

Local Energy Policy Statement: A Consultation

October 2019



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PURPOSE

The purpose of this policy statement is to set out the approach the Scottish Government wishes to see embedded in practice and behaviours of all stakeholders as Scotland's energy system becomes increasingly decentralised (i.e. energy being generated close to where it will be used).

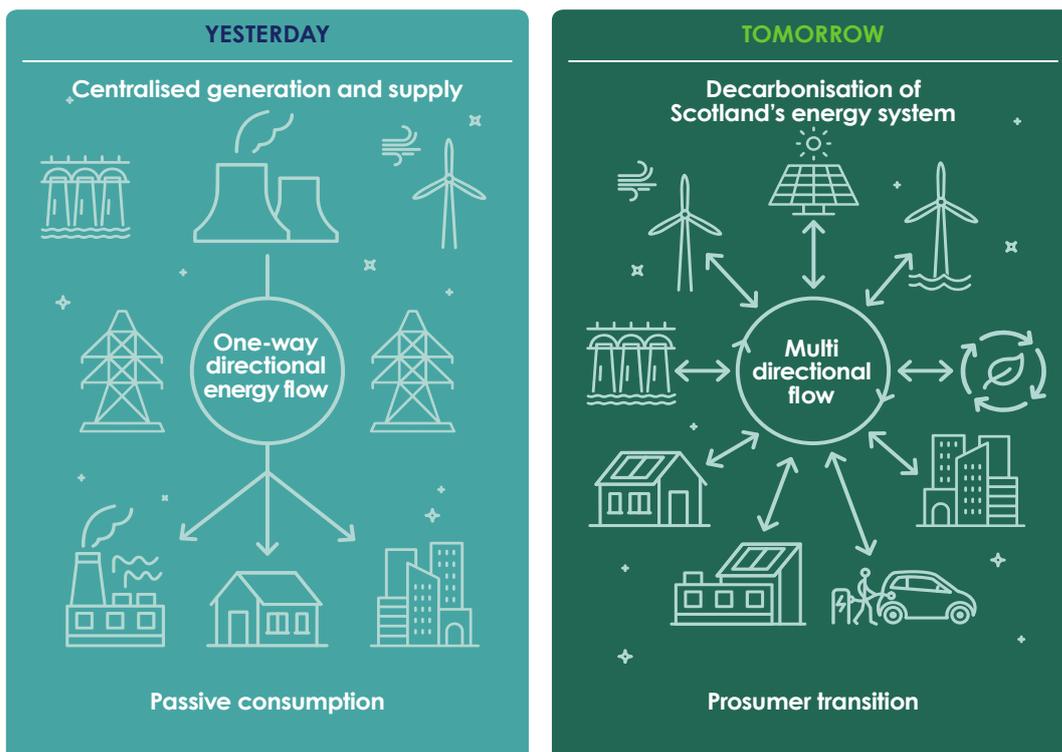
Our approach recognises that there will be a greater role for considering **local solutions to meet local needs**: ones which are more complex and operate using smarter technologies and new "disruptive" business models. There will also be a greater need to build strong partnerships and collaboration at a local level.

The statement is underpinned by a set of key principles, and associated outcomes, that we wish to see adopted. They represent the values we consider are critical to ensure **a just, inclusive energy transition** - one that has consumers at its centre, supported by strong partnership working and collaboration at a local level.

The statement does not aim to provide project guidance or delivery models, but aims to provide a vision that will guide and inform decisions taken by everyone participating in or developing local energy systems projects. However, it is not a final Scottish Government position - we are keen to gain stakeholders views on the approach to ensure that the final document is one that has endorsement from a wide range of interested parties.

For the purposes of this statement, the definition of "local energy systems" is as follows:

Local energy systems are ones which find ways to link the supply and demand of energy services within an area across electricity, heat and transport, delivers real value to everyone in local areas, and support the growth of vibrant, net zero local economies.



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CONTEXT

Scotland's Energy Strategy¹, published in December 2017, included the **development of innovative local energy systems** as one of six strategic priorities.

To support that aim, a commitment was made to develop a local energy systems position paper (i.e. the Local Energy Policy Statement), which set out a series of key principles and associated outcomes for a broad range of stakeholders to consider during the development of future local energy system projects and sectoral activity.

It is important to emphasise that the term **local energy is different from community energy**. However, there will still be a role for community-led energy projects within the wider local energy systems landscape and this is covered in the statement.

Community energy is the delivery of **community-led** renewable energy projects, whether wholly owned and/ or controlled by communities, or through partnerships with commercial or public sector partners.

Local energy is more wide ranging, involving a range of **different organisations** (both public and private sector), who are delivering an energy service for the benefit of local consumers operating within a defined geographically area.

Innovative Local Energy Systems

One of the six strategic energy priorities outlined in Scotland's Energy Strategy:

To empower our communities by supporting the development of innovative and integrated local energy systems and networks.



Scotland's energy system is changing, as evidenced in the shift over the past two decades from power generated from large fossil fuel plants to substantial increases in renewable generation - particularly onshore and offshore wind. In effect, the energy system has developed from one that was largely centralised to one that is becoming increasingly decentralised, with more diverse ownership and delivery models.

This is a fast moving environment both in terms of technology development and its supporting infrastructure and, as such, it is difficult to predict exactly how it will develop.

¹ <https://www.gov.scot/publications/scottish-energy-strategy-future-energy-scotland-9781788515276/>

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However, **what is clear is that the way we generate, supply and use our energy will continue to change fundamentally in the coming years**, and the way in which it will change will differ from place to place - based on local need and opportunity.

In this transitional environment, we must not lose sight that our overall approach to energy is driven by **the need to decarbonise the whole energy system**.

This is in line with the net-zero emissions target for 2045 proposed by the Scottish Government within the Climate Change (Emissions Reduction Targets) (Scotland) Bill² and also set out within the Scottish Government's Programme for Scotland 2019-2020³ in September 2019.

The Scottish Government recognises that local energy cannot be delivered in isolation: it will develop alongside (and within) a vibrant national energy network. Both are critical to ensuring that Scotland can transition to a net zero future by 2045 in a way that delivers secure, affordable, clean energy for Scotland.

In summary, the local energy systems landscape is complex, involving a range of different links, relationships and interdependencies.

That is why the Scottish Government considers the time is right to explore with stakeholders across Scotland what values and principles should be embedded in practice and behaviours.

² <https://www.parliament.scot/parliamentarybusiness/Bills/108483.aspx>

³ <https://www.gov.scot/publications/protecting-scotlands-future-governments-programme-scotland-2019-20/>

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KEY PRINCIPLES

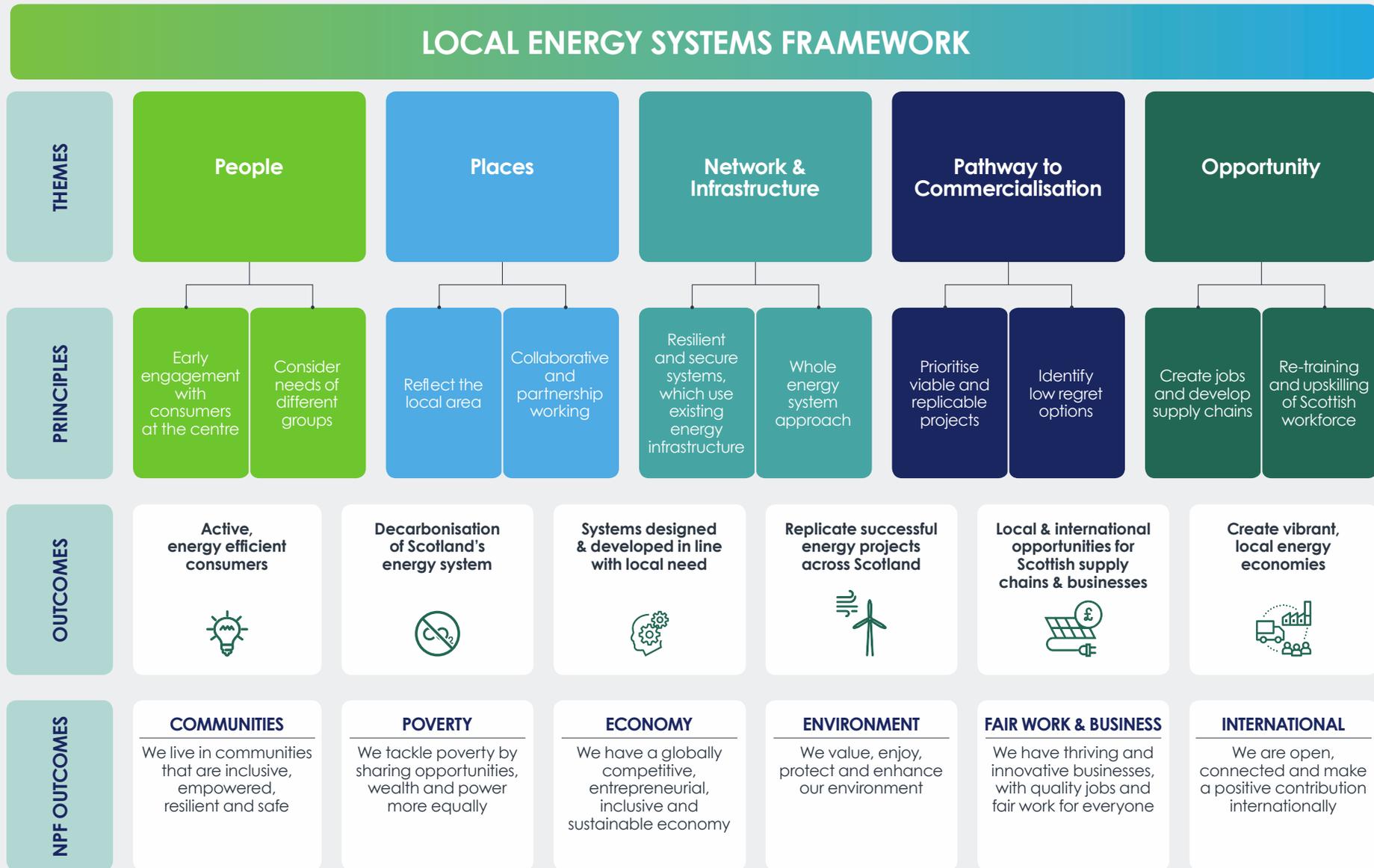
The Scottish Government, with assistance from an expert external steering group, have laid the foundations for an initial 10 key principles that local energy stakeholders should consider before developing and/or delivering any local energy system in Scotland.

