

Chapter 1: Introduction and Strategic Context

Summary

- **Sustainable energy is both an environmental imperative and an economic opportunity. Although energy efficiency has been part of energy policy since the 1970s, the convergence of issues concerning climate change, energy scarcity and global population growth demands: i) a more radical change in our patterns of energy use in the years to come; and ii) that all areas of government take energy efficiency into consideration in their policy development.**
- **Energy efficiency and productivity - maximising the output from a given set of energy inputs - offers a way to resolve the apparent tension between the goals of economic growth and environmental sustainability by reining in energy consumption without limiting economic growth.**
- **It is far more cost-effective to act now against climate change through energy efficiency and reducing emissions, than later to pay the costs of inaction. We need to encourage substantial investment in initiatives which focus on maximising the efficiency of energy use and reducing energy consumption.**
- **Scottish business can benefit by innovating and creating new products and markets for energy efficient products, processes and services.**
- **Encouraging and assisting householders to improve the energy performance of their homes and to avoid wasting energy helps them to enjoy continued and improving standards of living.**
- **The Energy Efficiency Action Plan will be the key mechanism for articulating energy efficiency action across the whole of Scottish Government.**

Overview

1.1 Scotland is an energy-rich nation, internationally recognised as having vast resources in renewable energy, oil and gas. Energy is recognised in the Government's Economic Strategy as a key sector with high growth potential and the capacity to boost productivity.¹ It is also recognised in the Energy Key Sector Report as a source of international competitive advantage.² Its use is a major feature of our way of life and underpins activity across all sectors - business, domestic and public. However, it is also responsible for the major share of our greenhouse gas emissions, which contribute to climate change, the most serious problem facing the global community. Globally, energy-related CO₂ emissions have been rising steadily over the past decade, largely as a result of the growing demand for energy. They are currently set to increase further by 45% on 2006 levels by 2030.³

1.2 Given this tension, it is becoming widely recognised that energy efficiency must become a top priority, complementing Scotland's other energy-related strengths and working across areas such as housing, transport and business to help the Scottish Government achieve its Purpose *'to focus government and public services on creating a more successful country, with opportunities for all of Scotland to flourish, through increasing sustainable economic growth'*.⁴

¹ Scottish Government, 'The Government Economic Strategy', 2007 (www.scotland.gov.uk/Publications/2007/11/12115041/0).

² For detail of energy's importance as a key sector, see Scottish Government, 'Energy Key Sector Report', May 2009 (www.scotland.gov.uk/Resource/Doc/917/0081161.pdf).

³ International Energy Agency (IEA), 'World Energy Outlook 2008', Executive Summary, p. 11 (www.worldenergyoutlook.org/docs/weo2008/WEO2008_es_english.pdf).

⁴ Scottish Government, 'Government Economic Strategy'.

1.3 Maximising energy efficiency contributes to the Scottish Government's Purpose targets of increasing economic growth, productivity, and labour market participation through the work required to implement energy efficiency measures. It also contributes to the solidarity purpose target through measures aimed at the fuel poor or those on low incomes, and the sustainability target through the drive to reduce energy consumption, and hence emissions, in order to meet our statutory targets for 2020 and 2050. It thereby helps to play an important role in achieving economic, climate change and social objectives. The Scottish Government intends, through its Energy Efficiency Action Plan, to give it greater emphasis across all its work. This accords with the Scottish Parliament's Economy, Energy and Tourism Committee's view that it:

wants to see a radical shift in policy towards energy efficiency and for substantial investment of resources in initiatives which focus on maximising the efficiency of supply and consumption of energy. These steps should be first in the hierarchy of priorities within a Scottish energy policy.⁵

1.4 This consultation, and it is expected the resulting action plan, will use a broad interpretation of the term 'energy efficiency'. The overall aim is to use less energy while obtaining the same level of comfort or service, i.e. to reduce unnecessary energy consumption. This covers three main areas: i) reducing energy demand through behaviour change and measures such as insulation; ii) making the process of converting fuel to an energy service, such as heat, light or movement, more efficient; and iii) generating and using low- and zero-carbon distributed or local energy, which helps to reduce the need for grid electricity and its associated transmission losses. The use of local low-carbon heat (e.g. putting waste industrial heat to good use) helps avoid additional energy consumption.

