Scottish Energy Strategy: The future of energy in Scotland

Strategic Environmental Assessment
Post Adoption Statement

Contents

1. Introduction

The Scottish Government launched the draft Scottish Energy Strategy for consultation on 24 January 2017. Informed by the development of the draft Climate Change Plan, the draft Strategy sets out a vision for the future of energy in Scotland in line with the ambitions laid out by the Climate Change (Scotland) Act 2009.

The Environmental Assessment (Scotland) Act 2005 (hereafter referred to as the 2005 Act) requires Scottish public bodies to carry out a Strategic Environmental Assessment (SEA) on their plans, programmes and strategies. SEA is a way of examining plans as they develop and to identify any significant effects they may have on the environment. It ensures that environmental considerations are taken into account and, where required, proposes mitigation measures to avoid or minimise any potentially significant adverse effects on the environment.

A joint SEA was undertaken for the draft Energy Strategy and the draft Climate Change Plan. The Environmental Report was subject to public consultation alongside both the draft Strategy and Plan for 17 weeks between 27 January 2017 and 30 May 2017.

This Post Adoption Statement sets out how the SEA and consultation responses have influenced the final Energy Strategy which was published on 20 December 2017. A Post Adoption Statement for the Climate Change Plan will be prepared and published separately.

Section 18(3) of the 2005 Act sets out the information required in the Post Adoption Statement. This includes:

- how the environmental considerations have been integrated into the Strategy;
- how the Environmental Report has been taken into account;
- how the consultation responses to the Environmental Report have influenced the final Strategy;
- the reasons for choosing the Strategy as adopted, in light of other reasonable alternatives considered; and,
- the measures to be taken to monitor the significant environmental effects of the Strategy's implementation.

2. The Draft Scottish Energy Strategy

The draft Energy Strategy brings together existing Scottish energy policies and new ambitions into a single overarching approach. Its vision is for a modern, integrated, clean energy system, delivering reliable energy supplies at an affordable price in a market that treats all consumers fairly. It describes Scotland's current energy system and its policy context and highlights drivers of change and the changing nature of energy systems worldwide. The Strategy explores the need for a stable and managed transition to low carbon energy, for adaptation to the effects of climate change and for ensuring resilience and security of supply into the future.

Policies and ambitions are set out in three main sections in the draft Strategy. Each section discusses an important component of Scotland's evolving energy sector:

- **Meeting our energy supply needs:** Sets out the Scottish Government's vision for the role and contribution of both new and existing energy technologies in the nation's future energy mix. These include traditional fuel sources such as oil, gas and coal; renewable and low carbon electricity and heat generation; new, lower carbon energy sources such as bioenergy and hydrogen, and energy storage and increased system efficiency and flexibility.

- **Transforming Scotland's energy use:** Presents the key ambitions of reducing energy demand and improving the efficiency of resources through support for greater flexibility for consumers and producers and the introduction of viable, lower carbon alternatives in sectors such as transport. Energy supply and consumption are considered as equal priorities and an integrated approach to managing power, transport and heat is proposed.

- **Smart local energy systems:** Builds on the overarching theme of reducing overall energy demand and supports the decentralisation of energy networks. It supports and encourages local energy economies and community ownership of energy assets and considers how energy supply can be better and more flexibly managed and monitored.

Relationship between the Energy Strategy and the Climate Change Plan

The Climate Change Plan outlines the range of policies, policy development milestones and proposals to meet annual emissions reduction targets set by Scottish Ministers for the period 2017 – 2032. The draft Energy Strategy has been developed in close alignment with the draft Climate Change Plan, building upon common ambitions and focusing on the key role that the energy sector can play in meeting Scotland's climate change commitments whilst ensuring security of supply.

Many of the policies and proposals within the draft Energy Strategy are also reflected in the draft Climate Change Plan, particularly in relation to the electricity supply sector and others which focus on sector decarbonisation and improving energy efficiency at point of use.

Links to relevant documents

- The published Scottish Energy Strategy: The Future of Energy in Scotland, available at: [Scottish Energy Strategy: The Future of Energy in Scotland](#)

- The draft Scottish Energy Strategy: The Future of Energy in Scotland, available on the Scottish Government website: Draft Scottish Energy Strategy

- The SEA joint Environmental Report of the draft climate Change Plan and draft Scottish Energy Strategy, available at: SEA Environmental Report

- Economy, Jobs and Fair Work Committee letter on the draft Energy Strategy, available at: Committee letter

- Environment, Climate Change and Land Reform Committee, Report on the draft Climate Change Plan - the draft Third Report on Policies and Proposals 2017-2032, available at: Draft Third Report on Policies and Proposals

- Economy, Jobs and Fair Work Committee, Report on the draft Climate Change Plan, available at: Report on the draft Climate Change Plan

- Local Government and Communities Committee, Report on the draft Climate Change Plan - the draft Third Report on Policies and Proposals 2017-2032, available at: Local Government and Communities Draft Third Report on Policies and Proposals

3. The SEA process and findings

The joint assessment of the draft Energy Strategy and draft Climate Change Plan was undertaken in three stages beginning with a detailed assessment of the individual policies and proposals set out in both plans. All SEA topic areas were scoped into the assessment. Secondly, the policies and proposals across the three policy groupings set out in the draft Energy Strategy were considered collectively. Finally, an overarching and strategic analysis was undertaken of the likely significant environmental impacts of both plans, including the potential for cumulative and in-combination effects. The key findings and mitigation considerations from the assessment are set out in Table 1.

