

Climate Emergency Skills Action Plan 2020-2025

Key Issues And Priority Actions



Skills
Development
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Ministerial Foreword

When we first announced that we would develop a Climate Emergency Skills Action Plan last year, we were directly responding to Scotland's declaration of a Climate Emergency and our increased legislative targets to meet net zero emissions by 2045. This transition will transform our economy and society, including the kinds of jobs we do and skills we need to thrive in a net zero economy. Now, facing rising unemployment following the economic downturn from COVID-19, this focus on supporting people into good, fair, green jobs is more important than ever.

Enhancing access to skills training is critical for successful decarbonisation and will help create new, high-quality green jobs, enhanced regional growth, and improved access to growing 'green markets' across the globe for Scotland's diverse businesses. Key to our

transition to net zero is ensuring that everyone can benefit from the opportunities and no one is left behind. This is what we mean by a 'Just Transition'. This approach also recognises that we can only achieve this transformation if we all work together and everyone is enabled to play their part. Ensuring people have the skills to engage and succeed in Scotland's green recovery from COVID-19 and transition to net zero is at the heart of this Climate Emergency Skills Action Plan.

The skills system has a key role to play in responding to changing demand and supporting individuals, in all communities, to access emerging opportunities. We recognise that any labour market disruption must be mitigated by investment in skills to support people to move into sustainable jobs in the net zero economy. This includes not only the

specific technical skills that may be needed to achieve a just transition, but also the higher-order and general skills that will be required.

The Climate Emergency Skills Action Plan sets out a clear direction for the reorientation of our skills system, and signals the role that businesses, communities and individuals across Scotland will play in achieving this. As a Government we have set out a series of ambitious decarbonisation targets and policies to support action towards these targets, and this plan forms a key part of our plans to achieving them.



Roseanna Cunningham

Cabinet Secretary for Environment, Climate Change and Land Reform

Jamie Hepburn

Minister for Business, Fair Work and Skills

Chair's Foreword

By Frank Mitchell

Chair, Skills Development Scotland and Chief Executive, SP Energy Networks



As its effects become increasingly evident in the world around us, climate change has become one of the defining issues in recent times.

It has moved up the agenda politically, socially, culturally and economically, with Green Recovery and the transition to a net zero economy being a central theme in the Programme for Government.

This builds on legislation passed last year setting the target of reducing Scotland's net emission of all greenhouse gases to zero by 2045 at the latest. Energy transition and the decarbonisation of transport have been targeted as areas of opportunity and growth, and in November 2021 the eyes of the world will fall on Scotland as Glasgow hosts the 26th UN Climate Change Conference.

For many years this has been central to my work as chief executive of SP Energy Networks, with the surge in demand for renewable energy needing to be met not only by changes in infrastructure, but changes in our skills base as well.

This is why I am acutely aware that Scotland's climate emergency response with a skills

transition that allows us to grasp the opportunities open to us and overcome the challenges that exist.

Over the next two decades the core competences of a wide range of jobs need to be made more directly relevant to the needs of a low carbon economy, and with the majority of the 2045 workforce already in employment, the primary challenge for Scotland is about iterative change.

That means updating and refocusing people's skills so they can contribute to rising productivity and help Scottish firms capture a share of growing international markets.

While the climate emergency is in itself a defining challenge, we must acknowledge it is happening while employment and skills are being reshaped by digitalisation, automation and the response to COVID-19.

These disruptive forces complicate public policy responses, but they also offer a window in which we can improve the skills of people in declining or vulnerable sectors of employment.

Meaningful collaboration is required across many agencies and partners to face up to

this task, as climate change is a cross-cutting issue requiring consideration within all strategic decision-making. The skills system must play its part managing the transition so it can quickly enable more individuals and businesses to prosper in a shifting economy.

The development of this Action Plan has been supported by a wide range of individuals and organisations who helped identify and prioritise the key actions which will address these skills challenges and opportunities.

It draws on the existing evidence base to set out the nature and scale of the long-term skills challenge presented by a move to net zero in the context of a just transition, and identifies immediate actions to support the development of the skills needed to meet the climate change challenge, particularly in relation to sectors identified as key to the transition to net zero.

In addition, it identifies longer-term actions that will allow the skills system to respond more effectively and sets out a route map that will allow for the Climate Emergency Skills Action Plan to function as a responsive and evolving document.

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Executive Summary

1. At a time when Scotland is focusing on its response to COVID-19, facing the challenges of Brexit and adjusting to increasing digitalisation, the Climate Emergency remains the single biggest long-term challenge.
2. Reaching the target of zero greenhouse gas (GHG) emissions by 2045, with a 75% reduction by 2030, will require transformational change across the economy and society, and will provide significant opportunities for:
 - developing new, quality green jobs
 - embedding green and circular economy skills
 - increasing access to growing global green markets for Scottish businesses
 - stimulating regional growth
 - providing enhanced access to nature and the environment.
3. The economic downturn and consequent unemployment brought about by COVID-19 has provided an opportunity for a green recovery, with Scotland's strategic response to recovery and renewal reinforcing the need for a focus on jobs and skills.
4. Green jobs include those in renewable energy, the circular economy and zero waste, and the nature based sector with wider 'green skills' sitting on a spectrum ranging from highly specific requirements in sectors directly supporting the transition to net zero such as energy, transport, construction, agriculture, and manufacturing, through to more generic requirements across all sectors to thrive in a net zero economy.
5. Green jobs can be categorised as:
 - **new and emerging jobs** that relate directly to the transition to net zero e.g. hydrogen cell technicians, carbon monitoring technicians, and urban miners
 - **jobs affected by the transition to net zero** that will need enhanced skills or competencies e.g. architects and environmental consultants
 - **existing jobs that will be needed in greater numbers** as the result of the transition to net zero e.g. insulation installers, energy assessors and designers and multiskilled on-site operatives.
6. Technical skills will be key, but soft skills will also play an important role in driving behavioural change, communicating to businesses, communities, and individuals the ethics and urgency of these changes and ultimately the benefits of the transition to net zero.
7. The skills system has a key role to play in responding to changing demand and supporting individuals, in all communities, to access emerging opportunities. We recognise that any labour market disruption must be mitigated by investment in skills to support people to move into sustainable jobs in the net zero economy. This includes not only the specific technical skills that may be needed to achieve a just transition, but also the higher-order and general skills that will be required.
8. The CESAP has been developed through engagement with Industry Leadership Groups and an Expert Group comprising Skills Development Scotland, the Scottish Funding Council, Zero Waste Scotland, the Scottish Cities Alliance, NatureScot, Scottish Government's Domestic Climate Change and Skills Divisions, Highlands and Islands Enterprise, Scottish Enterprise, South of Scotland Enterprise, the University of Edinburgh and the University of Strathclyde.

9. Potential opportunities for jobs growth and skills implication were identified across five broad areas of economic activity that will make a significant contribution to net zero transition. These areas reflect national priorities and investment within the Scottish Government's Programme for Government to reduce energy demand and greenhouse gas emissions and adapt to climate change:
- Energy transition (including oil and gas, on and offshore wind, hydrogen, electricity, carbon capture and storage)
 - Construction (including the retrofitting of housing and non-residential properties)
 - Transport (including road transport, railways, domestic aviation, shipping and aircraft support vehicles)
 - Manufacturing (with a focus on engineering)
 - Agriculture and land use management (including forestry).

10. Building on the analysis of the evidence base and the skills implications for each of these, six priority areas for action were agreed, each with a skills focus.
- **Priority 1: Supporting a green labour market recovery from COVID-19**
 - **Priority 2: Building better understanding and evidence of future skills needs to support Scotland's transition to net zero**
 - **Priority 3: Developing the future workforce for the transition to net zero**
 - **Priority 4: Driving awareness and action to support reskilling and upskilling for the transition to net zero**
 - **Priority 5: Ensuring fairness and inclusion in the skills system as part of a just transition to net zero**
 - **Priority 6: Taking a collaborative approach to ensure a skills system responsive to changing demands.**

11. The CESAP sets out a clear direction for the changes needed in the skills system, and signals the role that industry, communities and individuals across Scotland will play in achieving this. The focus is on the key actions needed over the next five years to 2025, with an update of the plan by the end of 2023.
- **The transition to net zero will take place over the next 25 years, but there is also a compelling need to act now.** The CESAP focuses on both immediate action as well as the **longer-term systemic change** that will need to take place by 2045. Building on the lessons of the National Transition Training Fund established in response to COVID, we will establish a **Green Jobs Workforce Academy**. The Academy will support existing employees, and those who are facing redundancy, to assess their existing skills and undertake the necessary upskilling and reskilling they need to secure green job opportunities as they emerge.

- The scale and pace of change needed across all sectors will demand a **significant realignment of our investment in education, training and work-based learning towards green jobs**. Skills Development Scotland and the Scottish Funding Council, through their joint Skills Alignment Team, will ensure that our annual investment in skills through work-based learning, further and higher education and upskilling and reskilling is fully aligned behind our economic ambitions for a net-zero transition. We will also establish a **Green Jobs Skills Hub that will cascade intelligence into the skills system on the numbers and types of green jobs that will be needed over the next 25 years**.
 - **The transition to net zero will require behaviour change by both employers and individuals**. The CESAP takes a broader view than traditional approaches to skills investment planning and considers the wider educational changes that will need to take place across society and the public, private and third sectors. **The Green Jobs Skills Hub will play a central role in raising awareness amongst employers and individuals of the need for behaviour change, and support them to take action to drive behaviour change and develop the leadership and management skills that will be required for a net zero future**.
 - **Key to our transition to net zero is a ‘Just Transition’ that ensures that everyone benefits from new opportunities**. It will be important to mitigate potential risks and provide targeted support to communities and parts of the population who are most likely to lose out from structural changes in employment. This will be particularly important in areas where jobs are declining, and where there are growing levels of insecure work. **Our investment in the Green Jobs Workforce Academy will, alongside targeted activity to address labour market inequalities, play a key role in supporting a Just Transition**.
 - **The skills investment required to support the transition to net zero will be driven by the wider change and investment that will take place in the economy**. The stimulation of that demand will be driven by employers, by National and Local Government and by Enterprise agencies. The CESAP complements the demand created in the Programme for Government 2020/21 and Climate Change Update Plan. **We will establish a Climate Emergency Economic & Investment Leadership Group to provide leadership, oversight and to drive the alignment of skills investment with our national economic ambition**.
12. The CESAP focuses on **immediate actions** to support the development of the skills needed to meet the climate change challenge and **longer term actions** that will allow the skills system to respond more effectively for the Climate Emergency Skills Action Plan to function as a **responsive and evolving document**.
 13. The actions have significant implications for **employers, individuals and skill providers** to support the transition to net zero. This will be a significant and long-term challenge and will require agility from the skills system to respond to the change and disruption throughout Scotland’s transition to a net zero economy.

1: Building a Climate Emergency Skills Action Plan for Scotland

Background

Scotland has taken a leading role internationally in recognising and responding to the climate emergency. It was among the first governments to declare a climate emergency in April 2019 and subsequently increased the legislative ambition to reach zero greenhouse gas (GHG) emissions by 2045 and 75 per cent reduction by 2030¹. It was among the first governments to set out a Circular Economy Strategy in 2016, recognising the role that resource use has on climate change. Four fifths of Scotland's carbon footprint is caused by the consumption of goods, services and materials². With the successful decarbonisation of the electricity grid, decarbonising the material elements of the economy has become increasingly important to mitigate the effects of climate change. Scotland's policy goals and specific targets have been set out in the 2018 Climate Change Plan (CCP) and the 2020 CCP update published alongside this Climate Emergency Skills Action Plan (CESAP).

Reaching these targets will require a transformation across the economy and society. This transformation will provide opportunities for the development of new,

quality green jobs, embedding green and circular skills, increasing access to growing global green markets for Scottish businesses, stimulating regional growth and providing enhanced access to nature and the environment. However, there are also risks that some people and places could be left behind unless steps are taken to mitigate this. The Scottish Government is committed to ensuring a 'Just Transition' which means working together to involve people in decision making about the move to net zero and ensuring everyone can access the benefits whilst being protected from the risks.

Developing a skilled, flexible, and adaptable workforce will be central to a successful transition and this was recognised in the Future Skills Action Plan published in 2019. This will enable people to access the job opportunities that will be created through the investment needed for a net zero economy including in renewable energy, retrofitting buildings, enhancing our environment and the promotion and embedding of the circular economy. Recognising the importance of skills and training to support people into green jobs, the Programme for Government 2019-20 set out plans to develop a CESAP to support Scotland's just transition to net zero GHG by 2045.

¹ Scottish Government (2020) [Climate Change Policy: Emissions Reduction](#)

² Zero Waste Scotland (2020) [Carbon Metric Summary Report 2017-18](#)

A Green Recovery

Building on the recommendations of the Advisory Group on Economic Recovery and the Enterprise and Skills Strategic Group Sub Group, the Scottish Government has committed to a green recovery from COVID-19 to create a fairer, greener and more prosperous country³. This approach seeks to create a more sustainable economy in the longer term with greater resilience in the face of future shocks whilst conserving and growing natural assets⁴. Unlike traditional fiscal stimuli, a green recovery package has a focus on infrastructure projects which include the development of net zero buildings, energy storage, clean and circular industry, transport and greenhouse gas removal, alongside nature-based solutions⁵. Evidence suggests that this type of investment can have a greater economic impact in terms of jobs and growth compared to 'grey' stimulus measures⁶. This is made possible by significant growth in the production of green goods and services which generates additional jobs, and upskilling workers to move them from high polluting industries to 'green' jobs within a low carbon economy.

As the energy supply gets greener as part of Scotland's Energy Strategy⁷, its proportion of Scotland's carbon footprint diminishes. As a result, Scotland's consumption of goods and services now accounts for approximately 80 per cent of the national carbon footprint (half of which is embedded in imported goods and services). Decarbonising the material elements of Scotland's economy is therefore increasingly important to meet the Paris Climate Agreement target⁸. There is now broad consensus that widespread adoption of circular principles is essential to this, therefore progress needs to be accelerated across all other sectors in order to maintain progress towards the 2045 and deliver transformative change.

