

ENERGY SECTOR KEY SECTOR REPORT

May 2009

Energy Sector Report

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1. Overview

1.1 Context

Scotland is an energy rich nation, internationally recognised as having vast renewable energy, oil and gas resources. The vast majority of the UK's oil production and over half of its gas production comes from fields based in the continental shelf around Scotland. Renewable energy in Scotland is also based on strong foundations, with a quarter of the European offshore wind and tidal resources and 10 per cent of the European wave resource. Scotland has a distinguished energy company base and world leading technological and research resources in a wide range of energy specialisms.

In 2007, 15 per cent of the electricity generated in Scotland was exported to the rest of the UK. Scotland is estimated to have the potential for producing 60 GW of renewable electricity resources, which could make Scotland a major exporter of renewable electricity to the rest of UK and further afield. This remarkable renewable resource can be harnessed, along with the associated technology and research and development gains, to stimulate both economic growth and recovery. In particular, Scotland has the potential to lead the world on offshore renewables, with an estimated 25 per cent of European offshore wind and tidal resource and 10 per cent of the wave resource. In 2007, electricity generated from renewable resources equated to 20.1 per cent of Scottish gross electricity consumption, compared with 16.9 per cent in 2006. With 5.5 GW of renewables capacity currently installed, consented or under construction, Scotland is well placed to exceed the 2011 target for 31 per cent of gross consumption from renewable resources. Scotland is also well placed to lead the UK and Europe on the development of carbon capture and storage at a commercial scale, with the Northern North Sea constituting Europe's largest potential carbon store.

Energy is vital to keeping Scotland's businesses, hospitals and schools running; heating our homes; and transporting goods and people. Producing energy from non carbon emitting sources and reducing demand for energy are central to our climate change commitments. And the energy sector is vital to Scotland's economy, not only in terms of current production, supply and consumption but also through the opportunities that arise from Scotland's comparative advantages in respect of the transformation in energy technology and systems that is required to meet the world wide climate change and energy security challenges.

In February 2009 Scottish Ministers announced a set of pledges on energy policy that form a coherent approach to energy issues in Scotland and aim to shape the energy policy agenda for the remainder of the current term of Government. They are focussed on addressing both short and longer terms opportunities for Scotland to take advantage of competitive advantage – thereby contributing to economic recovery and growth and to addressing climate change.

1.2 Importance of the Energy Sector to the Scottish Economy

| Table 1: Key Statistics in Energy | | | |
|--|---|--------------------------------------|--|
| | Employees¹ (2007) | GVA £m² (2006) | GVA per employee² (2006) |
| Mining of Coal | 800 | 59 | 45,156 |
| Service activities incidental to oil and gas extraction | 14,300 | 1,619 | 112,463 |
| Manufacture of coke, refined petroleum and nuclear fuel | 1,400 | 81 | 52,705 |
| Electricity, gas and water | 16,500 | 3,108 | 238,858 |
| ENERGY TOTAL: Excluding oil and gas extraction | 33,000 | 4,866 | 160,949 |
| % of Scotland | 1.4% | 5% | - |
| Extraction of oil and gas | 7,700 | 21,216 ⁴ | NA ⁵ |
| ENERGY TOTAL: Including oil and gas extraction | 40,700 | 26,082 ⁴ | NA ⁵ |
| % of Scotland | 1.7% | 23.2% | - |

Notes:

1. The Employee figures are sourced from the Annual Business Inquiry (ABI/1).
2. The GVA and GVA per employee figures are sourced from Scottish Annual Business Statistics.
3. This figure is estimated using a total Scottish GVA figure which is consistent with Regional Accounts.
4. In accounting for oil and gas activity in the North Sea, North Sea output is not included in Scotland's official GDP estimates. Instead it is included in the "extra regio" GDP data in UK Regional Accounts and not attributed to any specific UK region. Official GDP per capita estimates for Scotland similarly exclude North Sea GDP. The approach used here to calculate the GVA figure for extraction of oil and gas is however consistent with estimates in Government Expenditure and Revenue Scotland (GERS), 2008, and is based on Scotland having an 83% geographical share of North Sea Oil.
5. GVA per employee cannot be calculated in a consistent manner due to the fact that the GVA figure for extraction of oil and gas has not been sourced from Scottish Annual Business Statistics.

Key Facts

- Scottish Gross Domestic Product (GDP) in the energy sector (excluding renewable energy) has been relatively volatile in recent years and is currently around 90 per cent of 2004 levels. Growth was on average 1.8 per cent lower in the latest four quarters compared to the previous four quarters to 2008 Q3, despite strong quarterly growth in 2008 Q3 of 9.7 percent.
- Scotland has the potential to lead developments in renewable energy, with an estimated 25 per cent of European wind and tidal resources and 10 percent of Europe's wave resources.
- A sizeable majority of the UK's oil production and around half of its gas production comes from fields based in the continental shelf around Scotland and based on geographical considerations Scotland's share of the North Sea resource is over 83 per cent.
- A recent study has outlined the vast potential of Scotland's natural resources for carbon capture and storage (CCS), identifying the Scottish capacity as greater than that of the Netherlands, Denmark and Germany combined. This resource along with the commitment through Scotland's Energy Pledges will ensure Scotland can maximise its potential in this technology, which could have the ability to safely accommodate industrial emissions generated in Scotland and North East of England for the next 200 years¹.

¹ <http://www.scotland.gov.uk/Publications/2009/04/28114540/0> and Energy Pledge 5 (Annex A)

- Renewable energy is currently estimated to account for at least 3,000 jobs in Scotland, with the potential to support at least 16,000 new jobs over the next decade.
- In 2006, the energy sector (excluding oil and gas extraction) contributed over £4.8 billion in GDP, around 5 per cent of the Scottish total². In addition productivity in this sector is significantly higher than the Scottish average, reflecting the capital intensive nature of activities.
- Employment in the energy sector (excluding renewable energy) stood at 40,700 in 2007; 23 per cent of the GB energy sector total and a 10 per cent increase on 2006 levels.
- Between 2000 and 2007 Scotland exported an average of 17 per cent of the electricity it generated each year to the rest of the UK.
- Since 2000 there has been a 65 per cent increase in the proportion of Scotland's gross electricity consumption generated from renewable sources, which stood at 20.1 per cent in 2007. Total renewables capacity installed, consented or under construction is now 5.5 GW – more than our 2011 target for 31 per cent of Scotland's gross energy consumption to be met by renewables, which equates to around 5 GW installed capacity.
- Figures published by the industry body, Oil and Gas UK, suggest that in addition to the 34,000 direct jobs in the sector GB wide, the industry's expenditure in the UK Continental Shelf (UKCS) supports a further 230,000 jobs in the supply chain. Around 40 per cent or 92,000 of these jobs are estimated to be in Scotland.
- Estimates of the job potential in clean fossil fuels and carbon capture and storage in Scotland and through the export of technology and services run to 10,000 jobs³.

1.3 Rationale for Key Sector Status

The **Government Economic Strategy** (GES)⁴ states: *some sectors...offer the opportunity to strengthen Scotland's areas of international comparative advantage, through achieving critical mass and boosting productivity. Sectors have the potential to make a significant contribution to increasing Scotland's growth where:*

- *Scotland has distinctive capabilities and businesses with the potential to be internationally successful in areas of global demand;*
- *they currently account for a significant part of the Scottish economy and reflect the contribution of all areas of Scotland; and*
- *Government intervention can make a significant difference to future success by facilitating or accelerating development in areas where the market alone cannot deliver the best outcome.*

The overarching intention is to focus strategic work in Government and across the public sector on a number of priority energy policy areas to help drive sustainable economic growth. The intention will be to co-ordinate and drive delivery of key strands of energy policy, mapping current and planned activity, to allocate clear responsibilities for delivery and to achieve closer linkages to other key energy related issues, such as climate change and fuel poverty.

² Excludes the Financial Services sector, as the sector is not included in official statistics.

³ <http://www.scotland.gov.uk/News/Releases/2009/05/01104333>

⁴ <http://www.scotland.gov.uk/Topics/Economy/Key-Publications/ges07>

The GES identifies energy as a key sector of the economy with renewable energy development contributing to commitments to reduce carbon emissions and to promote sustainable economic growth. The Climate Change (Scotland) Bill will introduce a statutory target to reduce greenhouse gas emissions by 80 per cent by 2050. The Government's performance framework supports these with a commitment that 50 per cent of Scottish electricity gross consumption will come from renewable sources by 2020, with 31 per cent by 2011⁵. The Scottish Government has also proposed that 20 per cent of all energy use (not just electricity) come from renewable sources by 2020, in line with EU wide targets, and above the UK target of 15 per cent. It also intends to work towards the decarbonisation of the electricity generation sector by 2030.

The GES specifically highlights the current importance of the oil and gas sector to Scotland's economy and in particular the development of the supply-chain focusing upon high-value, internationally-orientated activities. It is important, however, to see energy in its entirety as a key sector of the sustainable economic growth of the Scottish economy over the next 30 years and beyond. Energy, including renewables, is an area where Scotland has a strong competitive advantage, unique natural and geographic opportunities in wind and wave and tidal generation, and established expertise and world leading technology and skills developed through our oil and gas and power generation industries. Scotland is estimated to have 25 per cent of Europe's offshore wind resource, 10 per cent of Europe's wave resource and 25 per cent of its tidal resource. Many of the skills and experience that have played a vital role in developing the North Sea are skills that will help develop our remaining oil and gas reserves, but are transferable and can put Scotland at the forefront of renewable energy technology and development and indeed carbon abatement more generally. There are also real opportunities in respect of modernising energy systems in communities and energy efficiency where Scotland can develop a leading role internationally if concerted effort begins now.