Table 1: Key findings

Meeting our energy supply needs
- This group of policies and proposals is likely to contribute to meeting greenhouse gas emissions reduction targets through a shift towards low carbon energy generation, with wider benefits across a range of SEA environmental topics. Given the continuing role for oil and gas exploration as part of a managed transition, technologies such as Carbon Capture and Storage (CCS) can also help to reduce emissions and reduce some of the adverse environmental impacts of this sector.   - Sharing of good practice and utilising systems and smart technologies alongside energy storage can provide greater system flexibility and increase resource security with positive impacts for population and human health.   - The transition to new energy sources and systems may present challenges to current energy networks and infrastructure. All energy technologies have the potential for adverse effects arising from the construction and, in some instances, the operation of infrastructure. These will require careful planning and management through applicable consenting regimes.
Transforming Scotland's energy use
- Positive environmental effects were identified from this group of proposals, particularly for climatic factors and material assets. By reducing overall energy demand from domestic and industrial sectors, the policy and proposals are likely to contribute towards meeting greenhouse gas emissions reduction targets. This can be achieved by improving energy efficiency, reducing energy demand and shifting patterns of transport use with wider benefits for human health and population from improved air quality.   - There is potential to improve Scotland's housing stock through the proposed energy efficiency measures. The use of innovative technologies can provide users with greater knowledge about their consumption. This can assist communities to become more active in the energy market, helping to reduce demand and reduce pressure on existing supply and distribution and so improve long term resilience to impacts from climate change.   - Policies which lead to infrastructure and construction work can potentially lead to direct and indirect, temporary and long term impacts on some environmental topics. Such effects would, however, be considered through the appropriate consenting regimes.

Smart local energy systems
• Reducing energy demand and empowering communities to participate in generating energy at a local level is likely to give rise to largely positive environmental effects, including on climatic factors, population and human health, air quality and material assets. For example, the proposals are likely to contribute to meeting greenhouse gas emissions reduction targets through increased provision of renewable and low carbon energy sources as well as increasing resource security through decentralised energy generation. This is an opportunity for a co-ordinated approach to the implementation of new heat and energy networks and targeted action for energy efficiency through an area-based approach. • There may be potential for adverse effects associated with infrastructure development. Such effects, however, would be considered through the consenting process.

Primary environmental effects
• The draft Energy Strategy is expected to deliver significant positive environmental effects, particularly the reduction of greenhouse gas emissions and an increase in climate change adaptation. • The draft Strategy's whole systems approach seeks to maximise benefits. This integrated approach builds on current strengths and has been informed by the development of the draft Climate Change Plan. Renewed focus is given to energy efficiency in the draft Strategy through measures such as Scotland's Energy Efficiency Programme (SEEP) and a proposal to set a new 2030 energy efficiency target to improve the efficiency of energy use across the Scottish economy. • Alongside SEEP, support in the draft Strategy for schemes such as the District Heating Loan Fund (DHLF), Low Carbon Infrastructure Transition Programme (LCITP) and potential new Local Heat and Energy Efficiency Strategies could play significant roles in both reducing consumption and facilitating uptake of local low carbon energy production. The proposal for a new 'all energy' target for the equivalent of 50% of Scotland's heat, transport and electricity consumption to be supplied from renewable sources by 2030 will also help to reduce greenhouse gas emissions. Emphasis on smart networks and smart meters could provide consumers with benefits such as better management of energy use and inform supply choice, community energy storage and local energy projects. • As well as seeking to increase the uptake of renewable technologies, the draft Strategy provides the opportunity to explore potential deployment of new emerging energy sources and technologies, such as CCS and the use of hydrogen as sources of high quality, clean energy, leading to likely reductions in emissions. Consideration will need to be given to any infrastructure requirements associated with new technologies. This has the potential to lead to negative environmental effects.

Secondary environmental effects
- Potential secondary environmental effects were identified for topics covered within policy group 1, 'Meeting our energy supply needs'. These were in relation to the marine and land environment, the development and operation of new infrastructure, increased generation and use of low carbon heat from renewables, pressures on current networks and infrastructure and increased uptake of biomass and production of biofuels. These effects are likely to be localised and will be considered through the appropriate consenting regimes. Unconventional oil and gas was not within the scope of this SEA.   - The potential for negative environmental impacts was identified within policy group 2, 'Transforming Scotland's energy use'. These were associated with the implementation of some energy efficiency measures, construction works, increase in demand and use of alternative energy sources and the electrification of transport. The assessment found that it was necessary to establish the sufficiency of alternative fuel sources and how these could be sustainably managed, including ensuring appropriate infrastructure is in place to facilitate a rise in demand. It also identified the need for consideration of energy efficiency methods involving roof cavities. In considering these impacts, the assessment found that these impacts are likely to be localised and temporary and will be managed through project level requirements and relevant consenting processes. It was noted that bats are afforded strict protection from disturbance through works involving roof cavities through the consenting process.   - In terms of policy group 3, 'Delivering smart, local energy systems', cumulative negative impacts may arise over time from increased implementation of smaller community and locally owned energy schemes and an increase in the installation of heat networks. Possible short term impacts from construction were identified in addition to longer term impacts from operations. Any impacts are likely to depend on a number of factors. Community involvement in the development of schemes may also identify opportunities for the development of appropriate measures to avoid or mitigate potential adverse effects, as well as help alleviate perceptions of such impacts. Early consideration of planning implications and appropriate design is likely to help mitigate negative impacts. Short term impacts may be managed through appropriate site management controls.

