

3.

**UNDERSTANDING
AND ACHIEVING
TRANSFORMATION**



3. Understanding and achieving transformation

3.1 Five cross-cutting themes of transformation

3.1.1 We know that the transformation to a low carbon Scotland will be challenging – and it will involve more than just focussing on particular sectors. This section of the report outlines our strategic approach to five cross-cutting themes:

- A strategic assessment of external factors that are driving the pace of change;
- Embedding achievement of the targets in the transition to a low carbon economy;
- Ensuring we collectively have access to a range of funding and financing mechanisms;
- Understanding the role of behaviour and decision making in achieving the targets and influencing accordingly; and
- Recognising the long term role of our planning system.

3.2 Strategic assessment: understanding external drivers

3.2.1 There are a number of external drivers that are forcing the pace of change in energy and climate change issues. While there may be little we can do to directly influence them given current limitations of Scotland's powers and ability to speak within key fora, it is important that we understand them and build future uncertainties into our long term planning.

3.2.2 The energy world is set to undergo profound change over the next 20 years as economies large and small - developed and developing - seek to make the transition to a low carbon world. As an open export-dependent economy, Scotland is reliant on access to international markets and flows of trade and investment across the globe. We will not be immune to global change. A number of factors are driving the pace of that change.

- Role of emerging economies in shaping future energy demand:** In the period to 2030 industrialisation, urbanisation and rising living standards in China, India and the Middle East will increase global energy demand by over one-third. China's demand will rise by 60% while India's will more than double. By 2030, 60% of the world's population will live in cities, with China adding 276 million and India 218 million urban dwellers.⁴⁹

⁴⁹IEA World Energy Outlook 2012: www.worldenergyoutlook.org/

- ii. Meantime, the number of people considered to be in the 'global middle class' is expected to grow as a percentage of overall population – further increasing pressure on per-capita consumption of resources.
- iii. **A shifting global energy landscape:** The next 20 years will witness significant shifts in the global energy map, with implications for energy markets and trade. By 2035, the United States of America may be virtually self-sufficient in energy due to increased unconventional hydrocarbons, increased bio-energy, and improved fuel efficiency in transport. As North American energy exports increase, 90% of Middle Eastern oil exports will go to Asia.⁵⁰ Changing patterns of energy production, balance of trade flows and import/export dependencies may redefine global economic and geopolitical balances.
- iv. **Policy choices and priorities:** Policy makers face critical choices in reconciling energy, environmental and economic objectives. Global fossil fuel subsidies are still growing to \$523 billion in 2011, up 30% from 2010. By comparison, global renewable energy subsidies amounted to only \$8 billion in 2011. Cumulative investment required in new energy supply is estimated to total \$37 trillion over 2012-2035. In the face of growing global energy demands, public policy will increasingly seek to reduce energy demand where possible – but energy efficiency dividends currently remain largely untapped, mostly due to non-technical barriers.⁵¹
- v. **Forward Operating Environments:** As we look further ahead, beyond 2025, the degree of uncertainty increases to the point where projections alone are not sufficient. Therefore, considering alternative futures can offer one way to assess potential forward operating environments for Scotland. Scotland's future energy and climate change prospects are especially interconnected with, and heavily influenced by:
 - Economic growth *-or-* stagnation across the world which will significantly impact investor confidence, access to capital, opportunities for industrial and commercial collaboration, levels of energy demand and supply; and

⁵⁰ Ibid.

⁵¹ Ibid.

- Weak *-or-* strong climate change mitigation policy implementation at home and overseas which will shape the competitive landscape for Scottish industry and exports, determine the fortunes of our energy technologies and energy services, and define the scope of our reductions in greenhouse gas emissions.

3.2.3 As part of the background work to this report, we explored a range of different futures, **not as predictions**, but rather in recognition of the potential for alternative and plausible operating environments ahead that we need to understand, including:

- A world where economic growth returns to pre-crisis levels and most governments invest in robust carbon reduction policies. However, behaviour change lags behind investment;
- A world of economic recovery, but where most debt-ridden governments prioritise growth near term to ensure security long term – all at the expense of investment in the low carbon transition;
- A world where indebted countries experience a decade of stagnation. But low carbon policies are not abandoned, but shifted towards low cost measures, especially to a focus on energy efficiency; and
- A world experiencing a decade of stagnation where the low carbon agenda is overshadowed by resource protectionism, minimising import dependencies, and prioritising a return of domestic growth.