This consultation process will give all stakeholders an opportunity to help shape these principles to ensure they are achievable and fit-for-purpose.

Theme 1: People
<ol style="list-style-type: none">1. Consumers should be at the centre of local energy systems development, and early engagement is key in achieving that.2. Not everyone will want to engage with local energy projects in the same way. Those developing projects should account for these differences, allowing people and communities to be involved in different ways.
Theme 2: Places
<ol style="list-style-type: none">3. Local energy projects should reflect local characteristics. The distinctive local resources, ambitions and priorities of particular places should be at the heart of future energy considerations.4. Collaborative approaches and partnership working on local energy plans will ensure all stakeholder groups are represented, and can participate, in the transition to local, low carbon energy systems.
Theme 3: Networks & Infrastructure
<ol style="list-style-type: none">5. All local energy systems activity should provide a high level of security and quality of supply to all. New activity should also consider existing energy infrastructure first.6. The design and operation of our energy networks should consider the whole energy system while supporting local, regional and national solutions.
Theme 4: Pathway to Commercialisation
<ol style="list-style-type: none">7. Projects that demonstrate a commercially viable and replicable opportunity, in line with the principle of inclusive growth, should be prioritised.8. Low regret opportunities that support a net zero emissions future should be identified and acted upon.
Theme 5: Opportunity
<ol style="list-style-type: none">9. Local energy systems should support the creation of quality jobs, which are secure and sustainable, as well as the development of the Scottish supply chain.10. Any changes to the energy system should ensure a just transition for Scotland's workforce - particularly for those who may be directly impacted by these changes through re-training or upskilling.

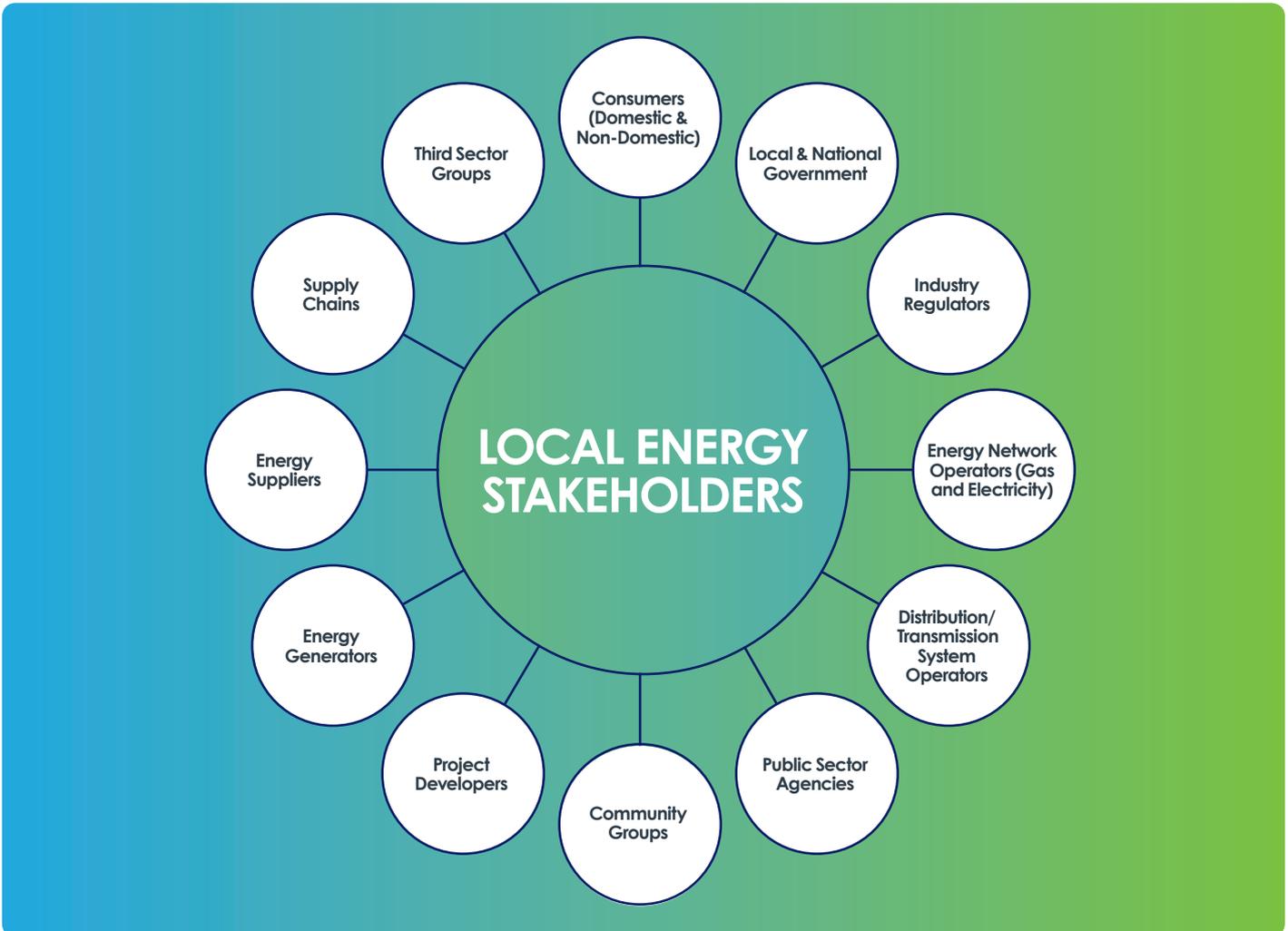
These principles have been included within our **Local Energy Systems Framework** diagram overleaf. This diagram gives a high level overview of this policy statement.

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The intended audience for this policy statement is broad. There are a wide range of stakeholders involved in developing and delivering local energy systems. These include people and organisations, ranging from individual consumers to network operators, and from community organisations to large energy generators and suppliers, as highlighted in the diagram below:



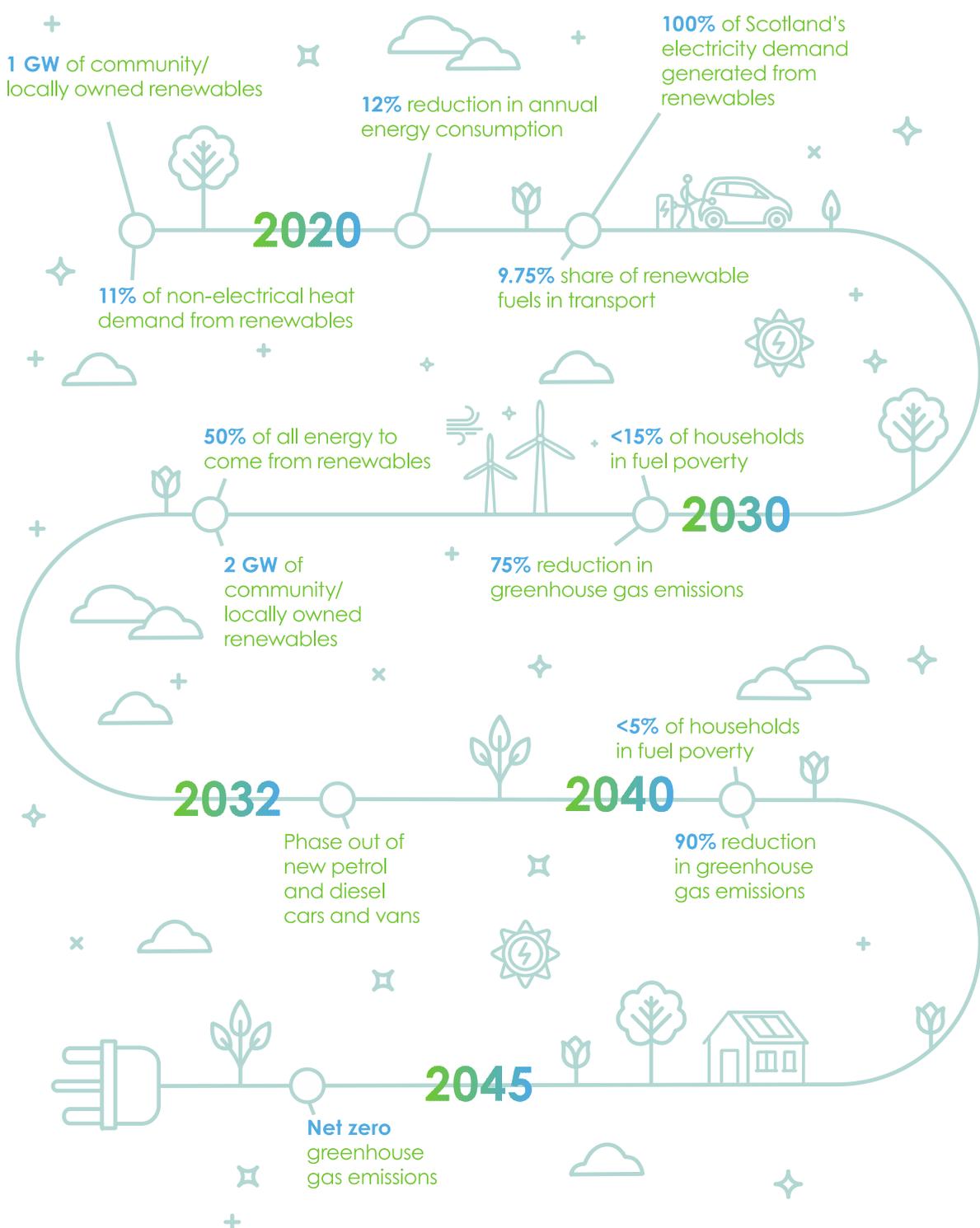
Our intention is to review the principles after 3 years to ensure they remain relevant.

Questions

1. Are you clear on the purpose of the statement? Please explain your view.
2. What are your views on the 10 principles?
3. How can the Scottish Government encourage stakeholders to adopt the principles set out within this document?
4. Are you clear about the roles of all the different stakeholders who may be involved in the development of local energy systems?