4. Opinions expressed on the draft Energy Strategy

This section sets out how the responses to the consultation on the draft Energy Strategy have been taken into account as the Strategy was finalised.

In early 2017, the Scottish Government conducted an open consultation on the draft Energy Strategy. The consultation asked seventeen questions covering the three policy groupings and monitoring and engagement. In total, 254 responses were received from a wide range of stakeholders, including businesses, public bodies and representative organisations. An [analysis of the responses](#) received on the draft Strategy was carried out by Why Research and published in November 2017.

A number of key cross cutting themes emerged from the consultation, as well as comments on specific policy areas and the proposals for monitoring and engagement. In formulating the final Energy Strategy, the Scottish Government has carefully considered all of the responses received during the public consultation, from Parliament via the Economy, Jobs and Fair Work Committee and directly from the Scottish Energy Advisory Board.

The final Strategy draws heavily on the draft published in January 2017. However, there are a number of differences which make a direct comparison between the two documents – and the responses received – not straightforward. In particular, the final Strategy makes the switch from separate considerations of energy supply, energy use and local energy, to a focus on six new 'Energy Priorities' for Scotland. This approach is considered to better reflect a 'whole-system' approach by considering the use and the supply of energy simultaneously.

These six priorities are:

- Consumer engagement and protection
- Energy efficiency
- System security and flexibility
- Innovative local energy systems
- Renewable and low carbon solutions
- Oil and gas industry strengths

An overview of the comments received and our response to them is set out below.

Cross cutting themes

Interdependencies between Scottish and UK energy systems
Consultation respondents expressed the view that greater recognition was needed of the interdependencies between the Scottish and UK energy systems and the role of European Union policy.

Scottish Government response:
The final Strategy acknowledges that the Scottish energy system is part of the wider Great Britain and European energy market and makes a commitment to continue, and build upon, existing inter-governmental partnerships accordingly. It also acknowledges that legally-binding EU renewable energy and energy efficiency targets have played a defining role in stimulating the huge growth in renewable energy in Scotland. It

recognises that the nature of the UK's exit from the EU could have a powerful bearing on progress towards achieving the Scottish Government's Energy Strategy.

Integration across devolved policy areas
There were calls for more integration of Scottish Government strategy across planning and energy, with some respondents expressing the view that the full range of devolved policy levers should be more closely aligned with the Energy Strategy.

Scottish Government response:
The final Strategy recognises that achieving the Scottish Government's aims will involve energy and non-energy policy levers and a combination of reserved and devolved powers.

The Scottish Government will commence its review of the National Planning Framework, incorporating the Scottish Planning Policy in 2018, with a view to adoption in 2020. This will create opportunities to collaborate on a revised set of planning policies wholly in line with the goals of the Energy Strategy and the Climate Change Plan.

The final Strategy recognises that although heat regulation is devolved to the Scottish Parliament, many of the issues which affect the heat market are reserved. It therefore details plans to continue to use the powers at the Scottish Government's disposal to prioritise the decarbonisation of Scotland's heat supply.

The Strategy also commits to consulting on the most effective way to implement newly devolved powers in relation to consumer advice and advocacy, and will build on recent uses of devolved powers to remove further barriers to energy efficiency and decarbonisation investment.

Maintaining a flexible approach towards local energy systems
While there was broad support across all respondent groups for harnessing the benefits of a decentralised, low carbon energy sector, there were comments on the need for flexibility to ensure that differing local needs can be met.

Scottish Government response:
The Energy Strategy reaffirms the Scottish Government's aim to maintain its leadership in developing local energy systems, as part of our 'whole-system' approach.

The final Strategy sets out a range of near-term actions to support the development of innovative and integrated local energy systems and networks, including a Local Energy Systems positions paper to explore these issues in more detail.

Supporting a range of technologies within Scotland's energy mix
While there was support for energy from renewable sources and/or for hydrogen to be part of the energy mix in Scotland, many respondents noted that a range of technologies will be required in order to maintain security of supply in the future.

Scottish Government response:
Through the introduction of two illustrative energy scenarios for 2050, the final Strategy acknowledges the need to take a flexible and open approach to decarbonisation, with a portfolio of technology options required. This builds on the positive response to the

perceived flexibility of the draft Strategy to adapt to future changes in emerging technologies.

The consultation support for a portfolio of options has been further reflected through the commitment to broaden the scope of the Renewables Energy Investment Fund to include 'low carbon' energy solutions as an Energy Investment Fund, and to bolster its funding with up to £20 million to be made available in 2018-2019.

Need for a clear roadmap and decision points
A number of requests were received for a clear roadmap for the direction of travel and for clarification on when decisions will be made at a national level for key sectors and for rolling out new energy choices.

Scottish Government response:
In response to these requests, the final Energy Strategy introduces the six broad energy priorities outlined above. Each priority is accompanied by a thorough consideration of the near-term actions that will help the Scottish Government achieve it. It also identifies the balance of reserved and devolved competence in the energy market and sets out where the Scottish Government will work with the UK Government and other national and international stakeholders to achieve its aims.

Innovation, investment, skills, resources and workforce matters
Many respondents referred to the importance of the Energy Strategy giving certainty to investors about the economic value from the energy sector, and continuing to enhance the Scottish supply chain with respect to energy. Respondents referred to the need for ongoing business-led innovation and demonstration projects across the energy sector; again noting the need for flexibility in offerings so that when innovative technologies are further developed, these can be incorporated into Scotland's energy mix.