3.2.4 The long term future requires our immediate attention. Policies over the next five years will shape the investments for the next ten years, which will largely define the global energy picture out to 2050. Strategic investments in infrastructure will commit us ahead for decades, battles for global standards may render otherwise promising emerging technologies redundant, and new energy solutions may create new resource dependencies.

3.2.5 Consequently, we are developing policies and proposals in an adaptive way, one which sets a clear direction and yet is sensitive to the fast changing operating context in which we compete. This RPP2 attempts to balance the need for a long term credible plan to meet our emission targets with the need to remain flexible to change.

3.2.6 Our policies and proposals should be able to flex in different futures. We expect our proposed transformational *outcomes* to remain largely steady, but our interventions, some technologies, our business models and our priorities may change as different ‘futures’ come to pass.

3.3 The transition to a low carbon economy

3.3.1 In our updated Government Economic Strategy published in 2011, we established a new strategic priority, the 'Transition to a Low Carbon Economy' emphasising the central importance of low carbon to Scotland's future economic success. The earlier Low Carbon Economic Strategy⁵² for Scotland set out our approach in detail. It represents a bold vision for a fundamental restructuring in the domestic economy – moving it to a low carbon basis in advance of a similar restructuring across the global economy.

3.3.2 Over the coming decades, consumer behaviour, business models, products, services and technologies will all adapt to a reduced reliance on carbon – this is the basis of an unprecedented economic opportunity for Scotland. The transformational changes required in our domestic economy are an investment to drive long-term growth and provide sustainable export markets for Scottish products and services.

3.3.3 There is a sound economic basis for our actions. Scotland's abundant natural resources are the basis for a revolution in renewable energy, supported by the energy infrastructure and skills in our oil and gas industry. Our future success in developing innovative low carbon technologies is dependent on Scotland's industrial and engineering excellence – and the outstanding performance of Scotland's research institutions. And our successful services sector is the platform for an exportable services market in waste, resource efficiency and energy demand management.

3.3.4 Our support for the low carbon economy is provided through six channels:

Long term legal and institutional certainty. Business certainty and investment are prerequisites for a successful transition. Scotland's world-leading statutory climate change targets and the accompanying actions in this report are the credible basis for long-term business certainty on Scotland's low carbon commitment.

Expanding renewable energy production. The supply of clean electricity from renewable sources will reduce the major sectoral contributor of greenhouse gases - power generation - and represents the major economic opportunity for Scotland to capitalise on its rich natural resources. Our commitment to supply 100% of energy demand from renewable sources by 2020 will ensure that the indirect emissions of

⁵² The Scottish Government: www.scotland.gov.uk/Publications/2010/11/15085756/0

other sectors of the economy are also addressed. Indeed, by making such a significant contribution to meeting our targets, renewable energy can relieve pressure on other areas of Scottish society.

Improvements in energy and resource efficiency in households and industry. The major opportunity outside renewable energy is in the emergence of new markets for services and products to improve the energy efficiency of the residential and industrial sectors, reducing fuel poverty in households and improving productivity and resource efficiency for business. The opportunities here are immense and span the construction, manufacturing and services industries.

Transition of transport to a lower carbon basis. Transport is a significant source of Scottish greenhouse gas emissions. Scotland has key competitive strengths to exploit in new and emerging transport technologies, for example, hybrid buses and ferries, and fuel cells and batteries (in line with our clean electricity story).

Expansion of renewable sources of heat. We can support the provision of private and public infrastructure to supply heat from renewable sources. This is a growing market opportunity for Scottish energy suppliers and construction businesses and a platform for the provision of a range of innovative new technologies.

Sustainable land use. Sustainable land use is the bedrock of any credible plan for a low carbon transition. We recognise the centrality of responsible stewardship of our natural resources to the future growth of the economy and to protect Scotland's resource base to benefit future generations.

3.3.5 Our commitments in the Low Carbon Economic Strategy support this RPP2. Work is already underway to take forward these commitments to:

- ensure our policies support low carbon investment - focusing on the development of financial models and products that promote and de-risk low carbon technology investments. These include the **Renewable Energy Investment Fund (REIF)**⁵³, a multi-million pound fund to stimulate greater levels of private finance investment in green power and renewable district heating projects;

⁵³ Renewable Energy Investment Fund:
www.scottish-enterprise.com/news/2012/10/renewable-energy-investment-fund-open-for-business.aspx

