Scottish Engineering

# What is Net Zero ?

Dr Eric Boinard

# House keeping

> Please place your microphone on mute and camera off

> Session will be recorded

> Slides will be made available

# Agenda

## The 5Ws and 2Hs of Net Zero

- Why – positive legacy
- Who – who cares ?
- What – insights from our 1-2-1 programme
- When – timescale and progress
- Where – green skills
- How – Scottish Engineering support programme
- How much – Reporting and Taxing

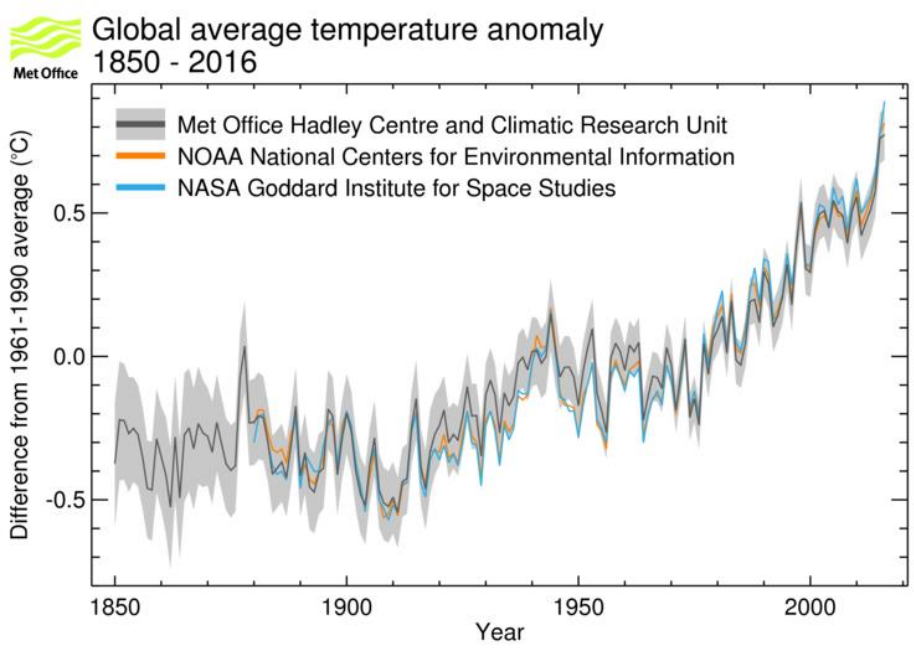
# Roadmap to Net Zero

## Why

Scottish Engineering

# Driver

## Climate change




| | |
|---|---|
| 197 | The number of parties that have signed the UN's Paris Agreement on climate change. |
| 187 | The number of countries that have ratified the agreement. |
| The probability of exceeding 2°C based on what countries have promised to do.[7] | 90% |
| The probability of exceeding 2°C based on what countries are actually doing.[7] | 97% |
| 16 | The number of countries with national laws consistent with their emissions reduction pledges. |
| 8 | The number of countries with legislation or proposed legislation to reach net-zero emissions by 2050*. |
| The growth in carbon dioxide emissions from fossil fuels and cement in 2018.[4] | 2.7% |
| The years left until emissions need to peak for the world to stand a much better chance of reaching the 1.5°C target. | 0 |

# Driver

## Competitive advantage

| Employees | Customers | Businesses | Governments | Competitors | Consumers |
|---|---|---|---|---|---|
| Easier hiring, retention | Higher revenues | Save cash and carbon | Lower regulatory risks | Cheaper financing | Higher value |
| 40% | +4–25 pp | ~50% | +2–12 pp | –100 bp | +3 pp |
| of talent seek sustainability | CAGR of sales growth for "green" products | of emission reduction at net zero cost in key sectors | EBIT margin after EU Carbon Border Tax[1] for companies abating 55% of emissions | WACC for top quartile environmental performers in Europe | TSR for top quartile environmental performers globally |

**Note**: 1. Based on a €75/$tCO_2$ carbon price assumption for 2030.

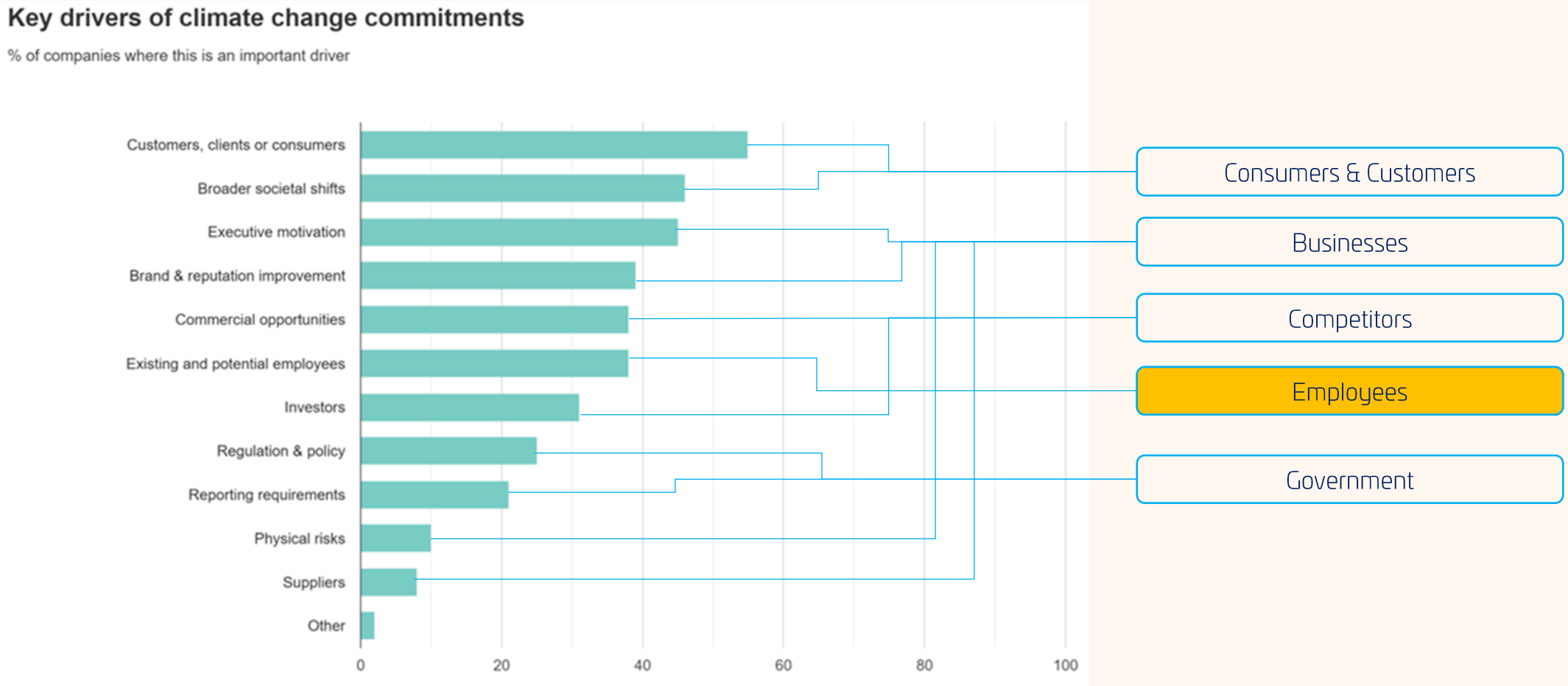
# Roadmap to Net Zero

## Who cares?

Scottish Engineering

# Everybody!

## Stakeholder desire



# Employee

## Values and Responsibilities

**Most millennials would take a pay cut to work at a environmentally responsible company**

Nearly 40% of millennials have chosen a job because of company sustainability. Less than a quarter of gen X respondents said the same, and 17% of baby boomers.

**23%** *say 'doing a job that makes a difference' is most important to their career.*

**25%** *say their ideal employer is an organisation with values matching their own.*

**37%** *are worried about automation putting jobs at risk – up from 33% in 2014.*

**60%** *think 'few people will have stable, long-term employment in the future'.*

**65%** *think technology will improve their job prospects in the future.*

**70%** *would consider using treatments to enhance their brain and body if this improved employment prospects in the future.*

**73%** *think technology can never replace the human mind.*

**74%** *are ready to learn new skills or completely retrain in order to remain employable in the future.*

**74%** *believe it's their own responsibility to update their skills rather than relying on any employer.*

**75%**

Believe their organisation needs to focus more on its societal & community impact to thrive in a post-COVID world.

SPRING WISE SURVEY

Scottish Engineering

# Employee

## Purpose


CONE COMMUNICATIONS

Sustainability and net zero is one of these fundamental purposes to which people can connect easily

### Employees want to work for company with a purpose

**58%** consider a company's social and environmental commitments when deciding where to work

**55%** would choose to work for a socially responsible company, even if the salary was less

**51%** won't work for a company that doesn't have strong social or environmental commitments

### Employees want a job that add value to this purpose

**88%** feel their job is more fulfilling when they are provided opportunities to make a positive impact on social or environmental issues (vs. 74% U.S. average)

**79%** consider a company's social and environmental commitments when deciding where to work (vs. 58% U.S. average)

**76%** would choose to work for a socially responsible company, even if the salary would be less than at other companies (vs. 55% U.S. average)

**75%** say it's important their company shares its goals, progress and related achievements

**71%** want their company to provide opportunities for them to help make a positive impact on the company's social and environmental commitments

**77%** say it's important their employer provides them with hands-on activities around environmental responsibility

**47%** believe companies need to find a balance around providing opportunities that focus on individuals' personal interests and the social and environmental issues most important to the business

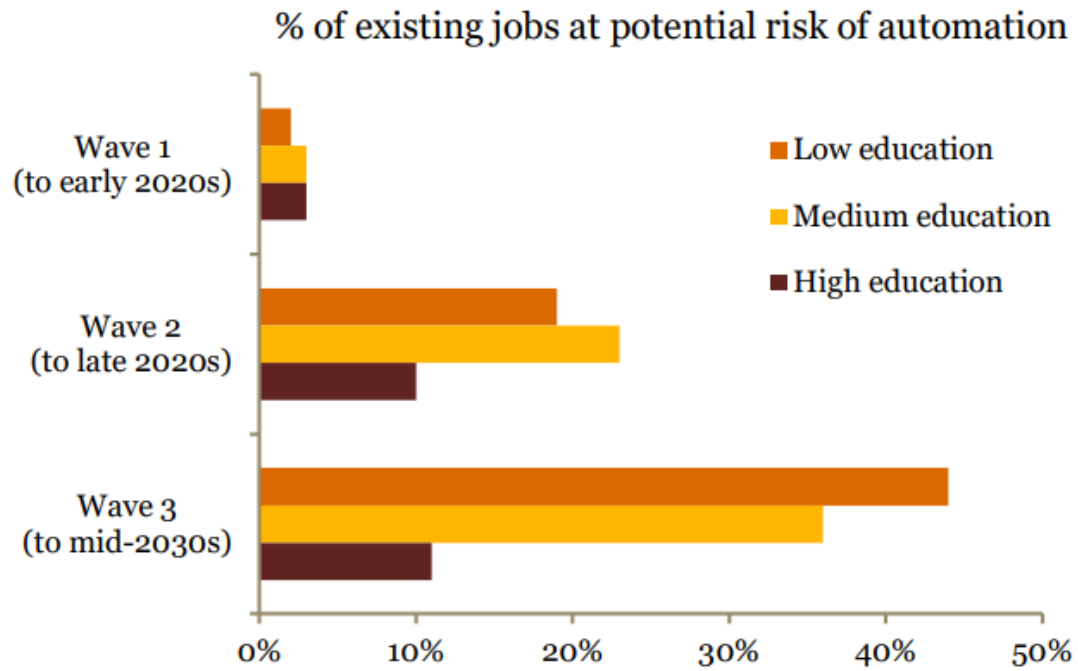
Scottish Engineering

# Employee

## Fear of automation

**37%**
*are worried about automation putting jobs at risk – up from 33% in 2014.*

**70%**
*would consider using treatments to enhance their brain and body if this improved employment prospects in the future.*




***Source: PwC estimates based on OECD PIAAC data (median values for 29 countries)***

| Waves | Description and impact |
|---|---|
| **Wave 1:** **Algorithmic wave (to early 2020s)** | Automation of simple computational tasks and analysis of structured data, affecting data-driven sectors such as financial services. |
| **Wave 2:** **Augmentation wave (to late 2020s)** | Dynamic interaction with technology for clerical support and decision making. Also includes robotic tasks in semi-controlled environments such as moving objects in warehouses. |
| **Wave 3:** **Autonomous wave (to mid-2030s)** | Automation of physical labour and manual dexterity, and problem solving in dynamic real-world situations that require responsive actions, such as in transport and construction. |

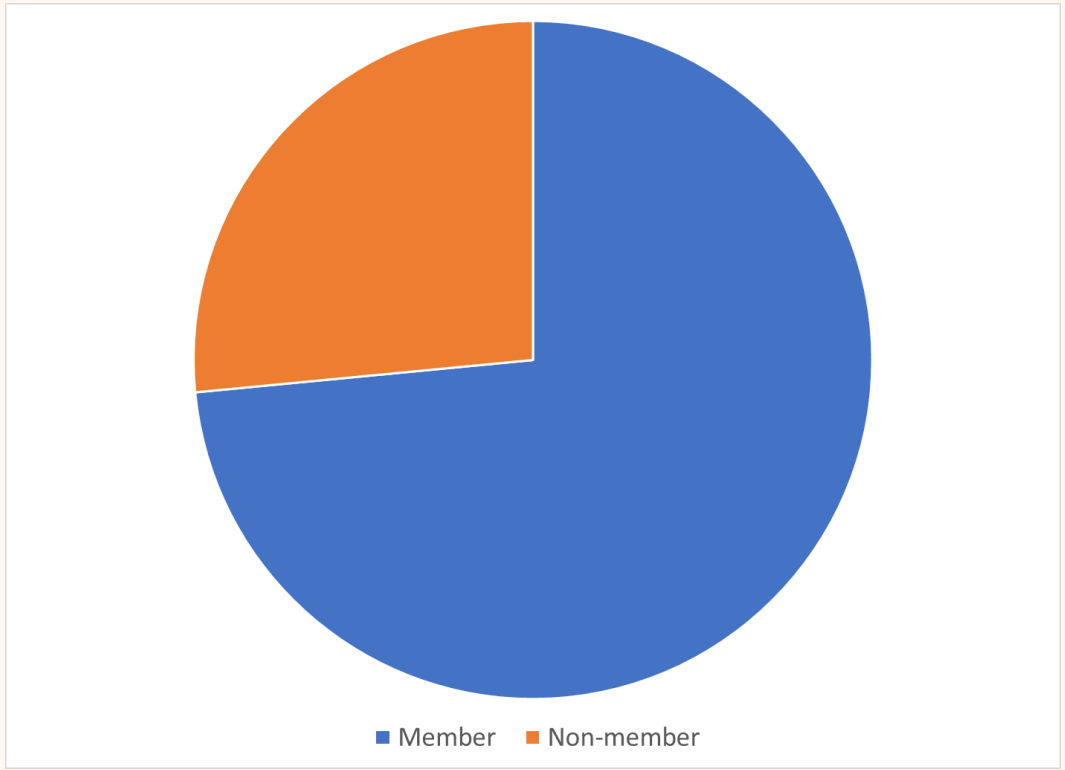
# Roadmap to Net Zero

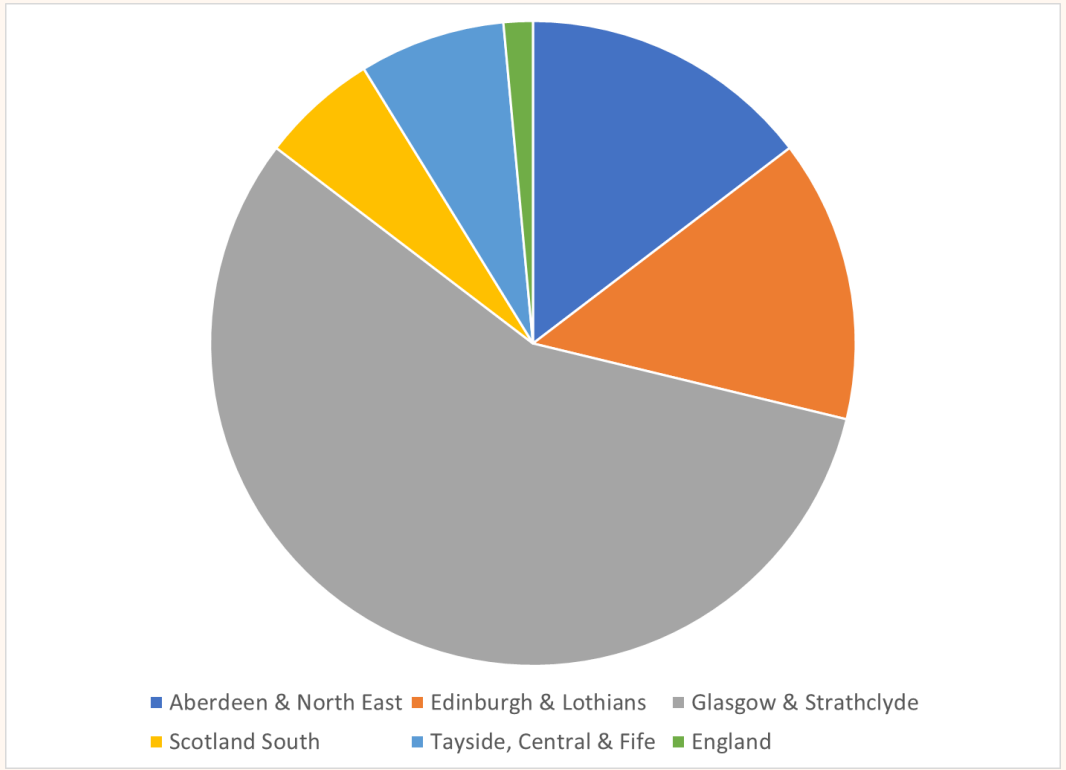
## What - insights

Scottish Engineering

# 1-to-1

## Engagement (286 to date, 66% with SMEs, 21% skill providers)



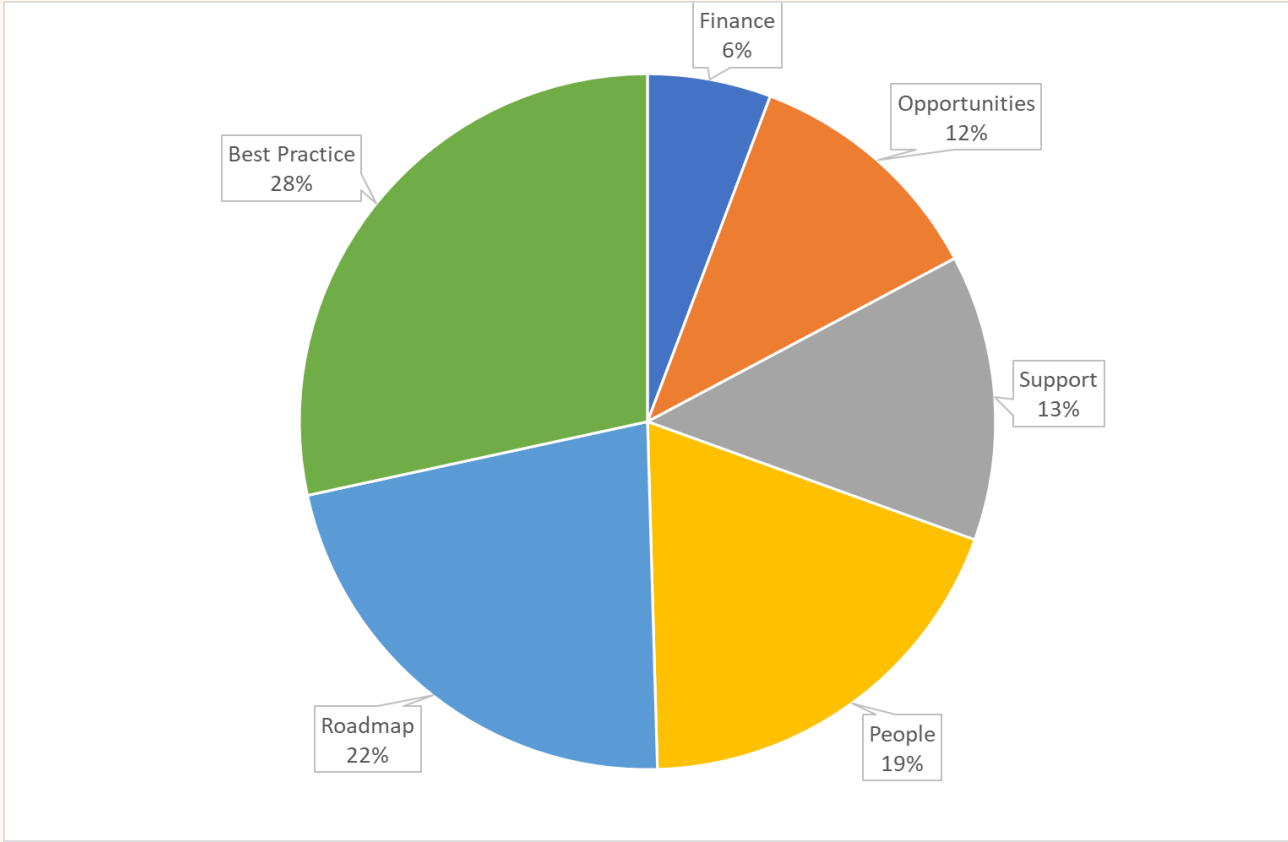



# 1-to-1

## Queries, requests and needs and what we are doing to help

### Tier 1

- Best practice (28%): methodologies, standards, pledges, legislation ⇨ guidance on standards and methodology, training and interventions
- Roadmap (22%): where to start, confusion, information overload ⇨ 7 steps SMART roadmap guidance
- People (19%): skills and training ⇨ driven by skill provider engagements (80%)



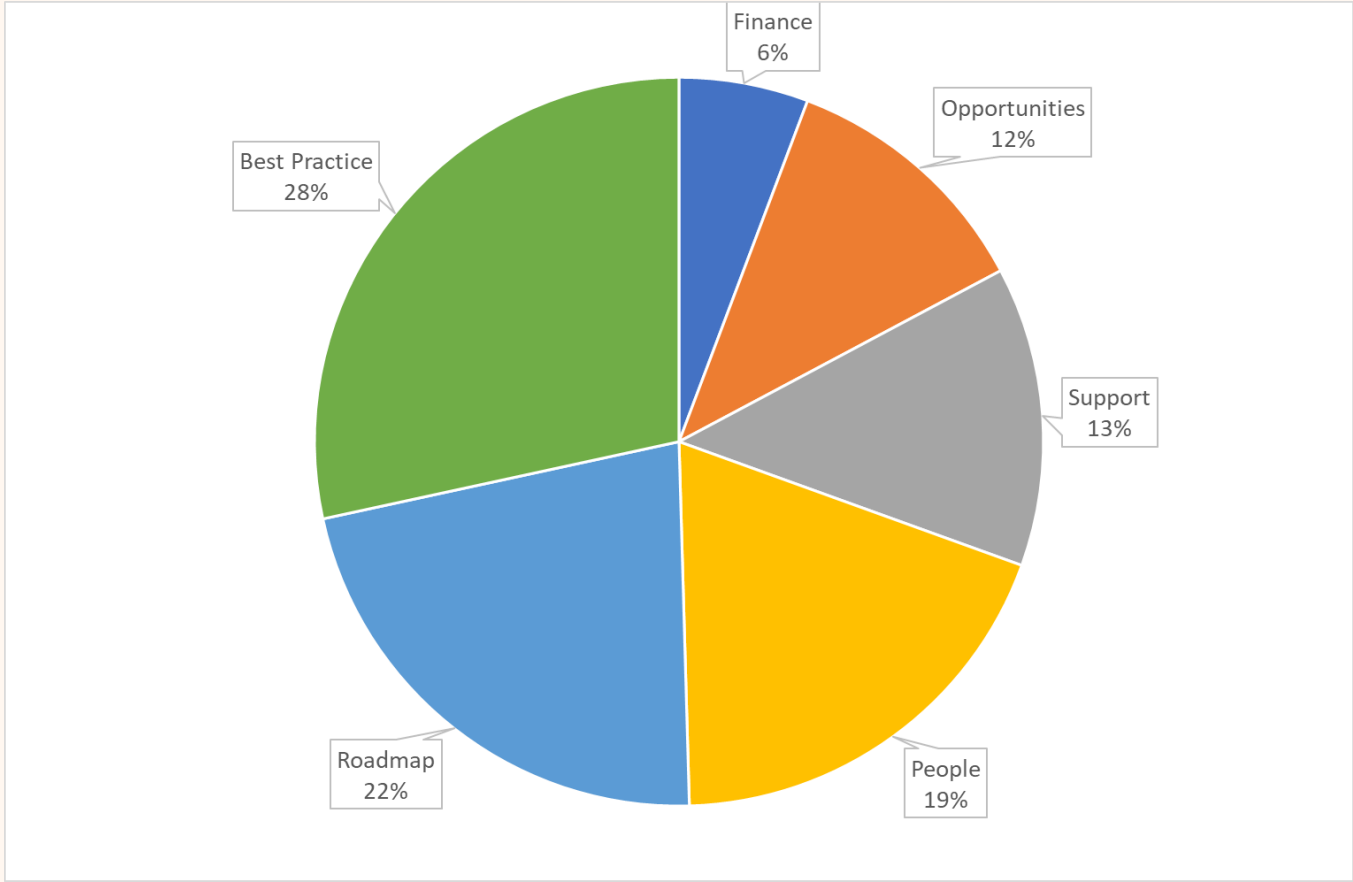

Scottish Engineering

# 1-to-1

## Queries, requests and needs and what we are doing to help

### Tier 2

- Support - non financial (13%): webinars ⇨ holistic but generic, ideation guidance
- Opportunities (12%): net zero and innovation ⇨ peers, trends, 4Ds
- Finance (6%): funding (internal and external), costs, grants ⇨ FBS, case studies



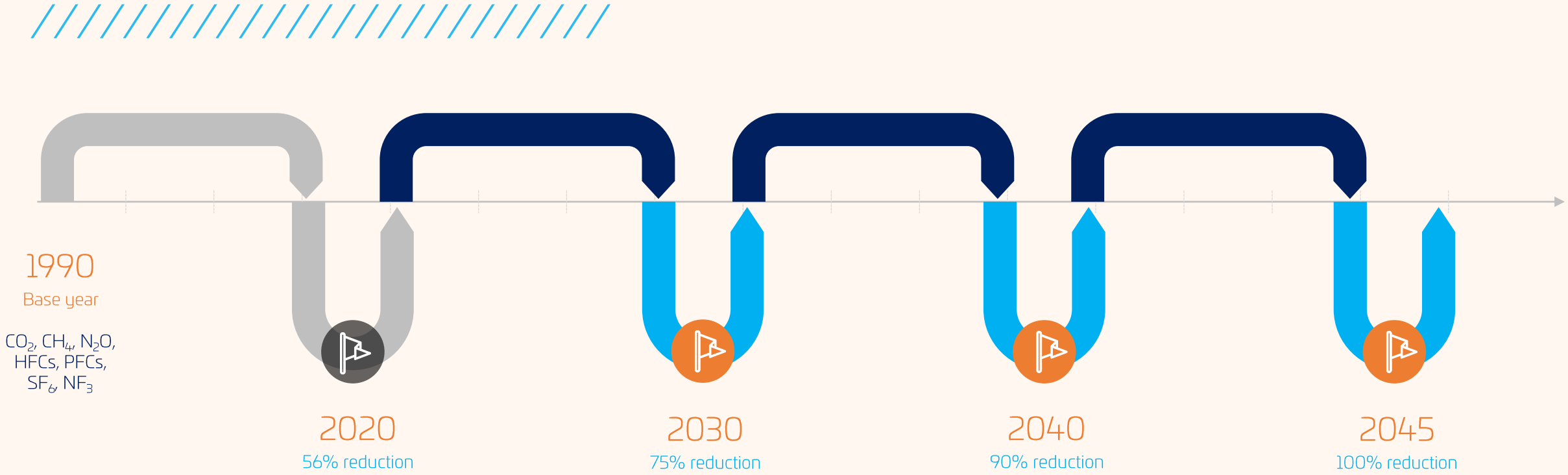
# Roadmap to Net Zero

## When - timescale

Scottish Engineering

# Scottish Government Legislation

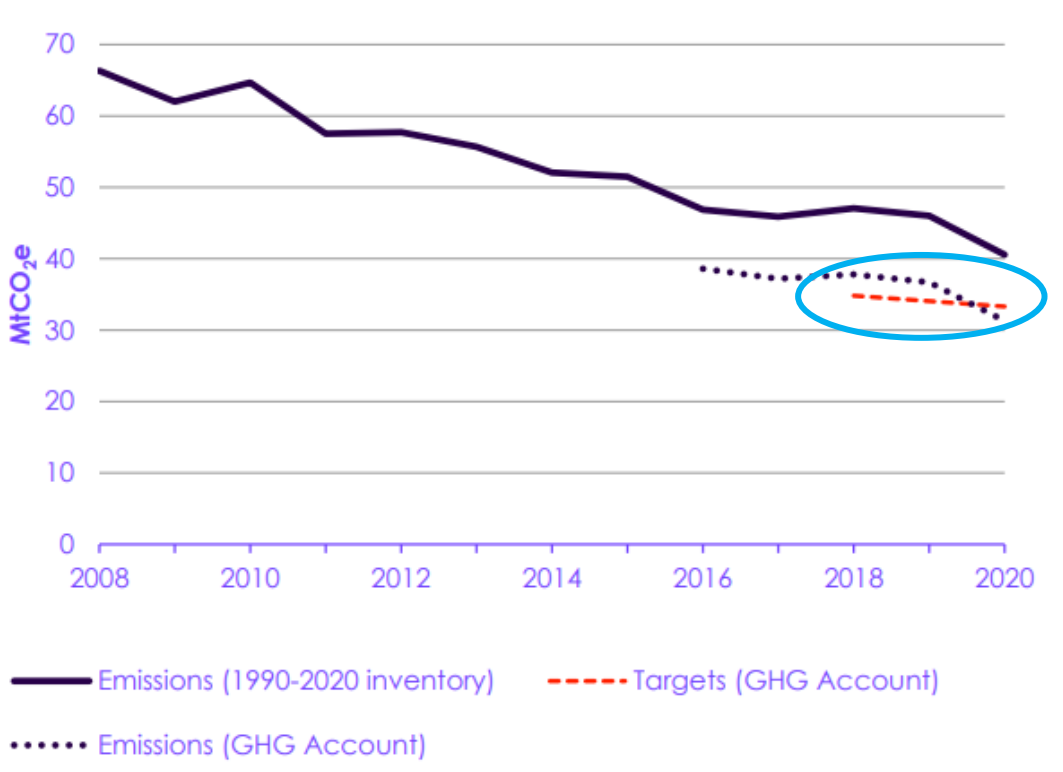
## Climate Change (Emissions Reduction Targets) (Scotland) Act 2019




Scottish Engineering

# Scottish Government Performance

## Climate Change (Emissions Reduction Targets) (Scotland) Act 2019

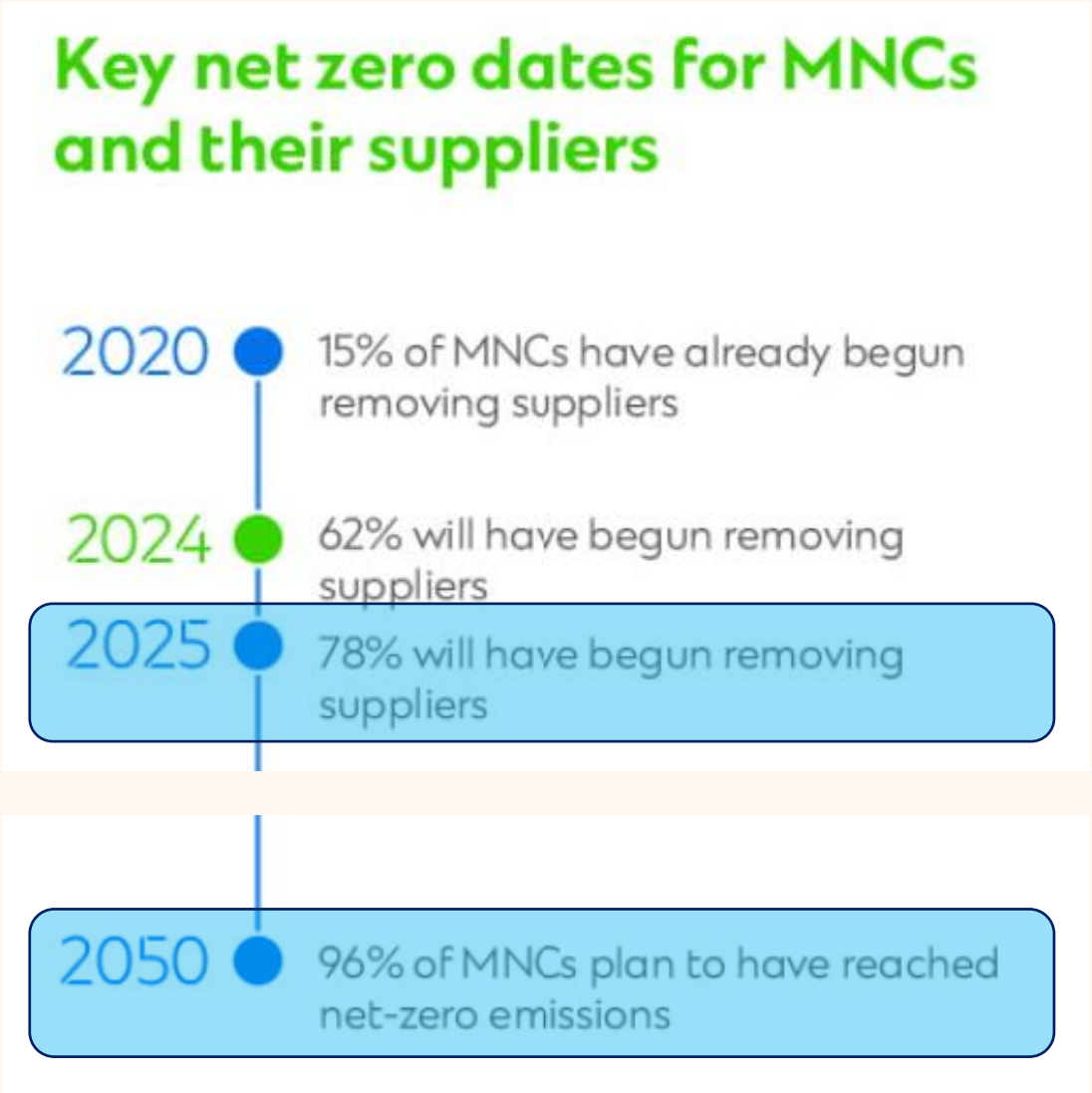



| CCC | Mt CO2e | Reduction | Target | |
|---|---|---|---|---|
| 2021 | 41.6 | 49.2% | 57.9% | Not met |
| 2020 | 40.0 | 58.7% | 56.0% | Met |
| 2019 | 47.8 | 51.5% | 54.1% | