



Circular Rural Places The Highlands and Islands

Reflections and Recommendations
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Contents

1	Introduction	3
2	The Highlands and Islands	4
3	The Circular Economy	7
3.1	The Highlands and Islands' Journey to Net Zero	9
3.2	Opportunities	10
3.3	Models & Strategies	11
4	A Rural Circular Economy	13
4.1	Just and Fair Transition	15
5	Rural Circular Opportunities	17
5.1	Rural Circular Economy Opportunities Tables	18
6	Circular Rural Recommendations	21
6.1	Collaboration	21
6.2	Innovation	24
6.3	Social Business	26
6.4	Built Environment	28
6.5	Public Sector	33
6.6	Rural Circular Skills and Jobs	36
7	Conclusion	41

1 Introduction

Rural Scotland accounts for 98% of the country's land mass and 17% of the Scottish population live in rural parts of the country. Scotland's largest rural region, the Highlands and Islands, has the lowest population density in the UK and one of the lowest in Europe.¹

Despite the sparse population and distance from larger markets, rural areas are of huge economic importance. They provide rich natural resources, are home to innovative entrepreneurs and have a significant role to play in Scotland's cultural heritage.

Zero Waste Scotland exists to lead Scotland to use products and resources responsibly, creating conditions for a circular economy. The transition to a circular economy is an integral part of Scotland's response to the climate crisis. Four fifths of Scotland's carbon footprint is created by the vast amounts of products and materials that we manufacture, purchase, use and then throw away.

The circular economy offers an alternative to the current linear economic model, one that conserves the planet's finite resources and massively reduces carbon emissions from the way we work and live. A circular economy creates new systems that allow for all materials and products to be kept in use for as long as possible, extracting maximum value whilst creating minimum environmental impact.

At Zero Waste Scotland we are taking a regional, place-based approach to support the development of a circular economy. We work with partners across Scotland to identify unique regional challenges/opportunities and to support the development of focused activities required to drive change at a local level.

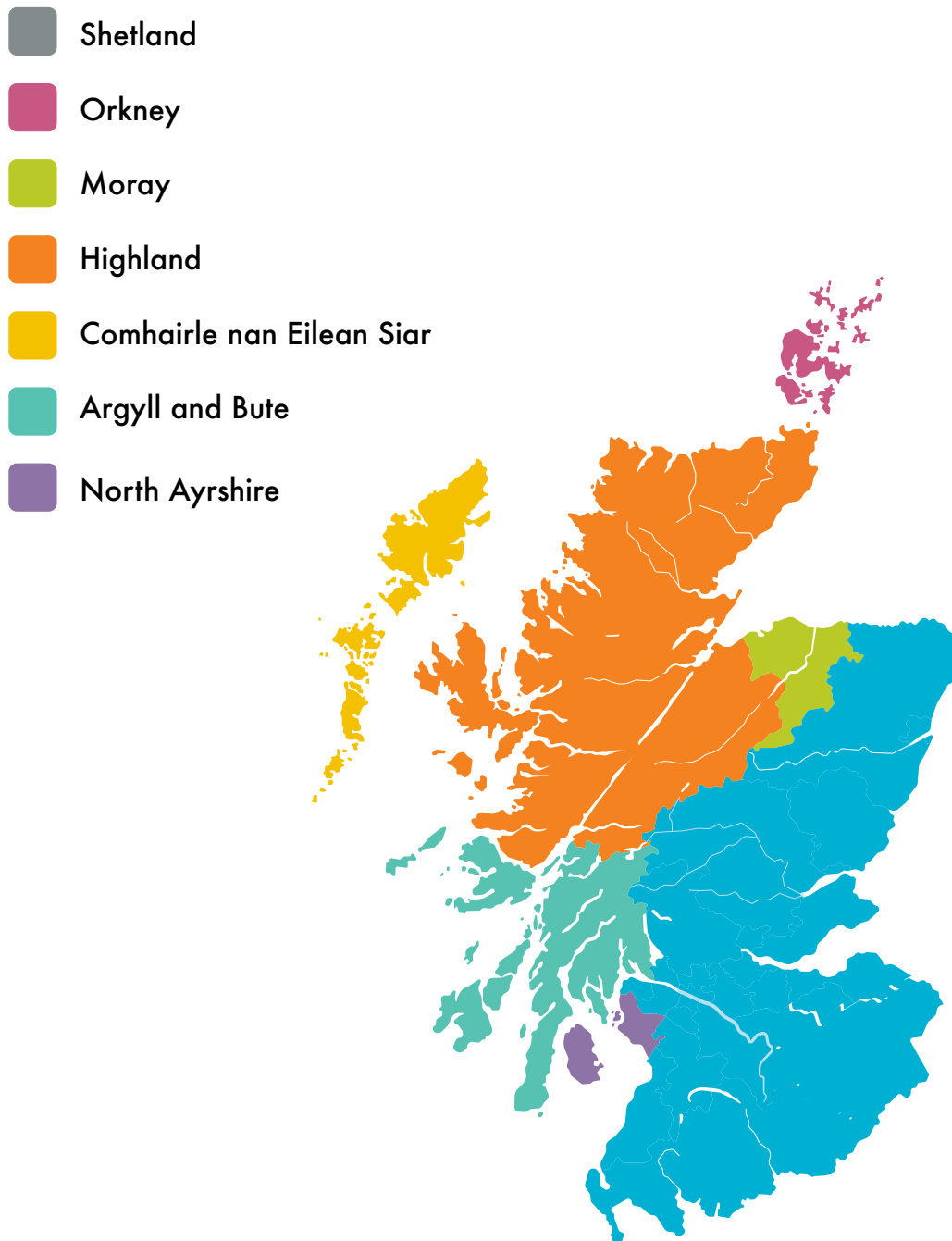
Since 2020, Zero Waste Scotland has been working with partners across the Highlands and Islands to identify, nurture and accelerate circular economy models that work in a rural economy.

The following paper sets out learning and recommendations from Zero Waste Scotland's regional partnership work across Highlands and Islands. These recommendations are drawn from the Highlands and Islands regional focus and have relevance for wider rural Scotland.



¹ <https://www.gov.scot/publications/rural-scotland-key-facts-2018/#:~:text=Rural%20Scotland%20accounts%20for%2098,mainly%20due%20to%20inward%20migration.>

2 The Highlands and Islands



Map 2.1 Highlands and Islands Region



The Highlands and Islands cover just over 40,000km². The region stretches from Shetland in the north to Campbeltown at the southern tip of Argyll, and from the Outer Hebrides in the west to Moray in the east. The area accounts for just over half of Scotland's landmass but less than 9% of its population.

The region is home to a diverse collection of entrepreneurial businesses, social enterprises and community organisations. Due to existing localised challenges (remoteness, distance from markets, dispersed populations etc) the region is already driven to produce and deliver products/services in innovative ways, providing strong foundations for the transition to a circular economy.

For example, the Highlands and Islands has a relatively low (and aging) population. The trend of low population growth is expected to continue, with the region's total population projected to largely remain unchanged by 2040. In contrast Scotland's overall population is projected to grow around 5% in the same timeframe. Adding to this trend,

³ <https://www.hie.co.uk/our-region/>

a lack of affordable housing increases the outmigration of young people.

Transport and wider infrastructure are long-standing issues in the Highlands and Islands, especially across the region's most rural areas and island populations. The region also suffers from widespread fuel poverty, with some island communities not connected to the National Grid.

Access to a skilled workforce can be challenging and Covid-19 has highlighted the regional economic reliance on the tourism sector.

Despite the geographical and socio-economic challenges, the region holds significant opportunities that have the potential to support a transition to a circular economy. The area has a rich and long-standing social economy with nearly 1,200 social enterprises, 21% of the Scottish total. They contribute 7% of all Gross Value Added (GVA) from social enterprises in Scotland and 8% of the employment.³

These organisations are driven by social and environmental impact; many already operate to reduce waste streams and provide models that add value to materials at a local level.

The Highlands and Islands has the largest concentration of community owned land in Scotland. Communities are taking control of the places where they live and work, ensuring that the local area is managed and developed in a way that works for the community, businesses and the environment.

The Highlands and Islands is also home to a range of innovative and forward-thinking businesses, across several key sectors, including energy, life sciences, aquaculture, creative industries, tourism, food and drink, technology and advanced engineering.

There are significant opportunities to support collaborations between the private, social enterprise and public sector to enable better use of resources, through planning and development.

The Highlands and Islands holds internationally recognised habitats – with 5 UNESCO designations (Wester Ross Biosphere, North West Highlands Geopark, Geopark Shetland, The Heart of Neolithic Orkney and St Kilda), has specialised biodiversity and a landscape of importance for carbon sequestration within peat layers.

Communities, businesses and the public sector need to recognise the connection between the way we live, the impact on climate and resulting biodiversity loss to effectively protect, enhance and adapt.

Because of the people and its landscape, the Highlands and Islands has the potential to be at the forefront of Scotland's net zero transition. The circular economy offers a model to support and accelerate this change, avoiding further damage to the environment, helping to restore lost biodiversity and ensuring the region is prepared and resilient to climate change.



3 The Circular Economy

Currently, four fifths (or 80%) of Scotland’s carbon footprint is generated by the vast amount of goods and materials that we produce, consume and throw away - often after just one use. Scotland imports about half of these products and materials from countries overseas, where the negative impact on biodiversity, habitat and water security can be significant.