- press the UK Government and the EU on path-dependent policy areas such as the **UK Electricity Market Reform**⁵⁴ and the **EU energy and climate change targets and scenarios**, as well as ensuring that we maximise the economic and investment opportunities for Scotland from the UK Green Investment Bank (GIB)⁵⁵ and the UK Government's 'Green Deal' package⁵⁶ for householders and businesses;
- further develop our international profile to secure investment and promote our low carbon exporters;
- assist organisations to be 'programme and project ready' as investors increasingly turn to Scotland looking for opportunities;
- work with a range of public, third sector organisations and investors to enable innovative funding models that reduce emissions and dependency on fossil fuel, and also provide revenues to communities, households and investors; and
- refresh the Climate Challenge Fund with a focus on reaching 'disadvantaged' and 'hard to reach' communities, to ensure that climate justice is delivered to those most vulnerable to the detrimental impacts of climate change, and deliver Manifesto commitments to allow revenue raising and engage young people in climate change action.⁵⁷

⁵⁴ DECC. UK Electricity Market Reform:

www.decc.gov.uk/en/content/cms/meeting_energy/markets/electricity/electricity.aspx

⁵⁵ BIS. UK Green Investment Bank: www.bis.gov.uk/greeninvestmentbank

⁵⁶ DECC. Green Deal: www.decc.gov.uk/en/content/cms/tackling/green_deal/green_deal.aspx

⁵⁷ Scottish Government, Extending the Challenge:

www.scotland.gov.uk/News/Releases/2012/11/climatechallenge27112012

Energy Efficiency Potential

The energy efficiency sector in the UK accounts for about 136,000 jobs and had sales of £17.6 billion in 2010-11. UK sales have grown by over 4% per year since 2007-08, and are projected to grow by around 5% per year between 2010-11 and 2014-15. However, we believe there is more potential in the market.

The UK Energy Efficiency Strategy⁵⁸ estimates that through socially cost-effective investment in energy efficiency we could be saving 196 TWh in 2020, equivalent to 22 power stations. Were all this potential to be realised, final energy consumption in 2020 could be 11% lower than the Business-as-Usual baseline. This potential can be found across the UK economy: realising this could have significant benefits for businesses and households in Scotland.

The promotion of energy efficiency is devolved and Scotland has established its own target to reduce final energy consumption by 12% in absolute terms against a baseline averaged over the years 2005 to 2007 by 2020.

3.4 Funding and financing the climate change targets

A range of funding routes exists and is being added to which will support the continuing development of policies and proposals.

3.4.1 This report covers a period which extends beyond the Budget for 2013-14 and which will encompass future sessions of the Scottish Parliament. Budget provisions for 2013-14 and plans for 2014-15 relevant to RPP1 and the delivery of the policies and proposals in this report have been provided to Scottish Parliament committees and the Scottish Parliamentary Information Centre. We have also published it on our website.⁵⁹

3.4.2 A major consideration in meeting both medium and long term climate change targets across sectors is how interventions and activities might be funded and financed. This section considers this at a practical level – drawing closely on mechanisms outlined in our Infrastructure Investment Plan 2011.⁶⁰ Funding mechanisms which result in direct emissions abatement are detailed further in their respective sectoral chapters.

⁵⁸ DECC, Energy Efficiency Strategy: The Energy Efficiency Opportunity in the UK:

<https://www.gov.uk/government/publications/energy-efficiency-opportunities-in-the-uk>

⁵⁹ The Scottish Government, Draft Budget 2013-14, Details of funding for climate change mitigation measures: www.scotland.gov.uk/Topics/Environment/climatechange/climatechangeinvestmentdocument

⁶⁰ The Scottish Government, Infrastructure Investment Plan: www.scotland.gov.uk/Topics/Government/Finance/18232/IIP

3.4.3 Taking action on climate change, specifically in reducing energy consumption, can result in direct cost savings. This is important not only for businesses tackling their bottom lines, but also for the public sector in reducing costs to release funding for other priorities and in making savings for tax payers. Key principles that underline our approach to funding and financing activities to support the climate change targets are:

- cost effectiveness;
- consideration of whole life cycle costs;
- preventative spend and 'spend to save';
- efficiency; and
- maximising wider economic benefits.

3.4.4 Governments will always have to prioritise limited funding and make tough decisions. However, when choosing to allocate funding to greenhouse gas abatement measures, there are choices. How these choices are made will depend on the type of policy or project under consideration.

3.4.5 Policies and projects require different types of funding, depending on their nature, timing and context. Capital funding is the most common method of financing public sector infrastructure projects. Many interventions involving behaviour change require revenue funding. And as the influencing behaviour section later in this chapter illustrates, supporting infrastructure may also be necessary, and so both capital and revenue funding are required in some cases.