JOURNEY TO NET ZERO

JOURNEY TO NET ZERO



CHAPTER 1: PEOPLE Building a future energy system that is shaped by and for the people of Scotland

Principles

- **Consumers should be at the centre of local energy systems development, and early engagement is key in achieving that.**
- **Not everyone will want to engage with local energy projects in the same way. Those developing projects should account for these differences, allowing people and communities to be involved in different ways.**

This chapter highlights that the way people interact with energy will change in the future and discusses what this might mean for individuals and communities.

1.1 A future shaped by people

The Scottish Government's vision is to **build a future energy system that is shaped by and for the people of Scotland.**

By people, we mean all energy consumers, individual households and businesses.

Local energy is wide-spanning, touching on many different areas and impacting on everyone – regardless of who you are or where you live.

In 2019, the Scottish Government published our *Energy Consumer Action Plan*⁴, which demonstrates our commitment to putting consumers' front and centre of policy and regulatory decision-making. It is important to recognise the role that Scotland's consumers will play in making a net zero emissions Scotland a reality.

It is equally important that any change happens *with* consumers, not to them.

Across the sector, we must act now to improve our understanding of consumers' needs and interests, take steps to protect consumers from regressive impacts, and encourage the changes in behaviour that are so critical to achieving net zero emissions.

Only through building trust and transparency can we help consumers to make the bigger changes that will be required to deliver net zero – from increasing the uptake of low emission vehicles, to improving the energy efficiency of our buildings.

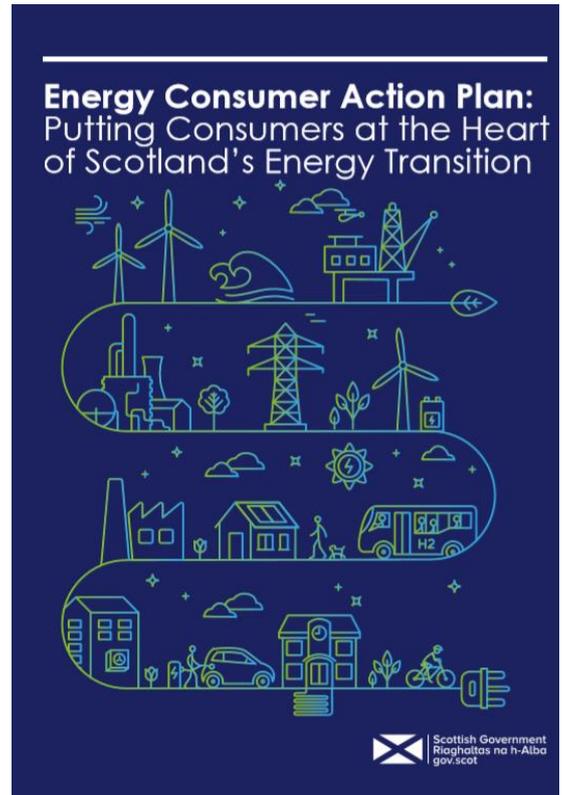
⁴ <https://www.gov.scot/publications/energy-consumer-action-plan-putting-consumers-heart-scotlands-energy-transition/>

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Energy Consumer Action Plan

As citizens and consumers, we are expected to play an increasingly important role in shaping our future energy systems. It is for this reason that we are committed to changing the way consumer issues are viewed and tackled in Scotland. This is essential because our ability to meet our energy and climate change targets depends on Scottish consumer voices being heard loud and clear – and, crucially, being integrated into regulatory and policy decision-making at an early stage. Among our top priorities:

- We will establish an independent Energy Consumer Commission for Scotland to give Scottish consumers a more powerful voice in devolved energy policy and those areas reserved to the UK government.
- We will consult widely to encourage lively public debate that allows the people of Scotland to shape their energy future.
- We will legislate to introduce a **statutory consumer duty** on Scottish public authorities to place consumer interests at the heart of policy and regulatory decision-making, ensuring that consumer outcomes are reflected in the energy transition.



1.2 Future energy system

The future energy system is one that will see a continued global shift away from centralised generation and passive consumption. This will mean more choice over how people produce, consume and purchase the energy they need.

The pace and extent of the change required to meet the increasingly complex energy requirements of consumers requires action now - particularly if Scotland's ambitions to become net zero by 2045 are to be realised.

While there is still uncertainty around what a future energy system will look like, **what is clear is that the way people interact with the energy system will be more complex than the current arrangements.** Chapter 4 provides details of some of the "energy products" that are starting to emerge, such as aggregator services and time of use tariffs.

At present, only the more informed consumers are able to take advantage of these: **we need to raise awareness more generally across all of Scottish society to ensure all consumers become better-informed and can take advantage of the opportunities that new local energy services can offer.** The responsibility to make that happen is not down to the Scottish Government alone, but a collective responsibility across a wide range of

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stakeholders across the energy sector. Only then can consumers begin to make the bigger changes required to deliver net zero by 2045.

1.3 Building on strong foundations

Scotland has a legacy of strong community engagement in local renewable energy generation. Our flagship Community and Renewable Energy Scheme (CARES)⁵ has supported hundreds of local community groups and other eligible organisations to develop, own and/ or take a stake in local renewable energy projects across Scotland.

The Scottish Government has set two targets that signal to the sector our belief that the benefits of Scotland's renewable energy resources should be shared with its people and these are of significant relevance to local energy systems: 1 GW of community and locally-owned energy by 2020, and 2 GW by 2030, and by 2020, at least half of newly consented renewable energy projects will have an element of shared ownership.

The rationale for developing these projects historically was to provide a community group with an asset to generate an income which would support the wider community's longer terms economic and social aspirations.

The change in UK Government subsidies (for example, the reduction/ closure of the Feed-in Tariffs Scheme and Renewable Heat Incentive) means that community groups are now less likely to look to renewables for the purpose of income generation - unless those projects are commercially viable without subsidy.

Scotland has a strong track record in community engagement in local renewable generation, which has often been led by community groups. There will be opportunities for community groups within wider local energy systems projects - ones that focus on adding value locally for the energy generated and supplied, such as:

- Energy systems designed and developed in line with local needs and aspirations.
- Well-informed, empowered, and active consumers.
- Provision of affordable warmth.
- Retention of local money within local economies.
- Partnerships and cooperation that can become a foundation for further community or local development.

There now needs to be greater focus and priority given to decarbonisation as the driver for community-led action.

Local energy systems projects will be more complex (for example, involving multiple stakeholders, new technologies, etc.), and involve more diverse groups of consumers within a local community - each with their own specific objectives.

⁵ <https://www.localenergy.scot/>

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This means that the role of consumers – as individuals and as part of wider-communities - will become more relevant and important. However, for each of these groups, the common expectations are that the energy system will be **affordable, secure, reliable and resilient**.

Work is already underway to consider how Scottish Government funded delivery programmes can take account of these changes. This includes our next CARES programme with a refocus towards decarbonisation. Prioritising wider community engagement and raising awareness within this context will also be a key aspect of the new programme.

Case Study: Greener Kirkcaldy

Greener Kirkcaldy, a community-led development trust in Fife, works locally to benefit people and the environment. They would like to see a future where everyone can heat their home affordably, eat well, and tread lightly on our planet.

They want their local community to get ahead of the curve during this period of transition to a low carbon energy system and make sure no-one gets left behind. They are planning to install solar PV on their community building, and have secured Scottish Government funding to add battery energy storage to make the most of the energy generated. Once it is installed, they will demonstrate their energy system to other community centres in Fife, to help them future proof their facilities and be ready to engage in a more locally managed, low carbon energy system.

They are also planning to inform their community about the solar PV and storage, brief them on changes coming in the wider energy system and how individuals might engage and benefit.

Greener Kirkcaldy are participating in Community Energy Scotland's 'Community Energy Futures' programme. This is helping build the knowledge and capacity of community groups in areas of high fuel poverty, to help their communities gear up and benefit from the coming energy changes so that no-one is left behind.



1.4 Early engagement

As mentioned earlier, the way people interact with the energy system is likely to become less straightforward in the future - meaning more complex partnership arrangements will be required.

It is important that organisations developing projects or providing enabling infrastructure undertake constructive and open engagement with the people and communities who

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have an interest – indeed, there are many organisations that already exist within communities across Scotland who are known and trusted by the wider community who can help. This is true for both organisations within the community/local area and those based externally.

This will help to create and strengthen trust and build strong relationships from the outset. Ideally, **engagement should start as early as possible** and should continue throughout the development phase of the activity and also throughout construction, operation and beyond.

When planning initial community consultation, it may be helpful to consider:

- What should be the geographical area to engage (as linked to Chapter 2)?
- Within that area, who are the appropriate contacts and communities of interest for consultation?
- How best can excluded groups within the community be engaged and represented?

There are already processes in place at a local level that require consultation, led by the Local Authority, primarily to support planning. These could, potentially, be adapted to include local energy needs. The Scottish Government's suite of Good Practice Principles^{6 7} for renewable energy developments provides a good standing point in helping a community to understand what's involved.

When engaging with people, who are often removed from the energy system and its development, it will be important to make clear at the outset what the priority outcomes of any project or proposal are. For example, is the focus system resilience, decarbonisation of heat, or the introduction of more electric vehicle charging infrastructure? This will help in reassuring consumers and people who may wish to engage with any future system.

1.5 No one is left behind

The Scottish Government recognises that achieving its ambitions for tackling climate change will require transformation across our economy and society. As the pace of our transition increases, the need to ensure it is just becomes ever more important. That is why the Scottish Government has taken world-leading action to embed Just Transition principles⁸ in our Climate Change legislation.

The Scottish Government has also established a Just Transition Commission⁹ to provide practical advice on '*a net-zero economy that is fair for all*'. It will consider how to achieve this in a way that tackles inequality and poverty, while promoting a fair and inclusive jobs market.

⁶ <https://www.gov.scot/publications/scottish-government-good-practice-principles-community-benefits-onshore-renewable-energy-developments/>

⁷ <https://www.gov.scot/publications/scottish-government-good-practice-principles-shared-ownership-onshore-renewable-energy-developments/>

⁸ http://www.ilo.org/wcmsp5/groups/public/---ed_emp/---emp_ent/documents/publication/wcms_432859.pdf

⁹ <https://www.gov.scot/groups/just-transition-commission/>

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The Fuel Poverty (Targets, Definition and Strategy) (Scotland) Act 2019¹⁰ has recently been passed with unanimous support across Parliament. This sets out ambitious targets towards eradicating fuel poverty across Scotland.

