

## Aspirations and Ambitions

### 1.1 Overview

The energy challenges and opportunities in your local community are impacted by the national picture in Scotland. That's why thoroughly reviewing Scottish Government policy direction and action around energy and transport is useful. You won't find a lengthy analysis of all the implications of actions around climate change and development of a low-carbon economy, but a summary of how transport systems and energy generation and use (both power and heat) may evolve in the short, medium and long term.

The Scottish Government sets out the overall challenges Scotland faces in responding to climate change, and the overall targets for reductions in carbon (GHG) emissions. Understanding the main targets and changes will help you and your community figure out what projects will offer local benefits while aligning with national efforts. It's important to understand that effective environmental conservation and enhancement of biodiversity are an integral part of these targets and changes.

### 1.2 International Commitments

Action on climate change is taking place around the world. Policy commitments made by national governments via international agreements have led to national policies to deliver on these commitments. National requirements must then be translated into local policies.

The UK Government is a signatory to several international agreements, including:

- Kyoto Protocol
- Paris Agreement
- Cancun Adaptation Framework

In December 2020<sup>1</sup> it set out its new Nationally Determined Contribution (NDC) under the Paris Agreement to reducing greenhouse gas emissions by at least 68% by 2030, compared to 1990 levels.

### 1.3 UK Government Policies

The international commitments made by the UK Government have led to the Government setting out policies to change the situation at a UK level.

#### Climate Change Act and Carbon Budgets

The 2008 Climate Change Act commits the UK Government to delivering an 80% reduction in carbon emissions by 2050 (against a 1990 baseline), in order to help mitigate future climate change. It also requires the UK Government to prepare sufficiently to adapt to risks posed by climate change.

#### Clean Growth Strategy (CGS)

The overall purpose of the CGS is to set out, at a high level, the steps the UK Government will take to ensure that future economic growth is decoupled from GHG emissions. This has two guiding objectives:

- To meet domestic commitments at the lowest possible net cost to UK taxpayers, consumers and businesses

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<sup>1</sup> <https://www.gov.uk/government/publications/the-uks-nationally-determined-contribution-communication-to-the-unfccc> (Accessed March 2021)

- To maximise the social and economic benefits for the UK from this transition

Eight areas of action have been identified.

### Industrial Strategy – Building a Britain Fit for the Future

The Industrial Strategy sets out the UK Government's priorities for maintaining a thriving economy in the transition to a low-carbon economy. They have been summarised as:

- Ideas – the world's most innovative economy
- People – good jobs and greater earning power for all
- Infrastructure – a major upgrade to the UK's infrastructure
- Business environment – the best place to start and grow a business
- Places – prosperous communities across the UK

### Waste Management and Resource Efficiency

The UK has an existing commitment (linked to the EU Waste Framework Directive) to achieve a 50% household-waste recycling rate by 2020. The most recent statistics show a total household recycling rate of 44.3% in 2015 – a fall from 44.9% in 2014. This will be updated as part of the delayed Environment Bill (2020).

Consideration of the lifecycle of resources used to produce goods and services has become more prominent in decision-making in the UK and internationally. This means rethinking how we can use changing design practices and better re-manufacturing, re-using and recycling to use fewer resources. This concept has been termed the 'circular economy', in contrast to the existing 'linear economy'.

### UK 25 Year Environment Plan

This UK Government plan sets out a long term approach to protecting and enhancing natural landscapes and habitats in England. The importance of the plan is outlined by the Prime Minister:

*'We hold our natural environment in trust for the next generation. By implementing the measures in this ambitious plan, ours can become the first generation to leave that environment in a better state than we found it and pass on to the next generation a natural environment protected and enhanced for the future.'*

The priorities set out in the 25 Year Environment Plan sit alongside the Clean Growth Strategy, with interlinking themes of reducing overall GHG emissions, enhancing the natural environment and decoupling economic growth from carbon-intensive activity.

For more details, see Appendix A.

## 1.4 Scottish Government

Scotland's Energy Strategy provides a route map that outlines the vision the Scottish Government has of what our future energy systems and needs might look like from now until 2050.

The vision as described in the strategy's introduction:

**'A flourishing, competitive local and national energy sector, delivering secure, affordable, clean energy for Scotland's households, communities and businesses.'**

This vision is guided by three core principles:

- **A Whole-System Approach** – Work to date has focused heavily on electricity production using low carbon sources, and improvements to the efficiency of our energy use. The strategy

recognises that these are important areas, but need to be worked on alongside heat and transport. All of these elements influence each other in the energy systems we need to create in the future.