Scottish Government response:
The final Strategy introduces a new chapter focussed on identifying and capitalising on the economic opportunities for Scotland associated with the Strategy's 2050 energy vision.

This chapter sets out eight areas where the Scottish Government is taking direct action to support the development of a thriving energy sector:
   a. Stimulating investment
   b. Supporting research and innovation
   c. Strengthening supply chains
   d. Creating new business models
   e. Developing necessary skills
   f. Boosting inclusive growth
   g. Cultivating regional partnerships
   h. Supporting internationalisation.

Meeting our energy supply needs

There was broad overall support, across all sub-groups, for the five priorities set out in Chapter 3, with particular support for the whole systems approach taken in the draft Energy Strategy and the flexibility shown to adapt to changes in emerging technologies. Only a small number of respondents disagreed with any of the priorities.

There were mixed views regarding the extent of support that should be given to the recovery of North Sea oil and gas, with some respondents welcoming continued support for the sector due to its vital importance in delivering reliable energy and economic value, while some others felt there is too much emphasis on this sector given the draft Energy Strategy's focus on decarbonisation.

A relatively large number of respondents welcomed the development and commercialisation of Carbon Capture and Storage, although they also highlighted perceived technical and/or financial challenges in the development of large-scale CCS on a cost effective basis.

A number felt that renewables should be supported as a significant, cost-effective resource and that Scotland should continue to build on its successes in promoting renewable electricity. There were references to onshore and offshore wind, as well as solar thermal energy and pumped hydro storage, as providing competitive cost-effective options.

Some respondents felt that Priority 5 (increasing the flexibility, efficiency and resilience of the energy system as a whole) should underpin the other four priorities.

Scottish Government response:
This is a long-term strategy, designed to guide our decision making between now and the middle of the century. Our overall approach is to support energy efficiency, develop Scotland's huge renewable resource, and promote storage and flexibility while encouraging innovation and building on existing industry strengths.

North Sea oil and gas production is highly regulated, with some of the most advanced and least polluting methods in the world. As the scenarios in the Energy Strategy show, demand for oil and gas will continue to play a role for decades to come. The Energy Strategy reiterates the Scottish Government's commitment to working with the oil and gas industry to prepare the sector and its workforce for a positive role in Scotland's energy system.

The final Energy Strategy adopts six strategic energy priorities (listed above), which are representative of the whole-system approach that guides the Strategy itself. The priorities are flexible, and able to respond to changes in individual technologies and wider market developments.

Renewable energy target
There was overall support for this target, although there was a perception from several respondents that this is too ambitious. A small number of respondents disagreed with setting targets altogether.

There were requests for the target to apply to all low carbon sources of energy, not just renewables and a range of different technologies were cited for inclusion in the energy mix.

Requests were made by some consultation respondents for more detail on different aspects of the renewables target, particularly on the effort required to decarbonise the heat and transport sectors.

The confirmation of this ambitious target – the equivalent of 50% of all Scotland's energy consumption from renewable sources by 2030 – reflects the Scottish Government's commitment to the renewable industry and to delivering the statutory emissions reduction targets set by the Climate Change (Scotland) Act 2009.

Scottish Government analysis, underpinned by the Scottish 'TIMES' model (and described in Diagram 10, p35 of the final Energy Strategy), shows that renewable electricity could rise to over 140% of Scottish electricity consumption by 2030, whilst to meet the 50% target, the non-electrical proportion of transport and heat demand met by renewables is assumed to be around 5% and around 20%, respectively.

To support the delivery of this target and to build upon consultation support, the final Energy Strategy includes a range of near term actions aimed at supporting and promoting renewable and low carbon technologies. The commitment in the final Strategy to deliver Annual Energy Statements will help monitor progress and guide future actions towards achieving this target.

Commercial development of onshore wind
Respondents discussed a number of elements which they consider would have a material impact on whether the onshore wind industry in Scotland can achieve commercial development without subsidy. These included the important role of streamlined and consistent consenting and planning processes, and requests for stability in terms of grid connections, grid management and charges.

Some respondents suggested options to mitigate the loss of subsidies, including the potential of a growing market for commercial Power Purchase Agreements and the importance of maximising economies of scale. Others called on the Scottish Government to continue to work closely with the UK Government and to stress the potential importance of subsidy-neutral market support mechanisms for onshore wind.

Scottish Government response:
The final Energy Strategy reaffirms a commitment to push for UK wide policy support for onshore wind and to take action of our own to prioritise and deliver a route to market, combined with a Land Use Planning approach which continues to support development while protecting our landscapes. More detail on the approach to the commercial development of onshore wind is set out in the [Onshore Wind Policy Statement](#), published alongside the Energy Strategy

Decommissioned thermal generation sites
Respondents considered that the capacity to use the existing infrastructure is a key benefit of Scotland's decommissioned thermal generation sites. This is because many are in strategic locations, with an existing skilled workforce and have existing grid capacity and community support. Respondents also suggested that the existing grid capacity could be made available to other generators. Only a small number of respondents felt there were disadvantages in using existing sites.

There were suggestions that the existing infrastructure can be used as centralised energy storage to help mitigate against the intermittent nature of renewable energy. Some respondents referred to a need for enhanced policy support within the planning system to ensure opportunities for re-purposing these sites were not lost.