A green recovery also provides an opportunity for Scotland's businesses and people to become global leaders in a net zero transition and to export their knowledge and skills across the world. The Climate Emergency Response Group (CERG) has published a range of policy recommendations to help inform Scotland's green recovery, based on 'benefit to the economy, climate, and wider well-being'⁹.



3 Scottish Government (2020) [Economic Recovery Implementation Plan](#)

4 COP26 Universities Network briefing (2020) [A Net-Zero Emissions Economic Recovery from COVID-19](#)

5 University of Oxford (2020) [Building Back Better: Green COVID-19 Recovery Packages Will Boost Economic Growth and Stop Climate Change](#); IPPR (2020) [Faster, Further, Fairer: Putting People at the Heart of Tackling the Climate and Nature Emergency](#)

6 European Commission (2014) [Assessing the Implications of Climate Change Adaptation on Employment in the EU](#); OECD (2013) [Greener Skills and Jobs for a Low-Carbon Future](#)

7 Scottish Government (2017) [Scotland's Energy Strategy](#)

8 United Nations Climate Change (2018) [The Paris Agreement](#)

9 Climate Emergency Response Group (2020) [Eight Policy Packages for Scotland's Green Recovery](#)

A Just Transition

A green recovery can play an important role in delivering a 'just transition' to a net zero economy. The COVID-19 crisis has highlighted the need to prepare for the transition to net zero to mitigate the risk of exacerbating inequalities through abrupt or unmanaged structural shifts to the economy. With a remit to 'advise on a net zero economy that is fair for all', the Just Transition Commission (JTC) published an Interim Report in February 2020¹⁰. The Commission developed a range of 'immediate action' recommendations for the Scottish Government as part of a green recovery report¹¹. The Commission has stressed the need for the Scottish Government to take immediate, decisive, and sustained action to reduce our emissions while also addressing existing inequalities in work, housing, and transport. A key recommendation from the Commission's green recovery report is the need to align the skills system to support net zero jobs.

It will be important to mitigate potential risks and provide targeted support to communities and parts of the population who are most likely to lose out from structural changes in employment. This will be particularly important in areas where jobs are declining, and where there are growing levels of insecure work.

Any approach to redeployment of workers from declining industries and sectors must consider regional and local contexts. Alongside this, fair work has been identified as a key component of the Scottish Government's Economic and Labour Market strategies. Ensuring that jobs are fulfilling, secure and well-paid is critical to inclusive growth across Scotland and redressing systemic labour market inequalities.

Access to jobs and training associated with delivery of the net zero targets will likely remain skewed towards certain socio-economic groups, unless this issue is proactively addressed. Critical sectors of the economy such as construction, manufacturing, and agriculture are male dominated, with underrepresentation of women and ethnic minorities. Additionally, those in lower skilled, low income or unstable employment are less likely to have the funding, information or flexibility to take advantage of new training opportunities. Rurality, and large variations in labour market outcomes between regions across Scotland are also long-running challenges. While there has been significant progress in improving the attainment of qualifications across Scotland, regional disparities in qualifications and skills levels persist.

Concerted efforts are required to ensure that the transition to net zero is just and inclusive, reducing existing inequalities rather than exacerbating them.

¹⁰ Scottish Government (2020) [Just Transition Commission Interim Report](#)

¹¹ Scottish Government (2020) [Just Transition Commission: Advice on a Green Recovery](#)

Wider Challenges

The transition to a net zero economy in Scotland by 2045 presents a significant challenge but cannot be viewed in isolation. There are several other challenges which will also impact significantly on employment and skills demand and supply in Scotland in the immediate and longer term.

- **COVID-19** poses a major challenge for economic policy makers in Scotland and across the world. There are difficult trade-offs between managing the health emergency, the impact on the economy, the education of young people and the long-term consequences for individuals' mental and physical wellbeing. The course of the pandemic remains uncertain, but measures to control the spread of the virus have already impacted heavily on many of Scotland's sectors and may have a lasting effect on both work and skills provision. Although support has been available through the UK Government's Job Retention Scheme the pandemic has significantly increased unemployment across the economy, and more acutely for certain demographic groups including disabled people, ethnic minorities, women and young people.
- **Brexit** has most independent commentators projecting a significant reduction in the size of the UK and Scottish economies as a

consequence, irrespective of whether there is a deal at the end of the transition period. Although difficult to quantify, there is also a concern that Scotland's and the UK's effective labour supply will be significantly reduced as large numbers of EU workers return home or move to other EU countries.

- **Digitalisation** with the growing importance of data and digital innovations for Scotland's economy and labour market is increasingly bringing about major changes in the nature of employment and the demand for skills required to make Scotland a more competitive economy. Digitalisation is also a key enabler of the circular economy, bringing new market opportunities to Scotland. The three inter-related developments which together can be categorised as digitalisation and each with the potential for impact are:
 - **Automation** where machines or electronic processes carry a range of functions, often repetitive in nature, previously or currently performed by workers. Three in ten current jobs in Scotland involve tasks that are at high risk from automation¹².
 - **Artificial intelligence (AI)** where the processes previously impossible without the application of human intellect that can now be carried out by computers
 - **Machine learning** where computers 'learn' how to do tasks more effectively through the processing of large volumes of relevant data.
- The demographic challenge, alongside migration flows, is the principal influence on the supply of people to the labour market. The ageing of Scotland's population projected for the next 20 years and beyond raises challenges in terms of skills supply and the size of the working age population.
- The drive towards a net zero economy, Brexit, and COVID-19 all generate potentially seismic shifts in employment across sectors, whilst at the same time each of these challenges also demands an appropriate skills response. This, in turn, may have an impact on how easy or otherwise it will be to address the skills challenges and maximise the opportunities brought about by a transition to net zero. These challenges are highly interdependent, ensuring a just transition to net zero means addressing quality of work, questions of fairness and inclusion, and inequalities in the system. The CESAP needs to be developed and implemented with full awareness of these broader challenges, the approaches in place to mitigate them, and their interactions. By recognising these interdependencies, the CESAP will lay the foundations for effective skills planning for the transition to net zero.

12 Fraser of Allander (2019) *Scotland in 2050: Realising our Global Potential*

2. Supporting Net Zero: The Contribution of Skills

The Rationale for a Climate Emergency Skills Action Plan

To meet Scotland’s net zero targets in a just transition, there is a need to adapt to the changing demand for skills, not just in sectors with a critical contribution to make to net zero, e.g. energy transition or construction, but across the whole economy. This requires both a skills system and a labour market which are more agile, proactive, responsive and resilient than ever before.

The structure of the labour market and skills demand will undoubtedly be affected by this transition. Demand will likely increase the availability of quality green jobs in sectors including construction, energy, and manufacturing. However, in some industries, for example, oil and gas extraction there will be new jobs, displaced jobs, and job losses driven by both changing demand and the impact of regulation intended to reduce GHGs.

The Scottish Programme for Government made a commitment to the development and publication of a CESAP ‘providing a framework for the skills investment needed to meet the climate change challenge and successfully support Scotland’s transition to a low carbon economy in a just and inclusive manner’. This underpins the Scottish Government’s policy directive to drive demand through investment in a range of measures to support the green economy and a transition to net zero, as set out in Figure 2.1.



Figure 2.1 Route to 2045: Supporting the Green Economy and a Transition to Net Zero

As part of the transition to net zero, the skills system has a key role to play in understanding changing demands, tailoring the supply of skills to meet growing demand, mitigating risks as they arise, and supporting individuals to secure emerging opportunities. The anticipated disruption to labour markets can be mitigated by investment in skills to support people to move into sustainable, resilient jobs in the net zero economy. An adaptive skills system is vital to maintaining the productive performance of economies and, through retraining people at risk of loss of livelihoods, ensuring a just and inclusive transition.

To different extents, the transition to net zero will have implications for jobs at all skill levels and across all occupational groups¹³. Analysis of demand highlights the differential impacts across occupations, with a majority of skill demand being limited to adaptations in existing skillsets rather than uniquely new skill areas. However, across the economy, around one in five jobs in Scotland may be affected positively or negatively by a transition to net zero emissions, with one in ten jobs necessitating re-skilling¹⁴.

Whilst the extent of change largely depends on the structure of the economy and national policy context and response, the appetite of individuals to support the transition will also be important. Positive indicators from oil and gas suggest that more than three quarters of workers are said to be ‘positive about retraining’ into the renewable energy industry as part of the net zero transition¹⁵. To implement a just transition, it will be important to position skills to form part of a systematic response to changing economic conditions, preparing workers for new and adapted job roles, embedding circular thinking and mindset across disciplines, while retaining skills and expertise in regional labour markets.

13 ILO (2019) *ILO Skills for Employment Policy Brief. Skills for a Greener Future: Challenges and Enabling Factors to Achieve a Just Transition*

14 Cambridge Policy Consultants (2020) *Evidence base for a Climate Emergency Skills Action Plan (Final Report)*

15 Scottish Renewables (2020) *GVA and Jobs Created by Deployment of Renewable Electricity Projects in Scotland*

Understanding Green Jobs and Skills

Whilst challenges remain in quantifying the number of green jobs in the economy, there is no doubt of their significant and growing contribution. The ONS's Low Carbon and Renewable Energy Economy (LCREE) dataset estimates that as of 2018, there were 23,100 employees (Full-Time Equivalents, FTE) in the Low Carbon and Renewable Energy Economy¹⁶ in Scotland; this constitutes 10 per cent of the total UK workforce (224,800 employees). Since 2014, the number of employees in Scotland has been broadly level compared to a decrease of five percent (11,100 employees) at the UK level.

There is no single agreed definition of 'net zero skills', 'green skills' or 'climate emergency skills' with the terms often being used interchangeably. There is a recognition that green jobs include renewable energy, circular economy and zero waste, and renewable energy and the nature based sector with wider 'green skills' sitting on a spectrum ranging from highly specific requirements in sectors directly supporting the transition to net

zero such as energy, transport, construction, agriculture, and manufacturing, through to more generic requirements across all sectors to thrive in a net zero economy, in various occupations such as lawyers, accountants, programme managers, financiers, teachers and trainers¹⁷. While technical skills will be key, soft skills will also play an important role in driving behavioural change, communicating to businesses, communities, and individuals the ethics and urgency of these changes and ultimately the benefits of the transition to net zero.

Three categories of green jobs have been identified, providing a framework against which to gauge likely skills demand and develop and focus interventions when the CESAP moves to its implementation phase¹⁸. These are:

- **new and emerging jobs** that relate directly to the transition to net zero e.g. hydrogen cell technicians, carbon monitoring technicians and urban miners
- **jobs affected by the transition to net zero** that will need enhanced skills or competencies e.g. architects and environmental consultants

- **existing jobs that will be needed in greater numbers** as the result of the transition to net zero e.g. insulation installers, energy assessors and designers and multiskilled on-site operatives.

In line with the commitment by the Scottish Government to net zero by 2045, ultimately the vast majority of jobs and skills should be 'green' to recognise individual responsibility to curtail environmental damage and to thrive as an integral part of a net zero economy.

These categories provide a useful framework for the CESAP to identify tangible and targeted actions to address the net zero skills challenge whilst also aiding understanding of the market demand for green jobs and the skills needed to meet this challenge. This will, in turn, boost our understanding of the transition to net zero pathways being supported by policy and economic action (for example, the Scottish Government's CCP update), particularly in sectors identified as key to the transition to net zero including agriculture and land use, construction, energy transition, manufacturing, and transport.

¹⁶ Defined by the ONS as: offshore wind, onshore wind, solar photovoltaic, hydropower, other renewable electricity, bioenergy, alternative fuels, renewable heat, renewable combined heat and power, energy-efficient lighting, energy-efficient products, energy monitoring, saving or control systems, low carbon financial and advisory services, low-emission vehicles and infrastructure, carbon capture and storage, nuclear power, fuel cells and energy storage systems.

¹⁷ Cambridge Policy Consultants (2020) Evidence base for a Climate Emergency Skills Action Plan (Final Report)

¹⁸ This categorisation draws upon a range of sources:

OECD/Cedefop (2014) [Greener Skills and Jobs](#)

Sofroniou, N. and Anderson, P. (2020) [The Green Factor: Unpacking Green Job Growth](#)
Dierdorff, E; Norton, J ; Drewes, D; Kroustalis, C; Rivken, D; Lewis, P. (2009). [Greening of the World of Work: Implications for O*NET®-SOC and New and Emerging Occupations](#)

Transition to Net Zero: Underpinning Skills

The demand for specific technical skills will grow across certain sectors and occupations as part of the transition to net zero. However, there is also a range of cross-cutting, higher-order skills which will be in demand across the whole of the economy to support this transition and as part of a future thriving net zero economy, for example, digital and data skills and meta-skills.

- Decarbonising the material elements of Scotland's economy is becoming increasingly important and there is broad consensus that widespread **adoption of circular principles** is essential to this and must include a focus on embedding circular skills and the 'greening' of jobs, particularly in those sectors critical to delivering transformative change. Extensive technical skills are required to drive circular economy approaches, such as systems thinking, eco-design, product management, material science and digital as well as the meta-skills of self-management, social intelligence and innovation.

- The CESAP evidence report demonstrated the increasing demand for higher level data skills across a number of sectors key to the realisation of a net zero economy. Digital skills are emerging as potentially important in several of these sectors, but they are already very important for a range of other sectors, including financial services and manufacturing. In the implementation of a CESAP, as well as the need for these skills to be clearly specified so that appropriate provision can be put in place or planned, close attention needs to be paid to skills development outside sectors key to the transition to net zero. Looking to the future, the jobs that are expected to be in high demand include data science, data analytics, artificial intelligence and cyber security, hence not only are digital skills important in the context of achieving net zero, but digital will be a necessary aspect of future-proofing the labour market.
- **Meta-skills are timeless, higher order skills that support the development of additional skills and promote success in whatever context the future brings.** These skills help learners embrace the inevitable changes to industry, job roles and society,

by embedding life-long learning, human capabilities, problem solving capabilities, adaptability and resilience¹⁹. They can be grouped into the three broad categories of self-management (focusing, integrity, adapting, initiative), social intelligence (communicating, feeling, collaborating, leading) and innovation (curiosity, creativity, sense-making, critical thinking). Meta-skills have a number of potential benefits for the transition to net zero:

- encouraging high performing workplaces that aid a strong recovery
- developing capability to respond to, and become catalysts for, change
- working collaboratively to build on green opportunities
- developing innovative thinking for pursuit of new green solutions and develop growth mindset
- creating a resilient workforce
- aiding in shifting mindsets towards circular thinking.