As previously indicated, the future energy system is likely to see rapid changes in technology and innovation. This is expected to bring more choice for consumers (both domestic and business users), and greater economic opportunities/ benefits for Scotland. However, it is important to recognise that there may be additional costs, and that some people may struggle to grasp the new opportunities in the energy market.

An Equality Impact Assessment and Fairer Scotland Impact Assessment will be undertaken in conjunction with this Policy Statement. The aim of this work is to ensure that there are no unintended consequences of the policy that have negative impacts on individuals or groups across Scotland, and that the policy makes the most of any opportunities to reduce existing inequalities. Where regressive impacts are identified, we will work with stakeholders to take steps to mitigate these so that consumers – including the most vulnerable in society – are protected.

1.6 Affordable energy

As stated above, the Scottish Government understands that, in our pursuit of affordable energy within a net zero economy, additional costs may arise. However, consideration must be given as to how low income families across Scotland are not unfairly burdened with these costs and to ensure that their energy is affordable.

The Scottish Government's draft Fuel Poverty Strategy for Scotland 2018¹¹ outlines how local energy supply options could potentially play a role when local authorities are considering ways to tackle fuel poverty.

1.7 Driving Demand Reduction

Reducing Scotland's energy demand is a key component of the energy transition. Smarter energy systems, combined with more energy efficient homes and more empowered and knowledgeable consumers who have greater control over their energy, will be large factors in achieving a net zero economy.

Energy Efficient Scotland¹² is the Scottish Government's 20 year programme – requiring, potentially, up to £12 billion of investment by public, private and third sectors - containing a set of actions aimed at making Scotland's existing buildings near zero carbon in a way that is socially and economically sustainable. By the end of the programme, Energy Efficient Scotland will have transformed the energy efficiency and heating of Scotland's buildings: making our existing homes, shops, offices, schools and hospitals more comfortable and easier to heat.

¹⁰ <https://www.parliament.scot/parliamentarybusiness/Bills/108916.aspx>

¹¹ <https://www.gov.scot/publications/draft-fuel-poverty-scotland-2018/>

¹² <https://www.gov.scot/policies/energy-efficiency/energy-efficient-scotland/>

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However, that role should not fall to the Scottish government alone - it is critical that there is a shared purpose and responsibility encompassing all of Scottish society for reducing our energy demand and being responsible consumers of energy. For example, it is expected that people will become empowered to take more control of how they heat their home through smart meters.

1.8 Questions

5. What options should we consider to ensure that the local energy transition is fair and inclusive for all consumers?

6. How can we ensure that people and communities across the whole of Scotland can participate in local energy projects?

CHAPTER 2: PLACES The development of innovative and integrated local energy systems, designed to meet local needs, can be transformational

Principles

- **Local energy projects should reflect local characteristics. The distinctive local resources, ambitions and priorities of particular places should be at the heart of future energy considerations.**
- **Collaborative approaches and partnership working on local energy plans will ensure all stakeholder groups are represented, and can participate, in the transition to local, low carbon energy systems.**

This chapter outlines how a co-ordinated and planned approach to meeting all energy needs within defined local area could support people living and working there in the transition to net zero emissions.

2.1 Recognising local difference

First and foremost, each local area is different – for example, each area will have different challenges as well as physical geography, building stock, and existing energy infrastructure.

Equally, each place will have its own ambitions and priorities, such as reducing fuel poverty, increasing life expectancy, improving employability, creating new employment opportunities, and/ or reducing declining populations. It is important that these are recognised as part of future energy considerations.

Energy is considered a service that facilitates the development and mobility of a place and its people.

Only by recognising the individual characteristics of an area, can proper consideration be given to the decarbonisation of the energy requirements of said area.

The high-level differences between certain types of location for local energy systems deployment is also reflected in the approach being taken by the enterprise agencies. Differences have now been characterised in a 'typology framework'. This is explained further in Chapter 5.

2.2 Scotland's Islands

The implementation of the National Islands Plan will build on and align, where possible, with Scotland's wider climate change commitments, policies and strategies, as well as with existing energy related schemes.

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Scotland's Islands

Our islands can be at the forefront of the transition to low carbon energy.

The introduction of climate change adaptation and mitigation measures, whether increased revenue for island communities through renewable energy projects or the protection, recovery, restoration or enhancement of natural carbon stores (on land or in the sea) or the introduction of solutions to combat coastal erosion, can have a direct, positive effect on the local economy and environment.

2.3 More change and choices

Scotland has a strong track record of delivering renewable electricity, predominately in rural and island areas. For example, by 2018, Scotland had seen renewable electricity generation increase to 73.9%¹³ of that consumed. The change from fossil fuel generation to renewable generation has, for the majority of consumers, not had an impact on how they interact with the energy system where they live or work as the energy generated has gone directly into the grid. However, as part of the transition towards sustainable, localised sources of energy (including for heat and transport), it is likely that individuals and consumers will be exposed to greater system changes and choices.

Case Study: Heat Smart Orkney

The Heat Smart Orkney project was set up to establish and show how smart controls and local rebating can be used as a way of both mitigating the effects of curtailment on the Rousay, Egilsay & Wyre (REW) community wind turbine while also addressing the issue of fuel poverty in Orkney.

Supported with £1.25 million from the Scottish Government's Local Energy Challenge Fund, the project works by diverting unused renewable energy into affordable heating, and is activated when the REW turbine is curtailed.

Smart storage heaters, flow boilers, hot water cylinders and immersion heaters are installed into participating homes as secondary heating devices, and these are switched on when a signal is sent from the turbine, via a cloud based platform to control equipment attached to each device – saving costs for individual householders.

Rather than watching the community turbine be turned off when the wind picks up, the community will be able to watch it continue to turn, knowing that local people are receiving cheap, green heat.

To reach our commitment to net zero by 2045¹⁴, it will be crucial that we all take ownership and actively consider how to decarbonise our whole energy system (electricity, heat and transport). Alongside this, there will continue to be a responsibility on energy providers to

¹³ <https://www2.gov.scot/Topics/Statistics/Browse/Business/Energy/Database>

¹⁴ <https://www.gov.scot/policies/climate-change/climate-change-bill/>

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ensure they are providing reliable, resilient, and affordable energy for people who live and work here.

2.4 Strategic Approaches

The Scottish Government is committed to developing strategic approaches, based on locally distinctive needs, opportunity and priorities. However, it is also important to recognise that a local area's own natural resource may also be able to contribute on a larger scale i.e. nationally. Some of these are not directly linked to energy but do share similar values, such as, collaboration, integration and community involvement.

Place Principle

The Scottish Government, in collaboration with the Convention of Scottish Local Authorities (CoSLA), have agreed to adopt the "Place Principle"¹⁵. The Place Principle provides a shared understanding of place, it helps overcome organisational and sectoral boundaries, encourages better collaboration and community involvement, and improves the impact of our combined resources and investment.

It is a common sense approach, providing a collective focus to support inclusive and sustainable economic growth, while creating places which are both successful and sustainable.

Implementation of the Place Principle requires a more joined up, integrated, collaborative and participative approach to decisions about services, land and buildings. It understands that, to maximise the positive impact of combined resources, each party involved must work better together, so that the whole is greater than the sum of its parts.

2.5 Local Heat and Energy Efficiency Strategies

The Scottish Government's energy specific approaches are focused on where we have powers: heat and energy efficiency. Using our devolved powers, we are proposing to legislate for statutory minimum requirements through Local Heat & Energy Efficiency Strategies (LHEES).

These strategies will set out the long-term strategic plan for each local authority area for heat decarbonisation and energy efficiency. These plans will be tailored to local circumstances, will guide delivery through Energy Efficient Scotland, and act as an investment prospectus - guiding and helping to attract inward private sector investment.

For example, a Heat Network Zone may be designated through LHEES, leading to targeted policies or funding to deliver large-scale district heating projects therein.

LHEES will form the basis of planning and delivering local energy systems in Scotland, helping to identify what technologies are needed where. They will support engagement

¹⁵ <https://www.gov.scot/publications/place-principle-introduction/>

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across multiple stakeholders including individuals, business owners, community groups, and energy network operators.

However, as mentioned previously, the Scottish Government is limited in its ability to legislate in some areas (for example, around electricity generation and distribution). That is why our focus, to date, has been on the aspects of local energy planning that could be placed on a statutory basis – heat and energy efficiency.

2.6 Local area energy plans

There is, however, scope to go beyond this - if there is appetite to do so - to consider the whole energy system including energy generation, distribution and storage, as well as transport.

One approach would be to build on LHEES to produce a more granular **local area energy plan** – one that encompasses all of the local energy system. The main characteristics of these plans are: (predominately) local authority led, with wider stakeholder engagement, and focus on a specific area. This approach aligns with one of the Scottish Government's core principles as set out in Scotland's Energy Strategy: **a whole-system view**.

Some local authorities are already looking to produce energy plans along these lines. However, the decision on whether to develop a local area energy plan, alongside the potential statutory minimum requirement under LHEES, is one for local stakeholders to take.

As for LHEES, such a plan could be seen as an “**energy prospectus**”, providing a shared purpose around decarbonisation to drive forward the necessary step change to galvanise a whole range of stakeholders to deliver transformation to the local energy system over a longer time frame. In summary: **an enabler for transformational change**.

Key steps that support strong local energy plans (LHEES and other models)

These can be adapted to meet individual circumstances, but offer a strong foundation on which to build an integrated and co-ordinated local energy plan:

- Stage 1: An assessment of existing local and national strategies and data availability.
- Stage 2: Area-wide assessment of existing energy resource through stakeholder engagement, including appraisals of: building stock (domestic and non-domestic) demand for heat and transport; opportunities and constraints; energy storage potential; assessment of different energy consumers and their needs.
- Stage 3: Area-wide setting of future local energy targets, including (but not limited to): energy demand reduction and decarbonisation; energy supply diversification and storage; local and community ownership; fuel poverty eradication.
- Stage 4: Conduct a socio-economic assessment of the solutions identified.
- Stage 5: Engage with local stakeholders to present findings and then use this engagement to inform selection of areas/ prioritisation of opportunities for future evolution of the local energy system, leading to the identification of programme priorities.
- Stage 6: Costing and phasing of delivery programmes in partnership with local stakeholders, including creation of new collaborative delivery mechanisms.