The final Energy Strategy makes the case for the relevant (and reserved) market and regulatory mechanisms to take a more strategic approach to system flexibility and security, placing more of a premium on the locational value of controllable, thermal generation across the country. Such an approach would create opportunities to capitalise on the infrastructure, skills and expertise to which respondents have referred.

The Strategy also makes clear the potential strategic importance of electricity storage, and the Scottish Government's determination to support innovation and deployment in this area, whether at existing sites or elsewhere across Scotland.

Role of hydrogen in Scotland's energy mix
There was overall support in the consultation for developing the role of hydrogen in Scotland's energy mix as it is perceived to be a flexible source of energy which can be used across different sectors, including transport, heating and power. Although views were generally positive, respondents noted several provisos or concerns. There were some requests for hydrogen to be produced from non-fossil fuels and comments that CCS is needed to optimise the use of hydrogen but that, at present, this has not been developed at a sufficient scale.

The consultation identified the need to increase public awareness, engagement and perceptions so that hydrogen can be accepted as a possible energy source. Many respondents called for the Scottish Government to be involved in and/or provide support for demonstration projects. There were also calls for the further development of the UK Hydrogen and Fuel Cell roadmap, with some suggestions for a similar Scottish based roadmap.

Scottish Government response:
The final Energy Strategy builds on its discussion of the role of hydrogen in the draft Strategy by developing a 2050 illustrative scenario. This is predicated on a largely hydrogen-based energy system, whilst also reaffirming the Scottish Government's commitment to supporting further research and development in this area. This commitment includes continuing to make support available for innovative hydrogen projects and trials and to support proposals by Scottish Gas Networks (SGN) to assess the viability of constructing and operating the first hydrogen distribution network in Scotland. The final Strategy also highlights the role of the Scottish Government in working with the UK Government and other partners to develop the 2017 Hydrogen and Fuel Cells Roadmap, whilst also exploring the economic opportunities presented by the potential role of hydrogen in Scotland's energy mix.

Transforming Scotland's energy use

There was overall support for the priorities outlined in the draft Strategy and a number of overriding themes emerged. Many respondents simply voiced support for the actions in general or for specific actions.

Scottish Government response:
The final Energy Strategy recognises that reducing energy demand will help tackle fuel poverty, help businesses become more competitive and release savings in the public sector for front line services. The Scottish Energy Efficiency Programme will focus on reducing energy demand in all buildings across Scotland to the mid-2020s. The final

Strategy makes clear the Scottish Government's commitment to the publication of a SEEP Routemap and Transition Plan from Spring 2018.

The final Strategy makes a concerted effort to acknowledge the role that digital and smart technologies will have on non-domestic consumers. This includes providing economic opportunities through transforming and disrupting markets, improving energy efficiency, and delivering new, data driven business models and platforms based on a more improved understanding of customer and market behaviour. The final Strategy also recognises the increasing role of cyber security in ensuring that the benefits of smart technology are not superseded by the risks.

The final Strategy reiterates the potential benefits of smart meters. However, in keeping with its priority for consumer engagement and protection, it recognises the importance that customers who are less engaged or connected and more vulnerable are not left further behind. The final Strategy also proposes the development of the Smart Meter Advice Project delivered through Home Energy Scotland to enable customers to make the most of the energy use data provided by their smart meters.

The final Strategy commits to continuing to work closely with consumer bodies and to ensure that industry listens to consumers, identifying and responding to specific issues, whilst also developing an energy consumer Action Plan to take a more detailed look into consumer issues across the energy sector.

The final Strategy incorporates commitments made within the [2017-2018 Programme for Government](), to support the up-take of 'ultra-low emission vehicle' technologies and to phase out the need for new petrol and diesel cars and vans by 2032. The Strategy recognises that a range of technologies across different sectors – from those improving efficiency to advanced liquid and gaseous biofuels – will play a part in the wider decarbonisation of transport.

For industry, the final Strategy sets out that the Scottish Government will build on existing programmes of support, and provide incentives, for industrial energy efficiency. The Strategy also details how we will support efforts to deliver the Energy Efficiency and Industrial Decarbonisation Roadmaps for the energy intensive sectors; continue to work with industry to encourage investment in key industrial clusters; liaise with the UK Government in relation to the UK industrial energy efficiency scheme; plan to develop a collaborative agreement with key industrial sectors in Scotland, and publish a discussion paper that considers how to achieve these outcomes in a way that builds on our existing commitments in SEEP and the Scottish Manufacturing Action Plan.

Energy efficiency target
There was overall support for an energy efficiency target, although several consultation respondents said this should be more ambitious and requested clarification of the baseline year. Many noted the need to align this with the EU ambition to implement an effective energy efficiency target of 30% by 2032.

Scottish Government response:
The final Energy Strategy introduces an energy 'productivity' target for the year 2030. Recognising that reducing demand is only one part of the Scottish Government's energy efficiency ambition, this new target is a measure of the combination of energy consumption and the output of the economy. The target is set against a baseline of

2005-2007, under which Scotland's previous energy efficiency target was set and is consistent with EU energy efficiency ambitions.

Setting this target for the productivity of energy use across the Scottish economy better represents the 'whole system' approach of the Strategy, as requested by a range of consultation respondents.

Smart local energy systems

The priorities for delivering smart, local energy systems were supported by many respondents. The final Energy Strategy, therefore, builds on these priorities by designating innovative local energy systems as one of the Strategy's six broad energy priorities. There was also overall support for the actions identified in this policy grouping.