¹⁹ Skills Development Scotland (2018) Skills 4.0: A Skills Model to Drive Scotland's Future, Centre for Work-based Learning in Scotland

Education and Skills Provision

Universities and colleges, along with skills providers, local authorities, and the third sector play a central role in providing the training, skills and innovation needed by employers across Scotland. The magnitude and rate of change now required across all sectors of the economy to achieve net zero demands a significant realignment and ramping up of 'green' skills and education provision. Assessment of gaps and development of net zero-aligned curricula must be done in close and coordinated collaboration with employers, industry bodies, unions and government agencies. The work of the Joint Skills Alignment Team across SDS and SFC will have a critical role to play to ensure alignment of the skills system with these green economic ambitions.

Crucial will be ensuring that the diverse timelines of green job creation and skills demands across the economy are matched with those of skills and education provision, taking account of institutional capacities, the build and roll-out times for new courses, and other competing demands (such as maintaining core education delivery under COVID-19 restrictions). Equally important will be the use of a place-based lens for more effective matching of local and regional

demands with educational provision; one that maximises the opportunities for reducing inequalities and increases accessibility to education.

Agile and responsive work-based learning (WBL) including Foundation, Modern, and Graduate Apprenticeships will also support these ambitions. The transition to net zero will require good quality, flexible, and accessible WBL which equips individuals with in-demand green skills, provides them with effective learning pathways into green jobs, and creates an increasingly productive and resilient workforce.

In addition to direct skills and education provision, our universities and colleges play a lead role in the research and innovation that will underpin the net zero transition. The roles of the Energy Skills Partnership (ESP) in engaging with the college sector to establish a responsive, flexible approach to emerging priorities, and of the Scottish Funding Council (SFC) in supporting the Innovation Centres programme which aims to enhance innovation and entrepreneurship across Scotland, are both key in this regard. Ultimately, building capacity in both further education (FE) and higher education (HE) across Scotland to enhance the generation of new net zero-aligned technologies, businesses and knowledge exchange represents a powerful lever for realising a green economic recovery.

A Just Approach to Net Zero

Chapter 1 emphasised the centrality of a just transition to Scottish Government's vision of a future net zero economy. This transition provides an opportunity to address both environmental and socio-economic issues, and the development and implementation of the CESAP follows this principle. The importance of a just approach can be considered in terms of both the people and places who will be affected by the jobs and skills implications of the transition.

A Focus on People

With a marked shift in our economy towards net zero, there is an opportunity to narrow labour market inequalities. The CESAP should contribute towards addressing these inequalities by recognising the distinct barriers faced by certain groups, and by supporting fair access to skills, training, and jobs flowing from the transition. The following section considers the barriers faced by these groups, defined by age, disability, ethnicity and gender. However, it is also important to recognise the interlinked nature of these barriers, whereby a person's age and ethnicity, for instance, combine to make barriers to fair access even greater. If these considerations are not made, it is likely that such barriers and subsequent inequalities will merely be reproduced in a future net zero economy.

Age

Although more than half of 18 to 34-year olds want a career which protects the environment, four of the five broad areas identified as key to a transition to net zero have workforces with higher proportions of older workers than Scotland's national average²⁰. Many of the pathways into energy and manufacturing require qualifications that are a challenge for some young people, while action is required to change young people's perceptions of sectors like agriculture and construction²¹.

Improving sector attractiveness across the green economy should aid informed decision-making at key junctures in a young person's career development. It is crucial to ensure that young people have the appropriate guidance and support to access skills and training opportunities and, subsequently, have access to the quality green jobs flowing from the transition to net zero. Developing the Young Workforce (DYW) groups have an important role to play here in supporting young people, and work experience opportunities and Foundation Apprenticeships will also be key in this regard. Additional support through the Young Person's Job Guarantee, which includes the UK Government's Kickstart programme, has been recently introduced. However, as the

JTC recommends, any job guarantee scheme 'should provide meaningful work that gives valuable experience' to young people²². Any challenges are likely to be exacerbated by the widespread disruption that young people have experienced to their education due to COVID-19, with many making the transition to employment at a time of heightened economic instability. Without appropriate support to overcome these challenges, young people could face sustained barriers to 'good' employment opportunities in a future net zero economy²³.

An ageing workforce in Scotland raises the possibility of discrimination, with older workers less likely to be supported through upskilling and reskilling opportunities compared to younger colleagues, for instance. Investing in the skills of older workers and implementing more flexible, inclusive workplace practices that promote intergenerational working would help retain experience in the workforce. This approach would benefit younger entrants into these sectors through additional mentoring and upskilling support as well as contributing to addressing the key issue of Scotland's labour supply.

Disability

Disabled people have a disproportionately lower level of representation in the workplace, and often face significant issues within the workplace such as poor promotion prospects, lack of support, and poor working conditions. They are also more likely to be in part-time, transient, and/or low-paid employment. Alongside this, research suggests that disabled people are "disproportionately affected by climate change impacts"²⁴. COVID-19 has also had a profound, and often disproportionate impact, with an increased likelihood of death or ill health, higher numbers shielding and being unable to work, challenges in accessing exercise and socialising, interrupted health care, and the exacerbation of existing health issues²⁵.

The transition to a net zero economy offers opportunities to address labour market barriers faced by disabled people and maximise the opportunities to capitalise on the strengths and skills they can bring to Scotland's workforce. Building upon the increase in flexible home working which has occurred in response to COVID-19 would not only be expected to reduce emissions from unnecessary travel, but with the right support and equipment it could help many disabled people gain and sustain employment. The Scottish Government's Fairer

20 Cambridge Policy Consultants (2020) Evidence base for a Climate Emergency Skills Action Plan (Final Report)

21 Green Jobs for Youth: [Boosting Decent Jobs for Youth, Greening the Economy](#)

22 Scottish Government (2020) [Just Transition Commission: Advice for the Green Recovery](#)

23 Scottish Government (2020) [Just Transition Commission: Advice for the Green Recovery](#)

24 ILO (2019) Policy Brief: [Persons with disabilities in a just transition to a low-carbon economy](#)

25 SCOPE (2020). Press release, [Disabled people's COVID-19 death rate as much as 11 times higher than non-disabled people](#)

Scotland Employment Action Plan²⁶ sets out how barriers to employment which disabled people face will be addressed, and how the employment gap will be reduced (by at least half) by 2038 and the transition to net zero presents opportunities to put this into practice.

Displaced Workers

In areas of substantial labour market change driven by the transition to net zero, some jobs are expected to grow while others are expected to decline. There is a need to manage this transition for workers who are displaced, mitigating risks and enabling access to opportunities. There are some clear opportunities for redeployment of labour, with only minor upskilling or reskilling necessary. For instance, with falling employment levels in oil and gas, the energy sector has been redeploying available skills in renewable energy and the core competencies and experience in large scale infrastructure schemes and in safety critical environments allow a relatively smooth transfer to renewable energy²⁷. However, redeployment will not be as straightforward for all displaced workers. It is important to provide targeted support to these individuals, the communities in which these declining industries are based, and the sections of the population most likely to face new challenges

from structural change in employment. The CESAP will take a proactive approach to help meet the needs of growing sectors alongside measures to redeploy workers from declining sectors. Opportunities for retraining through a National Transition Training Fund (NTTF) should be identified for displaced workers from carbon intensive industries, while Partnership Action for Continuing Employment (PACE) will also play a key role in support to individuals and businesses.

Ethnic Minority Individuals

There is very little evidence to date on the impact of a transition to net zero on those from Black, Asian, and Minority Ethnic (BAME) backgrounds. However, BAME individuals are underrepresented in four of the five sectors key to Scotland's transition to a net zero economy. Additionally, Scottish Government's Expert Reference Group on COVID-19 and Ethnicity has found that people from ethnic minority groups have been disproportionately impacted by COVID-19, with their concentration in low-paid work, or work that cannot be done from home, resulting in higher exposures to both health and employment risks²⁸. Scotland's Race Equality Framework and Action Plan highlights the labour market, workplace, and income inequalities faced by ethnic minority

people, and seeks to ensure that there is 'equal, fair and proportionate access to employment and representation at all levels, grades and occupation types in Scotland's workforce' for the BAME population²⁹. These ambitions also apply to the transition to net zero, with the CESAP playing an important role in ensuring fair access to and progression as part of the labour market opportunities flowing from the transition. Addressing representation of ethnic minority individuals in industries such as energy and manufacturing not only forms part of a just approach but would also broaden the labour supply into these sectors in the face of anticipated increases in demand.

Gender

Women are more likely to have lost their job or had their hours cut due to the COVID-19 pandemic than men, but the new jobs created by a green recovery package are likely to be disproportionately based in male-dominated industries, such as construction (85 per cent men) and manufacturing (71 per cent men)³⁰. Many women face additional barriers to accessing training opportunities as a result of inflexible working patterns, childcare responsibilities and their concentration in low-paid and part-time work³¹.

26 Scottish Government (2018) [Fairer Scotland Employment Action Plan](#)

27 Energy and Utilities Skills Partnership (2017) [Many Skills One Vision: Energy and Utilities Workforce Renewal and Skills Strategy: 2020](#)

28 Public Health England (2020) [Beyond the Data: Understanding the Impact of COVID-19 on BAME Groups](#), Scottish Government (2020) [Expert Reference Group On COVID-19 And Ethnicity: Initial Advice & Recommendations On Systemic Issues](#)

29 Scottish Government (2017) [A Fairer Scotland for All: Race Equality Action Plan and Highlight Report 2017-2021](#)

30 CEP (2020) [A CEP COVID-19 Analysis - Jobs for a Strong and Sustainable Recovery from COVID-19, Close the Gap \(2020\) Disproportionate Disruption: The Impact of COVID-19 on Women's Labour Market Equality](#), NOMIS Official Labour Market Statistics (2020) [Workforce Jobs by Industry \(June 2020\)](#)

31 House of Commons (2016) [Women and Equalities Committee Gender Pay Gap](#)

Without concerted efforts to support more women into areas key to a net zero economy by encouraging employers to change their recruitment and employment practices, as well as implement flexible working arrangements,, the transition may reinforce or even exacerbate labour market gender inequalities. However, the transition also provides a prime opportunity to address occupational segregation and, in the process, narrow the gender pay gap. In line with the Scottish Government's Gender Pay Gap Action Plan, the CESAP actions need to take account of the gender dimension to the transition, identifying and implementing tangible action to support women into the green jobs which will be central to a future net zero economy³².

A Focus on Place

A place-based approach is crucial to the effective development and implementation of the CESAP. The distinct characteristics of local and regional economies mean that the transition to net zero will bring different local opportunities and challenges, and therefore variations in demand and supply of skills. Consequently, a 'one-size-fits-all' approach for skills development will not work.

Scotland's cities are aiming to be agents of change in delivering the transition to net zero. Achieving net zero by 2045 will require major investment in supporting the industries of a net zero future, such as renewable energy, to grow and develop at a city level. It will also require initiatives to develop supply chains in a 'circular economy' focused upon more local production, low waste and recycling. Connectivity – between but especially within cities – will also have to change. The comprehensive programme of activity identified by the Scottish Cities Alliance (SCA) in its Transition to Net Zero Action Plan, demonstrates the key contribution to be made by Scotland's cities over the short, medium and longer term to the net zero agenda and in turn, the requirements of cities for skills development and re-training. Moreover, several cities have indicated that they wish to go further and achieve net zero 'well before' 2045³³.

Scotland's rural economy, on the other hand, is uniquely well placed to take advantage of a net zero transition due to its natural resources, supply chain expertise, physical infrastructure, and early track record in the energy transition. Many of the skillsets central to the net zero transition already exist in the rural economy, for instance land management and peatland

restoration. These skillsets place the rural economy in a strong position to support this transition and capitalise on the opportunities it presents.

Yet the economies of cities, town and rural areas are intrinsically linked. Cities will continue to provide jobs, particularly high-skilled ones, to town residents. Cities will also rely on their rural neighbours for access to labour and to house essential related low carbon economic activities and industries. Rural economies, on the other hand, will in part rely on cities to provide the training and talent needed to take up the new low carbon jobs established in more rural areas. Both local and city region approaches will therefore be critical to upskill and reskill the workforce to benefit from the transition to net zero.

Meaningful engagement with Highlands and Islands Enterprise (HIE) and South of Scotland Enterprise (SOSE), the SCA, Scottish Enterprise (SE), Zero Waste Scotland and the Circular Economy Skills and Education Hub (CESEH) as well as other regional partners such as colleges and local authorities, will be key to continuous understanding of the distinctly local opportunities and challenges that a net zero transition brings.

32 NOMIS Official Labour Market Statistics (2020) [Annual Population Survey \(Regional\): Ethnicity by Industry \(June 2020\)](#)

33 For example, Edinburgh has set its target to 2030. See [Edinburgh City Council \(2020\) Our Climate Target: Net Zero by 2030](#)

3: Opportunities and Skills Implications

Identifying Areas of Opportunity

Building on the CESAP evidence base³⁴ and broadly aligned to Scottish Government's Climate Change Plan³⁵, this chapter focuses on five broad areas of economic activity that can make a significant contribution to achieving net zero transition, and also offer potential opportunities for jobs growth in the short term. These five areas reflect national priorities and investment, within the Scottish Programme for Government, to reduce energy demand and GHG emissions and adapt to climate change and include:

- energy transition (including oil and gas, on and offshore wind, hydrogen, electricity, carbon capture and storage)
- construction (including the retrofitting of housing and non-residential properties)
- transport (including road transport, railways, domestic aviation, shipping and aircraft support vehicles)
- manufacturing (with a focus on engineering)
- agriculture and land use management (including forestry).

Although set out as distinct areas, there is significant cross-over in terms of activity, occupations and skillsets e.g. where reducing environmental impact in one sector relies on the action of another and where there may be significant movement of skilled workers between sectors.

Whilst there is still much to be done in terms of tightening up definitions of the jobs that are central to the transition to net zero and sectors in which they sit, it is possible to highlight several areas of opportunity being created and the likely skills implications that flow from it. Focusing on these opportunities will ensure that Scotland has the people necessary to take advantage of new and emerging jobs, jobs affected by the transition, and existing jobs needed in greater numbers to support the transition. These opportunities and skills implications are explored by broad area of activity, alongside a recognition of the importance of place in delivering net zero.