- **An Inclusive Energy Transition** – Changes to the energy system are driven by a need to decarbonise our energy use in line with targets set out in the Climate Change (Scotland) Act. While this will show Scotland's contribution to global action on climate change, it needs to be done in a way that's fair to everyone. This means addressing inequality and poverty, and promoting a fair and inclusive jobs market. Greater efficiency in energy use by businesses and householders can help reduce bills (and associated carbon emissions), leading to lower fuel poverty levels and enabling businesses to be more competitive. To ensure the benefits are felt by everyone, the Scottish Government intends to create a new energy company, which will be publicly owned and run on a not-for-profit basis.
- **A Smarter Local Energy Model** – Local energy economies are at the core of the transformation of Scotland's energy systems. Local solutions meeting local needs, linking local generation and use, and helping to create vibrant local energy economies. Local Heat & Energy Efficiency Strategies (LHEES) will provide information for local areas about investment in energy efficiency, district heating and other heat decarbonisation opportunities.

The Scottish Government's Local Energy Policy Statement<sup>2</sup> issued in January 2021 recognises the increasing role that local energy services can achieve to the benefit of local people. It identifies community-led energy projects as a priority within the development of local energy services. It sets out ten key principles that form the Scottish Government's approach. These centre on five themes: people; places; network and infrastructure; pathway to commercialisation and opportunity.

The Policy Statement supports the strategy aims to build on the legacy of strong community engagement in local renewable generation to enable larger strategic projects covering larger geographical areas. The Scottish Government target of 1 GW of community and locally owned energy by 2020 rises to 2 GW by 2030.

It underpins the Scottish Government's commitment to ensure that energy systems are designed and developed in line with local need, with both residential and non-residential consumers able to actively manage and meet their energy needs in an efficient manner. This should assist in lowering annual energy bills, while also offering opportunities for local supply chains and investment in local businesses.

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<sup>2</sup> <https://www.gov.scot/publications/local-energy-policy-statement/> (Accessed March 2021)

## Appendix A International and UK Government

### A.1 Wider Policy Landscape and Context

Action on climate change is taking place around the world. Policy commitments made by national governments via international agreements have led to national policies to deliver on these commitments. National requirements must then be translated into local policies.

Details are provided in the following sections.

#### A.1.1 International Conventions and Agreements: Current Position for Climate *United Nations Framework Convention on Climate Change (UNFCCC)*

The UNFCCC is an international environmental treaty that was adopted in 1992 and came into force in 1994, having been ratified by nations worldwide. The 197 nations that ratified the agreement are known as 'parties to the convention'. The agreement is linked to three other conventions:

- Convention on Biological Diversity
- Convention to Combat Desertification
- Ramsar Convention on Wetlands

The ultimate objective of the convention is to:

*'Stabilize greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system.'*

From the outset of this agreement, it was recognised that action on climate change needs to be cost-effective, and that contributions from different countries will vary according to their circumstances. Leading the way are the so-called industrialised countries (mostly those in the Organisation for Economic Cooperation and Development [OECD]) deemed 'Annex I countries' in the language of the UNFCCC.

The UNFCCC doesn't set any targets for greenhouse gas (GHG) emission reduction by individual countries. Instead, it sets out how international treaties or protocols can be negotiated to support international efforts to achieve the overall objective.

For this reason, parties to the convention meet annually at a 'Conference of the Parties' (COP) to assess progress and seek further action as is thought necessary to meet targets.

#### Kyoto Protocol

The first meeting of the parties to the convention took place in Kyoto (COP-1), and the resulting Kyoto Protocol came into force in 2005. It set out emissions reduction targets for Annex I countries, which, crucially, are binding in international law. Two commitment periods were agreed: the first from 2008 to 2012, the second from 2013 to 2020. There was an Amendment to the Protocol for the second-period commitments agreed in Doha (COP-18), but this hasn't yet come into force.

#### Paris Agreement

The Paris Agreement was adopted by those parties attending COP-21 in December 2015. It has been signed by 197 UNFCCC members. In February 2021 191 parties were in agreement. It has not been ratified by six parties.

The agreement applies to the period beyond 2020 and has three key objectives:

- '(a) Holding the increase in the global average temperature to well below 2 °C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5 °C above pre-industrial levels, recognizing that this would significantly reduce the risks and impacts of climate change;
- '(b) Increasing the ability to adapt to the adverse impacts of climate change and foster climate resilience and low greenhouse gas emissions development, in a manner that does not threaten food production; and
- '(c) Making finance flows consistent with a pathway towards low greenhouse gas emissions and climate-resilient development.'

The wording of the agreement recognises the role of scientific evidence in guiding action, and the need to ensure a peak in global GHG as soon as possible. It notes the need for rapid reduction in GHG beyond that peak in order to avoid major impacts from the changing climate on all signatories.

Those countries that have ratified the agreement are legally bound to prepare, communicate and maintain a nationally determined contribution (NDC). This sets out their targets in terms of overall reduction in nationally reported GHG emissions. A report on progress with the NDC should be produced every five years and ambitions set out at each review should be further reaching than the previous reporting period.

The agreement recognises that the NDCs currently proposed are not sufficient on their own to meet the objective of stabilising the global average temperature below the 2°C target. However, it makes a significant step towards reducing risks associated with climate change.

