Skills Development Scotland

SAAB | Scottish Apprenticeship Advisory Board

IFF Research

Sustainability in Scottish Apprenticeships

A system-level approach to the net zero transition

A SAAB & SDS paper | November 2021

1 Summary

"The alarm bells are deafening, and the evidence is irrefutable: greenhouse gas emissions from fossil-fuel burning and deforestation are choking our planet and putting billions of people at immediate risk."[1] UN Secretary-General António Guterres (August, 2021)

1.1 With growing scientific evidence confirming the substantial effect of human activity on climate change and its increasingly devastating impacts on communities, there is an urgent need for action. The Scottish Government were the first Government in the world to declare a **climate emergency in 2019**[2]. Accompanying this declaration, the Scottish Government set in law a requirement to reach **net zero greenhouse gas emissions by 2045**.

1.2 To reach this goal, many changes are required across all levels of society, organisations, and the economy over the coming decades. From a skills perspective, there is a need to adapt skills to meet these changing demands, not just in critical carbon reduction sectors but across the whole economy.

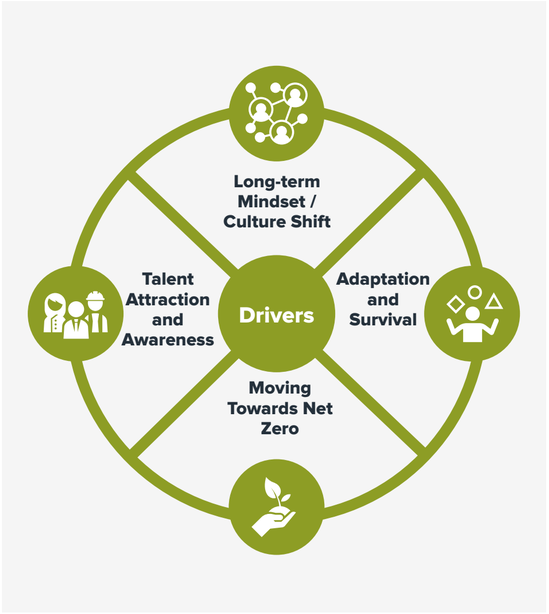
1.3 Green jobs, skills, training and reskilling are at the centre of the Government's approach, driven by the the **Climate Emergency Skills Plan 2020-2025**[3]. As a part of this response, SDS is exploring how apprenticeships can respond to the climate emergency and support employers & apprentices with the skills they need to champion sustainability and drive innovation.

1.4 Change in apprenticeships must be fit for purpose to support employers in this transition, and requires a demand-led approach to their development. This paper, developed with leadership from the Scottish Apprenticeship Advisory Board (SAAB), sets out employer & expert views and recommendations to ensure that the systems change taken in apprenticeships in response to the climate emergency supports the **needs of employers** in their net zero transitions. This marks the start of a wider engagement and development piece intended to develop a COP26 Skill Legacy in the apprenticeship system. Key findings are noted below.

1.5 There was widespread agreement that it was **critically important to support employers and industry to reflect sustainable practices** in their work which could be mirrored in Scottish apprenticeships. To employers, this could help support:

- Organisational transition towards net zero
- A bottom-up approach to mindset/culture shifts
- Talent attraction and retention
- Adaption and survival during rapid change

1 https://www.un.org/sg/en/content/secretary-generals-statement-the-ipcc-working-group-1-report-the-physical-science-basis-of-the-sixth-assessment
2 https://www.gov.scot/policies/climate-change/
3 Skills Development Scotland (2020), Climate Emergency Skills Action Plan 2020-2025



A system-level approach to the net zero transition

Depending on the context of the organisation, including size, region or industry, there are different implications for the support required, which must be accounted for in the development of this work.

1.6 In terms of considering areas of skills development, there is value in categorising into three 'layers' how sustainable practices and behaviours are influenced within the workforce:

- Top Layer: organisational policies, processes and culture;
- Middle Layer: the actual occupation or function of an individual ("**what** they do");
- Bottom Layer: an individual's behaviour and application to these tasks ("**how** they do it").

The top layer is fundamental but sits outside the remit of this piece; however, it is in the "what" and the "how" – the middle and bottom layers – whereby apprenticeships can support behaviour change around sustainability.

1.7 With some sectoral differences, there was consensus that sustainability concerns should be considered and embedded **within all apprenticeships**, rather than siloed within certain 'green' occupations.

1.8 A number of associated and complementary skills were noted by employers. These included: teaching general **climate change literacy / awareness** and risks; situating climate impacts within the **specific occupation and working practices**

1 Summary continued

of the apprentice and, for a number of sectors, **sector-relevant skills on using 'green' technologies**, **processes or products** that support the transition to net zero. **Meta skills** (such as leadership, critical thinking and problem solving), as well as apprenticeship-specific **digital and data skills** are important complementary skills / practices – these are already taught within apprenticeships, and will support adaption and resilience during change and continuous learning/technological adoption.

1.9 Employers were clear that where green technologies/processes and products were required for a specific occupation that they should be included in the apprenticeship. They agreed that where a new practice is required for a specific role, new technologies and their use should be included within that apprenticeship, rather than across the board.

1.10 In considering the steps required, employers set out a range of challenges and opportunities that will need to be met. We present these below, alongside recommendations for responding to these.