The opportunities and skills implications set out have been built up from analysis of the research evidence base, consultations with expert stakeholders and engagement with industry skills groups.

Sector-based Opportunities and Skills Implications in a Net Zero Transition

Energy Transition (Including oil and gas, on and offshore wind, electricity, hydrogen and carbon capture and storage)

The energy sector in Scotland is a major employer and source of economic output. In 2019, the sector had an estimated 74,600 jobs and generated over £8 billion GVA. Forecasts for the sector suggest continued falling employment levels of 11 per cent between 2019 – 2029 (approx. 8,000 jobs), but rising productivity of 27 per cent over the same period³⁶. The National Grid also estimates that the energy transition will drive the need for almost 50,000 jobs in Scotland by 2050³⁷.

Energy transition involves a shift from a reliance on fossil fuels for power and heat to renewable and zero emissions energy sources including solar, wind, hydrogen, hydro and wave power. It also includes efforts to reduce and conserve energy use, through the design, construction and retrofitting of buildings to minimise energy demand and waste. The transition to net zero will require an estimated four-fold increase in the levels of renewable energy deployed³⁸.

34 Cambridge Policy Consultants (2020) Evidence base for a Climate Emergency Skills Action Plan (Final Report)

35 Scottish Government (2020) [Update to the Climate Change Plan 2018-2032](#)

36 SDS (2019) [Sector Skills Assessments – Energy](#). Note these figures underestimate the sector which is difficult to quantify using standard datasets which continue to rely largely on Standard Industrial Classification codes, which has no separate category for Renewables. The classification only covers direct employment so does not consider the wider supply chain (e.g. wind turbine manufacture).

37 National Grid (2020) [Building the Net Zero Energy Workforce](#)

38 Committee on Climate Change (2019) [Net Zero Technical Report](#)

The energy sector is at the forefront of the shift to a net zero economy and there are significant opportunities for technical innovations that enable the decarbonisation, at scale, of high emitting sectors³⁹. Over the last decade there has been a major shift in the consumption of electricity in Scotland, with 76 per cent of electricity consumption in 2018 coming from renewable sources⁴⁰. This has contributed to displacing fossil fuels and in turn reduced emissions by some 12.9 million tonnes of CO₂ in 2018. The Scottish Government's Energy Strategy, due to be updated in Spring 2021, has the development of smart, innovative local energy systems as a priority and there are a number of projects for integrated energy systems being considered through the Low Carbon Infrastructure Transition Programme⁴¹. The oil and gas industry is a significant component of our economy and part of our energy mix, with Scotland's Energy Strategy already identifying a crucial role for the sector in the energy transition that is required to move to an economy and society that generates net zero greenhouse gas emissions.

The production of sustainable hydrogen for use in homes and industry – as well as for export – presents a major opportunity for Scotland. not only to support our net-zero

ambitions but to create and protect jobs and support sustainable economic recovery and growth. Some of this Hydrogen production will be underpinned by Carbon Capture and Storage and relies upon advancement in this complementary technology.

Meanwhile, as oil and gas production in the United Kingdom Continental Shelf (UKCS) is expected to decline, coupled with technological advancements, it is anticipated there will be fewer workers required offshore, therefore workers with transferable skills will be available to transition to other energy industries⁴². It is worth noting that even in the most rapid transition scenario, oil and gas will still provide 45% of global energy needs in 2040 and that a thriving UK supply chain will be crucial in ensuring net-zero ambitions are achieved. The electricity grid infrastructure investment, which will be required to transmit the additional renewable power will also offer employment opportunities. Growing investment and innovation in the energy sector is expected to result in increased demand for labour and skills, with rising pressure for adapted and new skills at all levels. While the sector's overall share of Scotland's total employment is set to decline slightly in the next decade, there will be accelerated diversification of traditional oil

and gas business into wider energy and other sectors and significant growth in renewables. Most new roles in the sector will build on existing skillsets from oil and gas, industrial research, manufacturing, and civil engineering.

39 Scottish Government (2018) [Climate Change Plan](#); Committee on Climate Change (2019) [Net Zero: The UK's Contribution to Stopping Global Warming](#)

40 See: <https://www.scottishrenewables.com/our-industry/statistics>

41 Scottish Government (2020) [Low Carbon Infrastructure Transition Programme](#)

42 The Oil & Gas Technology Centre (2020) [Closing the Gap: Technology for a Net Zero North Sea](#)

Skills Implications

- There is a need to better **understand and quantify** the demand for skills to support the transition to net zero in the energy transition, particularly in relation to timelines and timing for transferability of skills. Sectoral research is already underway, for example through the Energy Skills Alliance and the Scottish Offshore Wind Energy Council's Skills Group, but understanding the timing of demand in areas such as hydrogen and carbon capture, utilisation, and storage (CCUS) will be crucial to mitigate risks of a time lag on demand for skills and those who become displaced from the sector.
- The **transferability of skills across occupations and industries** provides a strong foundation for employees to transition from high to low carbon energy production. The re-deployment, and where necessary re-training, of oil and gas workers will be key to service replacement demand over the next decade and to meet the labour and skills needs of a growing renewables sector.
- **Short, flexible, training interventions and transition training** will aid the redeployment of these workers particularly in areas such as infrastructure installation and servicing.
- Vital to renewable energy are **core competencies and experience in large scale infrastructure** schemes and in **safety critical environments**, plus specific skills in gas engineering and operations and power grid management⁴³.
- **Reframing of skills and work practices to contribute to the decarbonisation efforts of oil and gas sector, as well as to the renewables sector**⁴⁴. This reframing will also be required for **technical and higher-level occupations** including instrumentation and control, design, chemical, commissioning, civil and electrical engineering, as well as initiatives to support recruitment and retention of apprentices and graduates.
- **Reskilling in relatively low numbers should meet demand for carbon storage technicians, fuel cell technicians, and hydrogen production researchers in line with use of hydrogen and CCUS**. This is due to the transferability of core skills from extractive, energy, and chemical sectors into these emerging areas of activity⁴⁵.
- **Implications of a significant increase in the use of hydrogen and CCUS are still unclear, but stakeholders expect heightened demand for labour and technical skills in the collection, treatment, transport and storage of waste gas**, and a need for repurposing oil and gas platforms and engineering of pipelines.
- Discussions with stakeholders indicate a **growing demand across the sector for data and digital skills**, as well as specific demand for data scientists and analysts.
- Stakeholders perceive the need to **better educate and communicate the wider opportunities that the energy transition can bring to the existing workforce**.

⁴³ Energy and Utilities Skills Partnership (2017) [Many Skills One Vision](#)

⁴⁴ Oil and Gas Authority (OGA). (2020) [OGA unveils strategy to support net zero](#)

⁴⁵ Carbon Capture and Storage Association (2014) [The economic benefits of carbon capture and storage in UK](#)

Construction (including retrofitting of housing and non-residential properties)

The construction sector is a large employer in Scotland, with 233,800 jobs in 2019 and an economic output of £11.1 billion GVA. Although the sector has experienced a recent fall in employment levels as a result of the COVID pandemic and faces further uncertainty in the short-term, forecasts suggest growth of around 10 per cent to 256,600 jobs by 2029 and a rise in output to £12.9 billion⁴⁶. The construction sector is also Scotland's biggest user of natural resources, consuming approximately half of all resources used annually, with construction and demolition work also responsible for nearly half of all Scotland's waste annually⁴⁷.

Improving the energy efficiency of residential and non-residential buildings is essential to realising the net zero target and Scotland has set out ambitious targets to improve, design, build and retrofit residential and commercial buildings⁴⁸. Transforming how we heat our buildings and make them more energy efficient, both new and existing, will be essential moving forward. With population growth and increasing numbers of single person households, it is estimated that

Scotland will need to deliver at least 28,000 new homes per year to 2035⁴⁹.

By 2030, we need to see a reduction in emissions from housing of around 70 per cent and from non-domestic buildings of around 60 per cent compared to today. This will require significant improvement in the energy efficiency of Scotland's building stock, as well as rapid and accelerating roll out of zero emissions heating technologies (such as heat pumps, heat networks and potentially hydrogen). While these targets provide many opportunities, there remains a significant challenge given the age, building type and materials used, particularly in cities, that can be difficult and expensive to improve. Switching to more responsible consumption through adopting more circular ways of building will significantly reduce Scotland's emissions from the use of resources and the waste of materials. There are also similar opportunities and challenges in relation to heating systems, with investment in heat networks, hydrogen demonstration, and mass deployment of heat pumps.

To achieve our buildings decarbonisation targets, the sector needs to adapt building design, construction methods and materials for new and existing buildings, improve thermal efficiency and move to zero emissions

heating systems. Decarbonising heating involves improvements to thermal efficiency, for example improved insulation and the use of low carbon heating sources such as heat pumps and heat networks. New technologies and approaches will continue to involve as options are explored and developed, for example role of hydrogen in heating is being explored. Adapting to innovation will be central to the sector and will also drive the need for focused upskilling.

⁴⁶ SDS (2019) [Sector Skills Assessment: Construction](#)

⁴⁷ Scottish Environment Protection Agency (2020). [Waste from all sources: summary document and commentary text](#)

⁴⁸ Scottish Government (2017) [Energy Strategy – Scotland's Energy Efficiency Programme \(SEEP\)](#).

⁴⁹ Scottish Parliament (2019) [New Housing and Future Construction Skills](#).

Skills Implications

- Meeting Climate Emergency targets require radical change and transformation at pace. There is need to address calls for a ‘step-change’ from the Climate Change Committee (CCC) in the development of **low carbon skills** in construction⁵⁰.
- There is an anticipated increased demand for **professional level skills** for jobs in planning, design, surveying and management and the deployment of nature-based solutions.
- Embedding of the Energy Efficiency Skills Matrix that sets out requirements for installers, designers and retrofit coordinators that links with MCS, PAS 2030 and PAS 2035 standards. The college network is currently developing additional provision to meet anticipated demand for upskilling.
- There will be a requirement for the **development of specialist knowledge and skills round retrofit, zero emissions heating systems and heat networks for**

professional, technical and craft roles, as well as data and smart systems skills for delivering energy management in buildings services.

- **Upskilling of existing roles and adaption of training will be needed across new build and retrofit** to embed best practice and ensure performance gaps are addressed.
- Growing demand for a wide range of **Digital Construction skills** including **increased adoption of Building Information Modelling (BIM) systems**.
- **Leadership skills to support cultural change and change management** as new technologies, behaviours and systems will need embedded.
- There is a need to **demonstrate competence and recognise adaptability and transferability of skills** across the sector, for instance through a ‘skills passport’ scheme⁵¹.

- There is an **ageing workforce** with a third of construction workers aged 50+, and an estimated 50,000 construction workers retiring by 2029.

The sector faces labour shortages with an estimated need for 79,100 construction workers by 2029. For many of these roles the main entry route is through apprenticeships, some of which take four years. Sufficient employment opportunities are essential to support this entry route. These **shortages will likely be exacerbated by Brexit** through a combination of sector growth and the return migration of EU workers.

50 Committee on Climate Change (2019) *UK housing: Fit for the future?*; National Federation of Builders (2019) *Transforming Construction for a Low Carbon Future*

51 ECITB (2020) *Skills Transferability Report*

Manufacturing (with a focus on engineering)

Manufacturing largely sits within the engineering sector in Scotland, which is a major employer and a key stakeholder in delivering the net zero target. Engineering accounts for 159,100 jobs, an economic output of £9.8 billion and is an important contributor to international trade⁵². The engineering sector is expected to make a significant contribution towards the transition to net zero, with the Scottish Government planning a fall of 21 per cent in industrial emissions between 2018 and 2032⁵³.

Change for the sector will come with the introduction of technological innovations that reduce waste and improve the capture of emissions, and through lowering energy loss in manufacturing processes. As countries across the world begin to institute more stringent legislative requirements to encourage the consumption of low-carbon goods and to improve the management of resources, opportunities for Scottish manufacturing lie in both the design and production of goods for the environmental market and responding to the wider consumer demands for such products in Scotland and abroad.

The drive towards net zero coincides with longer-term structural changes in manufacturing that have resulted in falling employment levels but rises in productivity and demand for higher-level skills. The introduction of automated manufacturing processes aligns with the use of technology to reduce emissions, waste, and the management of energy use.



52 SDS (2019) Sector Skills Assessment – Engineering

53 Scottish Government (2018) Climate Change Plan: Third Report on Proposals and Policies 2018 – 32

Skills Implications

- **Rising demand for intermediate and higher-level skills, managerial, professional, and technical roles, associated with a focus on energy efficiency and low carbon.**
- **Data and digital skills to become central to more automated manufacturing processes**, requiring work-based upskilling and reskilling of the existing workforce.
- Increased need for **design, analytical and technical skills** in new manufacturing processes (eco-design) and remanufacturing processes to support the **circular economy**, as well as **quality controllers, with an emphasis on dismantling products, testing component parts and restoring products to a ‘good-as-new’ status.**
- **Resilience and adaptability in the face of technological change** will be crucial for manufacturing to make the most of opportunities flowing from the net zero transition. Upskilling will be key, with most of the core skillsets required for the transition already present in the workforce.
- However, **upskilling initiatives must be accessible to SMEs, who make up 97 per cent of manufacturing businesses in Scotland.**
- **Sustainable engineering and manufacturing processes should be embedded as a core skillset in further and higher education engineering curriculums and Scottish Apprenticeships** to instil the fundamental principles of sustainability in entrants to the sector and communicate its importance to the future net zero economy.
- The **National Manufacturing Institute Scotland (NMIS)** will support businesses to **define their skills needs and support the transition to net zero, as well as providing training and professional development courses** to help both managers and technical staff to understand the implications and applications of advanced manufacturing. A Manufacturing Skills Academy will be established to develop a catalogue of advanced manufacturing modules. This will support skills development and help drive efficiency and productivity across manufacturing and other industrial sectors⁵⁴.

Transport (including road transport, railways, domestic aviation, shipping and aircraft support vehicles)

The transport sector employs around 109,000 people. Over the last decade, employment levels in transport have risen marginally in tandem with a movement towards low emission vehicles as part of the commitment to reducing environmental impact⁵⁵.