Starting from 2023, governments will come together every five years in a 'global stocktake', based on the latest science and implementation progress to date. The stocktake will set the context for the raising of ambition of all parties by looking at what has been collectively achieved and what more needs to be done to achieve the below-2°C objective.

The UK has ratified the Paris Agreement and committed to the process of progress review that it includes. In December 2020<sup>3</sup> it set out its new Nationally Determined Contribution (NDC) under the Paris Agreement to reducing greenhouse gas emissions by at least 68% by 2030, compared to 1990 levels.

### Cancun Adaptation Framework

The Cancun Adaptation Framework was adopted in 2010 at COP-16 in Mexico. It recognised the need for adaptation actions to be given the same priority as mitigation. This is particularly important in promoting international co-operation in order to reduce vulnerability and build resilience in developing countries.

While recognising that developed countries should take the lead in tackling adaptation, and support developing countries in ongoing targets, it also notes that vulnerable groups and ecosystems should be properly considered when determining adaptation plans.

#### A.1.2 National Context: Existing UK Climate Change Legislation

The 2008 Climate Change Act commits the UK Government to delivering an 80% reduction in carbon emissions by 2050 (against a 1990 baseline), in order to help mitigate future

<sup>3</sup> <https://www.gov.uk/government/publications/the-uks-nationally-determined-contribution-communication-to-the-unfccc> (Accessed March 2021)

climate change. It also requires the UK Government to prepare sufficiently to adapt to risks posed by climate change.

In recognising the global impact of greenhouse gas (GHG) emissions, the UK Government is also committed within the Act to contribute to global efforts seeking to limit global temperature rise to as little as possible above 2°C.

The Act included a requirement to create the Committee on Climate Change (CCC), which independently assesses carbon targets and advises government on the evidence behind them.

### *Carbon Budgets*

To meet UK-level emission GHG reduction targets, the government has set five-yearly carbon budgets, which currently run until 2032. They place a limit on the amount of GHGs the UK can legally emit during each of the five-year periods.

### *Clean Growth Strategy*

The UK Government published its Clean Growth Strategy (CGS) in October 2017. As stated in the Prime Minister's Foreword:

*'Clean growth is not an option, but a duty we owe to the next generation, and economic growth has to go hand-in-hand with greater protection for our forests and beaches, clean air and places of outstanding natural beauty.'*

The overall purpose of the CGS is to set out, at a high level, the steps the UK Government will take to ensure that future economic growth is decoupled from GHG emissions. This has two guiding objectives:

- To meet domestic commitments at the lowest possible net cost to UK taxpayers, consumers and businesses
- To maximise the social and economic benefits for the UK from this transition

To enable changes in the economy that will ensure later carbon budgets are met, much of the action needs to be taken in the near future, notably from 2023 onwards. Eight areas of action have been identified where key policies and proposals will be developed, as set out in Table A.1.

Table A.1 Clean Growth Strategy – Headline Action Areas

Headline	Summary of content
<b>Accelerating clean growth</b>	Develop 'Green Finance' capabilities to support investment in innovation, direct investment in low carbon projects, and wider availability of green mortgages (linking lending repayments to energy efficiency in properties).
<b>Improving business and industry efficiency</b>	Support business to improve energy productivity via a variety of means, including review of building regulations, simplifying carbon and energy reporting for business, and developing wider decarbonisation plans for industry. Direct investment in Carbon Capture Usage and Storage (CCUS) will support development of this technology, alongside funding of research and innovation in energy, resource and process efficiency.
<b>Improving our homes</b>	Strengthen building standards for energy efficiency and extend the Energy Company Obligation (ECO) to deliver more home energy improvements. There is also an intention to build and extend heat networks across the country and phase out fossil fuel use by homes not on the existing gas grid.  Energy efficiency standards for new boilers will be increased to help drive overall efficiency, and investment will be targeted at low carbon heating solutions for homes and businesses.
<b>Accelerating the shift to low carbon transport</b>	The most significant change in this area is the phasing out of new conventional petrol and diesel cars and vans by 2040. This will be supported by market investment in the ultra-low emission vehicles (ULEV) market, including taxis and buses. Alongside this will be the development of vehicle-charging networks and wider investment in cycling and walking networks for shorter journeys. It's explicitly stated that the government anticipates that the public sector will lead the way in transitioning to zero emission vehicles.  Investment will also be targeted at research and development of battery storage, and connected and autonomous vehicles.
<b>Delivering clean, smart, flexible power</b>	The government will continue to monitor how energy networks are managed in order to ensure that energy bills are kept as low as possible for consumers. This includes more use of battery storage and smart technologies to enable demand response technologies and balancing of grid supply. As well as the phasing out of unabated coal as a fuel source for electricity generation, there will be investment in nuclear power stations (Hinkley Point C) and encouragement for renewables such as offshore wind.
<b>Enhancing the benefits and value of our natural resources</b>	Future agricultural support will focus on directly addressing climate change impacts and enhancing environmental outcomes. Where practical, the government will seek to extend woodland and forest networks in England and increase the amount of UK-grown timber used in construction.  A new Resources and Waste Strategy will support the ambition for zero avoidable waste by 2050. This will include aspects of the emerging circular economy and efficiency of resource use.
<b>Leading in the public sector</b>	UK Government sees the public sector as having a leading role in delivering and supporting the evolution to a low carbon economy. This includes: <ol style="list-style-type: none"> <li>1. Tighter targets for 2020 for central government, and actions to further reduce greenhouse gas emissions beyond this date.</li> <li>2. Introducing a voluntary public sector target of a 30% reduction in carbon emissions by 2020–21 for the wider public sector.</li> <li>3. £255 million of funding for energy efficiency improvements in England and help for public bodies accessing sources of funding.</li> </ol>
<b>Government leadership in driving clean growth</b>	Recognising the requirement for government to be seen driving the strategy forward, the government is also committed to monitoring progress via a Clean Growth Inter-Ministerial Group and the use of a 'Great Green Britain' week to promote clean growth.  On a practical level, annual GHG reporting will include a measure termed 'Emissions Intensity Ratio' looking at GDP growth and reduced emissions.