There was support across the consultation responses for the use of Energy Masterplanning as a strategic approach to bring forward energy projects. Respondents noted the need to ensure the regulatory landscape allows for a decentralised and flexible energy system.

Scottish Government response:
The final Energy Strategy sets out a range of near term actions to help empower communities by supporting the development of innovative and integrated local energy systems and networks. The final Strategy also commits to developing a Local Energy Systems positions paper.

The final Strategy reaffirms the commitment to developing strategic approaches, based on locally distinctive needs, opportunities and priorities. This includes consulting on a new statutory framework for Local Heat and Energy Efficiency Strategies (LHEES) to guide investment in energy efficiency and heat decarbonisation at a local level. The need to ensure connection between national and regional policies, providing for new and emerging regional partnerships to support national planning policy, has also been recognised in the final Strategy.

Government-owned energy company
The need for some form of public agency to support an energy transition was acknowledged through the consultation responses. Some respondents suggested that such an agency could operate efficiently on a not-for-profit basis and allow for innovative energy systems which would help to overcome some existing market barriers.

Several suggestions were made on the form of such an agency, including a centralised energy agency, Energy Service Companies, Government and Community Owned Energy Companies and Municipal Energy Companies. However, some respondents queried the need for a Government owned energy company, suggesting that this could detract from the existing range of initiatives and activities undertaken by other organisations.

Scottish Government response:
The final Energy Strategy incorporates the commitment of the Scottish Government to develop the aim to create a publicly-owned energy company that will be operational by the end of the current parliament (2021). The aim is that this company will support

economic development, contribute to tackling fuel poverty, be publicly-owned and run on a not-for-profit basis.

Scottish Renewable Energy Bond
The majority of respondents expressed support for a Scottish Renewable Energy Bond, with suggestions that the Bond should focus on a wider range of energy sectors and not just renewables. This was viewed as an important delivery mechanism in instances where finance from other sources is a challenge. It would allow savers and investors to have a stake in the sector and open up ownership to a broader range of audiences. Some respondents cautioned on the sizeable challenge of delivering a new financial project to the market.

Scottish Government response:
Drawing on the consultation responses, the Scottish Government is carefully considering the range of support mechanisms to stimulate investment in renewables projects over the short and medium term.

To date, the Scottish Government and its partners have used initiatives such as the Low Carbon Infrastructure Transition Programme and the Renewable Energy Investment Fund (REIF) to attract and stimulate interest and private sector investment.

The final Energy Strategy sets out the intention to build upon the success of REIF and LCITP to sustain and increase the level of investment and deliver innovative low carbon energy infrastructure solutions.

The Scottish National Investment Bank will be a key partner in the future and through the provision of patient, long term capital, will support the aims of the Energy Strategy.

Delivery, monitoring and engagement

There was overall support for the Scottish Government, along with private and public sectors, to work in partnership. It was, however, suggested that these partnerships should include a wide range of stakeholder organisations, working to maximise the use of expertise, skills and knowledge.

The proposal to refocus the Scottish Energy Advisory Board (SEAB) on the new themes of the Strategy and to extend the composition of the Board was also supported. Respondents welcomed the commitment to publish an Annual Energy Statement, although it was felt this would need to be accessible, provide an appropriate level of detail, encompass a whole energy system and provide a robust monitoring and evaluation framework, with interim targets and milestones against which to measure progress.

With regards to public engagement, respondents focussed on a need to include a wide range of groups and to ensure a consistent, well developed, coordinated and long term national awareness campaign, using a range of different media channels.

Scottish Government response:
The final Energy Strategy outlines plans to continue and build upon partnerships with, amongst others, local government, industry, academia and civil society. Specific examples include the ambition to pool leadership and expertise from industrial sectors by working in partnership through a new Scottish energy intensive industries forum,

and to support the creation of Regional Economic Partnerships which bring together local authorities, enterprise agencies, the private sector and education and skills providers to create coherent regional economic strategies and plans.

The Scottish Government will update the remit of SEAB to take account of the Strategy's themes and strategic priorities. This will give the Board a wider perspective and support the delivery of the Strategy, including input into the Annual Energy Statement.

The final Strategy commits to developing an engagement framework on low carbon behaviours (in conjunction with the final Climate Change Plan), to use digital platforms to make information and data accessible and open, and to encourage and support communities to hold local conversations about local energy systems.

Another theme within the responses was the need for the final Strategy to highlight the importance of behavioural change and public buy-in for measures to transform Scotland's energy use. The 'Deepening Public Engagement' section of the final Strategy reaffirms this importance and details the Scottish Government's objectives of raising awareness and sharing information, encouraging a greater sense of ownership and finding better ways to share ideas. The Strategy's two 2050 illustrative scenarios have been designed, in part, as a communication tool to generate discussion across Scottish society about how the future energy system could potentially look.

5. Opinions expressed on the Environmental Report

Questions were used to help frame responses on the Environmental Report. These asked:

   I.   What are your views on the accuracy and scope of the information used to describe the SEA environmental baseline set out in the Environmental Report? (Please give details of additional relevant sources).

   II.   What are your views on the predicted environmental effects as set out in the Environmental Report?

   III.   What are your views on the findings of the SEA and the proposals for mitigation and monitoring of the environmental effects set out in the Environmental Report?

The statutory Consultation Authorities, Scottish Environment Protection Agency (SEPA), Scottish Natural Heritage (SNH) and Historic Environment Scotland (HES) provided detailed responses to the consultation on the Environmental Report. In addition to these responses, comments on the Environmental Report were received from individuals, third sector groups, public bodies and local government.