Challenge		Recommendations
	The need for clear terminology	Refer to 'sustainability' in apprenticeships and confirm key components
	Enabling all apprentices, across sectors, to develop sustainable work practices.	Support employers to develop and reflect sustainable work practices which can be mirrored in apprenticeships, incorporating a range of cross-sectoral, sectoral and occupational approaches
	Respond to emerging, specific industry needs that support net zero transition	Use multistakeholder approach inc. industry to focus on relevant competencies, and engage with other skills bodies internationally to learn best practice
	Urgency and need for pace in reflecting sustainability	Take a phased / iterative approach to reflecting sustainability
	Building awareness, capacity and capability among stakeholders inc. employers, providers and assessors	Ensure stakeholders receive necessary support e.g. trainer skills and other challenges, employer awareness and engagement

2 Introduction

2.1 The Scottish Government declared a climate emergency in 2019 and have committed the country to net zero emissions by 2045, via a 'Just Transition'[4]. To reach this goal, many changes are required across all levels of society. The apprenticeship system has a role to play, by advancing talent pipelines and developing skills in the workforce to meet existing and emerging demands.

2.2 Apprentices taught sustainable skills may provide the foundation for the future net zero workforce. This initiative will support the economy, by helping Scotland achieve its national and international sustainability commitments. Employers will also be supported, as it will help them prepare for, adapt to, and thrive in the net zero transition. Moreover, apprentices will be able to help drive innovation and sustainability within their organisation.

2.3 This report sets out results from a consultation with the Scottish Apprenticeship Advisory Board (SAAB) and other employers, covering industry views on the importance of reflecting sustainability into Scottish apprenticeships, and the steps required to achieve this.

2.4 To support the research, Skills Development Scotland (SDS) and SAAB facilitated a short life working group including SAAB members and additional external employers and experts in a range of sectors from across the Scottish economy. Online engagement and two workshops were held with the working group to discuss objectives, scope, themes and methods. Following the workshops, 21 one-to-one depth interviews were undertaken with workgroup members and employers more widely. Additionally, a mini literature review was conducted to provide policy and international context to the paper. The research ran between August and October 2021. Full details of the methodology can be seen in the Appendix.

4 https://www.gov.scot/policies/climate-change/

3 Policy Context

3.1 The need to combat climate change is now being recognised on an international scale. The UN's Intergovernmental Panel on Climate Change (IPCC) 2021 report highlighted that current national plans as submitted under the Paris Agreement will not limit global warming to 1.5°C, as previously targeted[5]. There is therefore a requirement for urgent, immediate action.

3.2 The Scottish Government was the first Government in the world to declare a climate emergency and has committed to becoming a net zero nation by 2045[6]. This involves reducing greenhouse gas emissions produced within all aspects of Scottish society, as well as balancing out emission by offsetting or sequestering.

3.3 Additionally, in 2020 the Scottish Government updated their climate change plan to reflect the impact of the Covid-19 pandemic and to commit to a 'green recovery'[7], utilising the opportunities of a just transition to net zero. This just transition involves ensuring the benefits of climate change action are equally shared, and that the costs do not unfairly burden those less able to pay or those whose occupations or livelihoods are at risk[8 9]. Aligning the skills system to support net zero jobs was one of the recommendations from the Just Transition Commission.

3.4 Reaching net zero by 2045 requires a transformational change across the economy and society, providing opportunities such as developing new quality green jobs and reflecting green and sustainability skills. The Climate Emergency Skills Action Plan (CESAP) identifies priority areas that will help Scotland to have a just transition and capitalise on job opportunities emerging from the net-zero agenda[10]. Agile and responsive work-based learning can equip individuals with in-demand green skills and competencies, provide effective learning pathways into green jobs, and create an increasingly adaptive and resilient workforce.

3.5 As part of Priority Area 3 of CESAP, 'Developing the future workforce for the transition to net zero', SDS are pushing forward with a range of activities, including the launch of the Green Jobs Workforce Academy, that will support the retraining and upskilling workers need to transition to a net zero economy. One aspect of this priority area is to 'align the work based learning opportunities available to support the transition to net zero'. Alongside further development of Foundation and Graduate Apprenticeships to respond to industry demand, and the development of green career pathways, this includes a focus on adapting apprenticeships to reflect the changes that are being made by businesses in the transition to net zero.

5 Intergovernmental Panel on Climate Change (2021) IPCC Report 2021
6 Scottish climate change plan (2020) Scottish climate change plan 2018–2032
7 https://www.gov.scot/publications/scottish-government-and-scottish-green-party-shared-policy-programme/
8 Just Transition Commission (2020) Advice on a green recovery.
9 Just Transition Commission (March 2021) A National Mission for a fairer, greener Scotland.
10 Climate Emergency Skills Action Plan (2020) Scottish Climate Emergency Skills Action Plan

3 Policy Context continued

3.6 Responding to the climate emergency through a systematic adaptation of the apprenticeship programme is an approach from which learnings can be taken from the international community. Indeed, in England, the Institute for Apprenticeships has also commenced a similar process[11]. The 'Bridging Innovation and Learning in TVET (BILT): Emerging Practice' report stated that 'Greening' technical and vocational education and training (TVET) has gathered momentum in countries globally, with emerging practice in different approaches to the integration of sustainability to respond to growing demand and support sustainable development[12 13]. This conceptualised all four types of competencies as highly relevant for 'greening': basic, professional and technical, advanced cognitive, and socio-emotional. Additionally, potential approaches to reflecting sustainability in apprenticeships were identified, which comprised of a cross cutting approach, a modular approach, a sectoral approach, and an occupational approach. The report recommends that a combination of all four approaches is the most appropriate solution to integration. A similar suggestion for approaches and approach combination is also made in the 'Trends in New Qualifications and Competencies for TVET: Perspectives of the European UNEVOC Network' report, suggesting this may be the most effective way to reflect green practices[14].