Transport is the highest emitter of GHG, responsible for approximately 28 per cent of UK GHG emissions in 2018⁵⁶. Figures indicate that emissions from Heavy Duty Vehicles (HDV) are set to rise over the coming years⁵⁷. The Scottish Government has prioritised reducing the environmental impact of transport, setting a target to lower emissions by 37 per cent in the sector between 2018 and 2032⁵⁸. Ambitions for transport, such as those to replace petrol and diesel vehicles with electric vehicles, rely on a large-scale change in the behaviours of businesses and households and major investment in infrastructure. Similarly, there are also ambitions to decarbonise passenger railways and domestic flights, and to develop and use renewable fuel for ferries and shipping⁵⁹.

With significant opportunity for technical innovation, design of low carbon transport products and an international market for knowledge and expertise, decarbonising transport has the potential to contribute substantially to economic growth especially in the areas of batteries, hydrogen for transport and zero emissions rail. With these opportunities come a range of skills implications for transport as part of the transition to net zero.



55 ONS (2018) [Business Register and Employment Survey](#)

56 BEIS (2020) [2018 UK Greenhouse Gas Emissions](#)

57 Scottish Government (2020) [National Transport Strategy](#)

58 Scottish Government (2018) [Climate Change Plan: Third Report on Proposals and Policies 2018 – 32](#)

59 Scottish Government (2020) [National Transport Strategy](#)

Skills Implications

- **Supporting ultra-low emission vehicles (ULEV) uptake may require over 65,000 people to undertake training in maintenance, installation and sales, as well as the emergency and roadside assistance, and repair of vehicles and network points** in order to provide full coverage of skills needed for the expansion of hybrid and electric vehicle use and their networks in Scotland⁶⁰.
- This **will drive demand for short training courses to reskill electricians and mechanics.**
- **A key requirement of efforts to reduce emissions from HDVs is to baseline the skills in Scotland required to transition from traditional fossil-fuel based engines to low carbon HDVs. The baselining exercise will inform our understanding of the extent to which Scotland has, or is developing, the skills necessary to support the transition to low carbon HDVs.**
- **Railway electrification** and the introduction of new technologies **will stimulate demand in both professional and technical roles including electrical engineers, hybrid technology engineers, sensor technicians and rail technicians with expertise in signalling and control systems.**
- **Investment in eco-driving skills has the potential to save £300 million in fuel costs and 3 million tonnes of emissions over a 5-year period across the UK⁶¹.**
- Stakeholders view that sector attractiveness must be improved for young and new entrants, so **enhancing careers information and providing clearer pathways into careers in sustainable transport** are key challenges⁶².

60 Optimat (2020) Ultra-Low Emission Vehicle Skills Baseline Study. Report for Transport Scotland and Skills Development Scotland

61 UK Government (2010) Department of Energy and Climate Change: Meeting the Low Carbon Skills Challenge

62 DoT (2016) Transport Infrastructure Skills Strategy

Agriculture and Land Use

Agriculture and land use make a dual contribution to the net zero target. The sector has the opportunity to reduce GHG emissions from agriculture, while also increasing the levels of carbon dioxide brought absorbed through peatland restoration. Sector measures can help to enhance and protect biodiversity, as well as contributing towards flood mitigation and climate adaptation. Agriculture and land use are therefore vitally important to Scotland's net zero targets.

Taking a broader sector definition of food and drink that includes crop and animal production and fishing with value chain manufacture of food and beverages, the sector employed an estimated 94,800 in 2019 and generates economic output of £5.9 billion (GVA)⁶³. The sector is forecast to experience falling levels of employment, some 5 per cent (4,600 jobs) by 2029, but rising levels of productivity of 17 per cent over the same period.

Scotland's agricultural and related land use represent the second largest source of net emissions after transport, although forestry makes a net contribution to reducing carbon emissions⁶⁴. The Climate Change Plan update sets a target of 24 per cent emissions reduction from agriculture over 2020-2032 and sets a target to increase annual woodland

creation to 18,000 hectares a year by 2024 and to restore 250,000 hectares of degraded peatlands by 2030⁶⁵. Across the land use sector, awareness of the importance of the climate emergency to agriculture and land management is growing. The establishment of an independent inquiry of farming and climate change, known as Farming for 1.5 degree (jointly set up by the NFUS and Nourish Scotland), as well as the Advisory Panel to drive the National Farmers' Union (NFU) response, demonstrates commitment to being an industry leader in tackling climate change. This will support NFU Scotland in its work to ensure that Scottish agriculture can remain vibrant, profitable and productive while delivering benefits for the climate and biodiversity.

These targets underline the need for a transformation in agricultural and land use practices, which the CCC estimates needs a fifth of UK agricultural land to shift to alternative uses that support emissions reduction, including low carbon farming opportunities in schools, afforestation, biomass production and peatland restoration⁶⁶. The generation of green energy to replace fossil fuels, potentially producing additional energy for sale back into the grid, creates additional income avenues for farms.

These opportunities as part of the transition, however, also provide challenges around the management of livestock and boosting renewable energy production and use, including bioenergy⁶⁷.

63 SDS (2019) [Sector Skills Assessment – Food and Drink](#)

64 Scottish Government (2019) [Scottish Greenhouse Gas Emissions 2017](#)

65 Scottish Government (2020) - [Climate Change Plan: Update](#)

66 Committee on Climate Change (2019) [Net Zero: The UK's Contribution to Stopping Global Warming](#)

67 National Farmers Union (2019) [Achieving Net Zero: Farming's 2040 Goal](#)

Skills Implications

- **Structural change** is being driven by the pursuit of sustainable agricultural practices and rising levels of manufacturing technology introduced into food production⁶⁸. **This change is reflected in demand for higher-level skills in business and commercial management to respond to changing markets⁶⁹, as well as in current skills shortages of engineers, food scientists/technologists and, at an intermediate level, dairy farmers.**
- **Managing change to low carbon and regenerative farming will require important management and technical competences.** Farmers and agricultural managers **need the skills to undertake or commission technical tasks required to reduce emissions. This will create additional demand at intermediate level requiring updated level 3 and 4 qualifications.**
- **Precision farming** aligned to changes in equipment and machinery will see **an increasing demand for digital skills and ongoing professional development.**
- Stakeholder engagements indicate that **upskilling and reskilling** the workforce to address the challenges and opportunities presented regionally by the transition to net zero **will be critical, which is a challenge in a sector that is predominantly made up of micro-businesses.**
- **An ageing and heavily male-dominated workforce** in agriculture and land use **requires the replacement of retiring older workers alongside increasing the attractiveness of the sector to a broader demographic**, with some 45.1 per cent of workers in agriculture and fishing over the age of 50 years – significantly higher than the average for all of Scotland (33 per cent).
- **Raising Awareness of GHG emissions and the skills required for their reduction is** vitally important to ensure a sector wide contribution to the net-zero target. Such a ‘culture change’ in Scottish agriculture will form part of a ‘transformation pathway’ through which the sector can support the transition to net zero, as outlined by the independent inquiry on farming and climate change in Scotland⁷⁰.
- Changing demand and an ageing workforce heighten the need to **refresh careers information and pathways** into the sector which reflect both future technical requirements and the scope for the sector to contribute significantly towards addressing climate change. This is particularly important in the context of a sector with fewer formal qualification pathways and upskilling opportunities.

68 SDS (2019) [Sector Skills Assessment – Food and Drink](#)

69 Scottish Government (2018) [A Future for Scottish Agriculture](#)

70 Independent Inquiry on Farming and Climate Change in Scotland (2020) [Farming for 1.5: A Transformation Pathway](#)

Place-based Opportunities, Challenges and Skills in a Net Zero Transition

A focus on place will be important to supporting a just transition to a net zero economy for all of Scotland's communities. Each city, town and rural area faces a range of different skills challenges and has a different combination of assets with which to respond to the opportunities presented by the transition to net zero. This underlines the clear benefit in strengthening linkages and networks across Scotland to allow for the sharing of learning and best practice across businesses, individuals, and place-based organisations.

Urban Areas

- The majority of Scotland's GHG emissions come from our **urban local authorities where most people, housing, transport and vehicles, and business facilities are located**⁷¹. For urban areas, the transition to net zero presents a combination of opportunities and challenges, particularly in relation to addressing the issues of transport, the built environment, the generation and distribution of power and the disposal of waste.

- Advice for businesses and households to improve resource efficiency, reduce energy costs and develop more sustainable business practices - whilst perhaps a more indirect approach - will, over time, help to deliver the step-change in behaviours that are required.
- The **most significant challenge in terms of tackling transport emissions comes from the most urbanised areas**, with the Scottish Government Climate Emergency Response Group (CERG) asking each of Scotland's city centres to be vehicle emission free by 2030. The work of organisations including the SCA, Scotland's Towns Partnership (STP), and Scotland's Regeneration Forum (SURF) mean that Scotland's urban areas are well-positioned to mitigate challenges and capitalise upon opportunities stemming from the net-zero transition. The SCA has set out key developments required to support the transition to net zero, including growth in low-carbon heating, non-domestic energy efficiency and low carbon power generation in city assets, transport, and waste. These align closely to the CESAP and will help to deliver a cohesive place-based approach.
- Scotland's urban areas have an enviable skills base, trusted institutions, strong infrastructure, and an increasing sense of 'place' in which it is attractive to live in. The majority of Scotland's universities and colleges are in urban settings, especially in cities and are the **major source of graduates** with the potential to contribute significantly to the transition to net zero if they can be retained by the mix of employment, social and leisure opportunities on offer.
- This will be particularly important because Scotland's cities are not immune from the implications of Brexit. Net migration to Scotland has meant an inflow of skills and working age migrants in Scottish cities in recent years.

⁷¹ UK Government (2020) UK local authority and regional carbon dioxide emissions national statistics: 2005 to 2018

Rural Areas

- The rural economy is poised to play an **important role** in the transition to net zero.
- In **rural areas of Scotland, recent years have seen a significant diversification of the ‘rural economy’, building on traditional land-based sectors to encompass a broader range of activity, including tourism, food and drink, the creative industries, aquaculture and marine, and importantly, energy and renewables.** The Skills Action Plan for Rural Scotland⁷² sets out the key issues and priority actions to ensure that employers have access to the skilled workforce that they need and that individuals can maximise the opportunities in their locality.
- **Scotland’s rural areas help counter national GHG emissions and can make a significant impact through the planting of trees, peatland restoration, and the generation and adoption of renewable energy.**
- There are also likely to be **opportunities in rural areas in terms of** agricultural diversification, the expansion of on and off-

shore renewables, food and drink through an increased demand for local food, eco-tourism, nature based solutions to flood risk and coastal management, low carbon transport driven by innovative local solutions and construction through zero carbon construction projects and the installation of renewable energy and insulation products.

- There will **also be opportunities flowing from biomass and biofuels usage, from improved woodland creation and management, encouraging the development of renewable energy** and developing the supporting infrastructure to facilitate this.
- Emerging research commissioned by NatureScot highlights **challenges around skills development across various land-based sectors; recruitment difficulties faced within forestry, challenges associated with a declining working age population in areas where nature-based jobs offer significant opportunities and a reliance upon migrant labour** likely to be adversely impacted by both COVID-19 and a post-Brexit UK immigration system.

- Whilst rural areas provide a smaller volume of graduates than their urban counterparts, rural universities and colleges across rural Scotland have a central role to play in their localities and many producing graduates **with a range of specialist skills** to support the transition to net zero that will enable individuals to secure emerging opportunities, for example, in environmental management.

Shaping Skills Priorities

This chapter has presented the unique contexts of the sectors which are key to supporting the transition to a net zero economy and the distinct, but frequently overlapping, opportunities and challenges.

This analysis provides useful insight, but collaborative and sustained action is required to further understand the skills needed to support Scotland's transition to net zero. This provides a basis on which to take immediate action to support the development of our current and future workforces, and this greater understanding will sustain targeted, evidence-based programmes and interventions in the months and years to come.

While many will benefit from the transition, there is a need to manage the transition for those workers and communities likely to face challenges to accessing the opportunities. It is more important than ever that Scotland's skills system is agile and responsive to changes in demand flowing from the ongoing transition to net zero. Collaboration with partners from across the enterprise and skills system will ensure that we can efficiently and effectively respond to the needs of businesses, individuals, and communities across Scotland.

Chapter 3 has laid the foundations for action and work is already underway across Scotland's sectors and regions to mitigate the challenges and capitalise upon the opportunities presented here. Chapter 4 identifies the priority areas for skills actions, setting out some of the current activity associated with a transition to net zero and highlighting the areas for future focus.