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2.7 Community-led local energy plans

Another approach is community-led local energy plans. The main characteristics of these are: developed by local people who have an interest in the community and are in collaboration with other stakeholders.

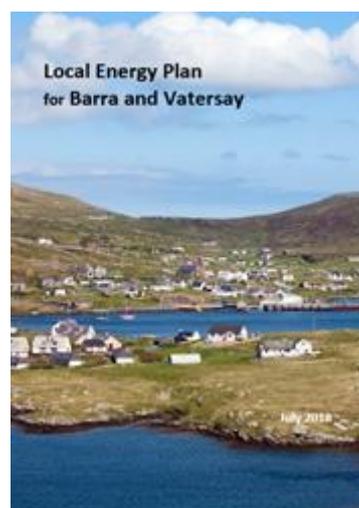
These plans tend to focus on smaller geographical areas, but can benefit, and indeed support, other local, regional, and national strategies.

The Scottish Government, through CARES, matched funded an EU funded project (COBEN¹⁶), which piloted **community-led** local energy plans.

A brief case study, highlighting the progress undertaken in the development of the local energy plan for Barra and Vatersay as part of the COBEN project, has been included below:

Case Study: Barra and Vatersay

- The development of Barra and Vatersay's Local Energy Plan was led by a local steering group, which encompassed representatives from the two community councils, Voluntary Action Barra and Vatersay, the Hebridean Housing Association and Barratlantic (a local business).
- This plan provides a community-led approach to considering the community's existing and future energy needs. Community priorities focussed on tackling fuel poverty, reducing energy use in the home, promoting the uptake of electric vehicles, more walking and cycling paths, and the development of opportunities to use local renewable generation and hydrogen.
- The plan identified 17 actions to take forward, which community organisations and businesses have worked closely together on while also developing new streams of investment to address the identified priorities.
- To progress these actions, stakeholders have considered initiatives which could have a significant influence on the local energy system. This includes how new community-owned renewable generation could supply energy demand in the north of Barra, and hydrogen to support the development of a hydrogen-powered ferry service between Barra and Eriskay.



There are a number of different strategic approaches available to local energy planning. While LHEES may be the statutory minimum requirement in future, which local authorities may have to comply with, other complementary approaches will be at the discretion of stakeholders within a specific area.

¹⁶ <https://northsearegion.eu/coben/>

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2.8 Local energy planning and wider climate change ambitions

The Scottish Government has supported a number of local energy systems demonstrator projects. However, these have tended to be done in isolation and did not take into account the wider energy systems in which the project was based. **This needs to change.**

We need to see a step change in our approach to decarbonisation, one that takes a more strategic overview, covering larger geographical areas, and involving partnership arrangements at delivery level between local communities, energy network companies, local authorities, the public, and private sector.

Local energy planning, both LHEES and wider local area energy plans covering all energy, will be a key building block to achieving that aim - and, strategically, individual local area plans should interact with other plans in neighbouring/ nearby areas.

As the development and deployment of local energy systems becomes mainstream across Scotland, these solutions need to be expanded into more densely populated urban areas – as **decarbonising our energy system can be a catalyst in the revival of local town centres** - and identify sustainable replicable models. This is reflected in the focus on strategic energy planning in a number of growth deals currently in development, including the Borderlands¹⁷ and Tay Cities¹⁸ deals.

For example, this could mean encouraging greater collaboration between local communities, local authorities, and housing developers/ builders to ensure new developments are created with long-term energy planning in mind that delivers for the net zero ambition.

2.9 Questions

7. What do you think the wider benefits of developing local area energy plans might be?

8. How can we encourage greater collaboration between the key parties involved in the development of local energy plans?

9. How do we ensure that whoever is leading a local energy plan is fully integrated into the LHEES process?

¹⁷ <https://www.gov.scot/policies/cities-regions/regional-growth-deals/>

¹⁸ <https://www.gov.scot/policies/cities-regions/city-region-deals/>

CHAPTER 3: NETWORKS & INFRASTRUCTURE Flexible networks can help realise local solutions.

Principles

- **All local energy systems activity should provide a high level of security and quality of supply to all. New activity should also consider existing energy infrastructure first.**
- **The design and operation of our energy networks should consider the whole energy system while supporting local, regional and national solutions.**

This chapter outlines the role that networks and the enabling infrastructure - electricity, heat, transport and digital - will play in the energy transition and Scotland's journey to a net zero future, as well as what this means for those developing local energy systems projects.

3.1 More flexible than in the past

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

Networks allow us to share energy – local networks allow us to share energy locally, and national networks allow us to share energy nationally. **Our networks need to evolve in ways that reflect the balance of local and national energy, and the different sources and uses of energy that are envisaged for Scotland.**

Our *Vision for Scotland's electricity and gas networks*¹⁹, published in March 2019, states that Scotland's gas and electricity networks delivered around half of all energy used in Scotland in 2017. These networks help to deliver affordable, reliable, and increasingly renewable energy across Scotland - and will be critical in achieving Scotland's net zero emissions target by 2045.

As illustrated overleaf, Scotland's Energy Strategy highlighted two possible future energy scenarios for Scotland.

It is worth re-iterating that the precise make-up of the future energy system is uncertain – therefore, it is difficult to determine exactly what Scotland's future infrastructure needs and requirements will be. For example, the uptake of electric heating and transport on a large scale could place extra pressure on the electricity system, affecting the networks' ability to generate, store and use electricity to meet peak demand.

¹⁹ <https://www.gov.scot/publications/vision-scotlands-electricity-gas-networks-2030/>

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SCENARIO 1 AN ELECTRIC FUTURE



By 2050 electricity generation accounts for around half of all final energy delivered. The sustained growth of renewable generation has helped ensure that we meet our climate change targets.

Scottish electricity demand has increased by over 60% since 2015, and is increasingly supplying transport demand through battery powered electric cars and vans. Space and water heating is largely supplied, where practical, by highly efficient heat pumps, and via a new generation of smart storage heaters.

Peak electricity demand has risen significantly, moderated to an extent by smart meters, responsive demand, new national and local market structures, and the changes in consumer behaviour that these have supported.

Scotland retains its pumped storage stations, with new capacity added during the 2020s, and electrical energy storage is widely integrated across the whole system. For example, the EV fleet operates as a vast distributed energy store, capable of supporting local and national energy balancing.

SCENARIO 2 A HYDROGEN FUTURE



By 2050, much of the demand previously met by natural gas has been converted to low carbon hydrogen. This is produced through strategically deployed electrolyzers and from SMR plants paired with CCS. The effective transition from natural gas to hydrogen – assisted by Government support and regulation, and by consumer behaviour – has helped us meet our climate change ambitions.

CCS development during the 2020s has allowed the production of low carbon gas on a scale large enough to transform the energy system. Final energy demand has fallen, but natural gas demand has greatly increased – mainly to produce hydrogen, but also to power flexible electricity generation, with both processes utilising CCS.

The flexibility offered by gas has also enabled the expansion of the gas network into new locations without compromising the sustainability of the energy system.

Scotland has developed electrolysis facilities, meeting a proportion of the overall hydrogen supply. This helps balance renewable generation on the system, and creates demand which ensures that new gas generation with CCS can run in the most efficient way.

New hydrogen transmission pipes link production facilities with the main demand centres, and new and repurposed pipelines take captured CO₂ to old North Sea gas fields for storage. The gas distribution network has been converted area by area, starting with the main cities.

However, irrespective of the type of energy system which may emerge, **there will need to be significant investment in the management, at all levels, of our networks** (including enabling infrastructure).

There must also be scope for a flexible and open approach to decarbonisation: one that allows and enables local, regional and national solutions. The design and operation of our networks should be able to help deliver these solutions.

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Our electricity networks today are based on a wholly national energy picture. There are limited opportunities for local communities to benefit from managing their local energy supply and demand in ways that limit the need for unnecessary network investment. However, the Scottish Government wants that relationship to change, and will continue to work with electricity network companies to achieve this.

Electricity policy is largely reserved, which means that persuasion, partnership and collaboration are important parts of our approach. The Scottish Government will continue to work closely with the UK Government, Ofgem, National Grid and Scotland's grid operators to ensure that Scotland's priorities are understood and reflected in any decision making process.

This will include playing as full a part as possible – with Scotland's energy network operators (both gas and electricity), consumer representatives and other stakeholders – in the discussions and debate which will inform the RII0-2²⁰ price control period. The Scottish Government will ensure that network companies reflect the ambitions and opportunities of local energy projects within their business plans.

3.2 Local and National

Local energy will not replace the need to have a flourishing national energy sector – rather, it will enhance it by allowing us to promote and maximise an efficient system and use of the network, as well as value from Scotland's renewable resources. Both are critical to ensuring that Scotland can transition to a net zero future in a way that delivers secure, affordable, clean energy for Scotland.

This balancing and combination of local and national needs and capabilities will need to play a key role in providing both a secure supply and greater resilience across our networks – from the bottom up. This will mean local and distributed energy, and demand-providing-services, will help ensure that the national network can operate securely and safely in an increasingly decarbonised system.

3.3 Must meet the needs of all consumers

Any changes - first and foremost - must be designed to meet the interests of all consumers and businesses. Above all, this means ensuring that **decision-making starts from the impact of change to all consumers** - in particular, reflecting the needs of vulnerable consumers across Scotland.

Today's energy networks provide a high level of security and quality of energy supply to all. Local energy projects can (and must) help retain and deliver these high levels, and have the potential to reduce the cost of doing so. For example, local generation or local energy balancing can defer the need for expensive reinforcement of the network while maintaining a high quality supply.

²⁰ <https://www.ofgem.gov.uk/network-regulation-riio-model/network-price-controls-2021-riio-2>

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3.4 Integration with other Scottish Government policies/ programmes

There are other related policies, providing enabling infrastructure, that are essential in our shift towards decentralised renewable generation.

Two of the key ones are:

- The promotion of ultra-low emission vehicles (ULEVs) and the associated infrastructure that will be necessary to achieve our targets. The Scottish Government has invested almost £30 million since 2011 to establish one of the most comprehensive electric vehicle charging networks in Europe – and this will continue to develop.
- Our commitment to world-class, future-proof infrastructure that will deliver digital connectivity across the whole of Scotland.