Fuel Efficient Driving

Fuel efficient driving (sometimes known as eco-driving) advice and training is currently provided on our behalf by the Energy Saving Trust. Fuel efficient driving can significantly reduce fuel consumption and emissions. In the coming years, we will continue to promote driver training, to public sector organisations, businesses and individuals as well as promoting telematics applications to bed-in the new driving behaviours.

The business case for more efficient driving is considerable. Fuel savings of up to 10% means the costs of training and telematics are recoverable within a short period. By the end of the decade we would expect to see a mature commercial approach to training provision as is already the case for the freight transport sector.

3.4.6 Significant elements of this RPP2 are capital intensive. Many lower carbon goods, for example electric vehicles or new energy efficient buildings, often have higher up front capital costs but lower long term

running costs than their higher carbon counterparts. In many cases this requires us to think differently about how we fund and finance low carbon infrastructure and services.

3.4.7 A critical requirement of making the transition to a low carbon economy and society, therefore, is for organisations and businesses to be able to draw on a range of funding, financing and investment mechanisms at local, national and international levels. The Scottish Government's role is to create, support and or draw attention to these mechanisms, as well as helping build capacity in other organisations to draw down on opportunities - for example with European funding.

3.4.8 As the Scottish Government is currently facing a severe fall in the level of traditional capital funding available, a 25.1% real-terms reduction between 2010-11 and 2014-15, alternative financing models, such as the Non Profit Distributing (NPD), Regulatory Asset Base (RAB), Tax Incremental Financing (TIF) and the National Housing Trust (NHT) are being taken forward to maximise our infrastructure investment programme.

The Scottish Low Carbon Investment Conference

The Scottish Low Carbon Investment Conference has taken place in Edinburgh each year since 2010. The conference is a leading international forum for emerging renewable energy and other low carbon innovation. Senior politicians, financiers and industry chiefs, as well as developers, practitioners, academics and policy makers from around the world, gather to debate and explore the global transition to low carbon economies and examine the role of the key sectors in scaling up investment.

Scotland, with its heritage of expertise in finance and technology and abundance of natural resources, is uniquely placed to make a significant contribution to the innovation needed in both fields to progress the global shift to low carbon. The role of government is recognised as key amongst the support architecture for green growth. The Scottish Government has committed to working with all stakeholders to ensure public sector intervention is targeted at the right areas to engender investor confidence and deliver a strong low carbon market. The conference is, therefore, an important forum for reaffirming that commitment and developing new and existing relationships.

A central theme of the conference objectives is that progress will be better achieved if the key sectors work together. The challenges are not isolated but common to the global economy. Energy security and climate change, the need to shift from finite resources to a sustainable footing for our energy needs, the technological hurdles that entails, and the need to find new investment instruments to support the low carbon sector, provide ample questions for the conference to consider.

3.4.9 We are thus increasingly turning to innovative ways of funding investments, using the Scottish Government's own funding to unlock other funding streams. The following non-exhaustive list illustrates the types of opportunities that may be available in the future for emission abating infrastructure, services, research and development, and business support.

3.4.10 The **Green Investment Bank (GIB)** is headquartered in Edinburgh.⁶¹ Over the Spending Review period to 2015, it will invest £3 billion focused on:

- offshore wind;
- commercial and industrial waste processing and recycling;
- energy from waste generation;

⁶¹ BIS. Green Investment Bank: www.bis.gov.uk/greeninvestmentbank

- non domestic energy efficiency; and
- supporting the Green Deal.

3.4.11 GIB has invested £635 million in eleven projects in its first five months of operation unlocking an additional £1.7 billion of private sector investment. The investments will save more than 2.5 MtCO₂e per year, the equivalent of taking around one million cars off the road, and generate enough renewable electricity to power 2.3 million UK homes.

3.4.12 The Scottish Government in collaboration with Scottish Enterprise and Scottish Futures Trust has identified a portfolio of low carbon projects in excess of £4 billion that might be appropriate for investment by GIB or other funds such as Scotland's Renewable Energy Investment Fund. About £500 million of these projects are under active consideration by the GIB.

3.4.13 The GIB is now looking to secure involvement in a range of projects in Scotland and is keen to join forces in unlocking projects across its key sectors as well as those of a larger more strategic nature. The Scottish Government has agreed to work with the GIB, and other potential investors, to bring forward a national programme of LED street lighting and to explore opportunities across the public sector estate for similar energy efficiency interventions. Scottish Government will make available up to £2 million in 2013-14, to support local authorities to undertake street lighting condition surveys, in order to accelerate this investment.

