launched the world's first economy-wide greenhouse gas emissions trading scheme in April 2002¹⁹. By December 2002, 34 companies had become members, while a further 6000 companies with CCAs can use the trading scheme either to help meet their target or to sell any over-achievement. The targets set for participants in the scheme should deliver 1.1MtC of carbon equivalent²⁰ savings by 2006.

3.40 Taken together, the savings generated by these schemes account for most of the 6MtC of savings identified under the Climate Change Programme. Beyond that, three other mechanisms help business improve efficiency:

- building regulations;
- the Carbon Trust (see box below); and
- the Enhanced Capital Allowances Scheme²¹ which enables businesses to claim 100% first year capital allowances on investments in energy saving technologies.

3.41 Chapter 2 noted that policies will in future need to be reviewed in the light of the emerging EU emissions trading scheme.²²

We will also consider whether to extend the EEC beyond the domestic sector, perhaps to businesses that do not pay the

19 www.defra.gov.uk/environment/climatechange/trading/

20 The UK emissions trading scheme includes all 6 greenhouse gases. All savings are expressed in terms of the estimated global warming potential on an equivalent basis to those from carbon dioxide.

21 www.eca.gov.uk/

22 In addition, the linkage with the integrated pollution prevention and control (IPPC) directive will need to be clarified.

CCL, as a means of improving their energy efficiency. We would consult fully on such a proposal if we concluded that it was the right approach.

In the public sector...

3.42 The public sector accounts directly for only 5% of UK carbon dioxide emissions. But this sector - in particular the Government itself - has a vital role to play in leading by example.

3.43 Government, along with other public sector organisations, is taking action to improve energy efficiency. For example:

- we will be showing leadership in our own performance. The central Government estate has an interim target to reduce carbon emissions by 1% a year from 1999-2000, **with new targets to be set in 2003, including on CHP** (see chapter 4). Our review of government procurement has identified a number of areas where government purchasing could more strongly support sustainable development goals. The review has been considering 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. As a result 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. We will be implementing our conclusions later this year;

- NHS Trusts are already targeted to reduce the level of primary energy consumption by 15% or by 0.15 MtC equivalent from March 2000 to March 2010²³; and
- since 2002/3 local authorities have been required to benchmark their energy use in operational property and street lighting and will set local improvement targets from 2003/04. Along with Registered Social Landlords, they are also required to bring their own housing stock up to decent standards by 2010.

Preparing the market and helping people make choices...

- 3.44 **With the Devolved Administrations we will continue to support the work of the Energy Saving Trust and the Carbon Trust** which provide free advice to households, businesses and public sector bodies on how to save energy. Raising awareness and providing targeted advice and information is a cost-effective way of overcoming barriers to energy efficiency. Advice also supports EEC by encouraging customers to take up the energy suppliers' offers. The UK-wide network of Energy Efficiency Advice Centres might, over time, evolve to become Local Sustainable Energy Advice Centres, covering energy efficiency, renewables and transport energy use.

23 www.nhsestates.gov.uk/sustainable_development/index.asp

Encouraging energy efficiency in homes, business and the public sector

Government and the Devolved Administrations provide funding for the Energy Saving Trust and the Carbon Trust to stimulate the uptake of energy efficiency in homes, business and the public sector.

The **Energy Saving Trust**²⁴ (EST) works in partnership with manufacturers, retailers, installers, energy suppliers, local authorities, advice providers and others. EST seeks to ensure the most effective delivery of energy efficiency to homes and small businesses for consumers, the 'Energy Efficiency' branding and marketing programme aims to transform attitudes to energy efficiency.

The **Carbon Trust**²⁵, launched in April 2001, is developing and implementing programmes to accelerate the take-up of energy efficiency in the non-domestic sector. These include the 'Action Energy' information and advice service; an interest-free loan scheme for small businesses; and stimulating innovation in new low-carbon technologies.

- 3.45 Our forthcoming Housing Bill will propose a requirement for home sellers to produce a sellers pack. This will be necessary for us to comply with the requirements of the EU buildings directive. The pack will promote energy efficiency by ensuring all homebuyers have access to information on energy performance of the homes they are considering buying.
- 3.46 We also need to ensure that industry is suitably qualified to deliver the measures we have set out. Our policies to improve training and skills are outlined in chapter 7.

24 www.est.org.uk

25 www.thecarbontrust.co.uk/thecarbontrust/default.htm

Encouraging innovation...

- 3.47 We need to develop even smarter ways to satisfy our energy needs, through better building techniques and products. Industry needs to continue to develop more efficient manufacturing processes that improve resource productivity. New types of meters will be needed to enable homes and businesses to make the best use of on-site electricity generation through renewables or CHP. And once products have been developed we need to get them deployed into the market. We agree with the recommendation of the Chief Scientific Adviser's Energy Research Review Group that energy efficiency should be treated as a priority area in which increased investment in research and development is particularly likely to yield major breakthroughs. The research and development to enable these technologies to make a contribution in the years to come needs to start now. The Carbon Trust's Low Carbon Innovation Programme²⁶, launched in 2002, provides funding to enable that to happen.
- 3.48 The new generation of buildings could have both minimum energy requirements and produce their own electricity through new and emerging technologies such as micro CHP²⁷, photovoltaics and fuel cells. Some homes that use little or no energy for heating already exist in the UK. In 2002-03 we introduced two new programmes - Community Energy and Clear Skies (a community and household renewables scheme) - worth £60m over three years to support CHP and renewable energy technologies.

26 www.thecarbontrust.co.uk/foundation/

27 Micro-CHP enables the simultaneous production of heating and electricity in the home and in small businesses. It is likely to operate in place of a domestic central heating boiler. CHP policies are further discussed in chapter 4.

Reporting progress...

- 3.49 These strands of policy in different sectors add up to an ambitious strategy for change. Further work is needed to consult on and put in place some of the detailed policies that will deliver it, for example as the scope and operation of the EU emissions trading scheme becomes clearer. But we do not want to lose momentum. **So, within a year, we will publish an implementation plan that sets out in further detail how we will deliver the strategy that we have set out here.** This will update and expand on the measures set out in the Climate Change Programme. **From then on we will report annually, as part of the follow up to this white paper, on progress towards achieving the savings we have set out.**