ULEVs, Electric Vehicle charge points and energy system integration

Switched on Scotland Phase 2: An Action Plan for Growth²¹, published in 2017, is an action plan to facilitate the growth in purchase and use of plug-in electric vehicles across Scotland. It complements the Scottish Government's commitment, made in September 2017, to phase out the need for new petrol and diesel cars and vans by 2032.

On 29 August 2019, a new Strategic Partnership was announced between Scottish Government, including Transport Scotland, Scottish and Southern Electricity Networks, and Scottish Power Energy Networks. It will deliver and improve coordination between electric vehicle charging infrastructure and electricity networks in Scotland.

The £7.5 million partnership includes Scottish Government funding of £5 million and at least an additional £2.5 million from the network companies to deliver trial projects to take place in 2020/2021, aimed at demonstrating the benefits of coordinated planning in electricity and electric vehicle charging infrastructure.

Realising Scotland's Full Potential in a Digital World: A digital strategy for Scotland

*Realising Scotland's full potential in a Digital World*²² sets out our plans for ensuring that digital front and centre of future plans – in the way in which we deliver inclusive economic growth, reform our public services, and prepare our children for the workplace of the future.

It's a strategy for Scotland, not just the Scottish Government. It recognises the profound challenges that digital poses for the nature of work, for society and for both the world and domestic economies. It also accepts that no single organisation can hope to have the answers to these questions and, therefore, looks to create a culture and environment of partnership where collective action is taken to ensure that nobody is left behind and everyone remains safe, secure and confident about the future.



²¹ <https://www.transport.gov.scot/media/39306/switched-on-scotland-phase-2.pdf>

²² <https://www.gov.scot/publications/realising-scotlands-full-potential-digital-world-digital-strategy-scotland>

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3.5 Well-placed to lead

The Scottish Government is well-placed to lead further development in this area. For example, through:

- Our role in planning and consenting new energy infrastructure.
- Supporting the deployment of enabling infrastructure to increase the take-up of EVs.
- Our Digital Strategy, which aims to provide high quality connectivity across the whole of Scotland.
- Our *Vision for Scotland's electricity and gas networks*.
- Our CARES programme, which provides a wide-range of free advice and support, as well as funding to support solutions that both generate and use energy locally, often to overcome infrastructure constraints.

Scotland has been at the forefront of developing a number of local community energy projects - primarily ones that focus on electricity - although there are some centred on heat technologies. The business models for these projects were (in most cases) based on financial incentives, including the Feed-in Tariffs Scheme (FITs) and Renewable Heat Incentive (RHI), which have provided a financially viable business case.

However, as highlighted in Chapter 1, the withdrawal/ reduction in UK Government subsidies means that local communities' ability to participate and/ or develop a renewable energy project is changing: it is not solely about generating an income, but involves more diverse interests such as achieving added value for energy generated locally.

Changes in technology and innovation, particularly around digital applications, is leading to the emergence of new "disruptive" business models. These will be transformational in how power is generated, bought and sold. Chapter 4 considers this further.

3.6 Using our powers

Where the Scottish Government has the devolved powers, we will take an integrated approach across different policy areas to ensure that the necessary enabling infrastructure is in place.

Some of these are not directly energy related – however, taking a joined up approach will allow us to take maximum advantage of the opportunities around technological and digital innovation, and their application to energy.

3.7 Questions

10. What infrastructure challenges are you aware of that present an obstacle to delivering local energy projects? What actions would help solve the issue?

11. What other actions could the Scottish Government take to ensure Scotland will have the necessary infrastructure in place to enable resilient, local energy systems?

CHAPTER 4: PATHWAY TO COMMERCIALISATION

Promoting local energy systems models that provide a pathway to a zero carbon future, which are inclusive, and are economically viable to operate in the long-term.

Principles

- **Projects that demonstrate a commercially viable and replicable opportunity, in line with the principle of inclusive growth, should be prioritised.**
- **Low regret opportunities that support a net zero emissions future should be identified and acted upon.**

This chapter focuses the importance of developing commercially and economically viable local energy systems and highlights key changes that the energy market will face in future years.

4.1 It starts with research and innovation

Scotland has a global reputation for leading research and innovation in a host of different fields – including energy. Indeed, Scotland is already home to a number of world-class research, development and innovation centres which stretch across the country.

The Scottish Government remains committed to both supporting technical innovation, and individuals and businesses throughout Scotland who are exploring innovative ways to deliver business models that decarbonise Scotland's energy system.

Ensuring that we can learn from these successful projects and transfer this innovation to the wider energy stakeholders will be the driver for encouraging replication across the country, at scale. It is only through replication at scale that Scotland can achieve our net zero ambitions and deliver inclusive growth.

Research and innovation in this area, to prove and scale technologies which can operate in a net zero economy, will be a priority in helping to unlock potential commercial opportunities – both here in Scotland and internationally. The latter of which is explored further in Chapter 5.

4.2 Road to commercialisation

The Scottish Government has supported, and continues to support, a range of innovative demonstration projects through initiatives such as the Low Carbon Infrastructure Transition Programme (LCITP) and CARES.

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Going forward, we need to share the learnings from these early projects - building on the ones that were successful and sharing the lessons from those that failed.

Where Scotland's energy system is transformed with the support of public funds, there will be a requirement for all case studies to be published on both the Scottish Government and Local Energy Scotland websites on a regular basis. Wider stakeholders will be encouraged to do likewise, to increase the range of information available to others.

The clear aim has to be to de-risk the sector, making local energy system projects more attractive investment propositions for individuals and local communities, as well as for the private sector, while delivering quality jobs and fair work – thereby, reducing the need for public sector support.

4.3 Public Sector Exemplars

The pace and scale required to deliver net zero by 2045 cannot be delivered by demonstration activities alone - the level of step change required will need to be supported with a greater focus on commercial projects that can attract significant private investment and deliver at scale. Only when this happens, will widespread change be seen.

However, irrespective of whether a project is developed by a community organisation, third sector or private enterprise, there is a need to transition away from reliance on public funding - towards commercially and economically viable systems that can attract private sector investment at the pace and scale needed.

It is widely recognised that the public sector has a role to catalyse and accelerate the transition – for example, by acting as an off-taker and anchor load - to a decarbonised energy system, or through embracing the challenge to decarbonise its buildings at a faster pace than the commercial and domestic sectors.

The Scottish Government recently announced its commitment to decarbonise its own estate by 2028. The approach taken to achieve this will have to deliver a set of economic solutions that demonstrate best value. In this way the public sector does not differ from the private sector.

4.4 Drivers for change - multi-faceted

Previous chapters highlighted the uncertainty of the final design of future energy systems that will deliver a net zero Scotland. It is worth re-emphasising this point, and being clear that flexibility and adaptability should be seen as strengths as they ensure that best value and reliance can continually be assessed.

There are major modifications happening across a number of areas which are disrupting the status quo in the energy market. The drivers for change are not down to a single issue - but are complex and involve a range of factors, such as those outlined below:

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- **Step change in heat decarbonisation requirements** – the Scottish Government will publish a Heat Decarbonisation Policy Statement in Summer 2020, setting out our vision and programme for decarbonising heat in line with Scotland's net zero commitment. This will involve a significant scaling up of project activity over the coming decades, providing opportunities for communities across Scotland.
- **New business models** – the removal of UK government energy incentives and subsidies has, amongst others, contributed to a need to consider other options to obtain a revenue stream, such as flexibility services, energy co-operatives, peer-to-peer trading, multi-bundled services, aggregation, and virtual private wires.

These options currently are only attractive to/ taken-up by a small consumer base but are expected to become common place, offering more flexible choice for domestic and business users.

- **Digital technologies and techniques** – such as the capture and application of data-driven approaches to create or improve products and services. These are already transforming sectors across the economy.

This is happening in the energy sector too, reflected by the move from passive to more active energy systems and consumer interactions. For example, heating systems which respond to a user's location or remote commands, or smart devices which can be activated when demand and, therefore, prices are low. This concept is expanded on below.

- **Switch to EVs** - as EVs become increasingly prevalent within the market, this will impact on peak demand periods for electricity, creating both opportunities and pressures for local distribution networks as drivers look to connect and charge their vehicles. EVs and vehicle to grid may also be expected provide flexibility benefits to the network.
- **Energy empowerment of local communities** - seeking more local benefit from local energy resources, which has included developing and owning generation or taking a financial or ownership stake in a local project.

Adding to this decarbonising energy usage, energy management, storage, supply has also been the norm for "off-grid" communities out of necessity.

However, the Scottish Government are beginning to see a desire for this more widely in more communities across Scotland. This is encouraging but it's important that we do not lose sight of the need to do so in a way that is inclusive; ensuring the most vulnerable are not worst off.

- **Remote and rural areas** – seeking to build on the pioneer work undertaken by a number of remote rural communities who have developed local energy solutions that meet their unique needs and circumstances.

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Case Study: Crossdykes Wind Farm – Community Shared Ownership

Muirhall Energy Ltd offered the local community an opportunity to acquire up to 10% equity shared ownership in a 46 MW wind farm. The offer was made to five local community council areas throughout Dumfries and Galloway.

The project is now consented and under construction, with completion programmed for summer 2020, and community investment by December 2020.

This is the first subsidy-free wind farm to be constructed, involving both community Shared Ownership and Community Benefit.

The Scottish Government, through CARES, awarded the community a grant to contribute towards costs for the necessary professional advice required to properly assess the opportunity.

This is an exciting opportunity for the community to receive substantial payments from Community Benefit fund, along with substantial income from Shared Ownership and, ultimately, to deliver long-term local ambitions and aspirations, that will be in place for future generations.

4.5 Digitalisation

There will be an increased role for digital technologies and techniques in the future energy sector. These will likely aid more intuitive systems that will have a powerful bearing on the future energy sector. The growth of the digital economy may offer more flexible choice for domestic and business energy users alike.

There is already a growing demand for storage, technological innovation, and smarter networks. Other developments include cloud computing and blockchain, which will transform business models, markets and employment.

These will continue to change the ways in which energy is produced and consumed, and will be vital in realising energy system balancing in a decentralised system with a wider range and number of generators and greater reliance on flexibility.

However, there are challenges associated with the continual digitalisation of the energy system for energy users, such as:

- Encouraging greater consumer engagement in the energy market
- Simplifying what can be a complicated process
- Digital exclusion

There are a number of issues surrounding the concept of smart energy systems. These include the current telecommunications network coverage difficulties experienced across many rural and remote areas throughout Scotland, as well as the lack of compliant metering technology available to energy users (who may not have yet received a smart meter due to either technical or behavioural reasons). **It is important to ensure that no groups are left behind during this digital transition.**

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Through this policy statement and our *Energy Consumer Action Plan*²³, the Scottish Government will continue to ensure the consumer voice is heard by making use of our powers and, where powers are reserved, seeking to influence the UK government and appropriate regulatory bodies (such as Ofgem). For our approach to succeed, we need regulators and UK Ministers to be responsive to Scotland's needs.

4.6 Financing the transition

The Scottish Government will continue to support and encourage projects that can demonstrate a clear pathway to solutions that can be self-sustaining and replicated across Scotland efficiently and at scale.

We recognise the challenge of wholesale replication. Successfully replicating place-based projects from remote, rural areas into more densely populated and urban areas (and vice versa) will require an in-depth understanding of the area in question, resources, economy and strategic drivers. This is set out in more detail in Chapter 2.

The Scottish Government will continue to signal to the market, through policy and legislation where appropriate, the priority it gives to renewable and low carbon generation in order to attract resources and investment.

The Scottish Government will continue to support the acceleration of the shift to low carbon, local energy solutions through existing support/ funding programmes, which include:

- **CARES** - a "one-stop-shop" providing advice and support, including financial support to community groups, third sector, public sector and rural SMEs seeking to develop renewable and low carbon projects.
- **Low Carbon Infrastructure Transition Programme (LCITP)** – providing support to make low carbon projects commercial investor ready.
- **Energy Investment Fund** - providing commercial investment for renewables and low carbon energy solutions.
- **Energy Efficiency Scotland** - which aims to make Scotland's buildings near-zero carbon.
- **Scottish National Investment Bank** - to be operational during 2020. As highlighted within the Scottish Government's Programme for Scotland 2019-2020, the Bank's primary mission will be the "transition to net zero". Work to shape this is ongoing.

In this way, through clear stable policy and targeted support, new business models will emerge that can attract investment and be replicated both across Scotland and internationally. In order to achieve this, the Scottish Government will ensure that our support is flexible and can be adapted quickly to meet the changing environment.

Our support is augmented by that provided through our enterprise agencies (Highlands and Islands Enterprise and Scottish Enterprise), and other national and UK bodies.

²³ <https://www.gov.scot/publications/energy-consumer-action-plan-putting-consumers-heart-scotlands-energy-transition/>

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4.7 What can be delivered now?

The delivery of a greater number of local energy system solutions is needed now. However, being an early adopter or a trailblazer can increase the level of risk. These risks can be minimised by considering the importance of place solutions that reflect local characteristics, undertaking a clear local area energy plan whilst also ensuring that lessons are learnt from these early projects.

There remains some fundamental questions to be answered about if and how the existing gas network can be decarbonised to support our net zero aim. However, as stated in Scotland's Energy Strategy, low carbon gas could either fully replace existing forms of gas, or be blended with existing gas to partially decarbonise the network.

The GB gas distribution networks are already investigating the performance of hydrogen and other low-carbon gasses across their infrastructure. This is the case in Scottish Gas Network's H100 project, which is looking to construct and demonstrate a 100% hydrogen gas grid in Scotland. Furthermore, 15 biomethane sites are already injecting low carbon gas into gas distribution networks.

The forthcoming Heat Decarbonisation Policy Statement and Hydrogen Action Plan will set out more detail on the potential role of decarbonised gas in providing heat for Scotland's buildings and industry. As such, the Scottish Government is committed to encouraging prioritisation of low regret local energy systems.

Low regret areas may have one or more of the following characteristics:

- Off-gas grid locations
- Adding new demand in areas with grid constraints
- Adding value to existing constrained generation assets
- Islands
- Remote and rural areas
- High-rise accommodation without gas

4.8 Questions

12. What significant barriers are there to the replication of existing local energy projects and systems in Scotland that this policy statement should take account of?

13. What actions can we take to accelerate the focus on economically and commercially viable low carbon local energy solutions in an inclusive way?

CHAPTER 5: OPPORTUNITY

Delivering sustainable, inclusive economic growth across Scotland and capitalising on the wider-benefits that local energy systems will bring.

Principles

- **Local energy systems should support the creation of quality jobs, which are secure and sustainable, as well as the development of the Scottish supply chain.**
- **Any changes to the energy system should ensure a just transition for Scotland's workforce - particularly for those who may be directly impacted by these changes through re-training or upskilling.**

This chapter highlights the potential economic opportunities - locally, nationally and globally - that a shift towards localised energy systems can deliver (as well as a reduction in carbon emissions).

5.1 Inclusive growth is key to success

First and foremost, it is important to highlight that inclusive growth²⁴ is a strategic priority for the Scottish Government.

Put simply, this means: *growth that combines increased prosperity with greater equality, creates opportunities for all, and distributes the benefits of increased prosperity fairly.*

It is essential to create the right environment for more inclusive employment opportunities to flourish. Through supporting investment, innovation, internationalisation and fairer work, the Scottish Government is encouraging competitiveness and more responsible business behaviour.

As outlined in Scotland's Energy Strategy, the Scottish Government is supporting an energy system in which treating consumers fairly is viewed as an important economic outcome for businesses and society alike.

Empowered consumers, acting within a system of fair competition, support inclusive and sustainable growth in our economy - enabling businesses to innovate and grow in response to consumer need.

Outlined below are some of the key areas where Scotland can potentially benefit from and, in some cases, lead the way.

²⁴ <https://www.gov.scot/policies/economic-growth/inclusive-growth/>

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5.2 Cementing Scotland's place globally

Scotland is recognised as a world-leader in decarbonisation and for our efforts in tackling climate change – therefore, Scotland is ideally placed to be a global frontrunner in the development of green local energy systems.

A recent study, commissioned by Scottish Enterprise and carried out by Ricardo Energy & Environment (Smart Local Energy Systems International Research²⁵), estimated that the local energy systems market in Scotland would be worth circa. £637 million by 2030 – and almost £350 billion globally.

With many countries now focusing efforts on tackling the global climate emergency, there has never been a greater opportunity to ensure that Scottish businesses can capitalise on this position.

Conversely, with these other countries now giving serious consideration to local energy systems, it is important that Scotland acts now to consolidate our efforts at home – before then pushing internationally– to prevent our leading-edge being lost.

Our Enterprise bodies are leading the charge to ensure Scotland is front and centre, supporting internationalisation and creating opportunities to attract new investment, through initiatives such as Trade Envoys and Innovation and Investment Hubs.

Within the same study mentioned above, it was suggested that the main types of services that could, potentially, be exported from Scotland broadly fit into three categories:

- Smart grid solutions
- Renewable power to hydrogen
- Renewable power to heat

And internationalisation does not solely mean the commercial export of goods, services and knowledge: there are potential opportunities for Scottish communities to benefit.

For example, knowledge-sharing between countries could be a key driver in the reduction of costs in the development and operation of local energy systems across Scotland.

This is already happening, particularly in our island communities through the Smart Islands Energy System (SMILE)²⁶ and Building Innovative Green Hydrogen Systems in Isolated Territories (BIG HIT)²⁷ projects.

²⁵ <http://www.evaluationsonline.org.uk/evaluations/Search.do?ui=basic&action=show&id=695>

²⁶ <https://www.h2020smile.eu/>

²⁷ <https://www.bighit.eu/about>

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CASE STUDY: Clean Energy for EU Islands – Supporting a Collaborative Transition to Net zero

The Islands of Rum, Eigg, Muck, Canna, Foula and Fair Isle are all 'off-grid', not connected to the national electricity network. Highlands and Islands Enterprise supported these communities to successfully apply to become part of the EU Clean Islands Network. All islands participating have pledged to develop a Clean Energy Transition Agenda.

This support programme provides a platform for collaboration on an international scale, enabling strong linkages to be built across international islands in a similar situation. The communities will

share knowledge, expertise and resource to develop one overarching off-grid Transition Agenda with specific recommendations for each island within this.

Although not a true island, the Off-Grid community of Knoydart will join them on this journey. The communities are also closely collaborating with the University of the Highlands and Islands, Shetland Islands Council, Highland Council and Highlands and Islands Enterprise on their journeys towards decarbonisation.



5.3 Scottish supply chains

Scottish businesses, including community organisations, have developed real strengths across the whole energy supply chain. To emphasise this diversity, the Smart Local Energy Systems International Research study identified nearly 200 companies in the local energy systems field of which 37% categorised themselves as consultants, 20% as project developers and 43% as technology developers.

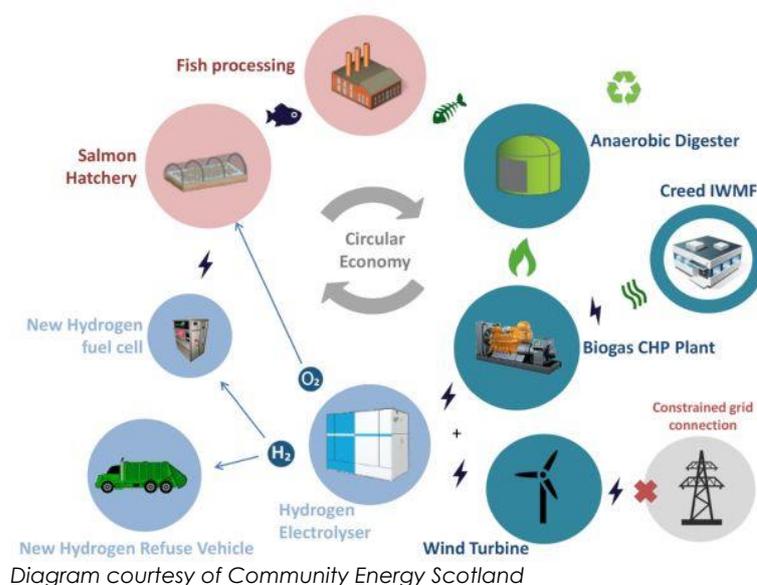
Chapter 4 refers to the impact which the digitalisation of the energy market will have on the way energy is generated and consumed. This also opens up huge potential for Scottish companies to offer a wide range of digital applications from software to data science to informatics – especially as many companies have never considered energy as a potential marketplace historically.

There is also growing interest (and opportunity) in adopting the **circular economy approach** in relation to energy – i.e. where the aim is to reduce unnecessary waste in the system, and across the wider Scottish economy. The circular economy approach is already having an effect in the manufacturing sector, with more thought given to the use and re-use of materials in manufacturing processes.

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Case Study: Outer Hebrides Local Energy Hub (OHLEH)

The OHLEH project delivers renewable power, heat, and transport to the local community by integrating a variety of innovative technologies to improve the efficiency and output of the Anaerobic Digester site at Creed, and the salmon hatchery in Barvas - both on the Isle of Lewis. The project is focused on encouraging a circular economy, where fish waste from the hatchery is used to increase the biogas output of the anaerobic digester. The added value of this being:



- Increased heat and electricity output from the CHP, which allows for the production of hydrogen.
- The use of new and existing hydrogen-generation infrastructure to release additional renewable energy generation capacity.
- The use of hydrogen as transport fuel for the Council's refuse collection vehicle.
- The development of the local supply chains and skills required to generate, transport and use hydrogen and oxygen locally, with both gases supplied to the salmon hatchery to power their Hydrogen fuel cell.

Overall, there is potential to develop local supply chains across a range of emerging and growing markets for local energy systems across all regions of Scotland – thereby, providing an opportunity for more balanced regional development within Scotland.

5.4 Community-led activity has a role

As mentioned in Chapter 1, Scotland has a legacy of strong community engagement in local renewables generation, primarily through supporting community ownership. There continues to be a role for community-led activity in the future local energy landscape, such as:

- By developing, owning and operating local energy system projects that create local solutions.
- By being meaningful partners in commercial renewable energy projects through shared ownership (and this opportunity is expected to continue for larger infrastructure projects).
- Whole system projects will need to engage, encourage participation, and inspire collective action within the project area - and communities can be key partners with unrivalled local reach.

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- Energy innovation and market disruption could see new opportunities for more localised systems and trading, with local communities having the opportunity to deliver these models.

Overall, local energy systems have the potential to help local communities reduce carbon emissions, create local jobs, upskill local people, reduced energy costs, and allow greater investment in the local economy – while innovative business models, such as those involving peer-to-peer trading, may help to retain wealth within local communities.

The Scottish Government will ensure that our Enterprise Agencies and Local Energy Scotland will continue to work with businesses and communities to build the necessary capacity for all to capitalise on the benefits arising from the transition.

5.5 Typology Framework

Scottish Enterprise have developed a typology framework to consider the different segments of the market, in terms of types of locations, where future local energy systems may be deployed.

Typologies investigated range from remote rural islands to large urban areas - and everything in between. Some high-level differences between these typologies, such as population density, the presence of heavy industry, the availability of the gas network and the proximity to renewable resource(s), have been considered and thought has been given to the different types of solutions and technologies applicable in each.

The work has examined what Scotland has to offer in each location type in terms of lessons learnt from past/ current projects, and also the knowledge, experience, products and services offered by our significant company base. It has also looked at potential international opportunities and threats in each typology.

The conclusion of this work, which involved significant stakeholder engagement, has allowed Scottish Enterprise to identify some initial focal typologies in terms of the potential economic opportunities they represent: remote rural islands, off-gas-grid towns, industrial towns and industrial parks/ campuses.

This exercise is not intended to exclude any projects and has been carried out to allow Scottish Enterprise to prioritise its resources. The typology framework is highly flexible, recognising the potential for opportunities in other typologies and cross-over between typologies. Going forward, this priority list will be under constant review.

Furthermore, there are opportunities for island communities to lead the way in showing how to realise climate change ambitions. For example, European Marine Energy Centre (EMEC) is a world-leading centre based on Orkney for testing wave and tidal energy devices.

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5.6 Equipping Scotland's workforce for the future

Scotland's Energy Strategy highlights the need to ensure there is a pipeline of suitably-skilled people to grasp the opportunities that our transition to a net zero economy (and decentralised energy market) will bring: from the manufacturing jobs which will produce the plant and equipment required to power Scottish communities and businesses, to the engineering roles required to install and maintain such equipment. However, this has to be the right kind of job creation: quality jobs which are sustainable and secure.

Scottish colleges and universities are world-renowned for producing talented graduates across a host of fields – including engineering, science, and digital technology. Indeed, many further educational institutions across Scotland have already recognised the need to tailor courses they offer to ensure graduates are prepared for a future net zero economy by incorporating renewables/ renewable energy into, for example, environmental engineering courses.

The Scottish Government recognises that there are concerns over what impact our transition to a net zero economy will have on existing jobs – whether this be through increased automation or the move towards renewable energy away from fossil fuels.

This document has highlighted our desire for a just transition: and it is essential to ensure that this encompasses Scotland's workforce – particularly those who may be impacted by these changes – by providing opportunities for re-training or upskilling that are accessible by those experiencing socio-economic disadvantage.

The Scottish Government will continue to work collaboratively with organisations such as Skills Development Scotland, Scottish businesses, and academic institutions to create modern apprenticeships that are fit-for-purpose and future-proof to enable Scotland to meet its ambition on climate change.

5.7 Questions

14. How can we ensure that Scotland capitalises on the economic opportunities from the development of local energy systems?

15. Do you have any opinions on the initial focal typologies chosen?

16. How can local energy considerations become business as usual for industry?

CONSULTATION QUESTIONS: SUMMARY

General

1. Are you clear on the purpose of the statement? Please explain your view.
2. What are your views on the 10 principles?
3. How can the Scottish Government encourage stakeholders to adopt the principles set out within this document?
4. Are you clear about the roles of all the different stakeholders who may be involved in the development of local energy systems?

People

5. How can we ensure that all socio-economic groups in all regions across Scotland will benefit from the transition?
6. How can we ensure that people and communities across the whole of Scotland can participate in local energy projects?

Places

7. What do you think the wider benefits of developing local area energy plans might be?
8. How can we encourage greater collaboration between the key parties involved in the development of local energy plans?
9. How do we ensure that whoever is leading a local energy plan is fully integrated into the LHEES process?

Networks & Infrastructure

10. What infrastructure challenges are you aware of that present an obstacle to delivering local energy projects? What actions would help solve the issue?
11. What other actions could the Scottish Government take to ensure Scotland will have the necessary infrastructure in place to enable resilient, local energy systems?

Pathway to Commercialisation

12. What significant barriers are there to the replication of existing local energy projects and systems in Scotland that this policy statement should take account of?

13. What actions can we take to accelerate the focus on economically and commercially viable low carbon local energy solutions in an inclusive way?

Opportunity

14. How can we ensure that Scotland capitalises on the economic opportunities from the development of local energy systems?

15. Do you have any opinions on the initial focal typologies chosen?

16. How can local energy considerations become business as usual for industry?

LOCAL ENERGY POLICY STATEMENT

RESPONDING TO THIS CONSULTATION

Responding to this Consultation

We are inviting responses to this consultation by 4 December 2019.

Please respond to this consultation using the Scottish Government's consultation hub, Citizen Space (<http://consult.gov.scot>). Access and respond to this consultation online at <https://consult.gov.scot/energy-and-climate-change-directorate/local-energy-policy-statement>.

You can save and return to your responses while the consultation is still open. Please ensure that consultation responses are submitted before the closing date of 4 December 2019.

If you are unable to respond using our consultation hub, please complete the Respondent Information Form to:

Local Energy Systems Team
Scottish Government
4th Floor
5 Atlantic Quay, 150 Broomielaw
Glasgow, G2 8LU

Handling your response

If you respond using the consultation hub, you will be directed to the About You page before submitting your response. Please indicate how you wish your response to be handled and, in particular, whether you are content for your response to be published. If you ask for your response not to be published, we will regard it as confidential, and we will treat it accordingly.

All respondents should be aware that the Scottish Government is subject to the provisions of the Freedom of Information (Scotland) Act 2002 and would therefore have to consider any request made to it under the Act for information relating to responses made to this consultation exercise.

If you are unable to respond via Citizen Space, please complete and return the Respondent Information Form included in this document.

To find out how we handle your personal data, please see our privacy policy: <https://beta.gov.scot/privacy/>

Next steps in the process

Where respondents have given permission for their response to be made public, and after we have checked that they contain no potentially defamatory material, responses will be made available to the public at <http://consult.gov.scot>. If you use the consultation hub to respond, you will receive a copy of your response via email.

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Following the closing date, all responses will be analysed and considered along with any other available evidence to help us. Responses will be published where we have been given permission to do so. An analysis report will also be made available.

Comments and complaints

If you have any comments about how this consultation exercise has been conducted, please send them to the contact address above or at localenergysystems@gov.scot.

Scottish Government consultation process

Consultation is an essential part of the policymaking process. It gives us the opportunity to consider your opinion and expertise on a proposed area of work.

You can find all our consultations online: <http://consult.gov.scot>. Each consultation details the issues under consideration, as well as a way for you to give us your views, either online, by email or by post.

Responses will be analysed and used as part of the decision making process, along with a range of other available information and evidence. We will publish a report of this analysis for every consultation. Depending on the nature of the consultation exercise the responses received may:

- indicate the need for policy development or review
- inform the development of a particular policy
- help decisions to be made between alternative policy proposals
- be used to finalise legislation before it is implemented

While details of particular circumstances described in a response to a consultation exercise may usefully inform the policy process, consultation exercises cannot address individual concerns and comments, which should be directed to the relevant public body.



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RESPONDENT INFORMATION FORM

Please Note this form **must** be completed and returned with your response.
To find out how we handle your personal data, please see our privacy policy:
<https://beta.gov.scot/privacy/>

Are you responding as an individual or an organisation?

Individual Organisation

Full name or organisation's name

Phone number

Address

Postcode

Email

The Scottish Government would like your permission to publish your consultation response. Please indicate your publishing preference:

- Publish response with name
- Publish response only (without name)
- Do not publish response

Information for organisations:

The option 'Publish response only (without name)' is available for individual respondents only. If this option is selected, the organisation name will still be published.

If you choose the option 'Do not publish response', your organisation name may still be listed as having responded to the consultation in, for example, the analysis report.

We will share your response internally with other Scottish Government policy teams who may be addressing the issues you discuss. They may wish to contact you again in the future, but we require your permission to do so. Are you content for Scottish Government to contact you again in relation to this consultation exercise?

Yes No



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