Overall the comments received were supportive of the assessment process and of the findings set out in the Environmental Report. The views and comments received have been summarised below alongside the Scottish Government's response to them.

Accuracy and scope of the environmental baseline:

The majority of respondents noted the accuracy and scope of the SEA was reasonable for its purpose. All three Consultation Authorities were content with the accuracy and scope of the baseline material used in the Environmental Report.

Historic Environment Scotland made reference to their guidance on a range of policy areas which they advocate will help to identify best practice and ensure the Strategy is implemented without detriment to the historic environment and this is acknowledged by the Scottish Government.

One individual did not agree with the baseline and another considered that the baseline paid insufficient attention to the need for renewable energy generated to meet demand or to consider energy footprint and energy consumption. An individual respondent expressed their opinion that the SEA focused on the uptake of renewable energy or decarbonisation but that the draft Strategy also focuses on other sources such as continuing to support North Sea oil and gas and Carbon Capture and Storage development.

Two respondents said the draft Energy Strategy was weak on environmental and biodiversity issues, including spatial impacts.

Scottish Government response:
We are content that the accuracy, scope and baseline of the SEA is fit for purpose. We note that all statutory Consultation Authorities, and the majority of other respondents, are in agreement with this.

We are satisfied with the proportionate approach taken to the assessment which focused on considering those areas where potential significant environmental effects were likely. We believe there are strong regulations and policy procedures already in place to consider the environmental impacts at the appropriate stage and scale.

The Energy Strategy is a long term strategic plan and is not intended to be spatial in nature. The Scottish Government is committed to taking the necessary steps to mitigate against any potential negative environmental effects arising from the policies deployed to deliver the Energy Strategy.

Predicted environmental effects

All three Consultation Authorities were generally content with the predicted environmental effects. However, both HES and SNH considered that the assessment would have benefitted from a more nuanced approach to the potential for negative and positive effects to arise from the draft Strategy. For example, the potential for negative impacts from the retro-fitting of energy efficiency measures to traditional or historic buildings, and the risk that not all biomass feedstocks would be produced sustainably was noted.

The reuse of infrastructure was supported and the recognition of the potential for new effects on heritage assets and their setting from actions to meet the new target for generating electricity from renewables was also welcomed. In particular, the potential for negative effects to arise from larger onshore wind turbines was noted.

SEPA considered that the summary tables in the Environmental Report were useful and said it would have been beneficial for these tables to have set out the full range of effects. They suggested the summary tables be revisited and included in the Post Adoption Statement to support future monitoring and Strategy review exercises.

SEPA also noted that a number of uncertainties were set out in the Environmental Report with regards to potential impacts and that these would benefit from further consideration during the finalisation of the draft Strategy. In particular, they considered that issues that would benefit from the drawing out of specific impacts and areas of uncertainty at a strategic/national level include carbon capture and storage, biomass, network management and infrastructure management. Whilst SEPA recognised that it may not be possible to specifically address these issues at present, they suggested that it would be helpful for the Post Adoption Statement to highlight these important strategic considerations and uncertainties to ensure they are effectively monitored and addressed as further details emerge.

There was general agreement with the predicted environmental effects set out in the Environmental Report. Another noted that while the predicted environmental effects were reasonable, they suggested that any assessment needs to be carried out in the context of socio-economic benefits.

A respondent noted that the Environmental Report focused on renewable energy but there should be flexibility with the scope and environmental effects as more information becomes available and as the Energy Strategy is implemented at a project level. An individual expressed the view that the predicted environmental effects were understated as the draft Energy Strategy did not consider, or mention, the embedded energy and related emissions from exports and water usage from CCS.

<u>Scottish Government response:</u>
The Scottish Government welcomes this feedback. In light of the fact that both the draft Energy Strategy and the draft Climate Change Plan cover a large number of policy initiatives, the assessment was considered to be both proportionate and focussed. However, it is recognised that there are a number of uncertainties when undertaking an assessment at this level, for example, predicting how the energy system might evolve over the duration of its life span. As such, it can be very difficult to make an accurate assessment of the full range of potential environmental effects that may arise, particularly those at a lower level. Where possible, the assessment has sought to identify likely impacts that may require consideration as polices and proposals in the final Energy Strategy are implemented.

We are pleased that SEPA found the summary tables to be useful. Given that the format of the final Energy Strategy differs significantly from the draft and the tables are not markedly changed from the originals, we have, therefore, not included them as part of the Post Adoption Statement. We will continue to build upon the accessibility of the information produced for future SEA and Post Adoption Statements based on this feedback. The assessment summary tables will be used to inform the approach to monitoring the environmental effects of the Strategy in future years.

The Energy Strategy recognises that there are potential trade-offs between some specific energy actions and other policy areas. Identifying these tensions as well as any synergies helps to manage them in order to maximise public benefits.

We believe we have the policy support in place to ensure the realisation of positive environmental effects and mitigate against negative effects.

In practical terms, any such tensions or opportunities are managed through the consideration of individual applications for consent or permit. These are managed through processes such as the Electricity Act 1989 and the Town and Country Planning (Scotland) Act 1997 and associated environmental impact assessment regimes. Environmental bodies such as SEPA, SNH and Historic Environment Scotland are statutory consultees under the Electricity Act and where relevant in relation to individual planning applications, and their advice contributes to the consideration of environmental effects in reaching decisions on applications for development consent.