1.4 Overall objectives of current activity

The key economic objectives which underpin our work to strengthen Scotland's areas of international comparative advantage in the energy sector, and to contribute to the commitment to reduce emissions by 80 per cent by 2050, are as follows:

- to capitalise on current opportunities to strengthen the Scottish supply chain for energy investments, especially in respect of oil and gas, renewable and low carbon energy and distributed energy systems;
- to strengthen productivity and competitiveness of the Scottish industry providing energy efficiency and distributed energy services to communities and businesses both at home and out with Scotland;
- to ensure Scotland captures benefits from current technology developments and capitalises on them by building strong world leading energy businesses of the future;
- for all these tasks, building the skills base that can deliver the exponential change in output from the energy sector as a whole that will be required to place energy at the centre of Scotland's future prosperity;
- the delivery of cost savings for consumers and business through energy efficiency improvements which will free up resources and increase demand for goods and services.

⁵ <http://www.scotland.gov.uk/About/scotPerforms/indicators/electricity>

1.5 National Conversation

Importantly, the Scottish Government is pressing for responsibility over Scotland's oil and gas reserves, which could be supported to optimise long-term production and give Scottish people a say in how this massive resource could be re-invested to bequeath a legacy for future Scots. The Government will continue to press this point, as well as to argue for greater powers over Scotland's energy markets more generally as part of a wider British Isles and European energy market. This heightened political will and impetus firmly places energy at the very centre of the Government's agenda for sustainable economic growth.

1.6 International Dimension

The overall aim is to position Scotland as a leader in renewable and low carbon energy in the UK, Europe and wider afield. To support this, the strategy has a strong outward looking dimension, involving:

- positioning Scotland as the preferred location of choice in the UK for investment in renewable and low carbon demonstration and deployment, building on the strong reputation developed in recent years for Government support for the right conditions for renewable investment, and playing a leading role in initiatives such as the energy stream of the British Irish Council;
- active engagement in delivering the European Union's sustainable energy targets, including developing the role of the Scottish European Green Energy Centre and developing strong and active Scottish participation in EU wide research, demonstration and deployment in partnership with the Energy Technology Partnership; and
- Using the Saltire Prize and working through Scottish Development International to position Scotland as a world leader on green energy.

1.7 Public Roles

The Scottish Government works extensively with the Scottish energy sector to understand sector issues and promote the sector interest in Scotland, and at UK and international level. The Scottish Government has established **The Scottish Energy Advisory Board** and the first meeting of the Board took place in May 2009. The Board will focus on the current and future energy challenges and opportunities for Scotland – and address the current challenges the industry is facing.

As parts of the energy sector have very different characteristics, technology and issues, three Ministerial-led energy theme groups will also be created focusing on **Oil and Gas**; **Renewables (building on the Forum for Renewable Energy Developments in Scotland)**; and **Thermal Generation and Carbon Capture and Storage**⁶.

The Scottish Government also works closely with Scottish Enterprise⁷, Highlands and Islands Enterprise⁸, Scottish Development International⁹ and a number of other public bodies and agencies on a number of energy issues, ranging from the

⁶ <http://www.scotland.gov.uk/Publications/2009/04/28114540/0> and Energy Pledge 5 (Annex A)

⁷ <http://www.scottish-enterprise.com/>

⁸ <http://www.hie.co.uk/>

⁹ <http://www.sdi.co.uk/>

development of the electricity network and related policy to initiatives to support energy efficiency and to support for renewables projects at a large and small scale. As consenting authority for large scale and marine developments the Scottish Government is working to deliver a system which offers clarity to developers on where and when developments can take place and reassurance about timescales for decision.

The enterprise agencies have direct engagement with individual energy companies, both indigenous Scottish companies and inward investors, across the energy sector and these companies can benefit from the wide portfolio of projects, programmes and business support offered by Scottish Enterprise and Highlands and Islands Enterprise.

The enterprise agencies also interact with the sector through projects, such as the Fife Energy Park, the National Sub-sea Research Institute and the Hydrogen Office. Other activity includes Proof of Concept projects, demonstration projects (such as the Power Systems Demonstration Centre that will investigate opportunities to develop onshore and offshore and sub-sea grid technologies), the European Marine Energy Centre and a Decommissioning Industry Forum, as well as assisting spin-out companies, support for conferences and exhibitions, with trade bodies including Scottish Renewables Forum and Scottish Hydrogen & Fuel Cells Association, as well as other industry partners, Scottish Government and the Scottish Funding Council.

The enterprise agencies maintain close working relationships with the oil & gas sector in a number of ways including: close contact with trade bodies including Oil & Gas UK, Subsea UK, Offshore Contractors Association, the Energy Institute and others; direct contact with key companies; contribution to industry workshops and conferences; industry steering groups; and through the new Oil & Gas Industry Advisory Group. The agencies also engage with the power generation sector through the trade body, Industrial Power Association, direct working with key companies, and a range of other activity including participation in feasibility studies.

2. Challenges and Opportunities

2.1 Challenges

While the energy sector is already an important part of the Scottish economy, there are key gaps to be addressed to ensure that Scotland can capture effectively the full benefits of the new opportunities in the energy (and wider climate change) sector.

The key challenges are:

- The global challenge presented by climate change, as a result of greenhouse gas emissions, threatens the stability of the world's climate, economy, population and geography. Energy generation and use is a major contributor to carbon dioxide emissions. The demand for energy is also set to increase as is competition for access to fossil fuel reserves, which are increasingly held in less stable parts of the world. For Scotland, this presents the challenge of decarbonising the energy supply and ensuring security of supply for domestic markets.
- While nuclear energy will continue to play a part meeting service demand for electricity for the lifetime of the current nuclear power stations, the Scottish Government is also very clear that Scotland neither needs nor wants new nuclear power generating capability in Scotland, and no replacement nuclear power capability will be developed in Scotland.
- The challenge of changing the way we use energy and improving energy efficiency in Scottish homes and businesses is a significant one, but one which will be vital if Scotland is to reduce its carbon emissions and end fuel poverty.
- Scotland has world leading energy research capacity, but there is a need for greater commercialisation – most of the technology in current renewable development is owned out with Scotland. A key priority has to be to ensure that Scotland can capitalise on its skills, particularly in marine and offshore renewables, in clean coal technology and carbon capture and storage and in power systems and grid technologies.
- Grid access is crucial to providing confidence to investors about new renewable developments, but current access arrangements result in delays in connection time. There are also major challenges on grid charging and system balancing, where the current Electricity Transmission Charging Regime, proposals for targeting constraints costs on Scottish generators, works against the development of clean, renewable energy in Scotland and unfairly penalises Scottish energy companies. While the current long term vision for transmission grid reinforcement in Scotland and the UK as a whole is moving in the right direction to support the ambitions of this strategy, current regulatory arrangements are putting significant barriers in the way of progress towards UK and EU 2020 targets
- Scotland has already streamlined its planning system through the 2006 Planning (Scotland) Act and has made major advances in promoting infrastructure investments through the National Planning Frameworks. Scottish Ministers have already announced a series of changes that can be done within existing legislation and is looking at further such measures. However the challenge of greater legislative control for Scotland remains and could be a major constraint to delivering Scotland's renewable and wider energy ambitions without greater devolution of the primary legislation.
- The UK regulatory framework does incentivise renewable investment in electricity supply through the Renewable Obligation Certificate (ROC) mechanism but does not at present provide adequate incentives for investment in other low carbon energy, especially clean coal and carbon capture and

storage. The UK Government has also blocked through its public spending rules the spending of money saved under the fossil fuel levy for investment in renewables in Scotland and the Scottish Government is arguing for these rules to be relaxed

2.2 Economic Prospects for the Energy Industry

The downturn in the global economy has resulted in a fall in the demand for energy. At a UK level, total energy production in the final quarter of 2008 was 5.5 per cent lower than in 2007 Q4, with consumption falling by 3.5 per cent over the period. As articulated in the 10 Energy Pledges, the Scottish Government is committed to supporting the sector through this challenging period and to take advantage of opportunities for long term growth. In addition, targeted support from European funds and from the recent UK budget will promote sustained growth across the sector in Scotland. The key UK Budget announcements include a proposed uplift to the Renewable Obligation, estimated to provide an additional £525 million to the UK offshore wind sector and the ambition to secure up to £4 billion through the European Investment Bank for renewable energy projects as well as action on carbon capture and storage and energy efficiency. In addition, the restructuring of the North Sea fiscal regime will encourage the re-use of existing infrastructure and support further extraction from small and challenging fields. Scotland, with its vast energy resource across all sectors, will be well placed to take advantage of these stimulus packages.

Oil and Gas

In line with the fall in demand for energy, in April 2009 the International Energy Agency revised down estimates of the global demand for oil by 1 million barrels per day, reflecting lower first quarter demand and revised GDP forecasts. This is mirrored by the significant fall in Brent Crude oil prices observed in the last year – from a peak of US\$146 per barrel in July 2008 to around US\$52 at end April 2009. Independent forecasts suggest oil price will increase slightly during 2010, with a median forecast of US\$58¹⁰. The longer term outlook sees oil prices rebounding, with EIA projections of US\$115 by 2020¹¹. The NBP Gas Price has followed a broadly similar trajectory to Brent oil, with the current price at around 29 p/therm – a 60 per cent fall from June 2008 levels.