3.4.14 The **Green Deal** is a new UK-wide finance mechanism funded by private capital. It will enable households and occupants of other buildings to have energy efficiency improvements installed at no upfront capital cost and to pay for them, over a period of years, through a charge on their electricity bill. More detail on the Green Deal can be found in section 5.4.

3.4.15 **Traditional capital finance** is the most common method of financing public sector infrastructure projects. Development and construction costs are paid from capital budgets at the time of building the asset. In general it ensures lowest cost of finance for a project. Examples of capital-funded infrastructure include cycling infrastructure, renewable projects, energy assistance within the housing sector, and estate maintenance.

3.4.16 The Scottish Government uses **capital and revenue grants** to good effect, often leveraging or matching significant funding from the private sector or other areas such as Lottery funding. Examples of grants include those used in our Green Bus Fund.⁶²

⁶² Transport Scotland. Scottish Green Bus Fund:
www.transportscotland.gov.uk/public-transport/Buses/Bus-Fund

3.4.17 The Scottish Government does not yet have flexibility to borrow under the current public finance framework. The limited **capital borrowing** powers enabled by the Scotland Act mean that for the purposes of capital investment, the Scottish Government will, from 2015-2016, be able to borrow up to 10% (approximately £250 million) of the capital budget each year with a cumulative limit of £2.2 billion. Capital borrowing will be one way of funding low carbon infrastructure.

3.4.18 Local authorities have powers to borrow under the **prudential borrowing regime**. In 2010-11, around £1.1 billion of capital spend was supported by LA borrowing. Local authorities are using this funding arrangement for activities that include emission abatement as well as saving money. Fife Council, for example, has a rolling programme to replace its inefficient street lighting with a more efficient system. The payback period is relatively short and Fife is not only reducing its emissions but also reducing its liabilities under the Carbon Reduction Commitment (CRC) scheme.

3.4.19 The **Regulatory Asset Base (RAB)** is a well-used method of funding infrastructure within the rail industry. Transport Scotland works directly with the Office of Rail Regulation and Network Rail to agree on major new investment. Projects are financed by borrowing undertaken by Network Rail. The Scottish Government then makes regular contractual repayments to Network Rail. Examples of rail infrastructure being financed in this way are the Edinburgh Glasgow Improvement Programme and Borders Railway.

3.4.20 **Tax Incremental Financing (TIF)** is used to fund public sector infrastructure needed to unlock regeneration in an area, and which might otherwise be unaffordable to local authorities. TIF allows local authorities to keep locally generated, incremental non-domestic rate revenue (NDR) from economic activity that has arisen as a direct result of their investment in “unlocking” infrastructure. The captured revenue is then used to repay the local authority’s debt raised to finance the infrastructure investment.

3.4.21 The Scottish Government uses **loan funds** to facilitate investment by others, where the market is failing to provide businesses and communities with access to finance. For example, the Energy Saving Trust has Scottish Government funding for a **District Heating Loan Fund**, helping communities to replace traditional heating with low carbon and renewable heat.

Tax Incremental Financing

One of the six TIF pilot projects under development is from Fife Council. The project involves a £17 million investment in infrastructure to improve vehicle and marine access to Energy Park Fife, remediate the site and enhance delivery of a Levenmouth Low Carbon Investment Park. An estimated 1000 new jobs will be created.

3.4.22 Access to finance is often cited as a barrier to energy efficiency or renewables uptake. The Energy Saving Scotland **Small Business Loans Scheme** provides loans of up to £100,000 through the Energy Saving Trust for the installation of technologies that reduce energy consumption and improve resource efficiency in SMEs (small and medium sized enterprises). The loans are interest free for energy efficiency measures.

3.4.23 Our **Central Energy Efficiency Fund (CEEF)** provides funding for local government, NHS Scotland and Scottish Water to reduce energy consumption and carbon emissions.⁶³ Projects must pay back within seven years for energy efficiency or ten years for renewable measures. Savings are repaid into the fund up to the original loan amount. Further savings may be used for frontline services or more carbon reducing measures.

3.4.24 Our **Salix Finance loans scheme** provides a public sector revolving loans fund for publically funded autonomous institutions such as universities and colleges to implement energy efficiency measures.⁶⁴ This fund will be opened up to the wider public sector in 2013-14.

3.4.25 The **Scottish Futures Trust (SFT)**, a company established by the Scottish Government, has responsibility to deliver value for money across all public infrastructure investment.⁶⁵ SFT works closely with public sector bodies to deliver infrastructure investment, including Scotland's Schools for the Future, the Non Profit Distributing programme, Asset Management and the Scotland-wide Hub programme.