The production of energy includes a number of activities that would be subject to SEPA environmental consents. For example, hydro schemes are regulated under the Controlled Activities Regulations and electricity generation is regulated through the Pollution, Prevention and Control Regulations. Under Environmental Impact Assessment legislation, the consenting process would consider the likely significant environmental effects of a proposed development and any necessary mitigation requirements.

Assessment findings, monitoring and mitigation proposals

SEPA highlighted that some identified effects will require strategic consideration, especially those not covered by planning and other regulation at the local level. They sought clarification on how the data produced from the proposed monitoring mechanisms will be used in monitoring the environmental effects of the Strategy. SEPA suggested that this information and clarification over responsibility for specific

mitigation measures at the project level, be set out within the Post Adoption Statement. They consider such an approach will help to ensure opportunities to maximise benefits and mitigate negative effects are realised.

Although HES welcomed the policies and proposals set out in the draft Energy Strategy, they said that the assessment would have benefitted from a more nuanced assessment of its potential negative and positive effects. They agree with the conclusions around mitigation and emphasised the importance for the final Strategy to recognise the impacts arising from sectors, including electricity, on the historic environment. They noted these will also require to be addressed as part of relevant decision making processes, including Environmental Impact Assessment. Other respondents agreed with the conclusion that many of the effects identified will be mitigated through existing mechanisms. Two individuals, however, noted concern that the proposals for mitigation and monitoring of environmental effects were inadequate.

SNH recommended an awareness raising programme for contractors be developed as a mitigation measure to reduce the risk of disturbance to bats during energy efficiency works in buildings.

Scottish Government response:
We are currently developing and finalising the monitoring framework for the Energy Strategy in advance of the first Annual Statement, expected in early 2019. Measuring the cumulative environmental effects of the Strategy will be considered when developing its monitoring framework in future years.

The Annual Statement will present the latest developments under each of the strategic priorities and also comment on the overall make-up of energy supply in Scotland. This strategic review will allow an analysis of the effects that require consideration at the national or strategic scale, as opposed to individual developments. We would welcome further discussion with SEPA about the best way to develop appropriate evidence to perform such an assessment.

The use of an annual statement to track progress and identify any unintended consequences and potential negative environmental effects will allow for a strategic approach to be adopted.

Further detail on the expected approach to monitoring is set out under section 7. However, we would welcome any further advice on this from the Consultation Authorities.

We have noted the suggestion regarding bats and energy efficiency installations and this will be given further consideration under the development of the Scottish Energy Efficiency Programme Routemap, due to be published in May 2018.

6. Reasons for choosing the final Strategy in light of other reasonable alternatives

Two alternatives were considered during the SEA of the draft Energy Strategy. Firstly, the setting of a new ambitious target for 50% of all energy generated to come from renewable sources by 2030. The second alternative was not to set this target.

The SEA process and feedback received from consultation on both the draft Strategy and the Environmental Report supports the alternative for an 'all energy' renewables target for 2030 of 50%.

In choosing this alternative, it was considered that there could be a greater focus on and commitment to renewable energy in the decarbonisation of Scotland's future energy mix beyond 2020.

An ambitious target could promote and facilitate further renewable energy projects and associated positive environmental effects. Increased diversification in the energy system as a whole and greater diversity in renewable technologies is likely, and alongside other proposals to improve system flexibility, would contribute to ambitions for decarbonisation of the sector.

In preparing the final Energy Strategy, the Scottish Government did evaluate the role of a target which captured a wider range of low carbon but non-renewable technologies, as discussed in the draft Energy Strategy consultation document.

Such a target would offer greater flexibility when attributing a wider range of technologies to our energy target. However, as the full effects of technologies such as hydrogen (and bioenergy) produced with carbon capture and storage are as yet unproven, it was not considered credible or environmentally prudent to allow such technologies to contribute to the Strategy's central 2030 target at this time. Our greenhouse gas emissions inventory will, however, track progress and highlight the role of non-renewable energy sources in meeting our climate change targets.

To ensure system stability and ensure affordable energy supplies, the Scottish Government will continue to support innovation and draw upon the latest scientific evidence and technological advances, while supporting the deployment of a balanced mix of technologies and energy solutions.

7. Monitoring

This section sets out how we will monitor the potential significant environmental effects in implementing the Energy Strategy.

The main monitoring and reporting mechanism will be the Annual Energy Statement which will be published by the Scottish Government. This Statement will set out:

- the latest energy statistics
- the progress made towards existing targets and the new 2030 targets
- progress made under each of the six Strategic Priorities
- changes within the UK energy market and international frameworks; and
- an assessment of technological changes and advances with a bearing on Scotland's energy system.

The Annual Energy Statement will take account of the Climate Change Plan monitoring framework and relevant energy indicators. Alongside the Annual Energy Statement, established monitoring regimes for related national and local policies, plans, programmes and strategies will supplement the monitoring of environmental impacts. This includes the Energy in Scotland series which reports on changes to Scotland's energy mix and provides information on how energy is both generated and consumed. This will assist in monitoring policies, policy development milestones and proposals.

Annual monitoring and reporting of Scotland's overall greenhouse gas emissions reductions is undertaken by the Committee on Climate Change. Alongside this, the annual Key Scottish Environment Statistics Report provides information on a wide range of environmental topics and indicators. Both help to inform the proposals for monitoring set out in the draft Energy Strategy. As new policies and proposals are brought forward and developed in more detail, further specific monitoring proposals may emerge.