The sharp decline in oil and gas prices from a peak of US\$146 in July 2008 to around US\$50 currently has adversely affected profitability in the sector. Market capitalisation of the 50 largest energy companies, as tracked by a global index fell 46 per cent over the year to end 2008, the worst recorded decline and substantially more than the 12 per cent and 7 per cent declines of 2001 and 2002. The lost value reflects a combination of falling global equities markets and lower oil prices. Companies are expected to cut exploration & production activities which could constrain the long term capacity of the industry to respond to any pick-up in demand as the global economy recovers. However, the announcement in the UK Budget 2009 of incentives to stimulate investment in small and technically challenging projects on the UK Continental Shelf, will help support the extraction of the estimated 25 to 39 billion barrels of oil that remain. Reforms to remove fiscal barriers for development in North Sea infrastructure are also seen as encouraging to the industry by maximising the potential of existing resources.

¹⁰ HM Treasury – Forecasts for the UK Economy, April 2009

¹¹ Energy Information Administration - Annual Energy Outlook 2009 (Mid Scenario to 2020)

Renewables

Major investment plans in the Scottish renewable sector, remain on track. Onshore wind in Scotland also remains resilient, illustrated by the announcement that construction of Europe's largest onshore wind farm at Whitelee, near Glasgow, is on course to be completed ahead of schedule.

Wave and tidal energy still remains an area of huge potential growth in Scotland. With full applications for the first round of the Crown Estate's leasing programme focused on the Pentland Firth due to be submitted in mid May. This development area includes the site of the first test centre for wave and tidal technology in the world, the European Marine Energy Centre (EMEC) in Orkney. The potential to unlock the resources in the Pentland Firth, which is estimated to contain six of the top ten sites for tidal developments in the UK, will promote both leadership in this industry along with valuable new jobs in Scotland¹².

Scotland's offshore wind resource is another source of huge potential growth for renewable development in Scotland. The Crown Estate has identified 10 potential sites for offshore development within Scottish Territorial Waters with the potential to generate 6.4GW of renewable electricity. In addition, a further 2 Round 3 sites, sit adjacent to Scottish Territorial Waters. The scale of these developments will bring significant supply chain opportunities to Scottish companies and require a skilled workforce, with Scotland well placed to capitalize on this opportunity given our oil and gas experiences.

At the global level, evidence suggests that it took until the first quarter of 2009 for economic downturn and related credit constraints to impact the renewables sector. While such short term drivers have adversely impacted the sector, the medium and long term growth prospects for the industry remain extremely strong. To sustain and accelerate this growth the Scottish Government published an Economic Recovery Programme earlier this year (see Box 1). The programme highlighted the importance of the 10 Energy Pledges that aim to support energy generation, energy efficiency and transport in Scotland.

Box 1: The Scottish Economic Recovery Programme: Supporting a Low Carbon Economy

The Scottish Government's Economic Recovery Programme highlights the opportunity for Scotland to build on unrivalled natural resources to ensure it is at the forefront of a green energy, low-carbon economic recovery. Through the 10 Energy Pledges - a central plank of the recovery programme - we are progressing a range of actions across energy generation, energy efficiency and transport that will create new jobs in low-carbon sectors, tackle climate change and save households and businesses money.

Targeting support for individuals, businesses and sectors during these difficult times will ensure that Scotland is well positioned to take full advantage of the economic recovery when it comes and primed to build on these foundations to secure a low-carbon economy in the long-term.

Intensifying work around fuel poverty and energy efficiency

¹² <http://www.thecrownestate.co.uk>

Alongside existing work on renewables, energy efficiency, climate change and sustainable transport, new initiatives are being taken forward under the Economic Recovery Programme to support energy and environmental objectives:

- £60 million of Scottish Government funding this year to support the new Energy Assistance Package that was launched on 6 April 2009. The package is a one stop shop offering advice on energy tariffs, welfare benefits, tax credits and energy efficiency with access to grants to improve energy efficiency. It makes better use of Government resources by enabling us to work with the energy companies to ensure Scotland gets its fair share of CERT activity.
- £15 million of new Government funding plus £15 million from other sources to support an ambitious area based home insulation scheme. The first stage of the scheme has the potential to offer advice and assistance to some 90,000 homes and support nearly 900 jobs in the process.
- £2 million of investment in the small business loans scheme to help more small businesses with interest-free loans to cut fuel bills. Consequently from December 2008, private landlords, agriculture and transport businesses have been able to get interest free loans from £1,000 to £10,000 for energy efficiency measures or installation of small scale renewables.
- £10 million expected annual savings from moving to national contracts for the bulk purchasing of electricity across the public sector.
- We are taking action to leverage increased spend in Scotland on domestic energy efficiency improvements through the Carbon Emissions Reduction Target (CERT) initiative, including increasing targets by 20 per cent. We estimate that Scotland's fair share of CERT funding could be worth £107 million a year in energy efficiency improvements.
- The Scottish Government will support Scottish and Southern Energy (SSE) in a new Home Energy Apprenticeship Pilot Programme, providing more than 100 individuals in Scotland with the opportunity to become energy professionals.

Reshaping capital spending plans

As outlined in the recovery programme, the Scottish Budget for 2009-10 also accelerates £293 million of spending on capital programmes into 2009-10, on top of £30 million in 2008-09. Of this, environmental and energy objectives will be further boosted by the following investments:

- £6 million of accelerated capital spending for infrastructure investment in the Fife Energy Park to support a range of energy projects.
- £6 million of accelerated capital spending for sustainable transport infrastructure projects. With £5 million allocated to strategic park and ride facilities and a further £1 million to rail related schemes, the funding will provide sustainable, integrated and cost effective public transport alternatives to the car, reducing emissions and traffic volumes on the road.
- £90 million of accelerated capital spending through local authority programmes across Scotland. These include new and refurbished schools,

social work facilities, new recreational facilities and a range of key infrastructure projects. In addition to supporting the economy and community development, the new and modernised facilities will improve energy efficiency and cut carbon emissions.

UK Budget

Key 2009 UK Budget announcements include a proposed uplift to the Renewable Obligation, estimated to provide an additional £525 million to the UK offshore wind sector and the ambition to secure up to £4 billion through the European Investment Bank for renewable energy projects. Additional UK government support of £60 million to promote research into development of CCS across the UK, will help quantify the potential that Scotland has to become a world leader in this technology. Also the announcement of £375 million new spending on energy and resource efficiency will encourage measures to reduce carbon emissions, save money and boost employment across the UK.

European Economic Recovery Programme

In Spring 2009 the European Union agreed, as part of its economic recovery package, significant investment in energy and Internet broadband infrastructure in 2009-2010. This includes €3.98 billion earmarked for investment in:

- carbon capture and storage (€1.05bn).
- offshore wind and grid projects (€565M).
- gas and electricity interconnection projects (€2.3bn).
- broadband and rural development projects (€1.02bn).

The European Recovery Plan lists an agreed number of energy projects that can bid to access the funding. The energy projects in Scotland on this list are:

- Carbon capture and storage: Total envisaged for UK is €180 million. The list of four UK projects includes Longannet.
- Offshore Wind: €40 million for a possible European testing centre for offshore wind development in Aberdeen area, supported by the European Wind Energy Association
- North Sea offshore wind integration project: €165 million for development of offshore grid projects

Projects will have to be ready for investment and incurring substantial capital expenditure by the end of 2010 to be eligible.

2.3 Opportunities

The challenges of increasing demand for energy, together with the imperative of decarbonising energy supply and ensuring security of supply also bring a significant opportunity. Scotland has already made real progress in meeting renewable targets and has established itself as the renewable investment location of choice in the UK. Scotland is also ideally placed to be at the forefront of the development of carbon capture technology given the need to upgrade our coal plants and the proximity to ideal storage locations in the northern North Sea. We are now working with our partners to build on that reputation to create the conditions for establishing Scotland as the Green Energy capital of Europe. Moving from an energy supply picture which

features nuclear power brings clear opportunities to maximise Scotland's comparative and natural advantages in energy and develop a sustainable mix of traditional and existing and new renewable energy generation. Aligned to this are the immense economic opportunities and climate change benefits in renewable energy and energy efficiency. Key opportunities lie in:

- the exceptional natural advantages Scotland has in terms of wind, wave and tidal power, and opportunities for micro-generation, strong academic research, world class industrial supply chains, and positive measures to stimulate development in the sector. The Scottish Government is preparing a Renewable Energy Action Plan as a unique opportunity to seize some of this potential¹³.
- There are both technological and market opportunities in reducing carbon emissions, and a cultural shift towards energy efficiency in our lifestyles, in the built environment and in transport. The Climate Change (Scotland) Bill will act as a driver for moving along a low-carbon pathway.
- There remain significant opportunities in oil and gas extraction. Since 1970, approximately 38 billion barrels of oil equivalent (boe) have been extracted from the UK Continental Shelf, with estimated reserves of between 25 and 39 billion boe still to be extracted - although the exact amount of reserves remaining will depend on a range of factors¹⁴. There are also major opportunities in encouraging the oil and gas supply sector in Scotland to diversify into marine and offshore renewables, including the current major opportunities in supplying offshore wind farms in the southern North Sea.
- In thermal generation there are significant opportunities in carbon capture and storage and clean coal and gas technology. Following the launch of the integrated strategic research study "Opportunities for Carbon Storage around Scotland" on 1 May 2009, it is clear that Scotland has the storage capacity, the natural resources, the technology and ambition to become Europe's leader in carbon capture and storage¹⁵. Developing critical new CCS technologies can help Scotland, and growing economies such as China and India, to meet significant carbon emission reductions. Scotland has vast potential for the geological storage of carbon, both onshore and under the North Sea. The size of the potential storage opportunities in the North Sea could also be of importance to the whole EU as a future carbon store. Although the technology is in development, Scotland is well placed to take a lead in its development and commercialisation.
- Our £13 million Wave and Tidal Energy Support (WATES) Scheme is supporting 8 innovative projects, with the aim of taking marine energy technology from the R&D stage deployment in Scottish seas. These projects are being deployed and tested in the unique facilities at the European Marine Energy Centre (EMEC) in Orkney. This will help to maintain Scotland's global lead in developing and supporting the marine energy sector.
- The Scottish Government's £10m Saltire Prize is aimed at encouraging the world's leading minds to develop commercial scale wave and tidal projects, capable of generating significant amounts of renewables electricity from Scotland's seas.