3.4.26 SFT's indicative analysis shows that an investment of c.£300 million in low carbon measures across the Scottish Public Sector estate could lead to potential cost reductions in the region of c.£1.1 billion before financing costs and £900 million after financing costs.

⁶³ Central Energy Efficiency Fund: www.energy-efficiency.org/ceef/CCC_FirstPage.jsp

⁶⁴ Salix Finance: www.salixfinance.co.uk/

⁶⁵ Scottish Futures Trust: www.scottishfuturestrust.org.uk

3.4.27 The Trust has initiated a Low Carbon Workstream to develop commercial delivery structures to aggregate projects and establish national energy efficiency programmes. Through this, SFT aims to realise investment potential and attract private finance as well as reduce costs for all authorities and the wider public sector. This will be achieved, for example, through developing public sector approaches to energy performance contracting, especially those which may be capable of being funded from the Government's revenue budgets. This work will initially focus on pilots involving an NHS Health Services Scotland office building and Glasgow City Council's primary school estate.

Street lighting

SFT, supported by Scottish Government, COSLA, the Cities Alliance, the Society of Chief Officers of Transportation and Resource Efficient Scotland, is managing the development of a national street lighting programme. The Trust is helping local authorities to assess the potential financial and carbon savings that could be captured, while the financial and commercial options is being developed in conjunction with the GIB. The Scottish Government will make up to £2 million available in 2013-14 to accelerate this programme and encourage local authorities to undertake street lighting condition surveys.

3.4.28 **Non Profit Distributing** (NPD) involves a partnership with a private sector provider, who finances, constructs and maintains an asset. The public sector then pays an annual charge over a 25-30 year period to the private sector from the revenue budget once the asset has been built.

3.4.29 The Scottish Government supports the use of NPD to deliver revenue-financed investment. NPD seeks to transfer risk and exert private sector discipline during the construction phase of a project and throughout its lifetime, but without the excessive profits associated with past Private Finance Initiative (PFI) projects.

3.4.30 In 2010, the Scottish Government announced a pipeline of NPD projects with a value of £2.5 billion across public services in transport, education and health. This is one of the largest investment programmes of its kind in Europe. High-quality sustainable design is supported by SFT at all stages of procurement and through to delivery.

3.4.31 **Hub**⁶⁶ is a Scotland-wide initiative delivering new community infrastructure that is expected to be valued at more than £2 billion over the next ten years. It brings together community planning partners, including health boards, local authorities, police, and fire and rescue services, and private sector development partners, to deliver sustainable community infrastructure collaboratively.

City of Glasgow College

Environmental sustainability is a key feature of the City of Glasgow College's technical requirements for its New Campus *Non Profit Distributing* Project. The College is looking for a design that meets certain minimum sustainability targets, including in relation to BREEAM⁶⁷ and Energy Performance Certificate ratings,⁶⁸ carbon emissions and low or zero carbon technologies. The College will use a low carbon assessment tool to review and evaluate all aspects of bidders' sustainability proposals.

3.4.32 The **Scottish Investment Bank** (SIB)⁶⁹ supports the development of Scotland's private sector SME funding market to ensure both early stage and established businesses with growth and export potential have adequate access to growth capital. SIB operates a suite of investment funds. The three equity funds adopt a co-investment and shared risk intervention model to encourage more private investors to invest in early stage Scottish companies with high growth potential. SIB is also the lead investor in the privately managed Scottish Loan Fund which operates on a fully commercial basis and is aimed at established companies.

⁶⁶ Scottish Futures Trust. Scotland-wide hub initiative: www.scottishfuturestrust.org.uk/our-work/hub/

⁶⁷ BREEAM: www.breeam.org/about.jsp?id=66

⁶⁸ Energy Performance Certificates:
www.scotland.gov.uk/Topics/Built-Environment/Housing/BuyingSelling/Home-Report/epcs

⁶⁹ Scottish Investment Bank:
www.scottish-enterprise.com/fund-your-business/scottish-investment-bank.aspx

Haddington Infant School and St Mary's Primary School⁷⁰

The new, joint school building benefits from natural lighting and includes a 'breathing wall' construction for good indoor air quality, solar-thermal water preheating and photovoltaic panels, while smart lighting controls are used to enhance energy efficiency. The joint facility was designed to achieve an Energy Performance Certificate A rating and delivers lower energy bills against each set of guidance from the Chartered Institution of Building Services Engineers⁷¹ and the Carbon Trust.⁷²

The school grounds are a resource for ecology teaching and recycling as well as recreation.