Why energy efficiency: the environmental imperative

1.5 In a world where energy is commonly seen as underpinning economic growth, reducing demand for energy by being smarter about the way we use it and producing the energy we need from non-carbon-emitting sources are critical both to satisfying requirements for the services that energy provide, and protecting the environment for future generations. Energy productivity - maximising the output from a given set of energy inputs - offers a way to resolve the apparent tension between the goals of economic growth and environmental sustainability by reining in energy consumption without limiting growth. In effect, it can help to decouple energy demand from economic growth, reducing costs and boosting productivity, whilst simultaneously providing a platform to limit or reduce emissions. As the McKinsey Global Institute (MGI) notes:

Europe needs to find a way to decouple GDP [Gross Domestic Product] growth from energy consumption in order to meet the twin objectives of achieving GHG [greenhouse gas] emission targets while maintaining economic growth and welfare. Europe can achieve this by focussing its efforts on improving energy productivity – the level of benefits we achieve from the energy we consume.⁶

1.6 Furthermore, it is far more cost-effective to act now against climate change through energy efficiency and reducing emissions, than later to pay the costs of inaction. The 2006 Stern Review confirmed IEA findings that by 2050 energy efficiency measures have the

⁵ Scottish Parliament Economy, Energy and Tourism Committee, 7th Report, 'Determining and delivering on Scotland's energy future', 30 June 2009, para 85 (www.scottish.parliament.uk/s3/committees/eet/reports-09/eer09-07-vol01-01.htm).

⁶ McKinsey Global Institute (MGI), 'Capturing the European energy productivity opportunity', September 2008, p. 7. For more detailed research into energy productivity as the most cost-effective way to reduce global energy demand see www.mckinsey.com/mgi/rp/energymarkets/, in particular 'The carbon productivity challenge: Curbing climate change and sustaining economic growth', July 2008.

potential to be the biggest source of emissions savings in the energy sector, giving both environmental and economic benefits as they cut waste and often save money.⁷ Lord Stern's report noted that whilst the stabilisation of greenhouse gases will cost 1% of GDP by 2050, the direct costs of unabated climate change could be in the range of 5%-20% of GDP per year.⁸ Three years later, Stern has recognised that his report underestimated the size and costs of the effects of global warming, making it all the more imperative that we act quickly.⁹

1.7 Energy efficiency can help us work to achieve our goals *now*, which is crucial if we are to fulfil Scotland's challenging climate change commitments of reducing emissions by 42% by 2020 and 80% by 2050.¹⁰ Compared with many of the alternative energy supply solutions, investing in energy productivity is cost-effective and faces less uncertainty. Indeed, increasing energy productivity is the cheapest and easiest short-term way to reduce GHG emissions. In many cases, it is feasible with existing technical means and is more economically attractive to consumers, businesses and government. And where some suggest that we are on the threshold of a new economic age, in which the transition to a low-carbon economy must be one of the defining issues, energy efficiency indicates a way forward that is both sustainable and holds out the prospect of continued economic prosperity.

Box 1.1 Energy efficiency and energy productivity

Using energy more productively provides the overall framework for understanding and maintaining the optimal balance between sustainability, energy demand and economic growth. Higher energy productivity can be achieved either by higher energy efficiency that reduces the energy consumed to produce the same level of energy services (e.g. a more efficient light bulb produces the same light output for less energy input), or by increasing the quantity or quality of economic output produced by the same level of energy services (e.g. providing higher value-added services in the same office building).¹¹

Energy efficiency - the technical efficiency of translating energy inputs into energy-based services - is sometimes interpreted as seeking exclusively to reduce end-use demand and therefore seen by some as potentially compromising economic growth and denying consumers current levels of comfort and convenience, or their aspirations to improve these. Energy productivity measures the output and quality of goods and services generated with a given set of direct and embodied energy inputs (i.e. the ratio of value added to energy inputs). It focuses on making economically achievable reductions without harming economic growth and quality of life.

Given the twin goals of economic growth and sustainability, this plan will refer to both energy efficiency and energy productivity, referring to energy efficiency primarily in areas such as housing, where significant savings need to be made if we are to achieve our targets across the board, and energy productivity with reference to business, all within the context of reducing our dependence on carbon.

1.8 Most countries appear to be looking to succeed economically with a lower dependency on fossil fuel, be this through greater energy productivity or new technologies and alternative sources of energy. Arguments regarding the issue of peak oil and the expected closure of some conventional power stations mean that more of our energy requirements will need to be met from renewable sources. The Scottish Government is fully committed to promoting zero- and low-carbon energy sources, and has recently published its Renewables Action Plan.¹² Yet global trends of increasing consumption and energy demand over time, as well as increasing international volatility and fluctuating prices, mean

⁷ HM Treasury, 'Stern Review on the Economics of Climate Change', Executive Summary, p. xiii (www.hm-treasury.gov.uk/d/Executive_Summary.pdf).

⁸ Ibid, p. x. This figure is averaged over time, and exclude costs due to political or social disruption or migration.

⁹ See www.guardian.co.uk/environment/2009/mar/12/climate-change-scienceofclimatechange.

¹⁰ Climate Change (Scotland) Act, August 2009

(www.scotland.gov.uk/Topics/Environment/climatechange/scotlands-action/climatechangeact).

¹¹ MGI, 'Capturing the European energy productivity opportunity', September 2008, p. 10.

¹² Scottish Government, 'Renewables Action Plan', 1 July 2009 (www.scotland.gov.uk/Publications/2009/07/06095830/0).

that these must be complemented by energy efficiency measures in order to ensure that we can satisfy our domestic energy requirements - thereby keeping Scotland's businesses, hospitals and schools running, our homes comfortable, and transporting our goods and people. Energy efficiency and renewable energy are both crucial to delivering long-term targets and must go forward in tandem.¹³

1.9 Within this, the logic is to reduce consumption and increase energy productivity first, and then to supply the maximum possible of remaining requirements through renewable and low-carbon sources. Experience elsewhere, such as in Denmark, seems to suggest that even for countries that have invested heavily in renewables, efficiency programmes prove most cost-effective and speedy in enhancing energy security in the short term and in achieving early and steady cuts in greenhouse gas emissions. Nonetheless, it should be noted that energy efficiency measures do not all provide the same level of payback. Some are very quick, whereas others take much longer to return on investment.

The economic and social imperatives

1.10 In dealing with the energy security and greenhouse gas challenges, Scotland should look both to mitigate the threats and take advantage of the opportunities. The Scottish Government sees energy efficiency and energy productivity as playing a key role both in Scotland's economic recovery programme and in promoting sustainable economic growth, and as providing many wider economic and societal benefits.

1.11 First of all, energy efficiency and productivity can help us to address multiple and pressing energy challenges, such as rising oil and gas prices in a global market; concerns about peak oil; concerns about security of supply; and dependency on politically less stable countries. Economy-wide improvements in energy efficiency will increase Scotland's security of energy supply by allowing a greater proportion of its energy to be supplied from national resources in the long term, reducing dependency on others. Moreover, they will also enable Scotland to maximise its energy resources for export, thereby boosting its international economic competitiveness.¹⁴ In addition, energy efficiency helps to reduce the amount spent on energy, thereby making business more resilient to tough economic times and increasing citizens' spending power on other goods and services.

1.12 Investments in energy productivity also reduce the need to expand energy supply, thereby saving the public purse millions of pounds otherwise required to invest in new generating plant. The IEA estimates that, on average, an additional €1 spent on more energy efficient buildings, electrical equipment and appliances avoids more than €2 being invested in new electrical supply. According to the CEO of Chevron, 'energy efficiency is the cheapest form of new energy we have.'¹⁵ The earlier and faster we reduce our energy consumption through boosting energy productivity, the larger the savings will be.

1.13 Besides this, Scottish business can benefit by innovating and creating new products and markets for energy efficient products, solutions and services. Renewable energy, environmental technologies and clean energy are sizable and growing markets that will help service the global demand for sustainability, security and resilience. The market for energy efficiency improvements will grow significantly over the next few years both in Europe and,

¹³ This relationship is complex and the two must work together as amount of use and fuel type both impact on greenhouse gas emissions. If, for example, there is an adverse shift in the carbon intensity of the fuel mix, (see e.g. the way in which Germany is partly filling the gap left by phasing out nuclear power with natural gas and coal), then greenhouse gas emissions may remain flat or decrease only slightly despite improved efficiencies.

¹⁴ Between 2000 and 2007 Scotland exported an average of 17% of the electricity it generated each year to the rest of the UK.

¹⁵ 'Chevron's CEO: The price of oil', *Fortune*, 28 November 2007 (<http://money.cnn.com/2007/11/27/news/newsmakers/101644366.fortune/>).

given a global climate deal in Copenhagen in December this year, across the world. Scotland is in a strong position to grow its own expertise and business base, and should position itself to capture the benefits from this high value-add sector.

1.14 Those who act early are best placed to mitigate the risks and exploit the opportunities. Scotland should invest now and build on its broader energy expertise to design and create new energy efficient technologies, systems and materials; to maximise the Scottish supply chain and thereby boost its competitiveness and the number of Scottish jobs; and to build its strength in a new area for export. This would provide a boost to the energy efficiency and renewables industries in Scotland, maximise the country's opportunities in these emerging markets, and provide leadership in helping other countries to meet the global challenges of climate change and security of energy supply. It would also help to develop the skills that we will need in moving forward to a low-carbon economy.

1.15 This is clearly not just an energy supply and consumption issue – it links into issues such as environmental degradation, general resource scarcity, and demographics. For example, recent high energy prices have reminded us that energy is a valuable commodity that should not be wasted and that low-income families are particularly vulnerable to rising energy costs. There are huge opportunities, at low cost, to improve the efficiency of our energy use in households, businesses, transport and the public sector, and potential improvements in how the public sector supports efficiency improvements. Across society, such savings will protect people and organisations from the impact of higher energy costs as experienced in the past 12 months. Encouraging and assisting householders to improve the energy performance of their homes and to avoid wasting energy helps them to enjoy continued and improving standards of living. This will particularly help those on low incomes and thereby support the Government's social goals of reducing the number of Scots living in fuel poverty, especially welcome in times of economic downturn. In addition, the savings from reduced energy consumption and improved energy productivity will free up resources to increase consumption or investment elsewhere without compromising consumers' comfort or convenience.

1.16 Whilst these objectives broadly work in the same direction, there may be tensions between them and with the more narrow understanding of energy efficiency. For example, a narrow interpretation of energy efficiency may not necessarily involve demand reduction. For instance, while implementing energy efficiency measures in a home, householders are ideally encouraged not to waste energy and to turn down the thermostat, switch off radiators in unused rooms, turn off unused lights and appliances, and close curtains at dusk. However, in some fuel-poor households it may be appropriate to encourage those who have been living in very cold or damp homes to take some of the savings as increased comfort for health reasons, e.g. turning the thermostat up a little.

1.17 In addition, energy productivity for business may not necessarily reduce an overall dependency on energy - though within the low-carbon context, it would accompany a move towards reduced carbon dependency. It may focus on saving costs through energy efficiency measures and then increasing business competitiveness by taking advantage of market opportunities and increasing output, potentially increasing consumption of labour and materials in the process. Whilst the Climate Change (Scotland) Act 2009 and a number of EU, UK and Scottish policies focus on reducing energy demand, it is important to recognise that we are seeking to fulfil multiple objectives. We need to strike a balance between these, all in the context of improving overall energy efficiency, reducing overall energy demand and related emissions, and building a successful Scotland based on sustainable economic growth.

1.18 In order to help strike the balance and take these agendas forward together, the Scottish Government wishes to promote energy productivity activity across all sectors, aimed at:

- reducing energy demand, reducing the need for increases in supply capacity, and enhancing security of energy supply;
- reducing total energy costs for households, business and the public purse, or in the case of rising energy prices, offsetting the impact of these;
- cutting greenhouse gas emissions and preparing for a low-carbon future; and
- boosting business energy productivity and supporting the energy efficiency sector.

Increased urgency of action: 'The perfect storm'

1.19 Energy saving has been a feature of policy for many years, ever since the oil shock of the 1970s when a sharp increase in the price of oil and other energy costs spurred various energy saving initiatives directed at consumers, industry and the public sector. However, the circumstances we face today are different due to the 'perfect storm' of energy scarcity combined with climate change and global population growth. This convergence and interaction of challenges, that are themselves sizable, demands a far more radical change to our patterns of energy use in the years and decades to come.

Energy scarcity

1.20 The temporary interruption to global oil supply in the 1970's triggered widespread recession, inflation and unemployment, and established energy security as a significant source of geopolitical conflict. In the 21st century, energy scarcity (including the potential of Peak Oil, which represents a permanent, inexorable and terminal decline in conventional oil supply) may be much more damaging unless significant steps are taken to reduce the rate of consumption and to evolve alternative sources of non-carbon based energy.

1.21 The decline in global oil production is likely to coincide with a period of unprecedented growth in global energy demand. This is expected to increase by more than 50% by 2030, with China and India alone accounting for 45% of the increase.¹⁶

1.22 The scale of investment necessary to exploit fully-known reserves and to develop the necessary energy alternatives is significant and should be considered alongside the costs and benefits of reducing demand for these. The current economic downturn may delay this essential investment at a critical time in our evolution towards a non-carbon-based energy economy.

Climate Change

1.23 Energy use is both a significant cause of man-made climate change and will be affected by its direct and indirect impacts. Observational data suggests that the speed of some climate change impacts is significantly worse than the most pessimistic scenario presented in the fourth IPCC report.¹⁷ Increased severity and frequency of extreme weather occurrences may pose a threat to critical energy infrastructure, as may rising sea levels, increased flooding, increased temperatures, and subsidence. Indirect impacts may also be transmitted from climate changes elsewhere in the world. The collapse of an important food supply chain due to water stress could have implications for domestic agricultural production, choices vis-à-vis bio-fuels, and an impact on energy demand.

¹⁶ IEA, 'World Energy Outlook 2007' (www.iea.org/weo/2007.asp).

¹⁷ Intergovernmental Panel on Climate Change, Fourth Assessment Report, 'Climate Change 2007' (www.ipcc.ch/publications_and_data/publications_and_data.htm).

Population Growth

1.24 The United Nations has predicted the global population will rise above 9 billion by 2050, placing additional pressure on the global energy and food supply.¹⁸ Furthermore these pressures are exacerbated by an increasing demand in developing countries for protein-rich foods which require more grain, water and energy to produce, and by the increasing constraint of available agricultural land.

Links to EU and UK action on energy efficiency

1.25 The European Commission has recognised the imperative of using energy more productively as part of its route to a low-carbon future. It aims to promote energy efficiency and energy saving as the most cost-effective way to reduce energy consumption while maintaining an equivalent level of economic activity, and as supporting broader Community objectives in the areas of security of supply, climate change mitigation and improving competitiveness. In its 2006 Action Plan for Energy Efficiency,¹⁹ the Commission estimated that Europe wastes at least 20% of its energy due to inefficiency, which could be costing some €200 billion a year at 2008 prices. It set a target of reducing energy consumption by 20% below business-as-usual projections by 2020, and included a broad array of directives and legislation across the six areas it considered to have the highest potential for energy saving: energy performance requirements for products, building and services; energy transformation; transport; financing and pricing; energy behaviour; and international partnerships. The current plan is due to continue until 2012. The Commission is currently undertaking a mid-term review in order to help prepare a revised action plan.²⁰

1.26 The 2006 EU Action Plan requires each European member state to implement its own Energy Efficiency Action Plan and to revise this every three years. The UK Government published its Energy Efficiency Action Plan in 2007.²¹ This covers measures in place across the UK and in reserved areas, for example setting energy efficiency standards for appliances and equipment and energy supplier obligations. It also mentions measures in some devolved areas such as building regulations.

1.27 In November 2008, the UK Climate Change Act received Royal Assent. This established an independent Committee on Climate Change and required the UK Government to set legally binding carbon budgets for 2008-2012, 2013-2017 and 2018-2022. In early 2009, the UK Government published a Heat and Energy Saving Strategy for consultation, followed in July by its White Paper, the UK Low Carbon Transition Plan.²² This was accompanied by its Low Carbon Industrial Strategy, Renewable Energy Strategy, Low Carbon Transport Strategy, and consultation on Renewable Electricity Financial Incentives (i.e. feed-in-tariffs). The integrated Low Carbon Transition Plan outlines over 40 climate change policies across the areas of power generation, buildings and communities, transport, business, and agriculture as they apply to the UK in reserved areas and England in devolved areas. The contribution of these policies to energy efficiency will need to be included in the revised UK energy efficiency action plan, which must be submitted to the EU in June 2011.

¹⁸ UN Population Division (www.un.org/esa/population/publications/wpp2008/pressrelease.pdf).

¹⁹ Commission of the European Communities, 'Action Plan for Energy Efficiency: Realising the Potential', SEC(2006)1173, 19 October 2006; cost estimate published January 2008.

²⁰ For background to consultation, which finished on 3 August 2009, see http://ec.europa.eu/energy/efficiency/consultations/doc/2009_08_03_eiap/2009_eiap_background_document.pdf

²¹ Defra, 'UK Energy Efficiency Action Plan', 2007 (http://ec.europa.eu/energy/demand/legislation/doc/neeap/uk_en.pdf).

²² Department of Energy and Climate Change (DECC), 'Low Carbon Transition Plan', 2009 (www.decc.gov.uk/en/content/cms/publications/lc_trans_plan/lc_trans_plan.aspx).

1.28 With regard energy conservation and the devolution settlement, the UK is responsible for measures that relate to regulation, appliance labelling, mandatory obligations, and energy services. The Scottish Government monitors these reserved areas and works closely with the UK Government to ensure that Scottish interests are represented. Scotland has powers to legislate in relation to the promotion of energy efficiency, and some other matters relevant to the provision of energy supplies, most notably planning control and environmental controls, as well local economic development and skills.

Box 1.2 The National Conversation – Energy Efficiency

The main responsibilities for energy policy and regulation are reserved to Westminster, although the UK Government relies on decisions that Scotland takes in permitting new sources of electricity generation. Powers to encourage energy conservation and improve energy efficiency in housing, as well as around building standards, housing policy, planning policy, business rates, council tax, and transport infrastructure and pricing are generally devolved. Powers to implement emissions trading schemes, such as the Carbon Reduction Commitment (CRC), are also largely devolved, though so far development has been undertaken in partnership with the UK Government.

The UK Government leads on mechanisms which are governed by energy market regulation such as the Carbon Emission Reduction Target (CERT), Feed In Tariffs and the Renewable Heat Incentive (for small-scale low-carbon technologies), and Energy Using Products, which are expected to deliver significant energy savings across the UK. In the early years much of our work to achieve these targets and the benefit we bring to Scottish businesses and households will be dependent on how successful we are in ensuring Scotland benefits from these UK/GB-wide policies. As a result, we are working with the UK Government and urging it to ensure future policies increase delivery in Scotland.

For example, CERT is the primary scheme for supporting households in Scotland to undertake energy efficiency improvements. This initiative, set up by the UK Government, places an obligation on the major energy supply companies to promote reduction in carbon emissions by providing households with subsidised energy efficiency measures such as cavity wall and loft insulation, efficient appliances and efficient light bulbs. Although not its primary purpose, CERT also has an important role in tackling fuel poverty.

Evidence suggests that Scotland is not getting its fair share of CERT spend proportional to its population. This is in the context of it having a colder climate and therefore a greater potential to make emissions savings. There are also greater levels of fuel poverty in Scotland that warrant a greater deployment of energy efficiency measures. The Scottish Government is acting within its current powers to work with the energy companies to increase CERT investment in Scotland through the CERT Strategy Steering Group and programmes such as the Energy Assistance Package and Home Insulation Scheme.

However, there is no current obligation on energy suppliers to deliver a minimum amount of CERT activity in Scotland. As it is cheaper for energy suppliers to deliver improvements, such as fitting loft insulation, in built up urban areas, in practice this means that Scotland, with a higher proportion of its population living in rural areas than the rest of the UK, has hitherto lost out. While Scotland can call on the UK Government to change the scheme to better reflect Scottish interests, it has no authority under current devolution arrangements to ensure this happens.

The Scottish Energy Efficiency Action Plan

1.29 The Scottish Energy Efficiency Action Plan, to be published in early 2010 following this consultation, will fulfil one of the ten pledges on energy policy that Scottish Ministers announced in February 2009.²³ This set of pledges forms a coherent approach to energy issues in Scotland. It addresses short- and longer-term opportunities, and focuses on both contributing to economic recovery and growth and addressing climate change. Pledge 7 promises to ‘implement measures to improve Scotland’s energy use through the Energy Efficiency Action Plan’. This is reaffirmed in the Climate Change (Scotland) Act, which contains a provision for Scottish Ministers to prepare and publish a plan for (a) promoting energy efficiency; and (b) improving the energy efficiency of living accommodation in Scotland. This plan must set annual energy efficiency targets and describe how those targets are to be reported on.

²³ See www.scotland.gov.uk/Topics/Business-Industry/Energy/Action/economic-recovery/10-Pledges.

1.30 For the purposes of the Act, 'energy efficiency' includes 'the use of (a) technologies (other than those used for the production of heat) reliant on renewable sources of energy; (b) materials, the manufacture or use of which produces or involves lower emissions of greenhouse gases than other materials; and (c) surplus heat from electricity generation or other industrial processes for district heating or other purposes'. This means the plan will need to consider technologies such as:

- photovoltaic panels, micro wind turbines, micro hydroelectric systems, and heat pumps using renewable sources of energy;
- more efficient energy-using products, including boilers and combined heat and power engines, pumps, fans, lighting, electrical equipment and vehicles, products such as insulation, passive design and glazing which can reduce unwanted heat loss and gain, and products which can help people to be more aware of the energy they use to encourage them to change their behaviour. Certain industrial processes may also be changed to be made more efficient.
- waste industrial heat and district heating networks.

In order to benefit from these, we also consider it important to include behaviour change as a component of the demand-reduction aspect of energy efficiency.

1.31 Setting the Action Plan in statute shows the commitment and importance that Scottish Ministers attribute to improving energy efficiency, and raises the profile of mainstreaming energy efficiency across policy measures in Scotland. As such, the plan will be the key mechanism for articulating energy efficiency action across the whole of Scottish Government.

1.32 This consultation on the Energy Efficiency Action Plan sets out:

- options for setting indicative energy savings needed from different sectors to contribute to overall greenhouse gas reductions;
- the key activities in each sector under the direct control of Scottish Government and its associated bodies and agencies, including, where known, the more economically attractive investments in energy productivity that are feasible with existing technical means for consumers, businesses and government; and
- the key gaps in activity that need to be tackled in order to increase energy efficiency and contribute to greenhouse gas emission targets.

1.33 The consultation is split into three parts. This first part provides the strategic context. It outlines here the need for energy efficiency; recent trends in energy consumption and efficiency (Chapter 2); and the most common barriers to reducing energy demand and the rebound effect (Chapter 3). Chapter 4 describes the Scottish Government's outline targets in this area, as well as issues around data and monitoring. Even though work on energy efficiency targets is in its early stages, it is clear that action needs to be taken urgently, and that our short-term priority must be to build up momentum behind energy efficient and low-carbon measures, given the fact that current levels of activity are totally insufficient to reach our longer-term 2020 and 2050 climate change targets.

1.34 Part 2 (Chapters 5-12) looks at current and proposed activities across a range of areas and sectors. Chapter 5 looks at the issues around changing attitudes and behaviour. Chapters 6-10 discuss the built environment, including general energy efficiency activity in housing (Chapter 6), the role of regulatory standards in housing (Chapter 7), non-domestic buildings (Chapter 8), the public sector (Chapter 9), and associated cross-cutting issues (Chapter 10). Chapter 11 discusses changing our use of transport, and Chapter 12 enterprise and skills. Part 3 concludes by looking forward at issues such as key partnerships and responsibilities (Chapter 13), and key issues moving forward (Chapter 14).

1.35 By addressing these areas and their activities in a single document, the consultation aims to provide an overview across all areas of government. This can then be used to guide new research and policy making, as well as regular and consistent monitoring and reporting on the contribution that energy efficiency will make towards our overall climate change objectives. Given the early stage of much activity in this area, we expect that our work on targets and sectoral activities may need to be updated after 12-18 months.

1.36 The consultation is interspersed with series of questions. These are necessarily set at differing levels since the Scottish Government is at different stages in developing energy efficiency policy across various sectors and sub-sectors. Thus, for example, the second housing chapter contains detailed proposals on regulation, whereas the section on skills highlights the need for further work even to identify all the players and bring all relevant groups together. In hearing your responses, we would particularly welcome any evidence that supports your views and arguments.

Links to other programmes, consultations and action plans

Climate Change Delivery Plan (published June 2009): sets out options available to put Scotland on the path to a 42% reduction in greenhouse gas emissions compared to 1990, in line with the statutory targets in the Climate Change (Scotland) Act 2009.

Renewables Action Plan (1 July 2009): fulfils the first of Scotland's ten energy pledges (see para 1.29) to support and accelerate the implementation of renewable energy in a way that promotes large-scale, community-based, decentralised and sustainable generation. This includes routemaps for renewable heat; bioenergy; hydro and hydrogen; onshore wind; offshore wind; and marine.

Renewable Heat Action Plan (planned autumn 2009): fulfils the second energy pledge, to build a commercially viable, diverse renewable heat industry in Scotland to deliver benefits to the wider public.

Low Carbon Vehicles Consultation (published 29 June 2009): fulfils the ninth of Scotland's energy pledges, to promote the development, uptake and use of electric and other low-carbon vehicles, in addition to using improvements in vehicle engineering which are already available. In addition, pledge 8 undertakes to develop and deliver more sustainable transport to improve efficiency and reduce transport emissions in the longer term.

Environmental and Clean Technologies Development Action Plan (published 22 September 2009): identifies significant growth opportunities in five priority environmental goods and services sub-sectors, namely water and waste water treatment, recovery and recycling, environmental monitoring and instrumentation, building technologies, and sustainable transport.

Draft Zero Waste Plan (published for consultation 20 August 2009): emphasises waste prevention, business resource-efficiency, re-use and recycling, in line with Scotland's goal to achieve a zero-waste society. This approach has knock-on benefits for energy efficiency as conserving resources reduces energy consumption. Energy from waste as a form of recovery also has its place, and our vision is that where energy is recovered, it is done so efficiently.