4: Priority Areas for Skills Action to Support the Transition to Net Zero

Identifying Areas of Opportunity

Developing Scotland's skills base and capitalising on the job opportunities flowing from the transition to net zero for all of Scotland's individuals, employers and communities will be key to achieving a just transition. The CESAP focuses specifically on skills related activity that will need to be undertaken by individuals, employers, education and the skills system to maximise the benefits from the transition to net-zero. Development of the plan has been mindful of the following:

- **The transition to net zero will take place over the next 25 years, but there is also a compelling need to act now.** The CESAP focuses on both **immediate** action as well as the **longer-term systemic change** that will need to take place by 2045. Building on the lessons of the National Transition Training Fund established in response to COVID, we will establish a **Green Jobs Workforce Academy**. The Academy will support existing employees, and those who are facing redundancy, to assess their existing skills and undertake the necessary upskilling and reskilling they need to secure green job opportunities as they emerge.
- The scale and pace of change needed across all sectors will demand a **significant realignment of our investment in education, training and work-based learning towards green jobs**. We will commission SDS and SFC, through their joint Skills Alignment Team, to ensure that that our annual investment in skills through work-based learning, further and higher education and upskilling and reskilling is fully aligned behind our economic ambitions for a net-zero transition. **We will also establish a Green Jobs Skills Hub that will cascade intelligence into the skills system on the numbers and types of green jobs that will be needed over the next 25 years.**
- **The transition to net zero will require behaviour change by both employers and individuals.** The CESAP takes a broader view than traditional approaches to skills investment planning and considers the wider educational changes that will need to take place across society and the public, private and third sectors. **The Green Jobs Skills Hub will play a central role in raising awareness amongst employers and individuals of the need for behaviour change, and support them to take action to drive behaviour change and develop the leadership and management skills that will be required for a net zero future.**
- **Key to our transition to net zero is a 'Just Transition' that ensures that everyone benefits from new opportunities.** It will be important to mitigate potential risks and provide targeted support to communities and parts of the population who are most likely to lose out from structural changes in employment. This will be particularly important in areas where jobs are declining, and where there are growing levels of insecure work. **Our investment in the Green Jobs Workforce Academy will, alongside targeted activity to address labour market inequalities, play a key role in supporting a Just Transition.**
- **The skills investment required to support the transition to net zero will be driven by the wider change and investment that will take place in the economy.** The stimulation of that demand will be driven by employers, by National and Local Government and by the Enterprise agencies. The CESAP complements the demand created in the Programme for Government 2020/21 and Climate Change Update Plan. **We will establish a Climate Emergency Economic & Investment Leadership Group to provide leadership, oversight & drive the alignment of skills investment with our national economic ambition.**

Analysis of the evidence base and the skills implications for each of the sectors key to the transition to net zero, set out in Chapter 3 of this report, and work with the CESAP Expert Group, has identified six priority areas for action, each with a skills focus:

- 1. Supporting a green labour market recovery from COVID-19**
- 2. Building better understanding and evidence of future skills needs to support Scotland's transition to net zero**
- 3. Developing the future workforce for the transition to net zero**
- 4. Driving awareness and action to support reskilling and upskilling for the transition to net zero**
- 5. Ensuring fairness and inclusion in the skills system as part of a just transition to net zero**
- 6. Taking a collaborative approach to ensure a skills system responsive to changing demands.**

Priority Area 1: Supporting a green labour market recovery from COVID-19

The Programme for Government 2020/21, delivered in the context of COVID-19, set out a 'national mission to help create new jobs, good jobs and green jobs' to set Scotland on the pathway to a green recovery. This was supported by a significant programme of investment to drive demand in key net zero markets that can create and sustain green jobs, and many sectors are developing recovery plans with clear links to a green recovery, for example, the Manufacturing Recovery Plan.

The impact of the pandemic has played out differently across different regions and a place-based response will be critical to prevent spatial inequality from deepening. Targeted support will also be required for different groups within the labour market including workers that have been made redundant, workers at risk of losing their jobs, workers that need upskilling in their current organisation, workers in low skilled, low paid jobs, new labour market entrants and the unemployed who are seeking work.

This priority area identifies the collective action that will be taken to support a green labour market recovery and capitalise on this demand, including:

- targeted investment to support the creation of jobs in sectors central to the transition to net zero
- providing support to those facing redundancy in sectors facing job losses
- ensuring there are collective regional responses to the labour market challenges – and opportunities – as a result of the COVID-19 pandemic.

Priority Area 1: Supporting a green labour market recovery from COVID-19

Skills Action Areas	Current activity	Future focus	Lead (and partners)	Timescale
Target investment to support the creation of jobs in sectors central to the transition to net zero	<p>Programme for Government set out £1.6 billion capital investment over the next Parliament to drive demand in key net zero markets such as buildings, transport, natural environment and industry</p> <p>Funding also included £100 million Green Jobs Fund to help businesses create new, green jobs</p> <p>Access to these good, green jobs will be supported by recovery skills programmes including the National Transition Training Fund, Young Person's Guarantee, Fair Start Scotland and No One Left Behind</p>	<p>The Climate Change Plan Update sets out a route map to meet the climate change targets over the coming decade. This will drive the timing of further opportunities for green job development</p> <p>This includes further investments from the Low Carbon Fund for transformational net zero projects over the next five years</p> <p>The Scottish Government will also publish a Capital Investment Plan next year focussed on mobilising more capital investment in Scotland as well as delivering the Inward Investment Plan's focus on attracting investment into the energy transition and low carbon transportation amongst other areas of Scotland's strengths</p>	<p>Scottish Government</p> <p>(Enterprise Agencies, Industry, Skills, Standards and Qualification Bodies, Colleges, Local Authorities, Third Sector, Zero Waste Scotland, NatureScot)</p>	Immediate/Ongoing
Provide support to those facing redundancy and displacement	<p>Supporting workers facing the prospect of displacement through access to impartial PACE advisers who can help them recognise their skills and redeployment options</p>	<p>Enhance the PACE offering with digital upskilling to help minimise displacement of workers, building on existing resources to develop data and digital skills modules which can be integrated into existing skills support</p>	<p>SDS, PACE Groups, Local Authorities</p>	Immediate/Ongoing
	<p>Safeguard apprentices against displacement through the Young Persons Guarantee, which includes the Adopt an Apprentice programme and local partner support, helping Modern and Graduate Apprentices who are facing redundancy get back into work</p> <p>The Apprentice Transition Plan helps redundant apprentices to complete their apprenticeship, gain certification and identify any training needs to allow them to continue their career journey</p>	<p>Continue to support apprentices through Adopt an Apprentice and local authorities to allow them to complete their apprenticeship and consider opportunities to transition into green jobs</p>	<p>SDS, Local Authorities</p>	Immediate/Ongoing

Priority Area 1: Supporting a green labour market recovery from COVID-19

Skills Action Areas	Current activity	Future focus	Lead (and partners)	Timescale
Ensure collective regional responses to support the green recovery	Undertaken a programme of collaborative work with colleges to develop a coherent skills response to COVID-19, including the identification of opportunities for a green recovery in their regions	Work with partners across Regional Economic Partnerships to support regional opportunities to address a green recovery from a skills perspective, e.g. Halo Kilmarnock	SDS, SFC, Regional Colleges, Local Authorities (and their local partners including the third sector), and Regional Economic Partnerships	Immediate/Ongoing
	The Scottish Cities Alliance partners have recently approved a Transition to Net Zero Carbon Action Plan. The Action Plan was co-designed by the 7 Scottish cities, Scottish Government and national agencies and sets out how they will work collaboratively to ensure the Scottish cities cumulatively play their part in meeting the 2045 carbon reduction targets whilst maximising economic and well-being outcomes across the cities	To support the delivery of priority activity in the Transition to Net Zero Carbon Action Plan the Scottish cities will work closely with the Scottish Government and national agencies over the next period to develop an investment and funding strategy which underpins the Action Plan	Scottish Cities Alliance partners/national agencies	Immediate/Ongoing

Priority Area 2: Building better understanding and evidence of future skills needs to support Scotland's transition to net zero

The transition to a net zero economy will have fundamental implications for skills demand over the next 25 years and it will be essential to have a robust and trusted evidence base on which to guide future action and to ensure the skills system across Scotland can respond to changing demand.

SDS and SFC already work closely with industry and employer bodies to gather a wide range of evidence on skills needs and future labour market demand, as well as gathering data on skills provision and outcomes.

To ensure that the skills system responds in an effective and timely way to the opportunities presented by net zero, greater collaboration and information sharing will be key.

This priority area identifies the key actions which will ensure that current and future skills investment in support of net zero is strongly evidence based, including:

- strengthening the evidence base on current and future demand for skills for net zero
- clearly articulating emerging skills needs to the skills system through the creation of a Green Jobs Skills Hub
- understanding current skills provision to support the transition to net zero across education, training and work-based learning
- understanding the supply of people with skills to support the transition to net zero.

Priority Area 2: Building better understanding and evidence of future skills needs to support Scotland's transition to net zero

Skills Action Areas	Current activity	Future focus	Lead (and partners)	Timescale
Strengthening the evidence base on the current and future demand for skills to support the transition to net zero	<p>The Evidence Base for a CESAP⁷³ sets out broad skills demand across the sectors critical to a net-zero transition, whilst highlighting the challenges of definitions and the need for a just transition</p> <p>A portfolio of evidence base work is currently underway to better understand the nature and scale of wider interrelated skills challenges and serve as preparation for more specific propositions for delivery including:</p> <ul style="list-style-type: none"> • High level skills provision mapping • Research on the role of meta skills in shaping a green recovery • Focussed research on digital and data skills • Focussed research on construction 	<p>Ongoing research and analysis to keep pace in a fast-moving operating environment including</p> <ul style="list-style-type: none"> • a six monthly Labour Market and Skills Assessment to support the transition to net zero • better understanding of the financial investment in net zero economic activity, the financial investment in green skills and its return in terms of new jobs 	SDS	From April 2021
Communicating and articulating evidence on changing skills requirements to employers, skills providers and educational institutions	<p>The Circular Economy Skills and Education Hub influences the skills policy agenda, to provide thought leadership and opportunities for collaboration around CE skills, learning and education and to provide tangible resources to enable Scotland to maximise the opportunities presented by the transition towards a Circular Economy</p>	<p>Establish a Green Jobs Skills Hub to provide leadership, influence and guidance in developing the required knowledge, skills, standards, behaviours, attitudes and education to support the transition to net zero by</p> <ul style="list-style-type: none"> • articulating to training and education providers the evidence and research base that should inform skills and education requirements • providing a consistent and collaborative approach to implementing skills change nationally across existing platforms and linking to wider initiatives, • demonstrating and stimulating demand for the required skills through business service delivery 	SDS, Zero Waste Scotland	June 2021
	<p>Developed a working definition of green jobs as a framework to understand employer skills demands in terms of</p> <ul style="list-style-type: none"> • new and emerging jobs that relate directly to the transition to net zero • jobs affected by the transition to net zero that will need enhanced skills or competencies • existing jobs that will be needed in greater numbers as the result of the transition to net zero 	<p>Use the established classification of green jobs to estimate the number and change over time by occupation to support the transition to net zero and assess against identified sectoral opportunities in across Scotland and its regions⁷⁴</p>	SDS (Strathclyde University, Institute of Employment University of Warwick)	Spring 2021

73 Cambridge Policy Consultants (2020) Evidence base for a Climate Emergency Skills Action Plan (Final Report)

74 Dierdorff, E; Norton, J ; Drewes, D; Kroustalis, C; Rivken, D; Lewis, P. (2009). Greening of the World of Work: Implications for O*NET®-SOC and New and Emerging Occupations

Priority Area 2: Building better understanding and evidence of future skills needs to support Scotland's transition to net zero

Skills Action Areas	Current activity	Future focus	Lead (and partners)	Timescale
Understanding current skills provision to support the transition to net zero	Initial mapping of skills provision across colleges, universities and Scottish apprenticeships underway due to report January 2021	Undertake gap analysis to identify and agree areas for better alignment to opportunities to support both education and work-based learning	SDS, SFC (Industry/Sector Skills Groups, Regional Colleges)	March 2022
Understanding current supply of people and skills available to support the transition to net zero	<p>Drawn on the Sector Skills Investment Plans and Action Plans across sectors central to net-zero transition (oil and gas, energy, food and drink, engineering, construction and forestry) and engaged with existing sector skills groups to inform the CESAP</p> <p>Drawn on wider sectoral and sub-sectoral research including:</p> <ul style="list-style-type: none"> • Transport Scotland project to baseline the skills requirement for decarbonisation of the supply and operation of zero emission vehicles. • the skills planning work of the Scottish Offshore Wind Energy Council (SOWEC) Skills Group • work around Peatland Restoration 	<p>Develop a cross-sectoral approach to skills planning as number of sectors in the drive to net-zero (and beyond) are seeking the same skills set increasing competition for the supply of skilled labour</p> <p>Gather data disaggregated by age, disability, ethnicity, and gender for all programmes developed as part of the action plan to ensure effective evaluation of outcomes for these respective groups</p>	<p>SDS</p> <p>(Industry/Sector Skills Groups, Sector bodies)</p> <p>Industry/Sector Skills Groups</p>	<p>Immediate/Ongoing</p> <p>Immediate/Ongoing</p> <p>Immediate/Ongoing</p>

Priority Area 3: Developing the future workforce for the transition to net zero

Ensuring the supply of a skilled workforce to deliver the transition to net zero and support a thriving net zero economy in future will need to be a whole system effort, involving work-based learning, further and higher education and research and innovation. It will require action from national agencies, colleges and universities, private and third sector skills providers and employer and professional bodies.

This priority area sets out the collective action to be taken to align provision behind the needs of the net zero transition and develop the future pipeline of talent to support the transition to net zero. This involves a range of activity that should create greater agility and flexibility in the skills system to respond to opportunities in Scotland's sectors and regions as they emerge, including:

- the establishment of a Green Jobs Workforce Academy
- commissioning the Joint Skills Alignment Team of SDS/SFC to ensure alignment with the green economic ambitions set out in the CESAP
- developing new work-based learning pathways to capitalise on net-zero opportunities and maximising the uptake of apprenticeships in green jobs
- aligning education and training opportunities in schools, colleges and universities to net-zero opportunities and maximising their uptake
- building capacity for research and innovation to support the transition to net zero.