Both the BILT and Trends in New Qualifications and Competencies report also drew attention to the link between 'digitalisation' and 'greening' when considering sustainable apprenticeships.

11 See: https://www.instituteforapprenticeships.org/developing-new-apprenticeships/resources/sustainability-framework/
12 Bridging Innovation and Learning in TVET: BILT Thematic Workshop – New Qualification and Competencies in TVET (2019)
13 Bridging Innovation and Learning in TVET: Thematic Workshop – Greening TVET. (2019)
14 Trends in New Qualifications and Competencies for TVET: Perspectives of the European UNEVOC Network. (2020)

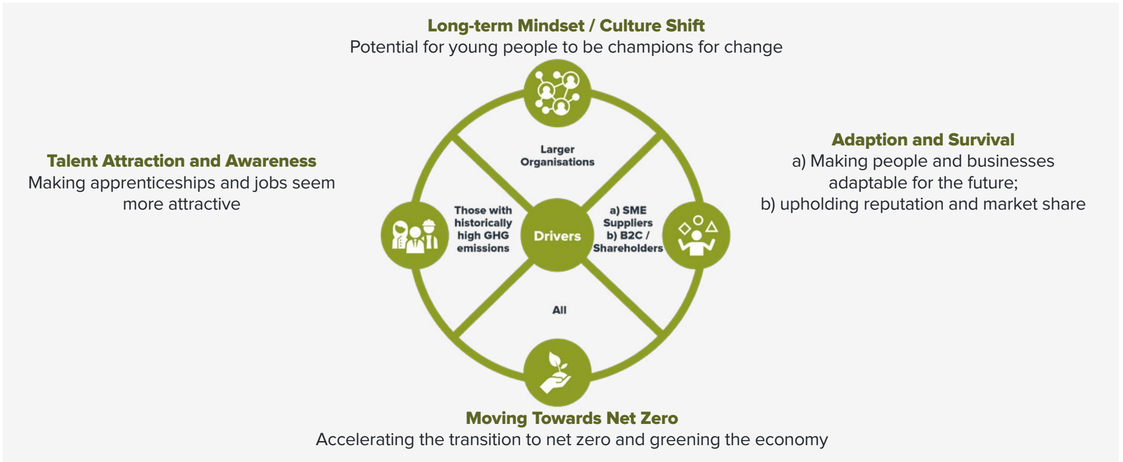
4 Analysis of findings: The employer voice within system change

Rationale and demand for sustainability in apprenticeships

4.1 This section establishes the principal drivers for change that underpin industry demand for sustainability to be reflected within Scottish apprenticeships.

4.2 As shown in Figure 4.1, four themes struck a chord across employers participating in the research: **moving towards net zero, talent attraction and awareness, long-term mindset/culture shift and adaptation and survival.**

Figure 4.1 Employer rationale for reflecting sustainability



4 Analysis of findings: The employer voice within system change

4.3 Arguably **the most critical driver was 'long-term mindset/culture shift',** i.e. the need for companies to fully embrace the need for more sustainable practices at a holistic level and embed these within their company culture both from the top-down, and from the bottom-up.

4.4 Reflecting sustainable work practices in apprenticeships would support this behavioural shift from the bottom-up, as young people (who, as a demographic, are among those most likely to already value and prioritise sustainable practices in their own lives) have the potential to act as champions for change. Equipping them with cross-cutting sustainability skills and knowledge via apprenticeships could help underpin organisational changes that happen as a result of the transition to net zero, and additionally support them to make challenges within their roles that may further top-down policy and practice in this area.

4.5 Equipping them with cross-cutting sustainability skills and knowledge via apprenticeships could therefore help drive change.

4.6 Whether or not a shift in culture and mindset was prioritised in smaller companies was generally acknowledged as potentially haphazard. If championed by senior leaders within the business, changes in culture and practice towards more sustainable behaviour were seen as easy to drive forward. Similarly, if employees in small businesses prioritise and practice sustainability, these practices can potentially educate and change the culture as a whole, as there are fewer processes in place and employees are likely to have more communication with senior leaders. CESAP 2020-2025[15] also identifies education of employers as critically important, and notes that the Green Jobs Skills Hub may be a useful resource here. "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" (p7)

> **"I think every organisation is different, and I think one of the challenges is, if you have somebody at the top that's culturally getting behind this and gets it and really wants to drive it then it permeates right throughout the organisation."**
>
> B2C technology

15 Climate Emergency Skills Action Plan (2020) Scottish Climate Emergency Skills Action Plan

4 Analysis of findings: The employer voice within system change

4.7 Talent attraction and awareness emerged as another key driver, especially in those industries with higher levels of greenhouse gas emissions. If companies wish to attract and retain high calibre employees, they need to ensure that they meet employee sustainability expectations. Offering 'greener' apprenticeships therefore conveys a double benefit of a) attracting people to the company via the apprenticeship; b) putting their resulting skills and knowledge to use in further improving sustainable practices within the company, thereby further increasing company relevance and attractiveness.