### *Industrial Strategy – Building a Britain Fit for the Future*

Alongside the Clean Growth Strategy is the Industrial Strategy, published in late 2017, which sets out the UK Government's priorities for maintaining a thriving economy in the transition to a low carbon economy.

The priorities have been summarised as five foundations of productivity:

- Ideas – the world's most innovative economy
- People – good jobs and greater earning power for all
- Infrastructure – a major upgrade to the UK's infrastructure
- Business environment – the best place to start and grow a business
- Places – prosperous communities across the UK

These underpin four 'Grand Challenges', which seek to put the UK at the vanguard of future industries:

- AI & Data Economy – put the UK at the forefront of the artificial intelligence and data revolution
- Future of Mobility – become a world leader in the way people, goods and services move
- Clean Growth – Maximise the advantages for UK industry from the global shift to clean growth
- Ageing Society – Harness the power of innovation to help meet the needs of an ageing society

The five foundations of productivity are wide-ranging and there are a lot of new and ongoing initiatives outlined in the Industrial Strategy. Some of the action areas most relevant to ongoing environmental actions are summarised here in Table A.2.

Table A.2 UK Industrial Strategy – Headline Action Areas

Foundation	Action area	Commitment / action point
Ideas	Investment in research and development	Commit to reach 2.4% of GDP investment in R&D by 2027 and to reach 3% of GDP in the longer term
	Industrial Strategy Challenge Fund	The next programmes will be: <ul style="list-style-type: none"> <li>▶ Transforming construction – creating safer, healthier and less energy intensive buildings</li> <li>▶ Prospering from the energy revolution – Smart energy systems enabling maximum use of clean energy sources via suitable storage systems</li> <li>▶ Transforming food production – efficient food production with reduced pollution, waste and soil erosion</li> <li>▶ Audience of the future – Development of immersive technologies such as virtual, augmented and mixed reality</li> <li>▶ Next generation services – Developing applications for artificial intelligence and data analytics within the UK service sectors</li> <li>▶ Data to early diagnosis and precision medicine – Using data to support diagnostic programmes</li> <li>▶ Healthy ageing – Smarter use of data to enable independent lifestyles for the elderly and appropriate care supports</li> </ul>
	Higher Education Innovation Funding (HEIF) to reach a total of £250m a year by 2020–21	Supports knowledge-based interactions between universities and colleges and the wider world. Universities use HEIF to respond to business needs and local opportunities.
	Launch a new competitive £115m Strength in Places Fund	The fund will support collaborative programmes based on research and innovation excellence in places across the UK which can demonstrate a strong impact on local productivity and enhance collaboration between universities, research organisations, businesses, local government and Local Enterprise Partnerships in England and relevant agencies in the devolved nations.
Infrastructure	Investment in flood protection	£2.6 bn investment in over 1,500 flood defence schemes, protecting up to 7,500 households
	Housing	Support for planning system reforms and investment support for more house building
	Promotion of zero emission vehicles	Plug-in grant available for purchase of battery electric vehicles by individuals and businesses Central government car fleets to be at least 25% electric by 2022 Development of £400m Charging Infrastructure Investment Fund
	Clean Air Fund	Help individuals and businesses adapt as measures to improve air quality are implemented in the most challenging areas of air pollution in England
	Circular economy	Strengthen support for development of a circular economy via the Environment Plan and new strategy for resources and waste
	Digital connectivity	Investing in new 5G infrastructure and 'full-fibre' broadband networks
	Clean energy	Continued investment in clean sources of energy generation and support as detailed in the Clean Growth Strategy
Business environment	Sector Deals	Launching Sector Deals with life sciences, construction, artificial intelligence and the automotive sector, and in advanced discussions with the creative industries, industrial digitalisation, and a number of other sectors. These are partnerships with government designed to foster long term investment
Places	Local Industrial Strategies	Identify local strengths and challenges, future opportunities and the action needed to boost productivity, earning power and competitiveness. Continue to work with Local Enterprise Partnerships to set out clearly defined activities and objectives

Note: Details offer view of relevant actions but are not intended to be an exhaustive list.

### A.1.3 National Context: Committee on Climate Change

The Committee on Climate Change (CCC) is an independent, statutory body established under the Climate Change Act 2008. It consists of a large range of skillsets, from scientists, engineers and economists, while also commissioning specialist expertise when reviewing particular aspects of UK Government policy. The CCC advises the UK Government and devolved administrations on building a low-carbon economy and preparing for climate change.

An annual report is published with commentary on progress against targets and where the CCC sees cause for optimism or concern in delivering the changes needed to ensure the UK meets its climate change commitments.

Most of this advisory work is about mitigation. The other important aspect of the CCC's work is to advise on adaptation measures. This relates to managing the impacts of climate change by preparing for situations involving flooding, heat waves, water shortages, and new pests and diseases.

### A.1.4 Natural Resources: UK Level Policies

It's useful to provide a little more information around waste management, water and natural resources.

#### *Waste Management and Resource Efficiency*

The UK has an existing commitment (linked to the EU Waste Framework Directive) to achieve a 50% household-waste recycling rate by 2020. The most recent statistics show a total household recycling rate for the UK of 44.3% in 2015 – a fall from 44.9% in 2014. This will be updated as part of the delayed Environment Bill (2020).

Alongside efforts to increase recycling is a goal to reduce in the amount of waste sent to landfill, with a focus on biodegradable waste, in order to avoid methane emissions in landfill sites. The Clean Growth Strategy seeks to stop all biodegradable municipal waste reaching landfill by 2030.

The combination of increased recycling and reduction in biodegradable waste to landfill, as well as more efficient capture of fugitive GHG emissions from existing landfill sites, has meant an overall reduction in waste-related emissions of 73% since 1990. This is the single largest sectoral contribution to overall GHG-emission reduction to date.

Consideration of the lifecycle of resources used to produce goods and services has become more prominent in decision-making in the UK and internationally. This means rethinking how we can use changing design practices and better re-manufacturing, re-using and recycling to use fewer resources. This concept has been termed the 'circular economy', in contrast to the existing 'linear economy'.

The current economy uses resources in a linear way, which means things are made with virgin raw materials, used, occasionally recycled and then thrown away. In contrast, a circular economy keeps products and materials circulating in the economy at their highest value for as long as possible. It does this through redesign, re-use, remanufacturing, recycling, delivering products as services, and sharing.

The Clean Growth Strategy has committed to a new Resources and Waste Strategy, which will expand on elements of the circular economy and more efficient resource use. This follows on from existing work by devolved administrations, such as the Scottish Government's Zero Waste Plan that has been in operation since 2010.

### *Water Supply and Resource Use*

All regulated water companies are obliged to consider overall service resilience, which is about balancing their operations to ensure that impacts of climate change are minimised while consumers continue to receive reliable good-quality water supplies.

One important aspect of this is developing water resources management plans. These set out how water companies intend to provide a secure and sustainable supply of water to customers over the next 25 years and beyond. These plans are submitted to both Defra and the Environment Agency to ensure they are appropriate for the challenges faced in each water supply area.

### *Natural Capital*

The importance of protecting natural capital (geology, soils, air, water and all living organisms) has been highlighted in a recent stress test study for the UK. The findings show that the loss or degradation of natural capital could lead to significant impacts on the national economy by 2050 if actions aren't taken to curb or adapt to the potential changes. These impacts could be particularly significant for the most at-risk sectors, such as the food and beverages sector.

The report looks specifically at three areas of impact:

- Crops and livestock
- Water supply
- Flood regulation

Management of natural capital is therefore extremely important, both to sustain the present ecosystems, and to support efforts to increase resilience to impacts of climate change. This requires concerted adaptation work, as well as the extensive mitigation measures outlined in previous sections.

### *Biodiversity and Habitats*

The urgent need to tackle biodiversity was highlighted in the State of Nature (2016) report. The report uses work from more than 50 nature conservation and research organisations to offer an overview of the state of nature in the UK. Its headline findings were:

- Between 1970 and 2013, 56% of species declined, with 40% showing strong or moderate declines. Forty-four percent of species increased, with 29% showing strong or moderate increases. Between 2002 and 2013, 53% of species declined and 47% increased. These measures were based on quantitative trends for almost 4,000 terrestrial and freshwater species in the UK
- Of the nearly 8,000 species assessed using modern Red List criteria, 15% are extinct or threatened with extinction from Great Britain
- An index of species' status, based on abundance and occupancy data, has fallen by 16% since 1970. Between 2002 and 2013, the index fell by 3%. This is based on data for 2,501 terrestrial and freshwater species in the UK
- An index describing the population trends of species of special conservation concern in the UK has fallen by 67% since 1970, and by 12% between 2002 and 2013. This is based on trend information for 213 priority species
- A new measure that assesses how intact a country's biodiversity is suggests that the UK has lost significantly more nature over the long term than the global average. The index suggests that we are among the most nature-depleted countries in the world
- The loss of nature in the UK continues. Although many short-term trends suggest improvement, there was no statistical difference between our long and short-term

measures of species' change, and no change in the proportion of species threatened with extinction

### A.1.5 UK 25 Year Environment Plan

This UK Government plan was published in January 2018<sup>4</sup>. It sets out a long-term approach to protecting and enhancing natural landscapes and habitats in England. The importance of the plan is outlined by the Prime Minister:

*'We hold our natural environment in trust for the next generation. By implementing the measures in this ambitious plan, ours can become the first generation to leave that environment in a better state than we found it and pass on to the next generation a natural environment protected and enhanced for the future.'*

The priorities set out in the 25 Year Environment Plan sit alongside the Clean Growth Strategy, with interlinking themes of reducing overall GHG emissions, enhancing the natural environment and decoupling economic growth from carbon-intensive activity.

The overall goals set out in the plan can be summarised as:

- |   |   |    |   |
|---|---|----|---|
| 1 | Clean air   | 6  | Enhanced beauty, heritage and engagement with the natural environment |
| 2 | Clean and plentiful water   | 7  | Mitigating and adapting to climate change                             |
| 3 | Thriving plants and wildlife  | 8  | Minimising waste  |
| 4 | A reduced risk of harm from environmental hazards (e.g. flooding and drought) | 9  | Managing exposure to chemicals  |
| 5 | Using resources from nature more sustainably and efficiently                  | 10 | Enhancing biosecurity   |

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<sup>4</sup> <https://www.gov.uk/government/publications/25-year-environment-plan> (Accessed March 2021).

## Appendix B Scottish Government

Scotland's Energy Strategy was published in December 2017<sup>5</sup>. It provides a route map that outlines the vision the Scottish Government has of what our future energy systems and needs might look like from now until 2050.

The overall vision is set out in its introduction:



This vision is guided by three core principles:

**A Whole-System Approach** – Work to date has focused heavily on electricity production using low carbon sources, and improvements to the efficiency of our energy use. The strategy recognises that these are important areas, but need to be worked on alongside heat and transport. All of these elements intertwine in the energy systems we need to create in the future.

**An Inclusive Energy Transition** – Changes to the energy system are driven by a need to decarbonise our energy use in line with targets set out in the Climate Change (Scotland) Act. While this will show Scotland's contribution to global action on climate change, it needs to be done in a way that's fair to everyone. This means addressing inequality and poverty, and promoting a fair and inclusive jobs market. Greater efficiency in energy use by businesses and householders can help reduce bills (and associated carbon emissions), leading to lower fuel poverty levels and enabling businesses to be more competitive. To ensure the benefits are felt by everyone, the Scottish Government intends to create a new energy company, which will be publicly owned and run on a not-for-profit basis.

**A Smarter Local Energy Model** – Local energy economies are at the core of the transformation of Scotland's energy systems. Local solutions meeting local needs, linking local generation and use, and helping to create vibrant local energy economies. Local Heat and Energy Efficiency Strategies (LHEES) will provide information for local areas about investment in energy efficiency, district heating and other heat decarbonisation opportunities.

These, in turn, are built on six priorities:

<sup>5</sup> <http://www.gov.scot/Resource/0052/00529523.pdf> (Accessed March 2021).

## Scotland's Energy Priorities



### Consumer engagement and protection

We will work hard to protect consumers from excessive or avoidable costs, and promote the benefits of smarter domestic energy applications and systems



### Energy efficiency

We will continue to take direct and supporting actions to improve the use and management of energy in Scotland's homes, buildings, industrial processes and manufacturing



### System security and flexibility

Scotland should have the capacity, the connections, the flexibility and resilience necessary to maintain secure and reliable supplies of energy to all of our homes and businesses as our energy transition takes place.



### Innovative local energy Systems

We will empower our communities by supporting the development of innovative and integrated local energy systems and networks



### Renewable and low carbon Solutions

We will continue to champion and explore the potential of Scotland's huge renewable energy resource, and its ability to meet our local and national heat, transport and electricity needs – helping to achieve our ambitious emissions reduction targets



### Oil and gas industry strengths

We will support investment, innovation and diversification across our oil and gas sector, working with industry to advance key priorities such as maximising the recovery of remaining resources, subsea engineering, decommissioning and carbon capture and storage – collaboratively addressing the challenges of today and preparing the sector and its workforce for a positive role in Scotland's future energy system

In Scotland at present, 51% of the energy we consume is used to heat homes and businesses, and around 79% of homes use natural gas as their heating fuel. Transport energy use accounts for another 25%, predominantly via road vehicles. The final 24% is electricity use. While just over 75% of electricity generation in Scotland came from low/zero-

carbon sources in 2015, work is needed in heat and transport in order to reduce carbon emissions enough to meet Scotland's climate change targets.

There is no single vision for the long-term changes we will see in the generation, supply and use of electricity, heat and transport systems.

There's potential for greater use of electricity in heating homes and businesses, and in powering electric vehicles. However, this requires changes to the way we manage demand for electricity, and the control systems we use to match supply and demand.

In an electricity-led world:

- Heat pumps and smart storage heaters are used to heat homes and businesses
- Demand management and smart meters enable an efficient electricity supply network
- Cars and vans are electrically powered and a national network of public charging points operate alongside those in our homes
- HGVs and ferries are operated using hydrogen fuel (or as electric/hydrogen hybrids)
- There is limited use of bioenergy and natural gas by businesses
- UK-wide management of electricity transmission networks includes interconnectors with Europe, and a smart grid approach is required to manage distribution demands

An alternative approach is to use greater amounts of low-carbon gas. Sources can include biogas (from anaerobic digestion) and hydrogen (potentially produced from electrolysis or via steam methane reforming in combination with carbon capture storage).

In a hydrogen-led world:

- Hydrogen boilers and fuel cells replace natural gas and fossil fuel boilers in heating within homes
- Hydrogen fuel and fuel cell technology is used in cars, vans and larger vehicles. Fuel cells help shift freight from road to rail, and ferries are also predominantly hydrogen fuelled
- Hydrogen replaces natural gas in commercial use, and off-grid businesses use heat pumps and district heating systems
- Gas demand is met from a variety of sources, including import of natural gas from Europe and globally
- Carbon capture storage is used at large industrial facilities

In reality, it's likely that elements of both these scenarios will be implemented, depending on local needs. What these scenarios show is that there will be significant change in the way our energy systems work and extensive investment required to enable these changes.

An important aspect of these changes is the role of local energy solutions. The increase in low/zero-carbon energy generation means there will be more distribution of generation away from traditional large-scale power stations. There can be many benefits of local solutions for consumers and local economies, particularly in areas where access to national infrastructure is limited.

Communities will be empowered wherever possible to develop and commission local energy system plans where they're the full or part owners. Local projects will, as far as possible, use existing energy infrastructure before seeking new transmission or distribution requirements. The aim is to make best use of available investment and ultimately maintain affordable energy costs for end users.

At the heart of this process are the ‘whole system’ approach and inclusivity:

- Systems designed and developed in line with local need
- Active, energy-efficient consumers (both residential and non-residential)
- Lower annual energy bills
- Opportunities for local supply chains and investment in local businesses

Support for local energy is currently supported via Scottish Government investment streams, such as Community and Renewable Energy Scheme (CARES) and the Low Carbon Infrastructure Transition Programme (LCITP) as well as funding through the Scottish National Investment Bank (SNIB).

Community-owned renewables projects generate income, which communities can reinvest. This has the potential to create jobs, deliver local services and increase population as a result. Increasing the level of shared ownership of energy projects can play a big role in this process.

In 2018 the Scottish Government published the Energy Efficient Scotland Route Map<sup>6</sup> and launched the Energy Efficient Scotland Transition Programme. The Programme will run for 20 years and is intended to carry forward significant public and private investment and involve activities from improving the energy efficiency of buildings, decarbonising the heat supply to off-gas grid properties and supporting the development of heat networks. This will require strategic planning at a national and local level.

Scottish Government have set out proposals to place a statutory duties for local authorities to prepare Local Heat and Energy Efficiency Strategies (LHEES) that will support a coordinated approach to local planning and delivery of energy efficiency and heat decarbonisation programmes. It is proposed that LHEES will:

- Conduct an authority-wide assessment of the energy performance and heat demand of the existing building stock, enabling potential for improvement to be identified and target-setting for energy demand and carbon reduction;
- Undertake a socio-economic assessment of potential energy efficiency and heat decarbonisation solutions, allowing Local Authorities to identify and prioritise local projects for delivery; and
- Cost and phase delivery over the lifetime of Energy Efficient Scotland, ensuring local and national support is in place to support building owners and sending strong investment signals to the supply chain.

The Energy Efficient Scotland Route Map also sets out a number of framework standards that the route map seeks to achieve. These are set out in Table B.1.

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<sup>6</sup> <https://www.gov.scot/binaries/content/documents/govscot/publications/strategy-plan/2018/05/energy-efficient-scotland-route-map/documents/00534980-pdf/00534980-pdf/govscot%3Adocument/00534980.pdf>? (Accessed March 2021).