Priority Area 3: Developing the future workforce for the transition to net zero

Skills Action Areas	Current activity	Future focus	Lead (and partners)	Timescale
Establishing a Green Jobs Workforce Academy	Delivering NTTf, ITA, FWDF to support immediate retraining so people can access green jobs as part of a green recovery	Design and delivery of a national, long term programme to support the retraining and upskilling needed for the transition to net zero with a focus on: <ul style="list-style-type: none"> Green Integrated Careers and Skills Assessments enabling individuals to draw on digital and appropriate face-to-face support. This will help them to understand their individual technical and meta skills and access appropriate skills pathways and relevant green opportunities access to short, sharp industry certified course provision aligned to economic investment the development of a Skills Wallet providing access to targeted funding to individuals not in employment, those in low paid or insecure jobs and those in higher level jobs with the potential to progress. This will support skills development and progression to meet the demands of green jobs in line with opportunities as they come on stream 	SDS	September 2021
	Learning from these programmes to develop the evidence base of what's needed in the longer term to support the scale and breadth of retraining and reskilling across the workforce for the net zero economy (this will also be informed by Green Jobs Skills Hub)	Develop targeted and co-designed upskilling and reskilling measures informed by evidence on the pre-existing barriers to training and development faced by BAME communities, disabled workers, women, and young people	SDS (Equalities Organisations, employers)	Immediate/Ongoing
Ensuring that the annual skills investment in apprenticeships, FE/HE; upskilling and reskilling is fully aligned to opportunities to support the transition to net zero	SDS and the SFC are working on a programme of skills alignment to match skills provision with the needs of learners, employers, and industry to drive sustainable and inclusive growth	The Joint Skills Alignment Team across SDS/SFC commissioned to ensure alignment with the green economic ambitions as set out in the CESAP	SDS, SFC	Immediate/Ongoing

Priority Area 3: Developing the future workforce for the transition to net zero

Skills Action Areas	Current activity	Future focus	Lead (and partners)	Timescale
Aligning the work-based learning opportunities available to support the transition to net zero	<p>New pathways to support entrants into their sectors, and amending existing frameworks:</p> <ul style="list-style-type: none"> pilot Foundation Apprenticeship (FA) in Digital Manufacturing Energy Skills Alliance developing an “All Energy” Apprenticeship Lantra Scotland currently exploring the opportunities for land-based businesses to become more involved with Foundation Apprenticeships 	<p>Support further development of Foundation and Graduate Apprenticeships to respond to industry demand in new areas, e.g. environmental construction and carbon management</p> <p>Explore the development of innovative pathways to support those wanting to secure ‘green’ careers, e.g.:</p> <ul style="list-style-type: none"> assess the potential for the roll out of Fast Track work readiness courses to support the development of skills needed for the transition to net zero pilot and evaluate new models of apprenticeship delivery in sectors central to the transition to net zero taking into consideration the barriers to participation identified by SMEs and microbusinesses 	<p>SDS (Industry/Sector Skills Groups, SQA, Zero Waste Scotland and Industry)</p> <p>SDS</p>	<p>From March 2022 (re-contracting for 2021/22 complete)</p> <p>From April 2021</p>
	<p>Work is already underway to update National Occupational Standards (NOS) and apprenticeship frameworks central to the supporting the transition to include mandatory net zero elements</p> <p>NOS managing agent, SDS, works with the three devolved administrations on a list of priorities.</p>	<p>Embed green skills into apprenticeship frameworks where it is relevant to the function of the role via Technical Expert Groups’ design and review processes</p> <p>Ensure that all new frameworks of relevance include mandatory elements to support the transition to net zero</p>	<p>SDS (Industry/Sector Skills Groups, SQA) Skills, Standards and Qualification Bodies NatureScot</p>	<p>Immediate/Ongoing</p>
Aligning the education and training opportunities in schools, to support the transition to net zero	<p>Significant work has been undertaken in schools to deliver climate education</p> <p>Promotion of programmes such as Young Enterprise Scotland’s Circular Economy Challenge, and Primary Engineers STATWARS® Climate Change Challenge to strengthen Learning for Sustainability, this has enabled school pupils from all backgrounds to develop skills in a real-life context, giving them an introduction to, and understanding of, business, design and technology relevant to green jobs and the circular economy</p> <p>Utilising Developing the Young Workforce Regional Groups and School Co-ordinators to embed green skills in schools.</p>	<p>Climate education and an understanding of natural capital needs to form an integral part of all education and skills training and work-based learning through continued commitment to outdoor learning as a key part of Learning for Sustainability</p> <p>Draw on evidence from evaluation and regional activity to identify and share effective good practice in relation to Learning for Sustainability</p> <p>Explore the wider roll-out to schools of the Climate Solutions Accelerator Certificate, a one module overview of the Climate Solutions Certificate</p> <p>Ensure that natural capital and circular economy considerations are recognised as core skills across all disciplines</p>	<p>Education Scotland, Keep Scotland Beautiful, Scottish Forum on Natural Capital, Zero Waste Scotland, Regional Colleges and Universities</p>	<p>Immediate/Ongoing</p>

Priority Area 3: Developing the future workforce for the transition to net zero

Skills Action Areas	Current activity	Future focus	Lead (and partners)	Timescale
Aligning the education and training opportunities in colleges and universities to support the transition to net zero	Use of Regional Outcome Agreements, shaped by labour market intelligence, to ensure cohesive and coherent provision which meets national, regional and local learner and employer needs	All FHEIs (Further & Higher Education Institutions) in Scotland to review existing provision and its alignment with the net zero transition, and then develop a 10-year strategy for addressing gaps in existing provision and to provide dynamic alignment with changing skills and jobs needs in space and time	SFC (Regional Colleges and Universities)	Immediate/Ongoing
	Number of examples of the development of courses to respond to industry need, e.g., Hydrogen Awareness and Electric Vehicle Maintenance and Repair (ESP) and circular construction materials	Co-design and development of a Construction Retrofit national training programme	Zero Waste Scotland	Autumn 2021
	A number of colleges are being supported through Scottish Power Energy Network's Green Energy Fund and ESP, to develop specialised renewables and energy efficiency training centre to support the development of green provision and train the future workforce in renewables, energy efficiency and emerging technologies in collaboration with industry	Develop a 'Green Internship Scheme' to upskill young workforce on circular economy and net zero whilst supporting employment opportunities	Zero Waste Scotland Ayrshire College, Borders College, Dumfries & Galloway College, Edinburgh College, Fife College, Forth Valley College, Glasgow Kelvin College, South Lanarkshire College, West College Scotland and West Lothian College	Autumn 2021 Immediate/Ongoing

Priority Area 3: Developing the future workforce for the transition to net zero

Skills Action Areas	Current activity	Future focus	Lead (and partners)	Timescale
Maximise the uptake of all skills pathways relevant to supporting the transition to net zero across training, education and work-based learning	Promotion of opportunities flowing from the transition to net zero through high quality careers information, advice and guidance	Continue to promote and develop multiple accessible pathways into sectors key to the transition to net zero (including energy transition, construction, transport, manufacturing & agriculture and land use management) through work-based learning, FE and HE	SDS, Skills Providers, Regional Colleges and Universities	Immediate/ Ongoing
	Promoting apprenticeship pathways to all employers in the green economy by showing the relevance and credibility of apprenticeships, as well as underlining the idea that it is within employers' responsibilities to support youth employment	Increase reach and uptake of work-based learning and apprenticeship opportunities (Foundation, Modern and Graduate Apprenticeships) relevant to a transition to net zero through awareness raising	SDS, SFC (Industry/Sector Skills Groups, Developing Young Workforce)	From April 2021
		Approaches to maximise the opportunities from energy transition including: <ul style="list-style-type: none"> • Michelin Skills Innovation Park (MSIP) Advanced Skills Academy to develop the workforce of the future, through a permanent Skills Academy to embrace future technology, advanced engineering, AI and Low carbon transport specialisms • Energy Transition Zone (ETZ) Aberdeen-Skills and Jobs Plan established to support energy transition across sectors, and as part of the proposed ETZ activities • consider scope and plans to develop an online Skills Academy to support the development of future Construction Skills (included in Construction Sector COVID-19 Recovery Plan) 	MSIP, Dundee & Angus College	From early 2021
			SDS, North East of Scotland College, Aberdeen City Council, Robert Gordon University, University of Aberdeen, and Opportunity North East	From early 2021
Build capacity for Research and Innovation to support the transition to net zero	Through the SFC's Outcomes and Impacts Framework universities are guided to focus their knowledge exchange and innovation activities to support economic recovery, including a green recovery. The Innovation Centres and Interface are already working collaboratively to prepare for COP26 and beyond bringing together a wide range of technological, social and cultural solutions to make a successful transition to net-zero	Invest in a broad range of research capacity, developing our partnership with the challenge funding of UKRI in order to build multi-disciplinary responses to social, technological and regulatory challenges of net zero	SFC	Immediate/ Ongoing
		Evolve the relationships between businesses, universities and colleges to help academic teams form and align to the short, medium and long-term challenges of a just transition	SFC	Immediate/ Ongoing
		Support the talent pipeline of future academic and industrial researchers. Explore the role of pooled graduate schools and the demand-led industrial doctorates facilitated by Innovation Centres	SFC	Immediate/ Ongoing
		Incentivise the creation of net zero focussed spin-out companies taking research IP to the market, building on the momentum of the enterprise and net zero education growing in the curriculum	SFC	Immediate/ Ongoing

Priority Area 4: Driving awareness and action to support reskilling and upskilling for the transition to net zero

The transition to net zero will require significant action from industry, individuals and wider society to upskill and reskill. Some jobs will require specific upskilling or retraining to move to sustainable, green jobs while all jobs will require higher levels of environmental awareness as well as adjustments to reduce emissions, recycle waste materials, and sustainably source products.

This priority area sets out the collective action required to support greater awareness, reskilling and training as part of the transition to net zero including:

- supporting individuals to make informed career choices in relation to net-zero opportunities and developing a Green Careers and Skills Assessment Tool
- raising awareness amongst employer and individuals of the need for behaviour change, and changes to workplace practices
- taking action to support behaviour change across public and private sectors that can drive demand for new skills
- support the development of leadership and management skills that will be required for a net zero future.

Priority Area 4: Driving awareness and action to support reskilling and upskilling for the transition to net zero

Skills Action Areas	Current activity	Future focus	Lead (and partners)	Timescale
Enable individuals and their influencers to make informed career choices to support the transition to net zero	Enabling learners and workers to make informed choices about learning and career options in the future net zero economy through SDS's all-age, impartial and independent career information, advice and guidance (CIAG) service	Develop a Green Careers and Skills Assessment Tool as part of the Green Jobs Workforce Academy to enable everyone to recognise and articulate their existing core skills, understand how these skills relate to green jobs in a future net zero economy, and explore and navigate routes careers in this area	SDS	From July 2021
		Develop a package of case-study based marketing and communication materials tailored to career opportunities emerging from the transition to net zero	Implementation Steering Group (SDS, Industry Skills Groups, Zero Waste Scotland, NatureScot SDS, Skills Standards and Qualification Bodies, Employer Organisations)	From September 2021
		Build on LMI and evidence base to further enhance the knowledge of CIAG staff on opportunities across the economy which support the transition to net zero	SDS	From April 2021
		Ensure that CESAP supports the implementation of the Fairer Scotland Employment Action Plan through targeted promotion of green careers and designing training opportunities which are accessible to disabled people	SDS	From July 2021
Raise awareness amongst employers of all sizes of the need to change behaviours and workplace practices to contribute to the transition to net zero and of the options available for training in climate literacy and green skills and training	Bespoke circular economy business support has generated learning on the capacity and capability of businesses to deliver circular economy innovations	Undertake Circular Economy Skills audits in supported businesses to understand the business's learning journey, and the challenges and opportunities presented	Zero Waste Scotland, SDS (CESEH)	From April 2021
	Training developed by Keep Scotland Beautiful has helped organisations to better understand the climate emergency and respond to the risks and opportunities it presents	Examine potential for upscaling to national approach	Keep Scotland Beautiful (SE, HIE, SOSE, SDS, Sector Skills Bodies, Zero Waste Scotland, Scottish Forum on Natural Capital)	Immediate/Ongoing
	Developed multi-disciplinary training on natural capital approaches		NatureScot	Immediate/Ongoing

Priority Area 4: Driving awareness and action to support reskilling and upskilling for the transition to net zero

Skills Action Areas	Current activity	Future focus	Lead (and partners)	Timescale
The actions of employers across private, public and third sectors can drive significant behaviour change in the workplace, leading to the demand for new skills		<p>Potential for Scotland's public sector to be world leading in the transition to net zero and develop net zero plans across their operations and supply chains. This will involve:</p> <ul style="list-style-type: none"> • building internal capacity across public sector entities • transforming the current and future workforces to develop green skills and awareness to deliver on these plans • capacity building for effective procurement 	Implementation Steering Group (All public sector agencies)	From Spring 2021
		<p>Build a 'Toolkit' to help small/micro businesses develop the skills and knowledge they need to adapt to the demands of the transition to net zero. Develop and pilot for use in agriculture but with the potential to roll out to other sectors</p>	Skills for Farming Group (SDS, NFUS)	2021-2022
Support the development of leadership and management skills required for a net zero future	<p>Energy Transition Leadership programme</p> <p>Digital and online executive education programmes such as the Climate Solutions Certificate, developed by the Universities of Edinburgh and Stirling, Royal Scottish Geographical Society and Jump Digital, aimed at Graduates, Supervisors, Managers and Leaders is currently being piloted across public and private sector</p>	<p>Building on the current development of post-grad online leadership programme aimed at experienced graduate and apprentice engineers to provide leadership skills and techno-economic understanding of new and emerging low carbon energy. Designed to retain talent and upskill in technical and project management leadership to support energy transition</p>	Industry, ECITB, SFC	From Summer 2021
		<p>Develop existing leadership training and peer-to-peer learning in rural sectors (e.g. SE Rural Leadership Programme) to include skills for transition to net zero and role of the sector in helping to achieve it</p>	SE, Member organisations	From Spring 2021

Priority Area 5: Ensuring fairness and inclusion in the skills system as part of a just transition to net zero

The transition to net zero will bring significant disruption to the economy and to jobs, and if not mitigated, has the potential to dilute fair work practices and widen existing inequalities. Scotland is putting Fair Work at the centre of our economic recovery and embedding the principle dimensions of Fair Work (respect, opportunity, security, fulfilment and effective voice) into our just transition to net zero to support sustainable economic growth and good jobs, whilst ensuring no one is left behind. Trade Unions will play a critical role in protecting and enhancing workers' rights throughout the transition to net zero and play a key role in the just transition.

Supporting and enabling communities to participate in the transition will help them benefit from the opportunities while also building societal engagement on the challenges the net zero transition will bring. This priority area sets out the actions to ensure that the skills system makes a central contribution to a Just Transition by ensuring fairness and inclusion are at the heart of the good, green jobs agenda, including:

- Embedding the dimensions of Fair Work in sectors that make a significant contribution to net zero
- using the opportunities presented by net-zero to address disadvantage
- providing support for young people to capitalise on net zero opportunities.

Priority Area 5: Ensuring fairness and inclusion in the skills system as part of a just transition to net zero

Skills Action Areas	Current activity	Future focus	Lead (and partners)	Timescale
Embed the dimensions of Fair Work including workforce engagement in sectors which make a significant contribution to net zero	An important theme within Scotland's curriculum is Learning for Sustainability – an approach to life and learning which enables learners, educators, schools and their wider communities to build a socially just, sustainable and equitable society	Continue to collaborate and support key influencers to promote understanding of the barriers to employment faced by underrepresented groups, and advocate for inclusive workplace practices in target sectors, including flexible working, mentoring, and support for those with caring responsibilities	SG (Enterprise Agencies, Education Scotland, Equalities organisations, Employers)	Immediate/Ongoing
	Striving to meet targets for equal representation across apprenticeship frameworks, helping individuals access apprenticeships and supporting employers to develop inclusive approaches to recruitment and sustainable growth. First produced in 2015, the SDS Apprenticeships Equality Action Plan sets out the approach by SDS to working with partners to increase the diversity of apprenticeship uptake.	Co-create and implement solutions to support workplace progression for underrepresented groups through targeted mentoring and networking in the net zero frameworks	SDS	From April 2021
	Working with partners to instil the principles of inclusion, diversity, and equality in all SDS work-based learning programmes	Commission further user research and surveys in order to develop content and user journeys tailored to needs, utilising emerging digital services to allow individuals to explore and navigate to routes to net zero jobs	SDS	Immediate/Ongoing
	Build on successful examples such as the Women in Agriculture Task Force to ensure that training is focused on the training needs of underrepresented groups	Trade Unions will play a critical role in promoting worker's rights, and effective voice, and fair access to reskilling and upskilling opportunities throughout the transition to net zero and play a key role in the Just Transition Commission	Trade Unions	Immediate/Ongoing
		Increase understanding of the opportunities for career progression in key sectors, to increase the attractiveness and appeal of work in those sectors and work to remove any barriers faced by underrepresented groups	Industry/Sector Skills Groups, Regional Colleges, Employer Bodies, and Industry	Immediate/Ongoing

Priority Area 5: Ensuring fairness and inclusion in the skills system as part of a just transition to net zero

Skills Action Areas	Current activity	Future focus	Lead (and partners)	Timescale
Build on the opportunities provided by the transition to net zero to address disadvantage across groups and communities	Equality Impact Assessments ensure that policies and skills interventions do not discriminate and, where possible, promote equality of opportunity	<p>Maximise the opportunities flowing from City and Regional Growth Deals (including Community Wealth Building), Regional Economic Partnership and Regional Land Use partnerships</p> <p>Ensure that any training that is being delivered in relation to CESAP is also available in rural areas and for rural audiences</p> <p>Make both tackling occupational segregation and accessibility for rural communities' core aims of skills and training programmes and making the most of the potential for digital delivery to help maximise accessibility</p>	Regional Economic Partnerships, SDS, Enterprise Agencies and Local Authorities	Immediate/Ongoing
Provide support for young people to maximise their opportunities for success through work, education or training	<p>The Young Person's Guarantee will ensure that every young person aged between 16-24 in Scotland can access support to secure:</p> <ul style="list-style-type: none"> • Fair employment, including work experience • Further or higher education • Pathway Apprenticeships, an apprenticeship or other training programme • Formal volunteering or supported activity programme 	<p>Within the end-to-end review of the career service, seek to identify how better to support young people, parents, families, carers and key influencers, as the economy shifts towards net zero</p> <p>Build on approaches to accrediting experience and skills gained through volunteering</p>	<p>SG, Young Person's Guarantee Implementation Group which includes LA, SDS as well as partners from the public sector, third sector, and private sector</p> <p>Awarding Bodies, Skills, Standards and Qualification Bodies, Scottish Environment LINK, The Conservation Volunteers</p>	<p>Immediate/Ongoing</p> <p>Spring 2021</p>

Priority Area 6: Taking a collaborative approach to ensure a skills system responsive to changing demands

The transition to net zero will require co-ordinated action and investment across employers, the skills system, local and national Government and its agencies. This priority area sets out the key actions for a collaborative approach that enables employers and individuals to maximise the opportunities flowing from the transition to net zero as they emerge, supported by a skills system responsive to changing demands, including:

- Establishing a Climate Emergency Economic and Investment Leadership Group to provide leadership, oversight & drive for the national economic ambition supported by an Implementation Steering Group of industry experts and skills partners
- Creating an agile and responsive skills system through Skills Alignment

Priority Area 6: Taking a collaborative approach to ensure a skills system responsive to changing demands

Skills Action Areas	Current activity	Future focus	Lead (and partners)	Timescale
Multi-agency and industry collaboration around skills issues to support the transition to net zero	Intensive collaborative action to develop the CESAP setting out the priority areas for action in sectors central to transition to net zero	Establish a Climate Emergency Economic and Investment Leadership Group to provide leadership, oversight and drive for the national economic ambition. The ILG would report on progress with the implementation of the CESAP to progress to this group	SDS/SG	Immediate/Ongoing
		Establish an Implementation Steering Group (ISG) of industry experts and skills partners to facilitate delivery of the CESAP	SDS (SG, SFC, SE, HIE, SOSE, Education Scotland, STF, Skills, Standards and Qualification Bodies Scotland, Zero Waste Scotland, NatureScot)	From January 2021
		Establish a dynamic, dedicated Green Jobs & Skills Team to support the implementation of the CESAP and produce labour market intelligence on future green jobs requirements	SDS	From April 2021
Shape a skills system that is much more responsive, more innovative, and more collaborative to cater for the degree, complexity and pace of change coming in the wider economy and labour market	SDS and the SFC are working on a programme of skills alignment to match skills provision with the needs of learners, employers, and industry to drive sustainable and inclusive growth	The Joint Skills Alignment Team across SDS/SFC commissioned to ensure alignment with the green economic ambitions as set out in the CESAP	SDS, SFC	Immediate/Ongoing

5: Delivering the Climate Emergency Skills Action Plan

The CESAP sets out a wide range of actions with significant implications for employers, individuals and skills providers to support the transition to net zero. This will be a significant and long-term challenge and will require agility from the skills system to respond to the change and disruption throughout Scotland's transition to a net zero economy. An ongoing commitment from the Scottish Government and its agencies, stakeholders and employers will be vital to affect both the behaviour and system changes that are required for successful delivery as well as a commitment to continued iteration and development of the CESAP in future.

Timescale for CESAP

The net-zero transition will require long term commitment and action over the next 25 years. This CESAP focusses on the collective action that needs to be undertaken from 2020 through to 2025, with a particular focus on the period to 2023 as part of a green recovery from COVID-19.

While there is clear early action that needs to be addressed, it is also clear that this CESAP will need to be agile and responsive.

The skills action plan will be a living document, that adapts both its focus and its timing in response to changes in the policy

environment, economy and the emergence of new technologies. The CESAP will be updated by the end of 2023, taking into account any changes in the wider economic environment and setting out a further set of short, medium and long-term activities.

Implementation and governance of the plan

The development of the Plan has been guided by an Expert Group comprising Skills Development Scotland, the Scottish Funding Council, Zero Waste Scotland, the Scottish Cities Alliance, NatureScot, Scottish Government's Domestic Climate Change and Skills Divisions, Highlands and Islands Enterprise, Scottish Enterprise, South of Scotland Enterprise, the University of Edinburgh and the University of Strathclyde.

This group will form the basis of a CESAP Implementation Steering Group that will be extended to industry, employers and trade unions who are central to delivering the net-zero transition, along with colleges and skills providers and other partners with a sectoral focus including Transport Scotland, SEPA and Lantra Scotland. The Implementation Group will have an independent Chair appointed by the Scottish Government.

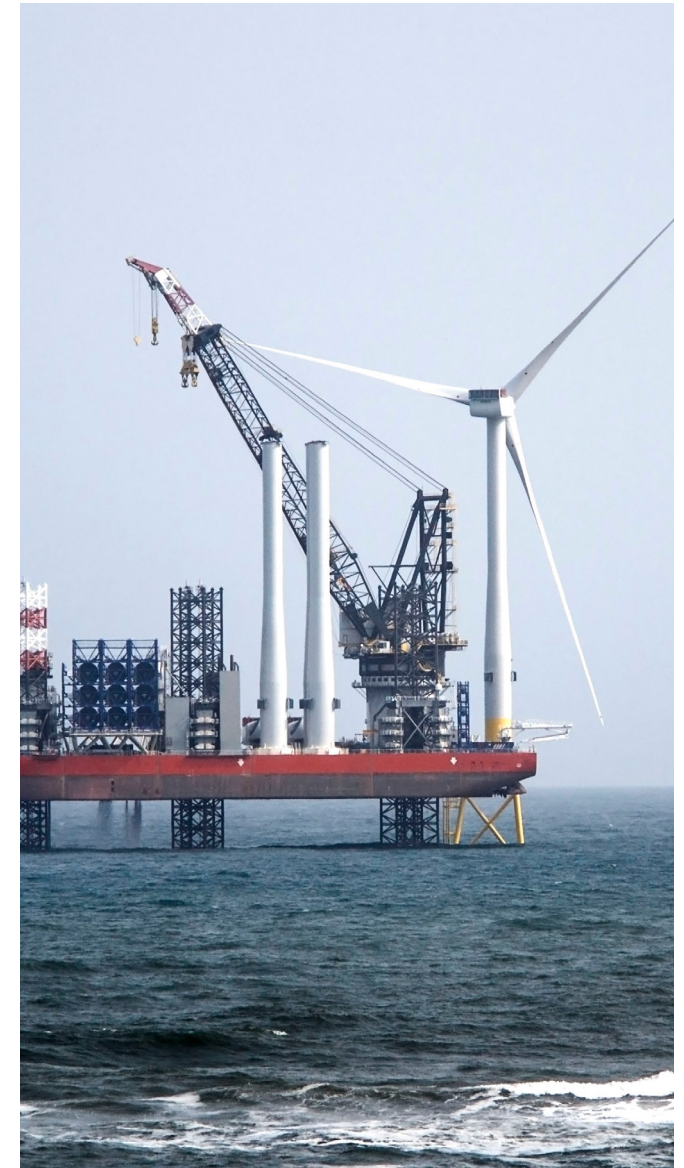
A key early task for the Implementation Group will be to develop a detailed implementation plan for the period through to 2023. The purpose of the Implementation Group will be to act as the focal point for the delivery of the actions in the CESAP. The Implementation Group will develop a clear Monitoring and Evaluation Framework to ensure that the progress of the actions in this plan is monitored.

The Implementation Group will seek guidance from, and report on progress, to a new Climate Emergency Economic & Investment Leadership Group to provide leadership, oversight & drive the alignment of skills investment with our national economic ambition. The membership will be based around the existing Scottish Energy Advisory Board, supplemented by representation from the Scottish Government's wider network of Industry Advisory Boards. This direct engagement with employers, to both shape and be involved in the delivery of the plan, will be central to its success and the group will also feed into the Scottish Government to ensure continued alignment with Scotland's Climate Change Strategy and delivery of a just transition to a net zero economy.

Resourcing the plan

The transition to a net zero economy will involve considerable investment from the private sector, government and its agencies to mitigate and adapt to the effects of climate change and to support business growth, drive the creation of new technologies, support the transition of the workforce and to capitalise on emerging opportunities. The Scottish Government has made significant spending commitments for net zero initiatives. The 2020–21 Budget brought the overall low carbon capital spend to £1.8 billion on an annual basis, while the 2020-21 Programme for Government and the draft Infrastructure Investment Plan committed additional capital investment to support the green recovery over the life of the next Parliament. Further details of this investment are set out in the Climate Change Update that is being published alongside this CESAP.

Similarly, the transition of the workforce to the net zero economy in coming decades and implementation of the CESAP will require alignment and reorientation of educational and skills support. Currently, the Scottish Government commits £1.8 billion per annum in support of work-based learning, further and higher education and research and innovation through SFC and SDS. Both agencies, through their Joint Skills Alignment Team, will have a critical role to ensure that our annual investment in skills through work-based learning, further and higher education and upskilling and reskilling is fully aligned behind our economic ambitions for a net-zero transition. Our labour market response to COVID-19 has also seen significant additional resources committed to upskilling and reskilling through the Transition Training Fund and the Flexible Workforce Development Fund. This commitment to upskilling and reskilling will be maintained through the establishment of the Green Jobs Workforce Academy.



Glossary

AI	Artificial Intelligence	FA	Foundation Apprenticeship	MCS	Microgeneration Certification Scheme
BAME	Black, Asian, and Minority Ethnic	FE	Further Education	MSIP	Michelin Skills Innovation Park
BIM	Building Information Modelling	FHEIs	Further and Higher Education Institutions	MtCO₂e	Metric Tonnes of Carbon Dioxide Equivalent
CCC	Climate Change Committee	FWDF	Flexible Workforce Development Fund	MyWoW	My World of Work
CCP	Climate Change Plan	GA	Graduate Apprenticeship	NFUS	National Farmers Union Scotland
CCUS	Carbon capture, utilisation, and storage	GHG	Greenhouse Gas	NMIS	National Manufacturing Institute Scotland
CERG	Climate Emergency Response Group	GVA	Gross Value Added	NOS	National Occupational Standards
CESAP	Climate Emergency Skills Action Plan	HDV	Heavy Duty Vehicles	NTTF	National Transition Training Fund
CESEH	Circular Economy Skills and Education Hub	HE	Higher Education	ONS	Office for National Statistics
CIAG	Careers Information, Advice, and Guidance	HIE	Highlands and Islands Enterprise	PACE	Partnership Action for Continuing Employment
COP26	26th Conference of the Parties, United Nations Climate Change Conference	ILG	Industry Leadership Group	PAS	Publicly Available Specifications
ESP	Energy Skills Partnership	ITA	Individual Training Account	PfG	Programme for Government
ETZ	Energy Transition Zone	JTC	Just Transition Commission	SCA	Scottish Cities Alliance
		LCREE	Low Carbon and Renewable Energy Economy dataset	SDS	Skills Development Scotland
		LMI	Labour Market Intelligence	SE	Scottish Enterprise
		MA	Modern Apprenticeship	SEAB	Scottish Energy Advisory Board

SEPA	Scottish Environmental Protection Agency
SFC	Scottish Funding Council
SG	Scottish Government
SME	Small and Medium-sized Enterprise
SOSE	South of Scotland Enterprise
SQA	Scottish Qualifications Authority
STF	Scottish Training Federation
STP	Scotland's Towns Partnership
SURF	Scotland's Regeneration Forum
UKCS	United Kingdom Continental Shelf
UKRI	United Kingdom Research and Innovation
ULEV	Ultra Low Emission Vehicle
WBL	Work-Based Learning



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