In 2021, Zero Waste Scotland developed a landmark report, The Scottish Material Flow Accounts (MFA). The report revealed the size of Scotland’s material footprint for the first time. The study found that Scotland’s raw material consumption amounted to 100 Mt of materials, which equates to 18.4 tonnes per person. This is 38% higher than the global average of 13.3 tonnes per person and more than twice as high as the suggested sustainable level (8 tonnes per person per year). The report also highlighted that Scotland’s domestic material consumption per capita is 44% larger than the UK as a whole.⁴

Analysis within the MFA showed that population and climate have a significant impact on raw material consumption levels. Scotland’s lower population density means more materials are required per person for civic amenities including roads, bridges and public buildings. Colder climate means there is more demand for heating fuels. Given this analysis, material consumption within Scotland’s rural communities is likely to be even higher than the Scottish average.

This current rate of resource consumption across Scotland is not sustainable. The circular economy offers a solution.

The circular economy is a fundamental shift in the way that we manufacture, use and view materials and products. It reduces waste to a minimum by recovering and reusing as many products and materials as possible, over and over again. It can be described in simple terms as a make, remake, reuse economy.

The circular economy is built on three core principles:



⁴https://www.zerowastescotland.org.uk/sites/default/files/ZWS1658%20MFA%20technical%20report%20v4_0.pdf

⁵<https://www.ellenmacarthurfoundation.org/circular-economy/concept>

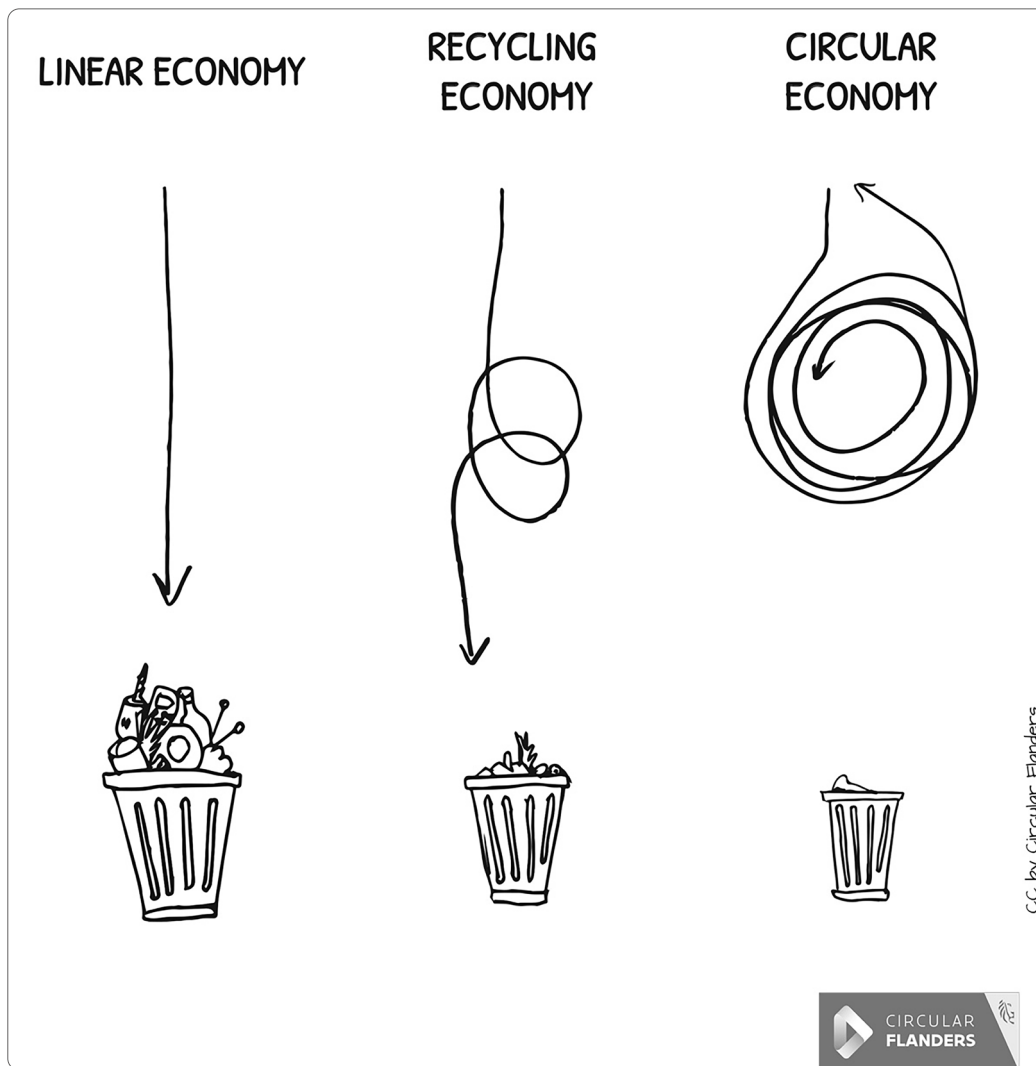


Diagram 3 Circular Economy diagram created by Circular Flanders

3.1 The Highlands and Islands' Journey to Net Zero



The Goal - Net Zero

Carbon dioxide is released when fossil fuels are burned to create energy. It isn't the only greenhouse gas, but it is the most significant. The terms "carbon", "carbon emissions" or "carbon equivalent" are often used to talk about all greenhouse gas emissions, not just carbon dioxide.

To address the problem of greenhouse gas emissions and their impact on the climate, Scotland has passed ambitious legislation that commits the country to net zero emissions by 2045. This is a target to reduce net greenhouse gas emissions by 100%, relative to 1990 levels, before the middle of this century.

Net zero means achieving a balance between carbon released into the atmosphere and the carbon removed from the atmosphere. The balance - or net zero - will happen when the amount of carbon humans add to the atmosphere is no more than the amount removed.



Enabler 1 Energy

Demand for energy in

Scotland continues to grow. Scotland needs to establish a sustainable, affordable and reliable energy supply. To support this the Scottish Government is developing the transition towards more sustainable, greener energy systems. The transition will involve a shift from a reliance on oil and gas, to instead drawing energy from renewable sources (e.g. wind, marine, solar, bioenergy and hydrogen). The renewable sector must meet local and national heat, transport and electricity needs. By 2030 Scotland aims to generate 50% of overall energy consumption from renewable sources and by 2050 Scotland will have decarbonised the energy system almost completely.



Enabler 2 Circular Economy

A significant

part of Scotland's carbon footprint is created from the making, use and disposal of products and materials. The circular economy challenges the way that Scotland manufactures, uses and views materials and products. It reduces waste to a minimum by recovering and reusing as many products and materials as possible. A circular economy in Scotland will require changes to business models, supply chains, the way products and services are designed and a significant shift in consumer behaviour. These changes will allow for all materials to remain within the value chain, removing the need for newly sourced materials and reducing the volumes of waste that Scotland produces.



Enabler 3 Nature-Based Solutions

Nature-based

solutions make use of natural systems to create positive benefits for both people and biodiversity. The solutions include a wide range of activities that create benefits though restoring, managing and creating new ecosystems. Healthy ecosystems, such as forests, peatbogs and oceans are important carbon sinks, absorbing and storing carbon from the atmosphere. Protecting and enhancing Scotland's diverse ecosystems will ensure that existing nature-based solutions are functioning well and capturing carbon. Protecting, restoring and enhancing biodiversity will mitigate climate risks and help communities to adapt to future climate change, whilst also creating healthier places to live and work.



Outcome 1

Just & Fair
Transition

Outcome 2

Green Jobs

Outcome 3

Resilient Businesses

Outcome 4

Biodiversity rich
and resilient
ecosystems

Outcome 5

Resilient
Communities

3.2 Opportunities

The circular economy presents opportunities to businesses across all sectors in Scotland, these include:

- Improved resilience
- Less spend on raw materials
- Reduced operating costs
- Strengthened relationships with employees, suppliers and customers
- Alleviate potential raw material supply risks
- Increased competitiveness
- Opportunities for innovation and new markets (new products, technologies, services, business opportunities)
- Creation of new jobs and need for new skill sets
- Builds and strengthens brand (creating a USP)
- Potential new customer base
- Reduction in waste costs
- Reduction in adverse environmental impacts, mitigating biodiversity loss

There are also unique opportunities for Scotland's rural places. These opportunities are relevant to the public sector (local authorities, government agencies etc.), private sector and the wider communities:

- Local service delivery
- New, locally based revenue generating opportunities
- Place based solutions for localised issues/needs
- Increased sense of place and community empowerment
- Business diversification
- Community wealth building opportunities (linking business, community and public sector)
- Growth of social enterprise/business sector
- Opportunities for local authority and local government agencies to reduce overheads and improve services
- Improved local places for people and wildlife, increasing quality of life



3.3 Models & Strategies

There are 9 key strategies that will enable the development of a circular economy in Scotland.

1. Circular design

More than 3 out of 4 decisions that directly influence material selection and manufacturing processes are determined in the design phase; and over 80% of the ecological costs are determined before a product is even created.⁶

Products need to be designed so that they can be easily repaired or remanufactured, using more modular designs and with careful consideration as to how the materials used can remain in the value chain. Manufacturers need to take responsibility for the items they produce for as long as possible.

2. Resource recovery

Resource recovery involves using by-products and co-products to retain or add value. Maximising resource use can create new business opportunities, reduces environmental impacts and reduces waste costs for businesses.

3. Enabling technologies

Design, manufacturing, distribution can all be done digitally using technology to reduce environmental impact. For example, monitoring product usage to reduce energy consumption, streamlining and tracking distribution, or using digital technologies to support take-back models.