3.4.33 Scottish Enterprise has a range of innovation and research and development grants. These are available to businesses of all sizes for research and development, co-investment and technological innovations. Scottish Enterprise provides guidance⁷³ on the most appropriate grant for businesses and supports them throughout the application process.

Low Carbon Funding Landscape Navigator

The UK Government launched a low carbon funding landscape navigator in 2012 to help providers of and applicants for low carbon funding link up more easily. Available on the Low Carbon Funding Landscape Navigator website,⁷⁴ the navigator has been developed by the Energy Generation & Supply Knowledge Transfer Network with support from DECC. Users can search for funding opportunities and get help in finding partners to build collaborations for specific calls. Both public and private funders can add and manage their own funding opportunities.

The navigator is a resource for the entire low carbon energy R&D community. It will be particularly valuable to smaller technology companies who struggle to keep up to speed with the myriad of support mechanisms.

⁷⁰ Scottish Government News Release: www.scotland.gov.uk/News/Releases/2011/11/08113629

⁷¹ The Chartered Institution of Building Services Engineers Technical Guidance: www.cibseknowledgeportal.co.uk/cibse-guides

⁷² The Carbon Trust Scotland: www.carbontrust.com/client-services/scotland

⁷³ Scottish Enterprise. Fund Your Business guidance: www.scottish-enterprise.com/fund-your-business.aspx

⁷⁴ Knowledge Transfer Network. Low Carbon Funding Landscape Navigator: www.lowcarbonfunding.org.uk

3.4.34 **European Structural Funds.** In the 2007-2013 programming period we have supported projects through targeted low carbon themed application calls. This has added valuable extra resources to individual projects. RPP2 related projects have included energy efficiency in social housing in Orkney. However, continuing this approach would mean that we miss an opportunity to combine Structural Funds with rural and fisheries funding streams in order to leverage additional resources from the private sector and centrally managed funds (e.g. Connecting Europe. Horizon 2020).

3.4.35 We want to identify low carbon as a priority from the outset of the new programme and to allocate a significant funding envelope. This strategic approach will help us to establish a combination of grant and financial engineering instruments that match our ambitions.

3.4.36 To support the delivery of regeneration projects in Scotland, we developed the £50 million **Scottish Partnership for Regeneration in Urban Centres (SPRUCE)**⁷⁵ using money from the EU JESSICA investment loan fund. This includes up to £15 million for energy efficiency retrofit projects in eligible local authority areas. Schemes that pilot or demonstrate new or innovative approaches to energy efficiency retrofit measures, including the retrofit of existing social housing stock, are eligible to submit a bid for this element.

3.4.37 Launched in 1992, the **LIFE programme** is one of the spearheads of EU environmental funding. The European Commission has proposed to boost funding for environmental and climate projects through a new LIFE programme in the 2014-2020 period.⁷⁶ If this regulation is adopted by the Member States and the European Parliament, the overall budget would be raised to €3.2 billion, of which €800 million would be allocated to a new climate sub-programme which will focus on reducing greenhouse gas emissions; increasing resilience to climate change; and increasing awareness, communication, and exchange of information on climate actions.

3.4.38 Grants to finance projects will remain the main type of intervention of the LIFE programme. They will support public authorities, the private sector (including SMEs), NGOs and other non-profit organisations, in testing small-scale low carbon and adaptation technologies, with new approaches and methodologies. Specific local and regional climate mitigation or adaptation strategies or action plans will also be financed. The sub-programme will support capacity building as well as awareness-raising actions.

⁷⁵ The Scottish Partnership for Regeneration in Urban Centres: www.ambergreenspruce.co.uk/

⁷⁶ European Commission, LIFE Programme: <http://ec.europa.eu/environment/life/about/beyond2013.htm>

Tayeco Ltd

Based in South Queensferry, Tayeco Ltd has received more than £900,000 from SIB's Scottish Co-investment Fund.⁷⁷ The company has developed *Ewgeco*⁷⁸ - the world's first real-time energy monitor for homes and business. *Ewgeco* provides users with a better understanding of their energy consumption patterns and encourages behavioural changes through precise and instant information on electricity, water and gas at any point in time.

3.4.39 Finally, the Scottish delegation was given useful advice on securing international finance in meetings at **UNFCCC Doha** with the financial and business sector, including the **European Investment Bank** and **Global Scots** in Qatar. Many European cities have accessed European Investment Bank funding for green initiatives, particularly in transport. A wide range of green projects could be eligible for loan funding as long as they represent a bankable proposition in terms of returns; the Scottish Government and some large Scottish local authorities would be big enough to act as guarantors (or alternatively a pool of smaller local authorities).

⁷⁷ Scottish Co-investment Fund:

www.scottish-enterprise.com/fund-your-business/scottish-investment-bank/sib-equity-funding/scif.aspx

⁷⁸ EWGECO: www.ewgeco.com/blog/energy-display-pioneer-embarks-on-non-domestic-expansion-drive/

3.5 Understanding and influencing behaviour

The Government recognises that behavioural factors are of critical importance in ensuring the success of most of the policies and proposals in this report. It published the Low Carbon Behaviours Framework in March 2013 which sets out our strategic approach to encourage low carbon lifestyles amongst Scotland's individuals and households.

3.5.1 This section of the document addresses the critical role that understanding and influencing behaviour has in the majority of the policies and proposals in this report and in meeting our climate change targets.

3.5.2 The Low Carbon Scotland: Behaviours Framework,⁷⁹ published in March 2013, sets out our strategic approach to encourage low carbon lifestyles amongst Scotland's individuals and households. The Framework draws on the latest behaviour change research and builds on the work achieved through our earlier Low Carbon Scotland: Public Engagement Strategy published in 2010. The Individual, Social and Material (ISM) approach, combined with ten insights for effectively influencing behaviours, will help the government and others to build stronger policies and programmes to meet the challenge of changing the way we live, work and travel.

The Scottish context

3.5.3 The way we use electricity and heat our homes and other buildings, the ways we travel, the products we purchase and transport from home and abroad, and the way we run our businesses and organisations, have emissions consequences. These stem from the choices we make, the fuels and technologies that we use and the way in which we use them, i.e. our behaviours.

3.5.4 Reducing emissions is challenging, and as Scotland's population and number of households increases, this challenge becomes greater still. Scotland's population⁸⁰ has seen a continuous increase in recent years, partly because there have been more births than deaths, but mainly because more people have moved to Scotland than have left. In 2011, migration was largely responsible for an increase in our population of 0.6% over the previous year. At 5,295,000, the population is now the highest ever recorded and it is projected to further increase to 5,760,000 by 2035.⁸¹

⁷⁹ The Scottish Government, Low Carbon Scotland Behaviours Framework: <http://www.scotland.gov.uk/Publications/2013/03/8172>

⁸⁰ Scotland's Census, 2011: www.scotlandscensus.gov.uk/en/

⁸¹ Scotland's greenhouse gas emission reduction targets do not change with changing demographics.

3.5.5 The Scottish Government is working hard to increase sustainable economic growth by promoting Scotland as a positive place to live, work, learn and remain. Should the trend in population increase continue, Scotland will be on track to exceed the population growth target established in our Government Economic Strategy. We have a large established migrant community and welcome the contribution new Scots are making to our economy and to society. However, all things being equal, population increases will mean still greater energy demands, and higher emissions from transport and waste. This makes Scotland's climate change targets more ambitious to achieve and means that we need to engage everyone in Scotland in the transition to a low carbon lifestyle.

3.5.6 There is no magic bullet for changing the way we produce and use energy, or manage our land. But clearly, policy and engagement programmes have key roles to play in influencing how society organises itself and what choices we are able to make. New and carefully planned infrastructure, innovative services and technologies, effective communications, and community and business engagement can do more to help us live more sustainably as a society, particularly where these are joined up and consistent.

The Low Carbon Scotland Behaviours Framework

3.5.7 Our Low Carbon Behaviours Framework sets out the key behaviours we need to encourage to meet Scotland's climate change targets, our evidence-based approach, the actions we will take, and how we will measure progress. The Framework recognises that changing behaviours is more likely to be successful when we consider the multiple factors across **individual, social and material (ISM)** contexts that influence them.

Ten key household behaviours

3.5.8 We need to be clear about which individual and household behaviours are key to tackling climate change. In 2010, Scottish Government research identified where household actions would make the biggest impact on reducing energy demand. Those **ten key behaviours** are intended to inform our analysis and understanding of what Government and others can do to enable, encourage and exemplify change. Furthermore, the key behaviour areas are relevant to many of the policies and proposals contained within this report. They are outlined in the table below. Further information can be found on the Influencing Behaviours website.⁸²

⁸² Climate Change Behaviours Research Programme - Update Report: www.scotland.gov.uk/Topics/Research/by-topic/environment/social-research/Behaviour-Change-Research/CCBRPupdatereport