¹³ <http://www.scotland.gov.uk/Publications/2008/11/05115324/0>

¹⁴ Oil & Gas UK, 2008 <http://www.oilandgasuk.co.uk/issues/economic/PriceInvestmentProfitabilityOct08.pdf>

¹⁵ <http://www.scotland.gov.uk/Publications/2009/04/28114540/0>

- Generating heat and electricity together, with combined heat and power (CHP) technology, can help make energy production more efficient, whether it is from fossil or renewable fuels. Supplying heat locally, through a district heat network, can also reduce emissions compared to conventional heating systems. CHP or district-heating plant can be even more efficient if they also provide cooling.
- Scotland has been a net exporter of electricity for many years - exporting an average of per cent of the electricity it generated between 2000-07 to the rest of the UK - and can continue to be so, with our advantages in, and commitment to, renewables and clean fossil fuel technologies. Significant increases in grid capacity, both onshore and offshore, will allow Scotland to maximise its potential renewable energy resources.
- There are also development opportunities in offshore grid. Work to assess the feasibility of these offshore grids has been undertaken and in November 2008 the European Commission's Strategic Energy Review identified a North Sea Offshore Grid as an infrastructure priority¹⁶. This gives these offshore grid opportunities added impetus at EU level. The Scottish Government will also support development of sub-sea grid, where there are opportunities to work with EU and other partner nations to develop a sub-sea grid network for the transport and export of the significant off-shore wind and wave energy potential in the North Sea. There are also opportunities in the West Coast of Scotland and the Irish Seas, and a unique and major opportunity to work collaboratively with Ireland and Northern Ireland to undertake a major feasibility study on how to deliver sub sea grid in the Irish Seas and West Coast of Scotland.

3. A Greener Deal for Scotland

On 2 February 2009 Scottish Ministers announced a set of pledges on energy policy that form a coherent approach to energy issues in Scotland and aim to shape the energy policy agenda for the remainder of the current term of Government. They are focussed on addressing both short and longer terms opportunities for Scotland to take advantage of competitive advantage – thereby contributing to economic recovery and growth and to addressing climate change. These have been incorporated into the Scottish Government's Economic Recovery Programme¹⁷. Key issues addressed within the pledges are:

Renewables:

- Building momentum across the public and private sector behind the Renewable Energy Action Plan, due for publication later this year.
- Building capacity in the renewable heat sector and taking actions to encourage expansion of renewable sources, including energy from waste.
- Providing financial support for an in depth research project into the skills needs in the renewables sector in Scotland.

Oil and Gas:

- Direct support for the sector and individual businesses through Scottish Enterprise

¹⁶ <http://www.scotland.gov.uk/Topics/Business-Industry/Energy/19185/SKMNEGrid>

¹⁷ Update on Scottish Economic Recovery Programme published in January 2009, <http://www.scotland.gov.uk/Publications/2009/03/17134146/0>

- Considering opportunities for knowledge and skills transfer into other sectors, e.g. renewables and low carbon technologies

Improving energy and environmental foresight and resilience

- Developing fuel and energy scenarios, including developing collaborative linkages.

Supporting clean fossil fuel technologies

- Consultation and research into carbon capture and storage capacity and costs.
- Further work into Scotland's potential in respect of CCS and taking forward demonstration projects.

Supporting development of sub-sea grids:

- Maintain net export capacity through pressing for changes in energy transmission charges
- Promoting the concept of West Coast and North Sea Supergrids

Energy efficiency and improved sustainable transport:

- From April 2009 addressing fuel poverty through an Energy Assistance package
- Developing an Energy Efficiency Action Plan
- Campaigns to promote sustainable and active transport coupled with investment in improved public transport to encourage modal shift
- Supporting the development of low carbon options for private transport

Leading in green energy

- Promoting Scotland technological advances and learning from others through the Saltire Prize and the Scottish European Green Energy Centre

These pledges, along with the work to deliver each of them, are set out in detail in Annex A.

4. Way Forward

Scotland, the UK and the EU are committed to meeting ambitious renewable energy targets by 2020 and ambitious climate change targets by 2050. It is important that we start work now to meet these targets. Scotland has already made real progress in meeting renewable targets and has established itself as the renewable investment location of choice in the UK. Scotland is also ideally placed to be at the forefront of the development of carbon capture technology given the need to upgrade our coal plants and the proximity to ideal storage locations in the northern North Sea. We are now working with our partners to build on that reputation to create the conditions for establishing Scotland as the Green Energy capital of Europe.

The current financial climate is making the cost of capital for investment more expensive. This increases the obligation on Government at Scottish, UK and EU levels to put the right conditions in place for industry to invest for the long term. The Scottish Government has launched the 10 pledges on energy as our commitment to

long term investment in sustainable energy and will launch our Renewable Energy Action Plan later in the year. It is also important that the UK Government puts in place the right conditions for investment in renewables and clean fossil fuels, including releasing money already committed under the Fossil Fuel levy to renewables in Scotland.

The EU's energy investment package, agreed by the European Council and European Parliament in Spring 2009, offers opportunities to promote investment in Scotland (offshore grid infrastructure, offshore wind and carbon capture and storage). The Scottish Government will be working with our partners and through the new Scottish European Green Energy Centre to ensure that Scottish bodies capitalise on this funding stream.

Annex A

ENERGY PLEDGES: Follow up action

PLEDGE 1: We will support and accelerate the implementation of renewable energy, through our Renewable Energy Action Plan, in a way which promotes large scale, community based, decentralised and sustainable generation.

We are working to build a pro-renewable electricity future for Scotland. With a quarter of the European wind and tidal resources and 10 per cent of the European wave resources, exploiting these exceptional renewable resources, and promoting opportunities for micro-generation is key to this goal. Our approach must recognise the importance of both large scale generation and decentralised community based schemes, in line with the Government's commitment to community participation in our energy future.

Key Actions (under way and proposed)

- The Renewable Energy Action Plan will centre around the critical development paths for each renewable technology. It will provide a clear framework for action between the public and private sectors, covering areas such as grid and other infrastructure needs, supply chain development, plant installation, and skills provision.
- The scale of Scotland's renewable energy resource, the pace of change in the sector, and the challenge of meeting the 2020 targets, invite a fresh approach to the Action Plan beyond the production of a one-off standalone document. We are instead setting out to coordinate a Scotland-wide response, in the form of joint action between an unprecedented number of public and private sector organisations over the next 6 months and beyond.
- The Action Plan will assist in coordinating effort, and establishing a centre of gravity for a diverse industry, to realise our renewables ambitions, and deliver the socio-economic and environmental benefits this will bring.
- A Strategic Overview has been carried out to identify the main sectors for carbon abatement in the short, medium and long terms, high level policy options to deliver these; barriers to implementation; and a provisional analysis of costs.

Which bodies are active

- Scottish Government Renewable Energy team, The Forum for Renewable Energy Development in Scotland (FREDS), Scottish Enterprise, Scottish Development International and Highlands and Islands Enterprise.
- Engagement plan currently identifies a further 100+ industry and public sector organisations, from local authorities to SubSea UK.

Economic and climate change benefit

- DECC estimates the sector could provide 160,000 UK jobs by 2020.
- Like the oil and gas sectors, a relatively high proportion of these jobs could be in Scotland, where there is a strong concentration of resource. The Scottish Government announced plans in February 2009 to secure at least 16,000

renewable energy related jobs by 2020, based on Department of Energy and Climate Change (DECC) projections of 160,000 jobs UK wide by that date.

- Work is underway to quantify full life cycle CO2 reduction impacts, and full economic benefits, by technology type, within the analytical strand of the Action Plan.

PLEDGE 2: We will aim to build a commercially viable, diverse renewable heat industry in Scotland to deliver benefits to the wider public, through the implementation of our Renewable Heat Action Plan

The Scottish Government commitment to work towards the EU target of 20 per cent of final energy consumption from renewable sources has major implications for the way we heat our buildings. Alongside our focus on renewable electricity generation, there are opportunities for the expansion of renewable sources of heat, including energy from waste. The new Energy Assistance Package will offer renewable heating systems for fuel poor households who are not on the gas grid.

Key Actions

- The Heat Action Plan will build on the FREDS report of 2008, which already identifies a range of policy options and recommendations. It will be a key part of the Renewable Energy Action Plan.
- The Renewable Heat feed-in tariff will for the first time incentivise commercial investment in renewable heat. Likely to be introduced in 2010/2011.
- For the first time we have a separate renewable heat target for Scotland – 11 per cent heat demand to be sourced from renewable heat by 2020
- £2 million Scottish Biomass Heat Scheme launched to help SMEs begin to convert to renewable heat technologies.
- Additional support via the Renewables Obligation to support CHP projects.
- The Scottish Government is involved in the current DECC consultation on Heat and Energy Savings (which covers renewable and non-renewable heat).

Which bodies are active

Scottish Government Renewable Energy Division, Scottish Enterprise, Highlands and Islands Enterprise, Energy Saving Trust, Carbon Trust, and other public sector partners, including local authorities, housing associations and education institutions, together with private sector partners such as Scottish Renewables, and a wide range of companies and community- based organisations.

Economic and climate change benefit

- At the small scale benefits can be at individual/community level leading to reduction in energy bills, and scope for rural regeneration. Larger scale projects increase employment opportunities, offering highly skilled jobs, leading to increased economic activity and investment in Scotland.
- Increased renewable heat capacity will reduce Scotland's emissions.

Key challenge is renewable heat take-up in Scotland is low, therefore market is starting from a very low base. Need to deploy a wide range of measures to ensure capacity building as well as financial incentivisation.

PLEDGE 3: We will work with the oil and gas sector to maintain its competitiveness, facilitate the transfer of skills and knowledge to other sectors and utilise Scottish based skills in world markets.

Scotland's North Sea oil and gas industry will continue to be a world leader, and continue to contribute to Scotland's economic success. In the years ahead the opportunities to utilise the world class technological and managerial skills in other areas and in other sectors, particularly offshore renewables will be one of Scotland key comparative advantages.

Key Actions

- Continuing/developing assistance for the oil and gas sector – primarily through the Scottish Enterprise energy team.
- Looking at future opportunities to transfer skills and knowledge into new sectors from oil and gas e.g. renewables and carbon capture and storage.
- The enterprise agencies have direct engagement with individual energy companies, both indigenous Scottish companies and inward investors, across the energy sector and these companies can benefit from the wide portfolio of projects, programmes and business support offered by Scottish Enterprise and Highlands and Islands Enterprise.
- Close contact with trade bodies including Oil & Gas UK, Subsea UK, Offshore Contractors Association, the Energy Institute and others; direct contact with key companies; contribution to industry workshops and conferences; and industry steering groups, and through the new Oil & Gas Industry Advisory Group. The agencies also engage with the power generation sector through the trade body, Industrial Power Association, direct working with key companies and a range of other activity including participation in feasibility studies.

Which bodies are active

- Scottish Government.
- Scottish Enterprise/Scottish Development International and Highlands and Islands Enterprise.
- Oil and Gas UK.
- Various other trade associations (Offshore Contractors Association, Subsea UK etc).
- Planned advisory groups.

Economic and climate change benefit

- Current oil and gas supply chain is worth around £5bn a year - still opportunities to develop this.
- The sector directly employs around 22,000 in Scotland.
- Many Scottish firms now seen as leading edge technology – expertise very much in demand elsewhere.
- Oil and gas activity will only lead to carbon savings if we promote some transfer to CCS.

PLEDGE 4: We will enhance our capability to undertake energy and environmental foresight, and develop our preparedness to anticipate and respond to threats and take advantage of opportunities.

Foresighting

In the past oil and gas played a key role in getting our economy and global economies to where they are now. In future, all societies will need to make the transition towards a low carbon future. The recent high price of fossil fuels has reminded us of the importance of energy use, and the challenges of making that transition. We need to understand better future trends and use this to shape more effective responses.

Energy Resilience

The resilience of the energy sector in Scotland is crucial to both the Scottish and UK economies and the day to day operation of the country. We need to continue to work with industry and key stakeholders to ensure that Scotland's energy sector remains resilient and that robust response arrangements are in place should emergencies occur.

Key Actions

Foresighting

- Developed fuel and energy scenarios.
- Established a new Energy and Environmental Foresight post (a 2-year secondment from Scottish Enterprise) to enhance the Scottish Government's strategic capacity in Energy and Environmental Foresight.
- Established a strategic collaboration with the US Government Department of Energy's Energy and Environmental Security Directorate to foster a multi-national network of strategic intelligence in energy and environmental foresight.
- Established links with other governmental strategic foresight work including UK Foresight; US; Canada; Australia, the EU and countries such as Norway, Netherlands; Latvia and Germany; and links with corporate foresight including Philips, Shell and KPMG.

Energy Resilience

- Developing an Action Plan to improve energy resilience via the Scottish Resilience capabilities programme.
- Engaging with key stakeholders to improve the resilience of Scotland's fuel supply and distribution system.
- Improving the resilience of Scotland's energy and telecoms via sector specific initiatives and in partnership with the UK Government.
- Continually reviewing energy emergency arrangements in Scotland.

Which bodies are active?

Foresighting

The issues and opportunities at stake span international boundaries and the public and private sector. The response needs to mirror this and similarly leverage

international efforts' perspectives, capacities and skills. Therefore the work needs to incorporate international partnerships with other governments and corporations with the Scottish Government leading on the implications for Scottish policy challenges.

Energy Resilience

A range of key stakeholders including industry, police and local authorities as well as the UK Government.

Economic and climate change benefit

We will be better positioned to seize strategic opportunities for new markets and industries; and to mitigate strategic threats to economic and social wellbeing arising from the turbulent confluence of energy scarcity and climate change.

PLEDGE 5: We will support development and implementation of clean fossil fuel technologies in Scotland, through collaboration with academia, industry and other interested parties.

Alongside the accelerated expansion of renewables, the electricity mix must benefit from clean fossil fuel technologies. As demonstrated by the recent Scottish Government study on carbon capture and storage¹⁸, Scotland can lead the way on Clean Coal (and Gas) Technology, and in Carbon Capture and Storage. The work we are now undertaking in preparation for future fossil fuel power station applications should help us to be ready for this.

Key Actions

- We are consulting on how we can require carbon capture in new power stations.
- The Scottish Centre for Carbon Storage has brought together the expertise of a number of our leading scientists, engineers and technologists from a range of disciplines and organisations to address the potential for, and challenges associated with, carbon capture and storage in Scotland. Its report was launched by the First Minister on 1 May 2009.
- Scottish European Green Energy Centre (SEGEC) engagement with European Commission and partner countries
- Further development of SG policy on CCS – roadmap in preparation, to be issued in summer.
- Support for Scottish based CCS UK demonstrator applicants.
- Consideration of funding options, including working with UK Government on consultation on proposed new levy to fund CCS demonstrators and attracting EU funding.
- Workshops to discuss CCS related issues and supply chain opportunities.

Which bodies are active

- Scottish Government.
- Scottish Centre for Carbon Storage.
- Scottish European Green Energy Centre
- Industrial and Power Association and a number of individual companies.
- Private Sector including Scottish and Southern Energy and Scottish Power.
- Scottish Enterprise.
- Advisory group on thermal generation and carbon capture and storage.
- Crown Estate

Economic and climate change benefit

- Scotland has vast potential for the geological storage of carbon, both onshore and under the North Sea. The size of the potential storage opportunities in the North Sea could also be of importance to the whole EU as a future carbon store. Although the technology is in development, Scotland is well-placed to take a lead in its development and commercialisation.
- Supply chain opportunities, although long-term, are likely to be considerable – if we are world leaders in the technology there are considerable export opportunities. Estimated job potential for Scotland from technology development and implementation and storage and transport some 10,000 jobs.

¹⁸ <http://www.scotland.gov.uk/Publications/2009/04/28114540/0>

- CCS technology has the potential to reduce carbon emissions by 90 per cent at power stations.

PLEDGE 6: We will support the development of sub-sea grids, alongside improvements in the onshore grids, and press the UK Government for fairer charging structures.

Scotland has been a net exporter of electricity for many years. It can continue to be so, with our advantages in, and commitment to, renewables and clean fossil technologies. This will require further development of the Transmission Grid, charging and system balancing structures which reflect our commitments to a low carbon future, and a greater focus on decentralised energy.

Key Actions

- Advocating to OFGEM and National Grid change in energy transmission charging to remove discrimination against Scottish based generation and resisting proposals for a locational approach to balancing of constraints that would target constraints costs on Scottish generators.
- Working with Scottish power companies, UK Government, National Grid, Ofgem and other stakeholders to assess and address onshore grid constraints and develop future grid that enables Scotland's renewable potential to be developed and delivered.
- Supporting smart grid development, including research and demonstration at Strathclyde University and Orkney Regional Management Zone initiative.
- Promoting the concept of West Coast and North Sea Supergrids through the ISLES project with the Republic of Ireland and Northern Ireland, and engagement with the European Adamowitsch Group on North Sea offshore connection
- Proposing measures to promote decentralised generation through our Renewable Energy Framework.
- Undertaking planning reforms (National Planning Framework) and consent streamlining.
- Through the Energy Technology Partnership and the Scottish European Green Energy Centre making smart grids and super grids priorities for action in 2009 and beyond.
- Over the next 20 years most of Scotland's UK's electricity grid infrastructure will need to be replaced. We need to influence the regulatory structure by which such investments will be regulated to ensure that they promote sustainability objectives.

Which bodies are active

The Scottish Government, UK Government, OFGEM, European Commission, EU partners, Energy Technology Partnership, Scottish European Green Energy Centre, research institutions, utilities, private investors.

Economic and climate change benefit

A transformation in grid infrastructure which capitalises on Scotland's sustainable energy generation potential and promotes efficiency, decentralisation and flexibility at distribution level.

PLEDGE 7: We will implement measures to improve Scotland's energy use through the Energy Efficiency Action Plan, which is a key part of the Scottish Government's Climate Change Bill.

The recent high price of energy has reminded us that energy is a valuable commodity which should not be wasted, and has highlighted the vulnerability of low income families to rising energy costs. There are, nonetheless, huge opportunities to improve the efficiency of our energy use, in households, businesses, the agricultural sector and the public sector, and potential improvements in how the public sector supports efficiency improvements. This is closely linked to fuel poverty and climate change objectives and needs to be given greater emphasis in our overall work.

Key Actions

- From April 2009, Scottish fuel poverty programmes will be replaced with an Energy Assistance Package, supported by Scottish Government funding worth around £60 million and Carbon Emissions Reduction Target (CERT) funding from the energy companies.
- The Scottish Government will bring forward proposals for the first stage of an ambitious area based home insulation scheme which has the potential to offer advice and assistance to 90,000 households and support 900 jobs.
- We have gained the commitment of the energy companies to work with us to ensure Scotland gets its fair share of CERT funding.
- We will establish an Energy Efficiency Project Board to oversee the strategic direction of the Government's energy efficiency policy and the proposed statutory requirement to publish, monitor and report on an Energy Efficiency Action Plan as part of the Climate Change (Scotland) Bill.
- We will implement the Carbon Reduction Commitment (CRC) in partnership with the UK Government and other devolved administrations. The scheme, starting in April 2010, will reduce carbon emissions by driving energy efficiency measures in the target sectors.
- We published an outline of an Energy Efficiency Action Plan in April and will consult widely on it in the summer.

Which bodies are active

- The six major energy companies (Scottish Power, Scottish & Southern Energy, EDF, Eon, npower, British Gas) have agreed in principle to work with us to ensure Scottish consumers receive their fair share of CERT.
- Carbon Trust continues to support larger, energy intensive businesses and public sector bodies, to reduce their energy use.
- Through the Energy Saving Scotland advice network, Energy Saving Trust deliver sustainability living advice to consumers and SMEs and are the first point of contact for the new Energy Assistance Package.

Economic and climate change benefit

- Through continued funding of Carbon Trust and Energy Saving Trust, we will help consumers, businesses and the public sector cut their carbon emissions and their fuel costs. This will contribute to Scotland's economic recovery and, in turn, our sustainable economic growth.

- Energy Assistance Package Government funding comes from a range of budgets and the package will deliver a combination of objectives in a coordinated manner, including on fuel poverty, wider poverty, climate change and energy.
- Achieving our fair share of CERT funding could be worth £107 million a year in home energy efficiency improvements, savings of £83 million in household fuel bills, as well as lifetime savings of 19 million tonnes of carbon.
- The CRC will contribute to our ambitious climate change targets by delivering reductions of over 4 MtCO₂ per annum by 2020. It will also offer the opportunity to save money, with an estimated positive NPV of £1 billion through reduced energy bills.

PLEDGE 8: We will develop and deliver more sustainable transport to improve efficiency and reduce transport emissions in the longer term.

We recognise the benefits and impacts of our individual travel actions. The transport challenge is to transform private transport demand by making alternatives, including walking, cycling and public transport, more attractive, accessible and affordable, and through more efficient use of vehicles to reduce the negative economic and environmental impacts of private transport.

Key Actions

- Targeted media and marketing campaigns promoting the benefits of more sustainable and active transport. Delivered by a range of organisations including GoGreener Campaign, Eco-driving Campaign and encouraging children to cycle to school;
- Advice and support to organisations to reduce energy use. Programmes currently underway, including travel plan advice, www.chooseanotherway.com, journey planning tools through Traveline Scotland, grant schemes, car-sharing databases as well as Edinburgh City Council's corporate membership of Edinburgh City Car Club;
- Smarter Choices, Smarter Places is engaging with 7 towns and communities across Scotland focusing on behavioural change to alternative forms of travel and a encouraging a range of activities including the delivery of cycle infrastructure, bike hire schemes and car clubs in rural areas;
- The Cycling Action Plan for Scotland will be published in Autumn 2009;
- Improving public transport to encourage modal shift, using cleaner vehicles, more Park & Ride Schemes and developing an integrated ticketing strategy.

Which bodies are active

Scottish Government, Transport Scotland, Road Safety Scotland, Regional Transport Partnerships, Local Authorities, Cycling Scotland, Sustrans, Living Streets, Energy Saving Trust, Paths for All, Traveline Scotland, commercial organisations providing car-sharing databases and car-clubs and public Transport Operators as well as other sustainable and active travel groups and organisations.

Economic and climate change benefit

Intensive implementation of Smarter Choices can deliver carbon savings through more efficient use of vehicles and encouraging modal shift to public transport. For example, an initial assessment of eco-driving programme estimates it could save CO2 equivalent to the annual emissions of 275,000 cars.

Research into Smarter Choices has identified it can deliver benefits and savings by reducing congestion and improving health as a result of more people walking, cycling and using public transport.

PLEDGE 9: We will 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.

Alongside improvements in public transport and infrastructure for walking and cycling, we recognise that there will continue to be a need for private transport. The crucial point will be for people to be in a position to make the most informed and appropriate choice for each journey. It will be important, where private cars are the chosen option, that low carbon options are both available and actively promoted.

Key Actions

- Benchmarking the Scottish public sector fleet, starting with Scottish Government and local authorities. Data gathered to assess the potential role of better logistics, scope for shared services and joint green procurement.
- Participating in DfT activity on car labelling and promotion of 'best in class' purchasing to consumers.
- Working with Scottish Enterprise to develop a better understanding of the mechanisms for supporting the testing and introduction of near to market, low carbon vehicle technologies.
- Engaging with industry via the Sustainable Transport Group to identify best policy options for supporting the industry and delivering our emissions reduction commitments.
- Research and studies underway to inform policy development on reduction of emissions from transport and the potential economic benefits from supporting the development of a Scottish manufacturing base for transport technologies.

Next steps:

- In partnership with other organisations, we will hold a conference in June which will introduce the Scottish Government consultation on transport technologies.
- By engaging with local authorities, industry and academics and informed by evidence from the consultation process and research studies, develop an action plan for supporting the introduction of low carbon vehicles.

Which bodies are active

Scottish Government, Local Authorities, Energy Saving Trust, industry representatives with expertise in hydrogen, electric vehicles or renewables, and Scottish Enterprise.

Economic and climate change benefit

In the short to medium term, green jobs, skills increase and development of a vehicle industry in Scotland. In the medium to longer term, low carbon vehicles offer the potential to deliver almost zero emissions by 2050.

PLEDGE 10: We will work to develop international partnerships through the Saltire Prize and the Scottish European Green Energy Centre to make Scotland a leader in the development and deployment of green energy.

Energy will play an increasingly important role in securing sustainable economic growth for Scotland in the European and World markets. We need to build on these exciting new initiatives to develop a clear comparative advantage for Scotland in European and international markets, both to promote our own technological advances and to learn from developments in other countries.

Key Actions

- The Saltire Prize has already attracted over 100 expressions of interest from 23 countries worldwide. Promotion through the offices of SDI, our Consular Corps and through existing media and promotional partnerships will continue to build on this early stage success. International scale consultation exercise on draft competition guidelines was completed in early 2009 to promote openness and transparency within the competition process. Prize open for formal entries from summer 2009.
- All Saltire activity will be integrated with work underway in SEGEC, and the Government's broader marine and other renewable energy development activity.

The Scottish European Green Energy Centre, currently being established, will play a pivotal role in positioning Scotland at the heart of research, development and deployment of low carbon energy technologies across the EU. Scottish researchers in our universities, research institutes and commercial sectors are world leaders in low carbon energy research. The Green Energy Centre will act as a catalyst and focal point for the development of the sector in a European context, providing additional resources and value added services which complement those of existing organisations, and will work closely with the Energy Technology Partnership (of the Scottish universities) in particular. Its strategic aims are:

- promoting the internationalisation of green energy research;
- fostering good practice in the development and deployment of green energy; and
- supporting sustainable economic growth and sustainable energy targets.

In the short to medium term, priorities include:

- Forming an alliance of partners to raise the importance of marine and tidal energy research and development (particularly focussed on the Atlantic and North Sea arcs);
- Promoting offshore wind development and deployment;
- Promoting long distance supergrid development and smart distribution grids;
- Developing partnerships on key policy priorities of carbon capture and storage and renewable heat; and
- Leading work on tackling policy and administrative barriers to development of renewable energies.

Which bodies are active

The Saltire Prize benefits from a growing international support community, including prominent environmental and economic development figures, the innovation prize

community, and a domestic network encompassing academia, education, public sector and the marine renewables industry.

The strategic objectives that we have already set for marine renewable energy and the development of supergrids reflect engagement with the European Commission and show the central importance of our ambitions for the Green Energy Centre, and the relevance of its work in delivering the EU's ambitious agenda for security of supply.

Economic and climate change benefit

- Innovation prizes have a proven record of attracting inward investment, as well as stimulating breakthrough advances in technology. The \$10million Ansari X-Prize is estimated to have created over \$100m of private sector investment.
- The full benefit that will be leveraged by the £10m Saltire prize fund will depend on the number and quality of applicants, and their success in meeting the challenge which will be influenced significantly by Scotland's regulatory landscape for renewable projects.
- Combining the aims and ambitions of the Saltire Prize and the Government's marine renewables policy should ensure strong progress is made towards creating a world leading marine renewable industry in Scotland, learning from the experiences of the creation of the oil and gas sector.
- Scottish academics and researchers and industry need to use the SEGEC and the parallel Energy Technology Partnership to drive forward collaborative projects which cement Scotland's comparative advantages and provide the basis for effective commercialisation, and be ready and willing to learn from foreign experience.

PUBLIC SECTOR INTERACTION WITH ENERGY SECTOR

Strategic Level

First Minister's Scottish Energy Advisory Board

In May 2009, the First Minister brought together a number of key Scottish energy industry players, and stakeholders including local authorities and the STUC, in the first ever Scottish Energy Advisory Board for effective, open and informed discussion with the Scottish energy industry on the key issues facing the sector in Scotland. Going forward, the Board will provide an ongoing forum for strategic discussion on the current and future energy challenges and opportunities for Scotland. It will work to understand and articulate the Scottish industry view on a range of energy issues, including the potential synergies between the oil and gas and the renewables sectors, how to deliver a low carbon economy and the challenge of ensuring the security of Scotland's energy supply.

Ministerial Energy Theme Groups

Parts of the energy sector have many shared and overlapping interests and issues, but there are distinct parts of the sector which have very different characteristics, technology and issues. First Minister has therefore also created three Ministerial led energy theme groups, led by the Minister for Enterprise, Energy and Tourism, focusing on: Oil and Gas; Renewables; and Thermal Generation and Carbon Capture and Storage. These Groups provide a forum to focus on specific issues under each theme, as well as sector wide and common issues. They will also advise Ministers and enterprise agencies on key Scottish energy issues, analyse trends, challenges, opportunities and blockages in each energy theme and make recommendations on how to address current and future challenges and exploit opportunities for growth to inform energy policy development.

The Forum for Renewable Energy Development in Scotland

The Forum for Renewable Energy Development in Scotland¹⁹ has been operational since 2003 and is a strategic level partnership between industry, academia and Scottish Government to capitalise on stakeholder expertise, networks, and activity in which they are engaged to develop Scotland's renewable energy industry. The membership of FREDS has recently been refreshed and with Ministerial input will become the renewables theme group discussed above.

Carbon Emissions Reduction Target (CERT) Strategy Steering Group

The Carbon Emissions Reduction Target (CERT) places an obligation on the major energy companies to provide households with subsidised energy efficiency measures. The Scottish CERT Strategy Steering Group was established in 2008 after research suggested that Scotland did not receive its fair share of funding under the previous phases of the GB-wide programme. The Group includes Ofgem, the Energy Saving Trust and the six main energy supply companies, who have agreed in

¹⁹ <http://www.scotland.gov.uk/Topics/Business-Industry/Energy/19185/Resources/17613>

principle to work with the Scottish Government to maximise the level of CERT investment in Scotland. The Group will publish a full CERT Strategy in 2009.

Working Jointly with Local Authorities

The Scottish Government is committed to working closely with local authorities in order to promote our energy sector as set out in the 10 pledges. Local authorities have a range of responsibilities within the energy sector in relation to planning, housing, economic development and other areas. For example the Scottish Government is consulting COSLA and local authorities in preparation for the implementation of the new area based home insulation scheme.

Representation and Engagement at UK Level

The Scottish Government is represented at strategic level in various UK energy and climate change discussions. This includes the Electricity Networks Strategy Group run by DECC. This group works to identify, and co-ordinate work to address the technical, commercial, regulatory and other issues that affect the transition of electricity transmission and distribution networks to a low-carbon future. It also includes direct and ongoing engagement with UK Ministers and Departments, including BERR and the Department for Energy and Climate Change. The Scottish Government is also represented on Project Boards for the review of the EU Emissions Trading Scheme and implementation of the Carbon Reduction Commitment as well as for the delivery of the UK emissions reduction targets, and is the lead partner in the Irish Scottish Links in Electricity Study with the governments of Ireland and Northern Ireland.

Scottish Ministers and the Scottish Government engage direct with National Grid and Ofgem. Scottish Ministers are also represented on a number of UK wide bodies. This includes PILOT²⁰, the UK wide oil and gas body which brings together governments, industry and other stakeholders to discuss issues of importance and interest. It also includes a number of other groups at the UK level including the UK Coal Forum²¹ and the Transmission Working Group²².

Representation and Engagement at EU and international Level

Scottish Ministers and the Scottish Government engage direct at EU and international strategic level. This includes direct engagement and links to the Directorate-General for Energy and Transport, and the EU Commissioner for Energy and his Cabinet. In addition to extensive engagement at UK level, this also involves direct engagement with a number of countries (including Ireland, the Netherlands, Norway and Germany) on possible east and west coast off-shore generation potential and sub sea grid development. We are also working to influence the international climate change debate leading up to the United Nations Climate Change negotiations in Copenhagen in December.

Scottish Enterprise's International Advisory Board

Scottish Enterprise International Advisory Board²³ (IAB) is made up of members with particular experience, positions of international prominence or influence in their

²⁰ <http://www.pilottaskforce.co.uk/>

²¹ <http://www.berr.gov.uk/whatwedo/energy/sources/coal/forum/page37276.html>

²² <http://www.ensg.gov.uk/index.php?article=3>

²³ <http://www.scottish-enterprise.com/international-advisory-board>

respective industries – including energy companies – and their willingness to contribute to Scotland’s wealth creation agenda. The IAB complements the role of the Scottish Enterprise Board by contributing international business advice and market development perspective to Scotland’s economic development drive and providing advice on strategy, guidance on key landmark projects and support to Scottish companies with significant international potential.

The Energy Technology Partnership

The Energy Technology Partnership (ETP) involving Glasgow, Aberdeen and Edinburgh Universities draws together key Scottish university based research and development capacity on energy technology to develop and disseminate ground-breaking renewables and low carbon research. The ETP also has strong links to key universities across the UK and overseas and to the energy industry. It is founded on the principle of research pooling, and acts as a common platform for seeking funding from UK and international funding bodies and industry.

The Scottish European Green Energy Centre

The Scottish European Green Energy Centre²⁴ draws upon the strengths of the Energy Technology Partnership and a broad network of European research and industry-wide partnerships to develop new and strengthened links across the EU and deliver new projects.

The Saltire Prize

The Scottish Government has created the opportunity to award one of the biggest international innovation prizes in history through its plans for the Saltire Prize²⁵ - a £10 million challenge prize for advances in wave and tidal energy.

Operational Level

The Scottish Grid Group

The Scottish Government facilitates a Scottish Grid Group, bringing together a range of Scottish industry interests on electricity network issues, including the owners of the Electricity Transmission network in Scotland. It provides a forum to discuss matters of common interest and present a Scottish voice on transmission and grid issues.

The Energy Saving Trust (EST)

The, Energy Saving Trust²⁶, through the Energy Saving Scotland Advice Network provides a dedicated business advice service offering hands on support to Scottish companies. This advice and support to improve their energy efficiency, in order to reduce carbon emissions, increase competitiveness and contribute to the Scottish Government’s top priority of sustainable economic growth.

Energy Saving Scotland – small business loans

²⁴ <http://www.scotland.gov.uk/Topics/Business-Industry/Energy/Energy-In-Europe/European-Green-Energy-Cen>

²⁵ <http://www.scotland.gov.uk/Topics/Business-Industry/Energy/saltire-prize>

²⁶ <http://www.energysavingtrust.org.uk/>

The Scottish Government funds EST to manage the Energy Saving Scotland – small business loans scheme. This provides interest-free loans for SMEs to invest in energy efficiency and microgeneration measures. The scheme was extended in December 2008 to encourage more renewables projects and now accepts applications from private sector landlords, as well as companies in the agriculture and transport sectors, all of which were previously excluded.

The Central Energy Efficiency Fund

The Central Energy Efficiency Fund (CEEF)²⁷ has provided local authorities, NHS boards and Scottish Water with a total of £20 million in interest-free loans for capital investment in energy efficiency and microgeneration. CEEF supports a range of technologies such as energy efficient lighting, cavity wall insulation and building energy management systems. This year, the scheme was extended by £4 million for the further and higher education sectors.

The Carbon Trust

The Scottish Government funds the Carbon Trust²⁸ to provide a range of technical energy efficiency advice to larger, energy-intensive businesses. This includes on-site energy audits and tailored Carbon Management reviews. Carbon Trust also provide energy performance support to larger public sector energy users through the Carbon Management Programme as well as on-site carbon reviews, aimed at realising emissions savings.

Energy Resilience

The Energy & Telecoms Resilience (ETR) Team in the Scottish Government represents the Scottish Government's interests on contingency planning matters affecting the energy sector in Scotland. The ETR Team work in close conjunction with Scottish Resilience and UK government to ensure that energy contingency planning arrangements are continually reviewed, improved and tested. This includes mitigating the impact of any potential disruption to fuel supplies and responding to off-site events at civil nuclear sites in Scotland.

Scottish Government Grant Support Schemes

The Scottish Government provides a range of business grant schemes to support to firms working in the energy sector. This includes the Regional Selective Assistance Scheme, aimed at encouraging investment projects which will create or safeguard jobs in Scotland. The SMART: SCOTLAND²⁹ grant scheme provides support to firms in the energy services sector providing funding support for early-stage R&D projects aimed at providing, improving and proving energy sector technology. Other renewable demonstration projects funded separately include a major biomass installation at Queen Margaret University College, Edinburgh, and most of the projects supported under the Scottish Hydrogen and Fuel Cell Grants Scheme which ran in 2007-08 under the Clean Energy Programme.

The Clean Energy Programme also included the Wave and Tidal Energy Scheme which is providing £13M support to 8 projects, most of which will be located at the

²⁷ <http://ceef.energy-efficiency.org/>

²⁸ <http://www.carbontrust.co.uk/default.ct>

²⁹ <http://www.rsascotland.gov.uk/ras/998.html>

publicly-funded European Marine Energy Centre (EMEC) in Orkney. The third element of the Clean Energy Programme was the Scottish Biomass Support Scheme (SBSS), run jointly by the Scottish Government and the Forestry Commission Scotland, which is providing £7M of support to about 65 projects across Scotland, and which has just progressed to a second round to be focussed on heat and district heating.

Community Support and Advice

Support and advice to communities on installing renewable generation is offered under the Scottish Government's Scottish Community and Householder Renewables Initiative³⁰, currently administered in the Lowlands by Energy Saving Trust and in the Highlands and Islands by Community Energy Scotland.

Scotland's enterprise agencies

Scottish Enterprise (SEn) and Highlands and Islands Enterprise (HIE) work to provide a range of practical support and assistance to the energy sector. This includes supporting the development of growing businesses through account management and working with Scottish energy businesses on market intelligence and supply chain opportunities. It also includes raising the profile of the sector across Scotland to attract foreign direct investment, working with existing investors to retain and grow their operations and working with energy companies to assist their expansion into international markets.

The enterprise agencies also offer a range of support to help the sector innovate and develop supply chain connections. This covers a range of activity, including research on emerging energy opportunities (e.g. offshore & nuclear decommissioning, and renewables) and emerging energy markets and support strategically significant industry projects and demonstration projects (e.g. the Hydrogen Office, the European Marine Energy Centre and the Pentland Firth Tidal Energy Project).

SEn and HIE also offer a range of practical and investment support for the energy sector. This encompasses support for additional energy infrastructure (such as Fife Energy Park, Energetica and Energy Technology Centre) working with energy companies to increase the supply of risk capital to growth businesses through initiatives such as the Scottish Co-investment Fund; and collaborative technology development fund to support and stimulate transfer of expertise. It also extends: to public relations, promotional and educational activity; to awareness and support for the Scottish sector; to supporting UHI to develop a renewable energy co-ordination unit and PhD support; and to working to promote career opportunities in renewables.

Scottish Development International (SDI)

Scottish Development International work to attract direct foreign investment to Scotland. Scottish Development International has a specific Energy and Engineering Services Team to support energy companies investing in Scotland. SDI can also draw on input and expertise from its offices throughout the world including the UK, mainland Europe, North America and Asia.

Skills Development Scotland

³⁰ <http://www.energysavingtrust.org.uk/scotland/Scotland/Consumers/Scottish-Community-and-Householder-Renewables-Initiative-SCHRI>

Skills Development Scotland aims to deliver comprehensive information, advice and guidance for careers and learning as well as extensive support for skills development in Scotland, with the aim of delivering real, positive and sustained change in Scotland's skills performance and for sector skills needs³¹. The Scottish Funding Council, Skills Development Scotland, and the Sector Skills Councils have come together, along with other stakeholders including the Scottish Government, to form a new Renewable Energy Skills Group to focus development of the skills base to meet the needs of the Scottish sector.

Regulation

The Scottish Climate Change Bill, introduced to the Scottish Parliament in December 2008, sets one of the most ambitious emissions reductions targets in the world - 80 per cent by 2050 - with public sector contribution and leadership vital to achieving this³².

The Scottish Government Renewables Obligation (Scotland) already requires licensed electricity suppliers to provide increasing amounts of their power to customers in Scotland from eligible renewable sources. Changes scheduled to come into effect from April 2009 will provide even greater support for emerging technologies such as wave, tidal and biomass generation.

The EU Emissions Trading Scheme (ETS) and the proposed Carbon Reduction Commitment (CRC) are both largely devolved matters. The EU ETS is under review and an amended, strengthened Directive will be in place for the beginning of Phase III in 2013. Regulations are UK-wide and made at Westminster with the agreement of Scottish Ministers. The CRC will begin in April 2010 and the last of three consultations on scheme design is currently underway (12 March – 4 June). Regulations will be through an Order in Council which will be considered by the Scottish Parliament later this year.

Operational regulation of the energy sector in Scotland is a reserved matter at both UK and EU level. The First Minister will shortly to draw together a Scottish Energy Advisory Group to provide an effective, collective and influential “Scottish voice” for engagement on a range of issues, including regulatory matters.

Scotland's planning system, which is aimed at ensuring land is used in the best way for everyone's long-term interest, is a vitally important factor for the Energy sector in grid infrastructure development and investment.

Scottish Ministers also have a regulatory role in considering applications to build and operate power stations and to install overhead power lines. The Energy Consent decision making process allows a balance to be drawn between the interests of developers, energy and planning policy, community interests and environmental considerations³³.

³¹ <http://www.skillsdevelopmentscotland.co.uk/>

³² <http://www.scottish.parliament.uk/s3/bills/17-ClimateChange/index.htm>

³³ <http://www.scotland.gov.uk/Topics/Business-Industry/Energy/Energy-Consents>

OVERVIEW OF THE INTERVENTIONS

Strategic Level

There is a good, and increasing, level of engagement between the Scottish energy sector, Scottish Ministers, agencies and key stakeholders. This will increase significantly with the formation of a First Minister led Scottish Energy Advisory Board and three Ministerial led sub groups (on renewables, oil and gas and thermal/generation and carbon capture and storage). These will provide useful strategic forums for industry and public sector partners to work together on the key energy issues facing Scotland and its energy sector. They will also provide a useful proving ground for existing and emerging policies for the energy sector. The First Minister led Board is also be an opportunity to articulate the Scottish energy industry position in the UK, EU and global context. The Council of Economic Advisers (CEA) is looking at energy issues as part of its remit and is working with the Scottish Government on a study of the costs and benefits of different electricity transmission options. The next National Economic Forum meeting in Autumn 2009 will have a specific focus on the energy sector in Scotland.

Strong, open and robust relationships with Government, institutions and organisations at EU level are providing a useful dimension to the cross UK energy debate. This will continue with engagement with DECC and BERR in particular providing a focus for collaborative effort at Government level to meet Scottish and UK targets for climate change and renewable energy. Building on the direct links established with National Grid and Ofgem also offers opportunities for closer and increased joint working.

Increasingly effective relationship building and engagement at EU and international level on possible offshore generation and grid connection opportunities also offer significant potentially mutual benefits across the UK and a number of EU and European partner countries.

Operational Level

The Scottish Government dedicates policy and analytical resource to energy policy issues, in energy markets, grid and transmission issues, energy efficiency, renewable energy and energy consents. This is aimed at ensuring Scottish Ministers can fully deliver their policy initiatives for the Scottish energy sector including those addressing climate change. Day to day engagement by the energy sector-specific teams within Scottish Government and the enterprise agencies enables close liaison and partnership working within the Scottish energy sector the public sector, and enable robust links with UK and EU Government. A key current priority is to increase the level of analysis.

Grant Support Schemes

Regional Selective Assistance has proved a valuable asset in attracting new companies to Scotland and helping established companies remain in Scotland to develop and grow. Over the last 5 years, £10.5 million of RSA support has been provided to some of Scotland's energy companies. Over the last few years, SMART: SCOTLAND has funded early-stage R&D projects aimed at providing technology to provide energy companies with over £3m for early stage technical and commercial

feasibility projects. The Scottish Government has offered grant support for the development of wave, tidal and biomass projects as well as hydrogen fuel cells. Taken together, these grant schemes amount to almost £25 million.

The Wave and Tidal Energy Scheme (WATES), through the link with EMEC, is helping Scotland to lead the way in the development of the emerging marine renewables sector. The Scottish Biomass Support Scheme has shown a high level of demand and this is reflected in the decision to run a further funding round. The development of biomass heat will be key to achieving the challenging renewable heat target posited in the Scottish Government's Renewable Energy Framework, hence it is important that momentum is maintained in the sector. The Hydrogen/Fuel Cell scheme will be evaluated in 2009 with a view to steering further support for the sector.

Community Support and advice

The Scottish Government is devising a new cross-Scotland grant scheme designed to maximise community benefits from renewables, and this will be in place by April 2009, along with newly-developed guidance for developers and communities on models for engagement.

Enterprise Agencies

Scottish Enterprise's Energy Key Sector team and SDI's energy services team both actively support the energy sector in Scotland. SEn has long-established and positive relationships with the oil & gas industry and is directly engaged with PILOT and contributes to several of the workgroups of main trade body Oil & Gas UK. SEn is also engaged with collaborative projects with BERR, ITF, Oil & Gas UK, Subsea UK, Higher Education Institutions, operating companies and first tier contractors.

In the power generation sector, the enterprise agencies have also developed close and regular contact with major utilities, major contractors, small and medium sized enterprises and consultants in the energy sector, much of it driven through the Industrial Power Association.

Scottish Enterprise also offers a range of support interventions to other key sectors and growth industries in the energy supply chain. Support to these industries, for example chemical sciences and construction, can improve the competitive advantage of the energy industry and infrastructure in Scotland through increases in efficiency and the technology used.

Energy Efficiency

The Central Energy Efficiency Fund has provided interest-free loans to over 850 projects helping local authorities, NHS boards and Scottish Water save an estimated £104 million in energy bills and 390,000 tonnes of carbon.

The Carbon Management Programme run by the Carbon Trust has already helped 26 Scottish public sector organisations improve their energy efficiency. By April 2009, all local authorities and the Scottish Government will have completed the Programme. The Carbon Trust itself provides direct support to larger, energy intensive Scottish companies with a range of technical energy efficiency advice. The Scottish Government invested some £1.9m in the Carbon Trust in 2008/09 and the wider activities of the Carbon Trust show implemented CO₂ savings of 186k-277k tonnes in 2007/08, and cost savings at over £18m.

Under *Energy Saving Scotland – small business loans* (previously Loan Action Scotland) demand for energy efficiency loans has increased year-on-year with 68 loans offered to business in 2007/08, worth over £1.6 million. A further £2 million is being invested in the scheme this year specifically for microgeneration measures, taking total investment in the scheme to over £5 million.

The Scottish Government provides £2.8m a year to Envirowise, who offer hands-on practical advice to businesses on resource efficiency, waste minimisation and effective use of energy and water³⁴. The latest (2006) impact assessment of Envirowise reported energy savings of 385,000 MWh, 45,000 MWh of which attributed to Envirowise.

Energy Consents for Renewable Energy Projects

In Scotland, there is already 3.11 GW of installed capacity from renewable energy sources. Since May 2007, the Scottish Government has determined 26 renewable projects, consenting 21 of them. The total amount of renewable electricity schemes either already operating or with planning permission is now over 5.5 Gigawatts (GW). This will take Scotland past the target of generating 31 per cent of its electricity from renewable sources by 2011 and well on the way to meeting 50 per cent of Scotland's gross electricity consumption from renewable sources by 2020. By 2030 the overall aim is to maintain and develop further Scotland's overall position as a producer and exporter of clean green electricity and to decarbonise electricity generation.

*Scottish Government
May 2009*

³⁴ <http://www.envirowise.gov.uk/scotland/Envirowise-in-Scotland.html>