4. Product as a service

The customer is at the core of the business model, instead of selling products the manufacturer retains ownership of assets and provides them as a service to the customer. This 'servitisation' model presents an opportunity to offer greater customer service, retain customers for life and creates opportunities for innovation.

5. Leasing

Leasing involves the manufacturer/retailer retaining ownership of products. They are responsible for delivery, maintenance and take back. Leasing allows the manufacturer to retain ownership of valuable materials and allows businesses to implement extended producer responsibility.



6. Remanufacture

Remanufacture involves products (at end of useable life) being disassembled into components. Those components are brought back to original quality, then used to create new products that are identical to the original, or often even higher specification.

7. Re-use

Using products & materials for as long as possible. Ensuring a product is used for its intended purpose for a long period of time provides much more value than alternatives such as recycling.

8. Repair

Extending the life of products by maintaining or improving them through repairing or upgrading.

Extending a product's economic usefulness (and value), reduces waste, minimises impact, and saves the need for new materials. Circular design principles are an important part of repair, to ensure that products can be separated and disassembled easily.

9. Sharing economy

Treating products as assets that can be used by multiple customers, multiple times. Manufacturers can retain ownership and provide shared access, or customers can create peer-to-peer sharing models.⁸

The 9 circular strategies detailed above provide opportunities across supply chains; from the manufacturing of physical assets, to the way that businesses operate, and customers engage. They present options to move from consuming vast amounts of resources to instead using services, repairing, sharing and leasing to keep products and materials within the value chain for longer.

These strategies can be used together within an individual business, across sectors or within a geographical area.



⁶ Zero Waste Scotland (2015) "Design for a Circular Economy" <https://www.zerowastescotland.org.uk/sites/default/files/Design%20for%20CE%20%20An%20Action%20Plan%20%20ZWS%2012.05.15%20For%20Publish%20.pdf>

⁷<https://www.remanufacturing.eu/about-remanufacturing.php>

⁸<https://ceaccelerator.zerowastescotland.org.uk/>

4 A Rural Circular Economy

Circular economy models are, given economies of scale, much easier to achieve in areas of critical mass where there is a large business base and high population density. For Scotland's rural places models will need to be formed that allow for materials and products to be kept within a geographical area/community, adding value and creating local income generating activities.

The transition to a circular economy in Scotland is likely to look very different across Scotland's diverse regions, depending on local needs and resources. For this reason, simply looking to replicate solutions from elsewhere (nationally or internationally) would not be an effective approach.

Zero Waste Scotland is taking a regional, place-based approach to supporting the development of a circular economy, identifying unique regional challenges/opportunities to determine what the transition will look like and what support mechanisms are required at a local level.

Whilst circular economy models need to be tailored to local and regional context for implementation, there are a wide range of good practices already available. These can be adapted to suit local needs and resources, allowing regions to quickly move ahead with projects. Key to success will be collaboration, re-thinking how resources are used across the public and private sector.

The increase in the availability, use and quality of renewable technologies will reduce the environmental impact of transporting goods and materials in the future, however as distance increases, the ability to manage and control material flows becomes much more

challenging and accountability reduces.

Diagram 4 provides a visual example of circular material flows within rural Scotland. It illustrates that there will always be flows of materials in and out of regions and across borders, however in a circular economy there are mechanisms that allow for 'optimal' resource flows (adding value locally) and 'required' resource flows that allow for global trade of materials when necessary.

To create circular economies that work in rural Scotland, local models need to be developed that link material systems at a regional and national level.

Circular economy models are not about stalling progress or development, they involve the use of technology and innovative solutions to link our islands, rural places, towns and cities. It will require a fundamental shift in how materials and products are produced and consumed, at all levels across Scotland's economic systems.



Unlocking the potential of Scotland's rural circular economy will create a diverse and resilient rural circular economy that captures value from all materials and products as they flow through business, community and the public sector. Keeping resources in use for as long as possible, finding localised and innovative solutions to hold them within the value chain. It is a take, re-design, make, use, reuse model relevant for everyone who lives, works or has influence in Scotland's rural places.

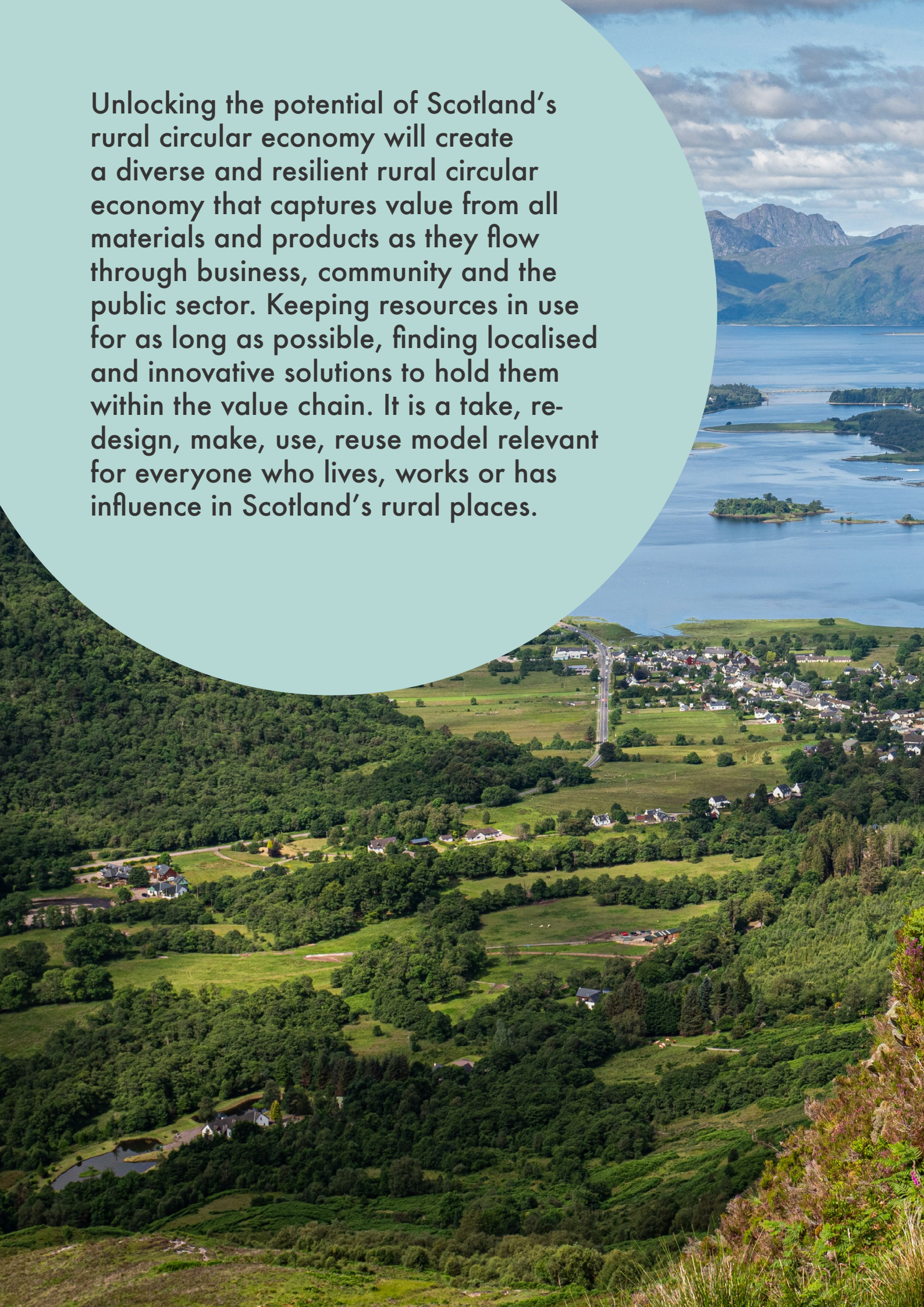
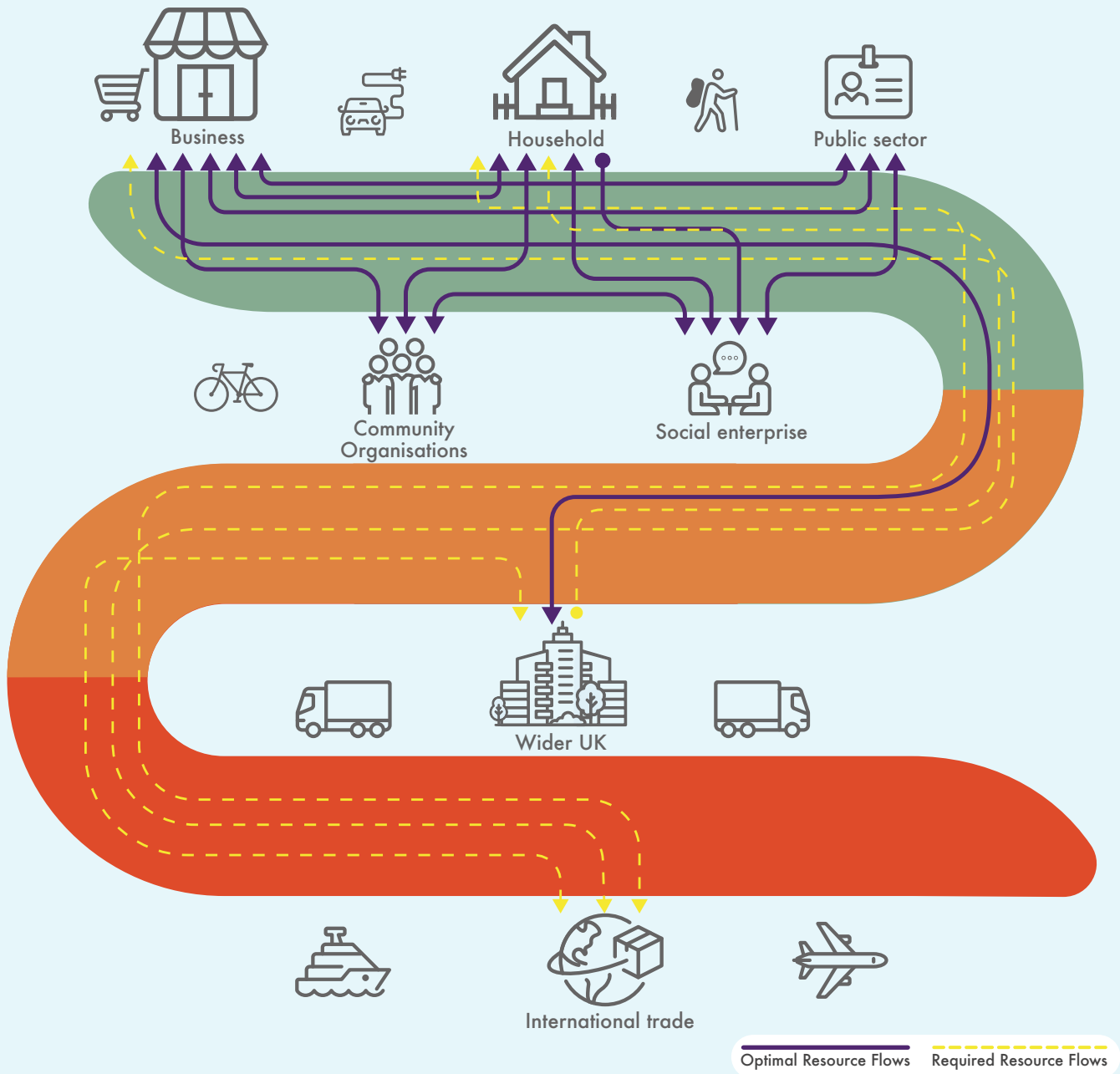


Diagram 4 Visual example of circular material flows within rural Scotland.

The below illustrates that there will always be flows of materials in and out of regions and across borders, however in a circular economy there are mechanisms that allow for 'optimal' resource flows (adding value locally) and 'required' resource flows that allow for global trade of materials when necessary.



4.1 Just and Fair Transition

As Zero Waste Scotland and other organisations continue to develop approaches to net zero and the development of a circular economy, it is recognised that it must be a just transition. This means that rural places need to be part of the circular economy journey, otherwise there is a risk of further increasing development gaps across the country.

The concept of a 'just transition' was originally developed by trade unions in the United States during the 1970s labour movement. It was presented as a framework to bring together the social and economic interventions necessary to provide security for the livelihoods of workers during a shift from environmentally hazardous industries. The meaning and use of the just transition concept has expanded in recent years to now include broader efforts to promote jobs, sectors and economies that are both environmentally and socially sustainable.⁹

The rationale aims to ensure that climate mitigation actions do not disproportionately affect poor, vulnerable and fragile communities, and remote areas. A just transition is important not only from an ethical perspective; it is also critical for ensuring the long-term sustainability of the circular transition process itself.

Ensuring a just transition is a core part of the Scottish Government's commitment to growing an inclusive net zero economy. The Scottish

Government sets out the ambition to create a more cohesive and resilient economy that improves the opportunities, life chances and wellbeing of every citizen in the country. Alongside this, the Climate Bill commits to ending our contribution to climate change by 2045 at the latest¹⁰.

The Scottish Government is committed to ensuring that just transition principles form part of the journey to a net zero economy, these principles include:

- Plan, invest and implement a transition to environmentally and socially sustainable jobs, sectors and economies, building on Scotland's economic and workforce strength potential.
- Create opportunities to develop resource efficient and sustainable economic approaches, which help address inequality and poverty.
- Design and deliver low carbon investment and infrastructure, and make all possible efforts to create decent, fair and high value work, in a way which does not affect the current workforce and overall economy.¹¹

The circular economy will have a significant role to play in achieving these principles across all regions in Scotland.

⁹ Scottish Government (2020) Just Transition: A Comparative Perspective <https://www.gov.scot/publications/transitions-comparative-perspective/pages/3/>

¹⁰ <https://www.gov.scot/publications/securing-green-recovery-path-net-zero-update-climate-change-plan-20182032/>

¹¹ National Strategy for Economic Transformation (2022) <https://www.gov.scot/publications/scotlands-national-strategy-economic-transformation/>



5 Rural Circular Opportunities

Since February 2020, Zero Waste Scotland has been building their knowledge and approach across Scotland’s rural economy. This has been supported through an active partnership with Highlands and Islands Enterprise (HIE). Zero Waste Scotland is now in a strong position to identify key circular opportunities for the Highlands and Islands and provide some guidance on how to nurture ideas and accelerate activities.

been gathered through the delivery of circular economy focused workshops with HIE staff (conducted in 2020). Other opportunities have been drawn from engagement with businesses and community organisations. The list highlights the significant opportunities to take forward new models, all of which have the potential to be implemented at pace through the considerations presented in Section 5.

Table 5.1 is by no means exhaustive but offers some examples of potential circular models for rural Scotland. These insights have

Table 5.1 Rural Circular Economy Opportunities

RURAL CIRCULAR OPPORTUNITY	SOCIAL IMPACT	ECONOMIC IMPACT
Growing and establishing the role of social enterprise models	New revenue generating opportunities, new local product/service provision and job creation.	Third sector & wider business community.
Sharing of resources, at a local level, between communities, private sector and public sector	Reduced wasted resources, ` new income generating activities, reduction in outgoings and the potential to keep resources within the value chain	All stakeholders in a geographical area.
Localised food production (polycrubs, vertical farming and community growing)	Innovations in food and drink sector, reduced food miles, high quality food provision, resilience in supply chain, new income generating activities and job creation.	Farmers, crofters, community groups, schools, local authority, food manufacturers and hospitality businesses.
Localised food networks/ sharing models	Sharing resources to reduce waste, reduced outgoings, new business models and income generating opportunities.	Farmers, crofters, community groups, schools, local authority, food manufacturers and hospitality businesses.

RURAL CIRCULAR OPPORTUNITY	SOCIAL IMPACT	ECONOMIC IMPACT
Increased local servitisation models	New business models, income generating opportunities, new skills requirements, employment opportunities, reduced waste, and availability of new products/services at a local level.	Social enterprise/social businesses, private sector, local authorities.
Localised energy production and management	New business models, adding value to waste, reduction in fuel poverty and support transition to net zero, community empowerment and resilience. Reducing energy costs through shared infrastructure.	Communities, social enterprise/businesses, local authority.
Utilising high nutrient by-products	New business models, new income generating activities, adding value to materials and keeping them in the value chain.	Communities, social enterprise/business, private sector, government agencies.
Extended producer responsibility	Producers taking responsibility for the end of life of their products.	Communities, social enterprise/business, private sector, local authority.
Electric vehicle car sharing	Sharing resources reduces outgoings and emissions, new business models and income generating opportunities	Communities, social enterprise/business, private sector, local authority.
Packaging free shops, using local producers	Income generating opportunities, innovative business models, stronger customer relationships and resilient supply chains.	Communities, social enterprise/business, private sector.
Reprocessing materials to make new products	New income generating activities, adding value to materials, new skills development, job creation and provision of new local products.	Communities, social enterprise/business, private sector.

RURAL CIRCULAR OPPORTUNITY	SOCIAL IMPACT	ECONOMIC IMPACT
Shared innovation spaces and equipment	Sharing resources reduces costs and waste, adding value to materials, nurturing circular innovation, creation of new income generating opportunities and skills.	Communities, social enterprise/ business, private sector, local authority, government agencies.
Building circular economy models into local planning and community development plans	Driving innovation, reducing resource consumption, creating healthier and more equal communities and potential for new income generating activities.	Communities, social enterprise/ business, private sector, local authority, government agencies.
Local sharing hubs (bikes, lawnmowers, DIY equipment, homeware etc).	Income generating opportunities, access to local products/ services, repair skills and job creation.	Communities, social enterprise/ business, private sector, local authority.
Mobile reprocessing facilities	Income generating opportunities, adding value to materials, keeping materials in use at a local level, availability of products/services at a local level.	Communities, social enterprise/ business, private sector, local authority.
Clothing/textiles re-use	Add value to materials and reduce waste streams, income generating opportunity and new skills development.	Communities, social enterprise/ business, private sector.
Local food/hospitality/green waste composting	Income generating opportunities, adding value to materials and job creation.	Communities, social enterprise/ business, private sector, local authority.
Circular models for tourism industry	Income generating opportunities, influence over visitor impact, add value to materials and resilience.	Communities, social enterprise/ business, private sector, local authority, government agencies.

RURAL CIRCULAR OPPORTUNITY	SOCIAL IMPACT	ECONOMIC IMPACT
Creative Industries sector adding value to materials	Income generating opportunities, adding value to materials, new skills development and job creation.	Communities, social enterprise/ business, private sector.
Locally grown timber and circular construction	New business models, innovative product development, skills development, job creation and opportunity to influence wider Scottish construction sector.	Communities, social enterprise/ business, private sector, local authority.



6 Circular Rural Recommendations

Through the regional partnership work delivered across the Highlands and Islands, Zero Waste Scotland has identified the following areas as being important factors for the development of circular economy models across the Highlands and Islands and wider rural Scotland.

These considerations are relevant to all of Scotland but have particular significance to rural areas given the challenges/opportunities presented by unique local economies and sparsely populated areas.

6.1 Collaboration

Influencing a change to Scotland's long-standing economic systems will require communities, businesses and the public sector to come together and collaborate on projects, resources, thinking and investments. The transition to a circular economy needs cross-sectoral action to close resource and product consumption loops. For this reason, collaboration must be a key consideration in cultivating circular and resilient rural places in Scotland.

An approach to embedding circular economy in rural areas that concentrates on individual businesses would be too narrow. It must be a collaborative process that involves a holistic range of stakeholders. This approach will require transparent communication at a local level. For the most rural communities in the Highlands and Islands it will involve collaboration across larger geographical areas (over local authority boundaries), helping to create stronger links between cities, towns and rural regions - with networked circular solutions.

The benefits of proactive, cross sector collaboration needs to be widely promoted to industry, communities and public sector organisations. Highlighting the advantages of cheaper sourcing, avoidance of wastage

costs, resilient and stable supply chains (not reliant on virgin imports and protected from resource price fluctuations) and new revenue generating opportunities. Encouraging new collaborations in rural Scotland could create real value, with opportunities for businesses and communities to share resources, products and even energy.

Support will be required to identify collaboration opportunities. Many of these relationships will be new, guidance may also be needed to help build trust and transparency across businesses, sectors and communities.

Those leading the way with circular economy models across the Highlands and Islands can play an important role in driving a collaborative approach; influencing, supporting and educating their staff, supply chains and wider community to embed sustainable, low carbon models into operations.

Existing networks, trade bodies and support organisations (with the expertise in rural economic development), should be upskilled and used to support collaborative connections. Knowledge sharing and education can inspire collaborative action, using it to drive forward innovative circular models in rural areas.

6.1.1 Collaborative supply chains & logistics

Supply chains and logistics are often more expensive and complex in rural parts of Scotland. The disruption caused by Covid-19 and Brexit highlighted the pressure on Scotland's supply chains, with rural parts of Scotland (across domestic trade, exports and imports) being disproportionately affected. Even without these unprecedented external factors, logistics across rural Scotland experience ongoing issues including

silo-working and lack of capacity. To keep resources and products in use for longer, there needs to be more innovative and efficient models in place to manage them - supply chains across rural Scotland will have to effectively reflect this change.

Supply chains developed using circular strategies will be vital in establishing looped resource cycles and wider resource recovery, remanufacturing and take-back models.

Supply chains across rural Scotland are often complex and include many actors, including live animals and people. The scope for things to go wrong is significant, which underscores the need for collaboration across supply chains to ensure that long-term planning and investment is made easier.¹² Most existing supply chains have grown organically without any thought to maximising resource value and recovery.

A full re-design of supply chain systems is needed, this re-design should include innovative approaches for the Highlands and Islands and wider rural Scotland. The design of circular supply chains for rural places will allow for the development of a productive system that can continuously flow products and resources.

Rural Circular Supply Chain Considerations:

- **Influencing:** Creating a circular economy requires a change in interactions, building stronger relationships within supply chains. Training local businesses to become certified in resource efficiency and empowering them to influence operating models across their supply chain could add huge value. Companies can push suppliers to reduce packaging and encourage suppliers to look at where they source products and materials.

- **Longer Term Relationships:** Stronger and collaborative relationships between manufacturers, logistics companies, local suppliers and rural businesses creates opportunities for reverse logistics, allowing manufacturers to take back products and materials at end of useable life. There are also opportunities to create networks across supply chains that could support the uptake of lease and product as a service models in rural Scotland.
- **Digital Technologies:** The use of digital technologies can improve logistics. The ability to track resources will play a big part in advancing circular economy models in rural Scotland. Technology will give the customer the ability to track a product's full life cycle and give manufacturers the data needed to trace and reuse assets. This traceability will allow manufacturers and suppliers to source the most sustainable goods and materials. It could also provide the data required to improve efficiencies and test new collaborative models.
- **Multi-Service Hubs:** Multi- service hubs create central points, within rural communities, to reduce the complexity of logistics. Bringing together several services to one location, where they can be jointly resourced and managed.
- **Mobile Services:** Mobile services are essential in some rural communities, creating a viable way for small firms to increase their customer base. There are existing models that already work well in rural Scotland such as care and repair and handyman schemes, which are based on local needs, are locally accountable and locally delivered. This model could be easily replicated.¹³

¹² [SRUC file:///C:/Users/Helen%20Lavery/Downloads/CPG_7_Dec_brief%20\(2\).pdf](file:///C:/Users/Helen%20Lavery/Downloads/CPG_7_Dec_brief%20(2).pdf)

¹³ <https://www.gov.scot/publications/identifying-options-developing-transport-infrastructure-food-drink-supply-chain-strengthen-resilience/>

- **Shorter Supply Chains:** Encouraging companies to source products and materials locally can create a competitive advantage. It reduces the risk of supply chain disruption and strengthens brands. Rural businesses will benefit from tailored guidance and support ahead of any future policy and legislation that requires businesses to take responsibility for their products after the point of sale (extended producer responsibility). This will allow them to actively design new supply chains and logistic systems that add value, create new jobs and strengthen local economies.

6.1.2 Clusters

Clusters are defined as a network of companies and institutions in a certain geographic location. Clusters are made up of production companies, raw materials suppliers, service providers, companies in related fields, and public institutions (such as research, training and local government).¹⁴

A cluster identifies industries, growing sectors and assets that already exist in a region. The cluster strategy aims to focus investment, to build business growth conditions, upgrade skills, create access to finance, improve infrastructure and to streamline government rules/regulations to support the development of a particular sector/industry. The cluster approach provides conditions to support the commercialisation of new products and services.

Clusters consist of companies, suppliers and service providers, as well as government agencies and other institutions that provide education, information, research and technical support.¹⁵ The approach provides a significant opportunity to accelerate circular economy development in rural places, creating a platform for collaborative working and the advancement of circular economy models.

As existing clusters continue to develop and receive investment and as new clusters are

initiated in the Highlands and Islands, circular models need to be designed and embedded at the core of these developments.

Government agencies and local authorities involved with clusters have a role to play in ensuring that products and resources are being managed in the most sustainable way. They have a responsibility to influence the development of cluster models, influencing the growth of innovative solutions for designing out waste.

In rural Scotland, it is important that communities and the social economy are included in the cluster approach. As clusters are developed, looking much more broadly than the direct sector/industry of interest will allow for materials to flow, adding value at a local level.

A clustered approach to development has already been successful in the Highlands and Islands, creating areas of activity, knowledge and expertise to drive economic activity. They create a neutral platform for academia, businesses, stakeholders and investors to accelerate activity.

Circular economy models should be a key part of strategy and policy for all cluster developments. In rural Scotland this approach creates potential for wider collaborative models, these could accelerate circular innovations, improve knowledge sharing and push for wider systems change.

¹⁴ <http://reut-institute.org/en/Publication.aspx?PublicationId=3753>

¹⁵ <https://www.ibrc.indiana.edu/ibr/2015/spring/article2.html>.

Circular Recommendations - Collaboration

RECOMMENDATION	ACTION
Collaboration support	Support to identify and nurture circular collaborative opportunities at a local/regional level (across sectors)
Creating conditions for connections	Support to create the best conditions for circular collaboration activities (e.g., through cluster development)
Promotion of cross-sectoral collaborations	Educate and promote the benefits of cross-sectoral collaboration to support circular models
Testing new models, mechanisms to remove risk	Support to trial and test collaborative approaches and models that support a circular economy, creating mechanisms that remove risk for business, communities and public sector (financial and reputational)

6.2 Innovation

Businesses and communities in the Highlands and Islands are naturally innovative, the range of barriers and unique opportunities that rurality presents drives them to think and do things differently.

Innovation has the potential to accelerate the circular economy in Scotland, circular models must be incorporated into all types of innovation: systems, business model and cultural. Businesses need to be aware that innovation is not just a consideration for product development or creating new things, it needs to be part of all business and community development. Circular approaches that allow for innovative thinking within the Highlands and Islands need to be identified and supported.

Zero Waste Scotland has identified three types of innovation that will be most significant in the development of circular rural places.

6.2.1 Systems Innovation

For Scotland's economy to become circular it requires system level change. Changes are required at all levels, from individual behaviour, business operating models and government legislation. The innovative approaches required cannot be done in

isolation, planning and action is needed that considers full economic, environmental and social impact. Systems innovation considers the complex interactions between society, economies and the environment.

Circular models can often be difficult to envisage, especially when looking to embed them in wider systems. An approach to support will need to include access to real life examples of circular economy working in rural places, where systems are in place to allow for products and materials to retain value at a local level.

Alongside the support to create a clear vision as to what circular rural places could look like, mechanisms are required that allow for truly innovative solutions to be trialled and tested, removing the risk for communities and business. This will include support with data, option analysis and trialling new approaches – removing risk and supporting the creation of replicable models that can be used to build skills and support the development of other projects.

The role of communities will be important in identifying the most appropriate system solutions for rural areas. Solutions will be influenced and designed in-line with the unique needs of a place.

6.2.2 Business Model Innovation

Business model innovation involves a company making transformational changes to their model, which can often mean delivering value to customers in new ways e.g. creating new ways to distribute products or offering new services.

Businesses and organisations are going to have to adapt their models to embrace circular opportunities.

Business model innovation should be developed using knowledge from staff, communities, key stakeholders and the wider supply chain. There is potential to strengthen markets and build new customer base through circular business model innovation.

Investment, new skills and time to implement will be needed. Business model innovation has the potential to create significant long-term positive impacts for businesses and the environment.

6.2.3 Social Innovation

Supporting rural places to transition to a circular economy is going to require cultural behavioural change to modify consumption habits and long-standing production models. Individuals are going to have to think differently about how they use products and materials; businesses will have to consider the full life cycle of their product, and supply chains will have to adapt.

Social innovation requires change from individual households, in the public sector and from national government. Local mechanisms that create consistent messaging relevant to the community will help accelerate this change. Local government has a role to play in incentivising and creating policies that will provide foundations for a shift in attitudes.

Circular Recommendations - Innovation

RECOMMENDATION	ACTION
All innovation must include circular economy considerations	Innovation support and funding should assess circularity as part of project appraisal
Examples of circular models in rural places	Using case studies from across rural Scotland and beyond to support vision
Remove risk for trialling new and innovative approaches	Funding that is focused on trialling new approaches and not reliant on a concept already being proven.
Support for social innovation	Consistent locally focused messaging on consumption and climate needs to support cultural change, to allow for products and materials to be used more responsibly





6.3 Social Business

Social enterprise and social businesses have a central role in the shift to a circular economy. Some of the most interesting and innovative projects emerging globally in the circular economy are being led by social enterprises.

There are a range of social business models already operating in the Highlands and Islands, supporting the development of circular approaches. However, in rural places these organisations tend to be small scale. Often, due to this scale, their impact is focused on local education/awareness raising. Work is required to support the scaling or replication of these proven models to achieve greater impact and systems change.

A triple bottom line reporting and accounting method (finance, environmental impact and social impact and social) is something that the wider private business sector is becoming increasingly interested in, with customers and supply chains looking for environmental/social impact to be a standard aspect of business operations. This wider approach to thinking about the economic systems – people, planet, and profit – mirrors the ambitions of the circular economy.

Social business models, alongside enabling local circular economy models, align well with the current wellbeing economy movement in Scotland and the drive towards community wealth building. The Scottish Government has already indicated that “in a world of growing division and inequality, it is more important than ever for governments to focus on broader measurements of health and wellbeing, not just wealth. The time for Gross Domestic Product (GDP) to be seen as the only measurement of a country’s success is over.”¹⁶

Circular economy models can act as the catalyst to bring community, business and private sector together to achieve common goals, that go well beyond revenue generation, at a local and regional level.

The recognition that traditional economic approaches are not inclusive, lacking acknowledgement of the range of issues that create optimal conditions for individuals and communities to thrive, has been gaining traction. Concepts like Doughnut Economics, a model created by Kate Raworth, offers a 21st century view of economics where needs are met within the means of the planet. It proposes the economy should work so that no

one should fall short of life's essentials (from food and housing to healthcare and political voice), while ensuring that collectively we do not overshoot pressures on natural systems; such as a stable climate, fertile soils, biodiversity and the ozone layer.¹⁶

As the circular economy grows in Scotland, social business models need to be encouraged. All businesses should be aware of and monitor/measure their environmental and social impacts. Social business should not be seen as a sub-section of the economy but instead as an integral part of circular economic systems – working closely with traditional industry and the public sector to help close resource and product loops.

Measuring social and environmental impact provides organisations with a narrative, that is not just sales and profit. The measurements can act as a powerful tool that can improve credibility and encourage people to buy into something greater than just a product or service. It can inspire staff and volunteers, encourage the continuous improvement of services, influence stakeholders and provide content for powerful marketing materials.

6.3.1 B Corp

The B Corp model was developed with the view that all businesses should be held accountable for the way they operate and the resulting impact on the environment and societies.

B Corp offers a definition for businesses that give as much consideration to their social and environmental impact as they do to financial returns. For a business to become an official B Corp organisation it requires certification, where a business needs to get a minimum score against a set of social and environmental standards. The initiative was launched in the UK in 2015 and there are now over 300 B Corp certified UK companies.

What does B Corp entail?

- Certified businesses are legally required to consider the impact of their decisions on their workers, customers, suppliers, community, and the environment.

- B Corp certification guarantees that a business is measuring its environmental and social impact and B Corps commit to transparency by publishing their score online.
- B Corps form a community of leaders and drive a global movement of people using business as a force for good.
- Certified B Corporations achieve a minimum verified score on the B Impact Assessment—a rigorous assessment of a company's impact on its workers, customers, community, and environment—and make their B Impact Report transparent online. Certified B Corporations also amend their legal governing documents to require their board of directors to balance profit and purpose.
- The combination of third-party validation, public transparency, and legal accountability help Certified B Corps build trust and value.¹⁷

Models like B Corp, that support companies to recognise, evaluate and improve their approach, provide frameworks that help accelerate rural Scotland's transition to a more circular economy. Companies in the Highlands and Islands are already using the B Corp model to hold themselves accountable and showcase their environmental and social credentials.

¹⁶ <https://www.gov.scot/publications/national-planning-framework-4/documents/>

¹⁷ <https://bcorporation.uk/we-are-b-corps>

6.3.2 Social Business Key Recommendations

Circular Recommendations - Social Business

RECOMMENDATION	ACTION
All businesses should be monitoring and reporting social and environmental impact	Support mechanisms that help businesses understand the value in monitoring and reporting wider impact and creation of models/templates that allow them to implement appropriate KPI's.
Scaling of rural social enterprise models	Create conditions that allow for social business to scale & and for models to be replicated.
Educating all businesses on the value of a triple bottom line approach	Creating local/national messaging around importance of social and environmental considerations
Ensuring social businesses are a key economic player	Social businesses trade like any other, they should equal advantage in the market. Support mechanisms that allow them to compete on a level with traditional private business are required.

6.4 Built Environment

As highlighted at the beginning of this document, the built environment in the Highlands and Islands and across wider rural Scotland has longstanding issues that hinder development. Rural Scotland has a high percentage of owner-occupied properties

but house prices (inflated due to tourism and market for second homes) impacts affordability, especially for young people. Commercial properties can be hard to access, due to both limited availability and the cost of rent.



Circular economy models offer a diverse holistic outlook to the built environment across rural Scotland. In a circular economy the built environment is considered as part of the wider local system – a placemaking approach. Solutions look to create developments that address issues across the economy, society and the environment.

For example, using shared spaces (business and community), retrofitting existing buildings, and using circular thinking in all new builds (renewable materials, modular builds, considering the end-of-life considerations).

6.4.1 National Planning Framework 4

The National Planning Framework (NPF4) is a long-term plan for Scotland that sets out where development and infrastructure is needed to support sustainable and inclusive growth. Published in 2022, NPF4, presents an opportunity to transform planning across Scotland.

NPF4 is the Scottish Government's most recent national planning strategy. It sets out spatial principles, regional principles, national developments and national planning policy. The framework recognises that Scotland in 2045 will be different. Radical change is needed and must be embraced so we can tackle and adapt to climate change, restore biodiversity loss, improve health and wellbeing, build a wellbeing economy and create great places.¹⁸

The Scottish Government is committed to developing planning policies that not only factor in the journey to net zero but also acknowledge the need to plan for the impacts of climate change (flood risks, water security, extreme weather events and food security etc)¹⁹. The plan highlights that climate impacts will not be equal, potentially disproportionately affecting communities in Scotland that are already disadvantaged – this includes fragile communities across the Highlands and Islands.

The strategy aims to transform the way that land and buildings are used across Scotland so that every decision made contributes to creating more sustainable places.

NPF4 has a strong focus on rural development. The policy intends to encourage rural economic activity, innovation and diversification whilst ensuring that the distinct character of a rural area and service function of small towns, natural assets and cultural heritage are safeguarded and enhanced.

The rural focused policy outcomes presented in NPF4 relate closely to circular economy models and ambitions; creating rural places that are vibrant and sustainable, where communities and businesses are supported with balanced and sustainable rural populations. The unique challenges of rurality will make many of these broad objectives harder to achieve, this will need to be addressed in strategy development, finance and future legislation.

NPF4 policy 29 highlights a number of elements that will support the development of circular economy models:

- Diversification of existing businesses
- Production and processing facilities for local produce and materials, for example sawmills, or local food production.
- Reuse of a redundant or unused building
- Small scale development that support new ways of working such as remote working, homeworking or community hubs; or
- Improvement or restoration of the national environment.

NPF4 also sets out a number of National Development Statement of Need, these are significant developments of national importance that will help to deliver the spatial strategy.

Eighteen national developments are set out, ranging from single scale projects,

¹⁸ <https://www.gov.scot/news/health-and-wellbeing-as-fundamental-as-gdp/>

¹⁹ <https://www.kateraworth.com/doughnut/>

collaborations and networks to smaller scale proposals. They are intended to act as examples of the Place Principle and place making approaches.

Highlighted in NPF4 is an ambition to develop Circular Economy Materials Management Facilities, this is of particular importance to the development of a circular economy in rural Scotland.

The material management facilities will be required to manage secondary construction materials and ensure that they are circulated back into the economy. The facilities will be designed to retain the value of resources, so that material use can be maximised - minimising the need for virgin materials and reducing the associated greenhouse gas emissions.

These models will be of huge importance in rural Scotland, where challenges in supply chains, sourcing materials and transporting materials long distances already exist. Creating such facilities will allow for materials to be sourced locally, will encourage material reuse and create new/green employment opportunities.

Zero Waste Scotland is actively working with partners in this space, researching models that will unlock material value at a local level.

6.4.2 Placemaking

Placemaking is a central concept that will support the development of a circular economy. Placemaking looks at all aspects that make a place, to help fully understand the planning/development needs. It is a system view that will help identify circular economy opportunities at a place level.

'Australian urbanist Kim Dovey described place as the 'centre of collective meaning'. It delivers for people. If we want to understand places, we should not start with the building, its efficiency or value. We start with a question to people: what kind of life do you want to lead and how can this place enable your choices .'²⁰

²⁰ <https://www.ads.org.uk/placemaking-2/>



Architecture and Design Scotland have been working to develop an understanding of placemaking approaches across Scotland's varied communities and places, using pilot projects to inform their learning. In 2020 they published *Designing for a Changing Climate: Carbon Conscious Places*, which details these approaches.

Four 'scales of places' were used for the pilots - an urban neighbourhood, a city centre, a town and a rural community to illustrate what Scotland in 2050 could look like if a collaborative approach was taken to support the design of places for the changing climate and in delivering on the United Nations Sustainable Development Goals.

From the rural pilot (delivered on Shetland) a vision was then created, showing what rural places could look like in Scotland by 2050 (Diagram 5.2). It presents a holistic model, giving an approach to the development of rural circular places, which combines existing and future developments with community engagement to influence all decisions. Points of particular interest for circular rural places within this vision include:

- Co-production of land-use and development frameworks could result in resource recovery opportunities, use of technologies, lease models and sharing economy concepts.
- Community engagement leading to better housing stock, built using circular principles.

- Local food growing, opportunities to create localised resource loops where food waste/green waste are used to make compost to feed back into the system.
- Shared retail spaces, maximising the use of spaces for business and community needs.

Community engagement must play a central role in understanding the development/planning needs in rural areas. Support is needed to create conditions that ensure public investments are not carried out in isolation (looking at one specific need/project), but that a rounded approach is taken to look at rural communities and places as a system, and building product and resource loops into the planning process.



RURAL



Diagram 5.2 Key principles Rural²⁰

1. Ground floor shops serving local businesses and services such as early years education, satellite health facilities and groceries
2. Community owned wind turbines provide electricity to the settlement through a local energy grid
3. Peatland and woodland restoration helps the area absorb carbon and balance emissions
4. Local growing and food production help the community towards food security and self-sufficiency
5. High quality, regular and reliable public transport and good active travel links connect the area to surrounding towns and villages
6. Through meaningful community involvement, new eco friendly housing was constructed using local timber and low impact renewable materials to absorb carbon

This is a 2050 Scottish rural community. Through the co-production of a rural land-use and development framework, opportunities to diversify the local economy including agroforestry, land management, eco-tourism and local service industry were identified.

Meaningful community engagement identified a need for a mix of new housing types and tenures in the area. These were designed to be low energy homes, constructed from local timber and low impact renewable materials, which both fit in to the landscape and naturally sequester carbon. All existing homes have been refurbished to be energy efficient and are powered by community owned electricity.

The local authority has invested in a high

quality public transport service to connect the area. The community development trust has supported this by securing grants to enhance the local active travel links.

A local land management group was set up to help manage the landscape for significant carbon capturing through peatland restoration and woodland planting. Local growing and food production has become a key feature of the community, helping them become more self-sufficient. Local events are often focused around the community growing space such as the annual harvest festival.

Overall the area has become known as the 'green lungs of Scotland' helping balance Scotland's overall carbon emissions.

²⁰ <https://www.ads.org.uk/wp-content/uploads/Carbon-Conscious-Places-Main-Report.pdf>

6.4.3 Built environment Key Recommendations

Circular Recommendations - Built environment

RECOMMENDATION	ACTION
Circular economy models should be a core consideration in planning and development in rural places	Developments should not be carried out in isolation, consideration should be given to the needs of the wider community, businesses and natural environment of a place
National Planning Framework 4 must continue to consider both circular principles and unique circumstances of Scotland's rural places	Through the delivery period of NPF4, circular economy must be given priority consideration and mechanisms to support rural places through the framework policy need to be considered in rural placemaking.

6.5 Public Sector

Investment (both financial and time) in circular economy models is required to build momentum and to establish circular economy as a widespread approach to managing resources in the most responsible way.

The Scottish Government estimates that total public spending in Scotland was £81 billion in 2019/20, equivalent to £14,830 per head. This estimate covers all public spending in Scotland: it includes spending by the Scottish Government and Scottish local authorities, and spending by UK Government departments in Scotland. This spend per head is higher than the UK average, more than in all the English regions and in Wales.²¹ Given this, the public sector in Scotland has a significant opportunity (and responsibility) to ensure that all investments are green, sustainable and that they are creating value for the future.

Scottish Government, departments, development agencies and local authorities need to build circularity into their decision making and project appraisal processes. The public sector must ensure that all projects and developments have clear circular strategies from inception. This will involve circular standards being built into all decision making.

6.5.1 Development Agencies & Public Sector Funding

There are two government economic development agencies that cover the most rural areas of Scotland. Highlands and Islands Enterprise (HIE), and the newly established South of Scotland Enterprise (SoSE).

Highlands and Islands Enterprise

Highlands and Islands enterprise (HIE) is the Scottish Government's economic and community development agency for the North and West of Scotland. HIE work with businesses, communities and social enterprises of all sizes and across all sectors. Their support includes providing advice, funding and property, as well as bespoke workshops and support.

HIE has been operating for over 50 years and has a long legacy in supporting economic and community growth in Scotland's most rural places, overcoming some of the challenge's rural geographies present. In early 2020, Zero Waste Scotland began a partnership with HIE, supporting them to embrace circular economy opportunities both internally and across the region.

South of Scotland Enterprise

South of Scotland Enterprise (SOSE) launched officially on 1 April 2020 as the new Economic and Community Development Agency for Dumfries and Galloway and Scottish Borders. SoSE was established by

²¹ <https://commonslibrary.parliament.uk/research-briefings/sn06625/#:~:text=The%20Scottish%20Government%20estimates%20that,to%20%C2%A314%2C830%20per%20head>

the Scottish Government in recognition of the unique circumstances of the South of Scotland, and the need for a fresh approach to drive inclusive growth across the area.²²

HIE and SoSE have a wide remit and the potential to act as enablers, supporting the development widespread circular models in rural places, alongside building them into their own operations. This will include the upskilling of staff so that circular economy considerations are a standard part of supporting organisations and appraising projects for investment.

The following range of criteria (presented in Table 5.1) highlights some of the factors

that should be built into project appraisal processes for externally funded projects. The agencies should also consider implementing similar measures for projects at their own hand and procurement processes. Such conditions on funding will help nurture the most sustainable businesses and encourage others to improve operating models.

This approach is not just relevant to development agencies, it is an approach that should be taken by all public sector bodies, including local authorities and health boards, that have significant spend and influence in Scotland's rural places.

Table 5.1 Project Appraisal Considerations

ESSENTIAL	RECOMMENDED	DESIRABLE
Has researched/ considered resource efficiency measures and aware of cost/carbon savings of these.	To measure and monitor carbon and environmental impact of operations. Actively looking to improve these.	To influence the operations of wider supply chains to improve carbon/environmental credentials
Aware of responsibility to achieve net zero (aware of some net zero policies and of SDG's)	Is aware of carbon and environmental impact of wider supply chains. Chooses suppliers that are aware of net zero agenda and can demonstrate they are a responsible option.	Have an environmental/net zero/ circular economy strategy
Some awareness and engagement with sustainability/circular economy models	Actively looking for circular economy solutions	Business model has been developed in line with circular economy principles, designing out waste where possible
Has actively switched their electricity, heat and transport to low carbon options.	Staff are aware and actively engaged in a low carbon agenda. They are equipped with some necessary knowledge and skills to engage	Extended producer responsibility is part of business model
Aware of circular economy opportunities	Measure, monitor and regularly improve the full life cycle of product/processes.	Low carbon agenda is part of the culture of business with all staff actively engaged and trained.
Staff are aware of the in low carbon agenda.	Has a net zero plan and is on track to achieve net zero targets.	Every aspect of the business has been developed with low carbon/ environmental sustainability as the focus

ESSENTIAL	RECOMMENDED	DESIRABLE
Can articulate and promote “green credentials” as part of brand	Has actively switched electricity, heat and transport to renewable/ lowest carbon options	Has a beyond net zero plan and is on track to achieve targets
	Actively following sustainable/low carbon/ circular procurement policies.	Actively influences and collaborates with supply chain and wider industry to improve carbon and environmental credentials – sharing learning widely
	Actively engaged with wider net zero policies and knowledge of SDG’s	Waste has been designed out of production/operation processes.
		Exemplar of a circular business, using experience to lead others to adapt models
		Brand has been built on “green credentials” and circular economy principles.
		Low carbon agenda is part of the culture of business with all staff actively engaged and trained. Staff collaborate with other businesses to share model and skillset.

Table 5.2 Project Appraisal Considerations continued

²² <https://www.southofscotlandenterprise.com/>



6.5.2 Public Sector Key Recommendations

Circular Recommendations - Public Sector

RECOMMENDATION	ACTION
Circular economy principles included within decision making and project appraisal criteria	To accelerate Scotland's transition to net zero, circular economy must form part of public-sector decision-making process and be included in conditions for funding appraisals

6.6 Rural Circular Jobs and Skills

Scotland is facing a distinct demographic challenge, with the population projected to decrease due to declining birth rates and an ageing population.²³

Migration is expected to be the only source of population gain by 2045. This demographic challenge is amplified across rural Scotland. For every 100 people of working age by 2043, there could be 74 people of non-working age in rural areas²⁴.

Alongside this changing demographic landscape, Scottish Government has set an ambitious target to reach a Net Zero carbon economy by 2045. The demand for jobs and skills from a green and circular economy will continue to increase rapidly due to new climate policy, legislative drivers and consumer behaviour change.

The transition to a circular economy provides opportunities to create innovative and inclusive solutions to overcome some of the challenges created by population change, e.g. digitising and streamlining processes. There will be growing opportunities for new skilled roles, in jobs with a strong focus on social impact, environmental impact and community wealth building. Circular jobs have the potential to support stronger local economies, encouraging people to study, live and work in rural Scotland.

6.6.1 What is a Circular Job?

Circular jobs are roles in repair, reuse, resource recovery and recycling. These jobs can extend the life of products and close raw material cycles meaning waste products of one process become the raw material of another.

²³ <https://www.nrscotland.gov.uk/news/2022/scotlands-population-projected-to-fall>

²⁴ <https://www.skillsdevelopmentscotland.co.uk/media/xxefrym5/rsa-rural-scotland.pdf>



For example, in the energy sector a wind turbine repair specialist would maximise the lifetime of a wind turbine to sustain and preserve what is already there.

The transition to circular economy will see an increased demand for the types of circular job roles associated with repair, reuse, resource recovery and recycling. However, to support

the wider transition it is essential that all jobs have circularity embedded into every role. Alongside core circular jobs are enabling roles. Enabling circular jobs are associated with jobs that remove barriers and support the acceleration of circular activities. For example, a product designer should embrace designing for disassembly which makes it easier for reuse at end of life.

Circular Jobs

Circular jobs are jobs in repair, reuse, resource recovery and recycling. These jobs can extend the life of products and close raw material cycles meaning waste products of one process become the raw material for other processes.

Enabling Jobs

These jobs remove barriers and support the acceleration and upscaling of circular activities as we transition to a circular economy across Scotland.

Enabling jobs could be jobs in design or digital technology or jobs that occur in the supply chain of the circular sectors and provide a service to uphold the circular jobs in repair, reuse, resource recovery and recycling.

6.6.2 Circular Jobs in Rural Scotland

The fundamental principles of the circular economy aim to prolong the circulation of materials at their maximum value, encompassing practices such as reuse, repair, redesign, remanufacture etc. These strategies open up a broad spectrum of employment opportunities, ranging from entry-level positions to highly specialized and skilled roles. Rural Scotland, with its associated industries (energy, tourism, forestry etc), businesses, and enterprises, holds significant potential to lead on the creation of innovative circular job opportunities for the local workforce.

These new job prospects span a variety of sectors and roles, with examples such as urban miners representing innovative emerging roles. Additionally, existing jobs will transform as individuals acquire enhanced skills and knowledge, particularly in incorporating circularity into new design concepts. Crucially, the growing demand for many of these positions highlights the

importance of integrating sustainability and circular thinking across all job sectors, emphasising that every role, not solely those traditionally considered “green,” will contribute to the transition.

6.6.3 A Key Growth Sector in the Rural Economy: The Energy Sector

Renewable and low carbon energy will provide the foundation of our future energy system, much of this activity will happen across rural Scotland. The potential for job creation in the rural areas associated with the energy transition are emerging quickly. Key findings from the CESAP (Climate Emergency Skills Action Plan) Pathfinder work suggest that:

- Energy transition accounts for more than 65% of all known green investment at around £58.5 bn. The largest being in offshore wind.
- The levels of known investment with a high likelihood of progressing are greatest in the Highland and Islands, Edinburgh City

Region, Aberdeen City Region, Tay cities and Glasgow City Region.

- With sectoral investment in Energy transition mostly concentrated in North of Scotland and the east coast.

renewable sources. As Scotland transitions to renewable energy there are huge opportunities to create high value circular jobs across the energy sector with a focus on resource recovery, reuse, repair and remanufacture²⁵.

By 2030 Scotland aims to generate 50% of Scotland's overall energy consumption from

Examples of Circular Jobs in the Energy Sector

Energy Transition Circular Jobs

What do circular jobs look like in the energy transition?



"Wind turbine repair specialist to maximise resource lifetime."



"Circular materials resource manager to focus on keeping materials and products in circulation for as long as possible through repair, recycle or reuse."



"Heavy lifting engineers will be required for the safe dismantling, transportation and handling of large energy infrastructure components required to bring these assets onshore."



These jobs will use waste as a resource and sustain and preserve what is already there.

Energy Transition Enabling Circular Jobs

What kind of jobs will enable the circular economy and support circular jobs in the energy transition?



"Brokers and data analysts to develop and populate a national database of decommissioned assets."



"Highly skilled industrial designers to experiment and innovate around the reuse of energy assets in other industries."



"Material Innovation specialist to identify practical applications and material solutions for entire decommissioned assets and components."



These practices will ensure more jobs become circular through incorporating digital technology, designing for the future, innovating and assessing assets for reuse or remanufacture.

The Highlands and Islands is already leading the way in creating innovative, circular jobs. Renewable Parts established in 2011 and now with a site in Lochgilphead is an example of

rural jobs being created in the local area with a focus on remanufacturing of wind turbine components.

Case Study

Renewable Parts

Renewable Parts focuses on the refurbishment and remanufacture of wind turbine components.



Skills: Technical expertise, teamwork and collaboration, communication, solution focused, innovation.

Roles: Disassembly Operatives, Fabrication Specialists, Assemblers and Product Designers.

Examples: **Workshop Technicians:** On the job training within the Innovation Centre. Damaged assets are broken down, assessed, and refurbished to send back to the market as recirculated rather than going to landfill. Using waste as a resource and sustaining assets in the wind industry.

Head Of Circularity: With an engineering background, responsible for overseeing the recirculation of component parts to ensure refurbishment is a profitable business model. Identifying future innovation projects and solutions within the wind industry.

Operations: Warehouse, marketing and sales team responsible for ensuring remanufactured wind turbine components contribute to a circular supply chain.

6.6.4 Skills for a Circular Economy

Starting a new business or transitioning an existing business to design out waste through circular strategies (see section 3.3) requires a significant shift in mindset.

Aligning any business with circular principles, such as resource efficiency, increasing product lifecycles and transitioning to products delivered as services, requires a range of skills and knowledge that many businesses may not have. Addressing skill and knowledge gaps is vital to ensure that businesses have the skills to match their drive, enthusiasm, and ideas to deliver the circular economy.

Skills and education for a circular economy needs to be driven by a range of partners and stakeholders from across

the education and skills landscape, for this to be successful it needs to be delivered in collaboration with local industry. One of the key recommendations in the Skills Delivery Landscape Review (published in 2023) is the need for a genuinely place-based approach to regional and local skills planning²⁶.

This will create the opportunities for greater local autonomy in decision making and delivery of circular skills provision at a local level, supporting rural jobs and retaining skills and expertise in the rural parts of Scotland. For rural Scotland, circularity presents a huge opportunity to create employment opportunities that encourage and support young people to train and remain in rural areas or return after education and act as mechanisms to retain material value and wealth at a local level.

²⁵ <https://www.skillsdevelopmentscotland.co.uk/media/w0ulewun/climate-emergency-skills-action-plan-2020-2025.pdf>

²⁶ <https://www.gov.scot/publications/fit-future-developing-post-school-learning-system-fuel-economic-transformation/>

6.6.5 Circular Rural Jobs and Skills Recommendations

RECOMMENDATION	ACTION
To recognise the central role of providers, particularly the huge potential of colleges in planning for and addressing skills needs in rural Scotland	Greater collaboration between local industry and college provision to identify gaps in circular economy knowledge and skills. Working collaboratively to embed new training and upskilling within the curriculum, meeting the needs of local businesses.
Empower regional economic partners including local authorities, development agencies and employer networks to co-produce future skills plans	Identify future skill needs at a local level through industries and businesses that will be delivering circular models. Share this data and invest in skills provision to meet the demand.
Greater aspiration and ambition around circular economy as a career destination.	Circular jobs should be aligned with and promoted with green jobs. Knowledge building through Developing the Young Workforce events and Career Fairs.
Motivation needed around vocational pathways where employers become places of learning, reskilling, upskilling.	Opportunities to develop circular skills through apprenticeships, internships and upskilling should be supported and developed.
Principles of circular economy embedded into curriculums.	Action should be taken to embed circular thinking, mindset and behaviours across school education and school estates. The Learning for Sustainability Action Plan and the ambitious 2030 targets can support this.
Target professional learning opportunities in the public sector.	Identify those professions that can drive circular economy behaviours and target professional learning opportunities to support knowledge building and recognition of circular economy across the local area.



7 Conclusion

As Scotland commits to creating conditions for a greener, net zero and circular economy, the Scottish Government and support bodies need to ensure that the Highlands and Islands is part of this transition.

The journey to a circular economy will not be easy, concepts will be trialled and may fail. The behavioural changes required will take time, but with the correct support, guidance, policies and investment Scotland will create greener, healthier, more resilient and circular communities nationwide.

By focusing efforts on areas where activity can be accelerated in rural Scotland, through collaboration, innovation, social business models, the built environment and public sector influence, the Highlands and Islands has the potential to lead the way in the transition to circular economic models.





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