**Table B.1 Energy Efficient Scotland Route Map - Proposed Framework of Standards**

Energy efficiency standard in the **social rented sector** - Maximise the number of social rented homes achieving EPC Band B by **2032**.

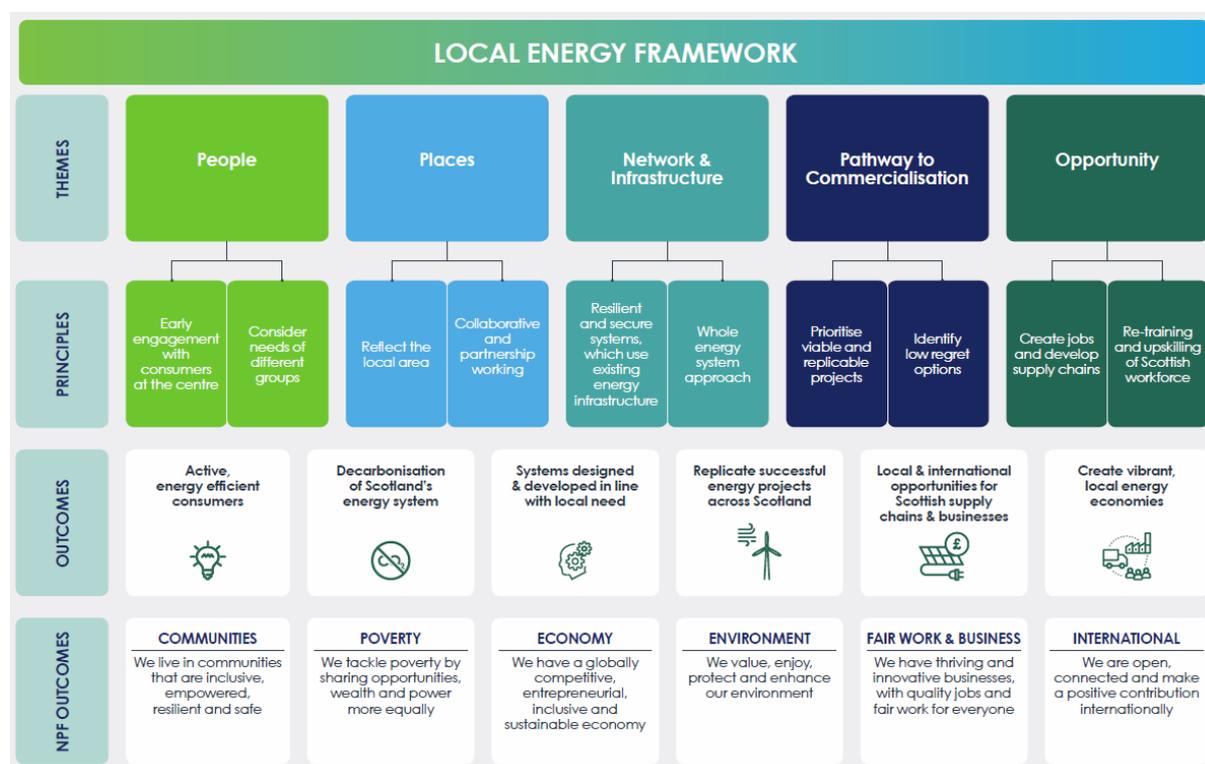
Energy efficiency standard in the **private rented sector** - Private rented homes to reach EPC Band E by **2022**, EPC Band D by **2025**, and EPC Band C by **2030** (where technically feasible and cost effective)

Energy efficiency standard for **owner occupiers** - All owner occupied homes to reach EPC Band C by **2040** (where technically feasible and cost effective) using a period of encouragement to 2030 before compelling home owners to improve the energy efficiency of their properties

Energy efficiency target for **households in fuel poverty** - All homes with households in fuel poverty to reach EPC Band C by **2030** and EPC Band B by **2040** (where technically feasible and cost effective).

The Scottish Government’s Local Energy Policy Statement<sup>7</sup> issued in January 2021 identifies community-led energy projects as a priority within the development of local energy services. It sets out ten key principles that form the Scottish Government’s approach. These are set out in Table B2 below:

Table B.2



The Policy Statement supports the strategy aims to build on the legacy of strong community engagement in local renewable generation to enable larger strategic projects covering larger geographical areas. The Scottish Government target of 1 GW of community and locally owned energy by 2020 rises to 2 GW by 2030.

It underpins the Scottish Government’s commitment to ensure that energy systems are designed and developed in line with local need, with both residential and non-residential consumers able to actively manage and meet their energy needs in an efficient manner. This should assist in lowering annual energy bills, while also offering opportunities for local supply chains and investment in local businesses.

<sup>7</sup> <https://www.gov.scot/publications/local-energy-policy-statement/> (Accessed March 2021)