"We may as well have a sign saying 'we make tobacco' in terms of public perceptions of relevance and attraction"

Engineering Sector Body

"If our company increases further with sustainability, we will be a more attractive place for employees. I do believe there's been a paradigm shift over the last few years at least, where the new generation don't necessarily pander to companies, companies pander to employees. So, sustainability ticks a box for the younger generation"

Solar panel manufacturer

4.8 The third driver identified was **'adaptation and survival'**, whereby failing to implement sustainable practices and products was seen as likely to result in loss of longer-term market share and profit. This was seen as likely to become the primary motivator for SME suppliers, particularly those who sold services and products via large companies' tendering processes.

4 Analysis of findings: The employer voice within system change

4.9 Indeed, a 'trickle-down' effect is just starting to become evident in the tendering process, whereby large companies who are ahead of the curve on sustainability are starting to ask for 'carbon footprint costs' and other evidence of susatainable practices, as part of the tendering process. Suppliers who have not considered sustainable practices will not win funding/contracts, and there is evidence that this is already providing the push for some SMEs to start making changes. This theme is expected to become more prominent in the near future and be the primary driver that forces many SMEs to make changes.

"It is financially driven or being driven by clauses that sit within the procurement process to ensure they do it as opposed to deciding to do it."

Engineering Sector Body

4.10 This theme was also important to companies with consumer customers and/or shareholders, where failing to implement sustainable practices could negatively impact a company's **business reputation**

"They're very, very, very conscious of what the media thinks of them. Their reputation and brand image would be absolutely ruined if they didn't. Every single one of the FTSE 100 will have a carbon statement."

Engineering & Manufacturing

4.11 To support this process, existing staff need to upskill in more sustainable practices and/or new staff should enter a company with these skills in place. Apprenticeships that reflect the sustainable work practices exhibited by employers is one way of achieving this.

4 Analysis of findings: The employer voice within system change

4.12 Finally, Moving towards net zero was a driver for all organisations due to its inherent importance and inevitability. There was expectation that the government's legally-binding commitment to this would lead to legislative and regulatory change over the next few years that will force businesses to adapt their behaviours. Reflecting sustainable practices within apprenticeships was seen as one of the ways to accelerate the transition of the businesses' practices to net-zero and 'green' the economy.

4.13 Within the four themes discussed above, **three key differentiators** emerged in terms of businesses' drivers for change, as shown in Figure 4.2.

Figure 4.2: Key audience differentiators

4 Analysis of findings: The employer voice within system change

Terminology

4.14 Employers typically agreed that it was important to determine consistent and clear terminology when considering sustainability within apprenticeships.

4.15 "Green competencies / skills" is a commonly used term when discussing upskilling workers to function in more sustainable ways. Despite this, definitions of "green competencies" are varied. MacLean et al. (2018) assert that each country should be able to establish a definition of green skills that can be operational in its particular context and provided examples to illustrate how interpretations vary.[16]

4.16 For example, Australia defines green skills as as "technical skills, knowledge, values and attitudes needed in the workforce to develop and support sustainable social, economic and environmental outcomes in business, industry and the community". In contrast, Indonesia has a more fragmented understanding of the concept of greening, with some training providers seeing this as being part of hygiene and safety, whereas others relate it to the introduction of a new curriculum relevant to international environmental standards, waste management and pollution prevention. The authors explained that this disjointed understanding of the concept is due mainly to the absence of a regulatory framework for green skills development in the country.

4.17 Previously, the United Kingdom has developed ten broad groups of skills (tier 1) applicable across sectors, broken down into groups of general skills (tier 2) and more specific skills (tier 3).[17] [18] This grouping was not mentioned by participants in the workshops and referenced by only one in depth interview, suggesting that awareness of it is low. Indeed, several participants felt that training providers and employers do not yet have a clear understanding of what 'green competencies' are.

> **"Employers lack understanding and need to be carbon literate and carbon aware. This acts as a real barrier."**
>
> Anonymous

16 MacLean, R., Jagannathan, S., Panth, B. (2018) Education and Skills for Inclusive Growth, Green Jobs, and the Greening of Economies in Asia.
17 Skills for a low-carbon and resource efficient economy (LCREE), Report for DEFRA (2008)
18 Further assessment of specific skills needs at a sectoral level can be found here: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/32373/11-1315-skills-for-a-green-economy.pdf

4 Analysis of findings: The employer voice within system change

4.18 Furthermore, it became clear employers felt the term "green competencies" is not an appropriate term because it is too vague and exclusive. For example, digital skills were seen as key in supporting a move towards more sustainable skills, but these cannot be termed as 'green' competencies – instead, they are complementary competencies.

4.19 Employers felt the term 'sustainable skills' was better understood, and covered a wider range of skills that was appropriate for the likely scope of skills that would be developed (see below). There was general consensus that this entails more efficient use of energy and natural resources, and reducing waste and greenhouse gas emissions, which all felt relevant to the broader net zero goals that underpin this work.

4.20 Inevitably there was some variation in interpretation, in terms of its coverage and what 'counts' as a sustainable business. One employer, for example, included a view of sustainability as positively impacting the environment as opposed to just reducing its negative impact, in this case likely influenced by the company's target to replenish more water than it uses. Within the engineering and manufacturing sector, there was also a focus on manufacturing products that were more sustainable, in addition to manufacturing in an energy efficient environment and using energy efficient methods.

Scope of sustainable skills

4.21 Following conversations about defining sustainable skills, a pyramid model was developed to help understand how the apprenticeship system can help impact workers' behaviours. This helps to establish the broad scope or focus of apprenticeship skills interventions. The model identified three categories or layers, of increasing individual agency.

- **Top Layer: Organisational policies and processes**
  These are the organisation's standard practices, policies, culture and rules. it is unlikely that apprenticeships can impact these, unless there is a strong 'bottom-up' culture. However, they are within the broader remit of CESAP (they might, for example, include senior leader education).

- **Middle Layer: What an individual's function is**
  This is what is within the scope of an individual's occupation – in other words, what is in their job description. This is within the scope of apprenticeship development but is likely to be quite sector / occupational specific.

16 MacLean, R., Jagannathan, S., Panth, B. (2018) Education and Skills for Inclusive Growth, Green Jobs, and the Greening of Economies in Asia.
17 Skills for a low-carbon and resource efficient economy (LCREE), Report for DEFRA (2008)
18 Further assessment of specific skills needs at a sectoral level can be found here: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/32373/11-1315-skills-for-a-green-economy.pdf

4 Analysis of findings: The employer voice within system change

- **Bottom Layer: How an individual undertakes their function**
  This is how an individual performs their function i.e. their behaviours and their approach. This is within the scope of apprenticeship development. For example, if the task is to arrange and organise a meeting, the individual has the choice to ask attendees to travel to a single location and print materials and provide hard copy papers, or arrange it virtually and send soft copies. Thus, the same task performed differently can have a different environmental impact.

Figure 4.2: Key audience differentiators

4.22 Participants were keen to emphasise the role of employer awareness towards climate change, and cultural behaviour more generally. Without this, apprentices may return from their apprenticeship, but have little opportunity to use the skills they learned to good effect.

> **"Without the right culture in an organisation, you'll get nowhere with this. Behaviour and individual practice is part of it, but the culture of the organisation is missing. It needs to be embedded. If you have a board that really cares and is engaged is great but some just don't care about this."**
>
> Digital

4 Analysis of findings: The employer voice within system change

Types of education required

4.23 Within this broader framework, employers reflected on the types of education that would be important for apprentices to learn.

4.24 There was an understanding across the board that climate change awareness or literacy was key as a first step before any specific education would be implemented, as there is an element of green skills in all occupations. Alongside this, developing a familiarity with climate change impacts and risks, and the accompanying broad policy relating to these, was important. This does not need to be technical or too scientific, but at a level that enables the apprentice to understand the direction of travel, and the importance / urgency of the situation. This is relevant across sectors and occupations.

"The first thing is that the person needs to understand WHY it's important, urgent – the context of why climate emergency is important."

Engineering

4.25 Additionally, it is important to be able to situate an individual's occupation within this context of climate change, i.e. increase understanding as to how they as individuals or via the processes or products they work with contribute to climate change, and – more importantly – what steps can be taken to reduce this impact and thus support the move to net zero. Some described this as undertaking the job through a 'green lens', with a couple of employers reflecting on the parallels to health and safety or information technology literacy, i.e. this runs through the core of how people do their work. Again this has relevance across occupations and sectors, although the specific skills are likely to differ.

"This should be like H&S, it should cut across, it's being aware of sustainability over everything, taking action on whatever you need to in your own sector. Recycling, carbon footprint, all those things. What do people need to know in order to change the culture on how we do things?"

Construction / Heritage

4 Analysis of findings: The employer voice within system change

4.26 A smaller number of employers considered that developing specific skills on technologies, products and processes unique to their sector and company, were an important component of sustainable skills, such as electricians needing to know how to fit a charging station, and that apprenticeships should consider and reflect the current and future needs of the sector and / or occupation. This bore more relevance to those in industries with a relatively high environmental impact.
(It is important to note that this does not imply that all roles need advanced or new digital skills.)

"An electrician will have to know all about electrics but will also need to know how to fit a charging station, a plumber will have to know all about plumbing but also be able to fit an air source heat pump...there is a green element with all trades."

Construction

Approach to integrating sustainable skills

4.27 As a fundamental starting point, albeit with some slight sectoral differences, there was general consensus in favour of reflecting sustainable practice across apprenticeship training, with consideration given to how day-to-day occupations, activities and practices are affected by and impact on the environment.

"Climate importance needs to be embedded in all apprenticeships and learning programmes, curriculum etc. either as a hardcore factor that runs down the spine, or more as something on the side. But not all apprenticeships will need to be technically trained or skilled in the climate agenda."

Place-based

4 Analysis of findings: The employer voice within system change

> **"It is much better to have sustainability modules built into existing frameworks either as compulsory or optional parts of frameworks and a much easier way to get coverage and broad adoption."**
>
> Manufacturing

4.28 This all also supported the concept of working towards a just transition, in terms of workforces from all sectors of the economy are contributing towards meeting net zero targets.

4.29 Participants were also emphatic that the introduction of specific sustainable skills within specific apprenticeships must be treated as a high priority for those occupations where such skills are needed. The rationale for this urgency included both realising some of the aforementioned benefits as soon as possible, but also in ensuring an equitable rollout across apprenticeships. Some had concerns that those currently undertaking apprenticeships were in danger of 'missing out' on skills that will become fundamental to the Scottish skills landscape

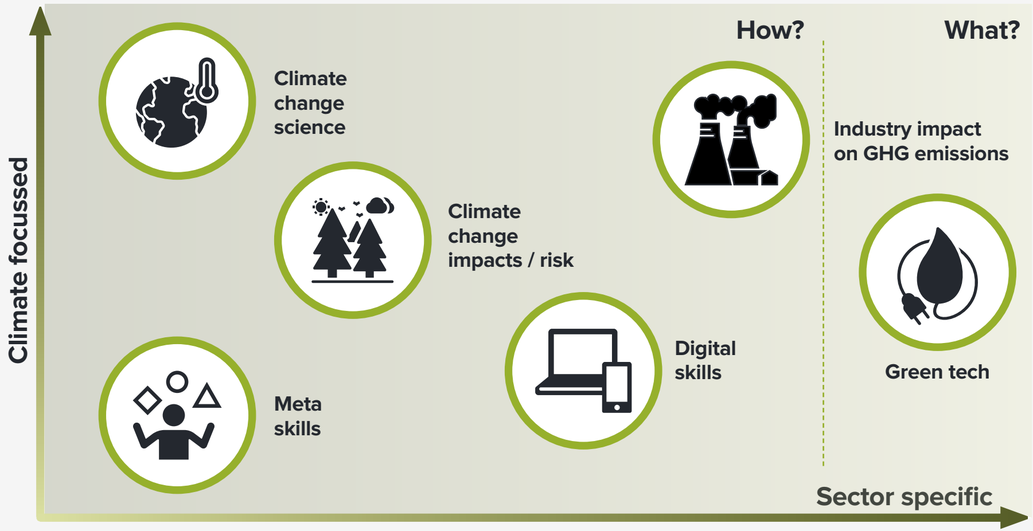
4.30 There are various approaches that can be taken to reflect sustainable skills in apprenticeships, without the need to overhaul the whole system. Emerging practice as identified in BILT research suggests a combination of the following approaches will provide the most effective approach, as it allows flexibility in implementation[19].

Approaches to integration	Examples of greening application
Cross-cutting approach Relevant to all learners across the system	Applying sustainability in work-related activities – e.g. climate literacy, energy and resource-efficiency
Modular approach Additional qualification modules to complement leaning and allow for a quicker response	Covering cross-cutting, sector or occupational competencies – e.g. responding to new local or sectoral demands
Sectoral approach Relevant to one economic sector	Optimising transport routes in the logistics sector – considering carbon emissions, energy efficiency etc
Occupational approach Relevant to one specific occupation	Operating, repairing and maintaining EV's – assembling electrical machines, setting up and maintaining automation systems etc.

19 https://unevoc.unesco.org/pub/bilt_trends_mapping_study.pdf

4 Analysis of findings: The employer voice within system change

Figure 4.4: Relevant digital skills



5 Challenges and opportunities

5.1 In order to support the development of sustainability within apprenticeships, research participants reflected what needed to be considered in the design and delivery of this work. A number of challenges / opportunities were identified, as follows:

1. **The need for clear terminology**
2. **Ensuring all apprentices, across all sectors, develop sustainable work practices**
3. **Respond to emerging, specific industry needs that support net zero transition**
4. **Urgency and need for pace in reflecting sustainability**
5. **Building awareness, capacity and capability among stakeholders inc. employers, providers and assessors**

These challenges were identified by employers and other research participants, and we discuss findings for each in turn.

The need for clear terminology

5.2 The terminology around how to discuss 'sustainability in apprenticeships' requires some thought. Early in the research, the term 'green competencies' was utilised, but participants indicated a strong preference for finding a different term that was more inclusive and better understood. The term 'sustainability' has been used throughout this paper, but even this term is broad and invites a range of interpretations that can vary by sectors and audiences, as well as individuals' broader awareness and understanding of environmental sustainability.

"One of the challenges is that the term 'sustainability' means so many different things, and I think it's really important it's seen in its broadest sense. I think this focus on green jobs and green skills is a bit narrow."

Engineering and Manufacturing

5 Challenges and opportunities

5.3 In setting out a programme of change, it is therefore vital that the parameters of its focus are clear, i.e. what we consider to be included within the term 'sustainability in apprenticeships', and – perhaps just as importantly – what should be excluded.

5.4 Within this broad terminology however it is important to recognise that 'green' concepts and indeed competencies more generally will mean different things to different sectors. Therefore, the terminology will also need to be worded to allow some flexibility and adaptability in terms of the skills developed within. This links to thinking that the identification of sustainability in apprenticeships (both existing and emerging demands) requires engagement with a wide range of stakeholders, particularly employers. This approach is emphasised in a paper "Bridging Innovation and Learning in TVET: BILT Thematic Workshop – New Qualification and Competencies in TVET" (2019) that includes greening qualifications and responding to societal demands for sustainable development, reduced environmental impact, and moving towards a greener economy and society.[20]

5.5 Setting these parameters from the start will ensure a more effective and efficient process, and support consistency in approach across the range of stakeholders involved.

Ensuring apprentices, across all sectors, develop sustainable work practices

5.6 As discussed earlier, most employers felt that reflecting and considering sustainability across apprenticeships, as opposed to creating a bespoke sustainability apprenticeships, would be fundamental to the success of reflecting sustainability within apprenticeships. This would also help emphasise that sustainable skills development is important for all apprentices, not just those interested in sustainability careers, or related routes.

5.7 Building these into existing frameworks should also be simpler and prove more effective than creating new frameworks from scratch. It will also support the just transition agenda.

5.8 A complementary set of integration approaches, ranging from cross-sector to occupational will be needed in order to roll out skills effectively and equitably.

20 https://unevoc.unesco.org/pub/bilt_thematic_workshop_nqc_in_tvet_summary_report.pdf

5 Challenges and opportunities

Respond to emerging, specific industry needs that support net zero transition

5.9 When reflecting sustainability in apprenticeships, it will be vital to consider specific industry needs, both currently and also with a view to the future, anticipating how demand will evolve over time. This might be impacted by emerging technologies (including digitisation), legislative changes, political or cultural shifts etc. Urgency and need for pace in reflecting sustainability

> **"Do you pre-guess skills, or wait for skills to be needed? We need flexibility in the design of apprenticeships to allow change of content etc. when importance/ relevance changes. We don't want the programme to become obsolete in the future."**
>
> Engineering and Manufacturing

5.10 Such intelligence is likely to derive from continuous engagement with a range of stakeholders, including industry themselves, as well as developments and best practice on the international scene.

5.11 As relayed earlier, employers considered it vital that reflecting sustainable skills in apprenticeships occurred as quickly as possible. However, they also conceded that it could take time to devise and prepare the range of learning outcomes, training materials, assessment process etc. that this requires.

5.12 Focussing on a phased or iterative approach to considering sustainability may help here. For example, incorporating a green lens against the occupational activities and raising awareness of sustainable options.

5.13 A consideration within this is whether there is a need to prioritise particular areas of the Scottish economy during roll out. In order to proceed with urgency, it could be valuable to focus on critical sectors, and take learnings forward to other sector areas.

5.14 There was a great deal of appetite for this idea among employers, who saw it as key to attracting young people into sustainability-focused apprenticeships in the longer term, as well as supplying them some of the skills they would need during their careers. It was however acknowledged to be a long-term ideal rather than an immediate goal, and work is already underway, as part of Priority Area 3 (developing the future workforce for the transition to net zero) within CESAP 2020-2025[21].

21 Skills Development Scotland (2020), Climate Emergency Skills Action Plan 2020-2025, p.43

5 Challenges and opportunities

Building awareness, capacity and capability among stakeholders inc. employers, providers and assessors

5.15 Employers widely believed that providers do not currently have the trainers in place to deliver the necessary sustainable skills.

> **"To make an apprenticeship happen, you need driving forces, the connections need to be in place, and the training providers need to have the skills and capabilities to teach the right things."**
>
> Retail

5.16 An important component therefore in design is to allocate sufficient resource and attention to these areas. This research identified a genuine appetite from training providers for reflecting sustainable practices within apprenticeships – some noted that this marked a positive shift in attitude compared to recent years. However, a challenge was identified in a perceived bottleneck around the number of qualified teachers, suggesting that employers themselves may have to, and be best placed, to take on this role.

5.17 There might be an opportunity for industry to lead training providers in this respect, offering out internal expertise to tutors to learn from and highlighting the importance of the employer role in this agenda. One example of good practice was offered by a construction firm, who had been approached by a local college and asked to offer training:

5 Challenges and opportunities

“We used to get a lot of pushback from providers, things like ‘a joiner doesn’t need to learn green competencies or understand about waste management’. Now there’s a change. I was in a recent meeting with four colleges and they only wanted to talk about the green agenda and how to embed green skills into programs. They’d asked for one of our Sustainability Managers to lecture them on green/sustainable issues so they can pass this on to apprentices. It does seem this change from providers has been because the industry has changed and is leading the way.”

Construction

5.18 Finally there was a commonly articulated fear that unengaged employers, particularly SMEs, may not have the culture, policies or processes (i.e. the top level of the pyramid) in place that would allow apprentices to effect more sustainable behaviour in the workplace, thereby minimising the impact of the any revised apprenticeships. This may be due to a lack of awareness of the need to transition to net zero, but also a concern that any changes to the business to allow for more sustainable practices could require significant investment.

6 Recommendations

Recommendation 1:

Refer to ‘sustainability’ in apprenticeships and confirm key components

Challenge: The need for clear terminology

We propose using the term ‘sustainability’ and referring to ‘green competencies / skills’ in relation to specific types of skills. Key components include:

- An understanding of the climate change science, associated impacts and risks
- Embedding a ‘green lens’ across apprenticeship training, with consideration given to how day-to-day job roles, activities and practices are affected by and impact on the environment
- Meta skills, such as leadership, critical thinking, and problem solving, to support adaption and resilience during this fast-paced transition to net zero
- Digital and data skills that equip apprentices with the tools for utilising emerging technologies

Recommendation 2:

Enabling sustainability across all apprenticeships

Challenge: Support employers to develop and reflect sustainable work practices which can be mirrored in apprenticeships, incorporating a range of cross-sectoral, sectoral and occupational approaches

There is clear value in embedding sustainable work practices, with a combination of approaches to provide flexibility in implementation and increasing occupational relevance. This includes a cross-cutting, legacy approach approach that addresses climate change and sustainable practice across all sectors; and utilising occupational and sectoral approaches to develop greater specificity for different apprenticeships.

Recommendation 3:

Use multistakeholder approach to guide skills development

Challenge: Respond to emerging, specific industry needs that support net zero transition

A wide range of stakeholders, particularly employers with specialised knowledge, should be consulted to guide sustainability and green competencies identification and integration, including emerging and future skills demands. Furthermore, there will be value in engaging with other apprenticeships and skills bodies internationally to learn from best practice and emerging developments.

6 Recommendations continued

Recommendation 4:

Take a phased / iterative approach to embedding sustainability

Challenge: Urgency and need for pace in embedding sustainability

A phased/iterative approach to reflecting sustainability and green practices into apprenticeships can support responding to the climate emergency with urgency. It may be that cross-cutting approaches can be integrated sooner, depending on levels of support and financial investment given. Emergent occupational competencies aligned to sustainable practice will require more time and financial resource to develop through the new employer-led model, with the immediate need to prioritise critical demand areas.

Recommendation 5:

Ensure stakeholders receive necessary support

Challenge: Building awareness, capacity and capability among stakeholders inc. employers, providers and assessors

In the short term, there will be learning materials available that can be used, enabling wide-spread access for all apprentices. Long term, there is a need to build capacity and capability in the wider Apprenticeship ecosystem of stakeholders. For providers this includes 'training the trainer', and incentives, including financial, to remove barriers relating to time and resource. For employers, this might include broader awareness raising aimed at senior leaders within organisations to better understand the rationale for reflecting sustainability in apprenticeships and how this can support their business and Scotland's transition to net zero.

7 Appendix: Method

7.1 SDS and SAAB facilitated a short life working group (SLWG) including SAAB members and additional external employers and experts – with representatives from both critical carbon reduction sectors and sectors more widely from across the Scottish economy. The working group included online engagement and two workshops.

7.2 IFF Research conducted depth interviews with SLWG members and other employers, conducted a mini literature review, and subsequently complied this report. The research commenced in August 2021 and was completed in October.

Workshops

7.3 Workshop 1: focused on developing the scope of the paper and its key objectives, considering existing insights on emerging approaches and the Scottish policy context.

7.4 Workshop 2: focused on validating and exploring themes in more depth, considering views and aims on a potential framing/model; and what support would be required to achieve those aims.

Depth interviews

7.5 The interview topic guide was developed off the back of the workshop and further discussions. The interviews aimed to investigate the workshop ideas and insights in more depth. They focused on unpicking the different priorities and challenges experienced by different sectors and businesses, as well as identifying examples of good practice and opportunities for SAAB to provide support.

7.6 In total, 21 depth interviews were carried out with members of the SLWG, some of whom had attended one or both workshops. Interviews were carried out over Zoom or Teams and lasted 45-60 minutes.

Mini literature review

7.7 A high-level review of existing literature was also conducted to provide international examples and context. This information has been incorporated into the report to add greater depth.

7 Appendix: Method

Limitations to the study

7.8 The participants were engaged with, interested in and/or working towards net zero, i.e. those with a better understanding of sustainability in their sector and in apprenticeships. Consequently, these audiences are likely to be ahead of other Scottish employers, in terms of prioritising sustainable practice implementation and appreciating the importance of these. While some could only comment on their own organisation, others were able to comment more widely on their sector, including which types / sizes of companies were lagging behind. This should be considered when interpreting the findings laid out in the research.

7.9 This study was conducted in a particularly short space of time, and thus does not seek to show a robust, rounded view of stakeholder views. Findings should be treated indicatively, and more research may be needed to reinforce / assess conclusions emanating from the research.

"IFF Research illuminates the world for organisations businesses and individuals helping them to make better-informed decisions."

Our Values:

IFF Research

1. Being human first:

Whether employer or employee, client or collaborator, we are all humans first and foremost. Recognising this essential humanity is central to how we conduct our business, and how we lead our lives. We respect and accommodate each individual's way of thinking, working and communicating, mindful of the fact that each has their own story and means of telling it.

2. Impartiality and independence:

IFF is a research-led organisation which believes in letting the evidence do the talking. We don't undertake projects with a preconception of what "the answer" is, and we don't hide from the truths that research reveals. We are independent, in the research we conduct, of political flavour or dogma. We are open-minded, imaginative and intellectually rigorous.

3. Making a difference:

At IFF, we want to make a difference to the clients we work with, and we work with clients who share our ambition for positive change. We expect all IFF staff to take personal responsibility for everything they do at work, which should always be the best they can deliver.

Short Life Working Group members

Paul Sheerin (Scottish Engineering), CEO
Ruth Jennings, Skills Development Programmes Manager at Sainsburys
Mhairi Creanor (Zero Waste Scotland), Circular Economy Project Manager
Mark Bustard (IBioIC), CEO
Catherine Gee (Keep Scotland Beautiful), Deputy CEO
Catherine Cartmell (HES), Skills Investment Plan Manager
Andy Pollock (City of Glasgow College), Associate Dean
Andy Sturgeon (Scottish Power), Social Projects & Sector Education Consultant
Sarah Dhanda (Enginuity), Head of Strategic Partnerships
Chris Clark (EMTEC), Managing Director
Sarah Hillyear (RGU), Head Of Business Development
Julie Whittle (Microsoft), Account Executive
Jim Hannigan (NMIS), Head of Skills Capability
Suzanne Sherry (Scotrail), Early Careers Manager
Henry Graham, National Chair of Lantra Scotland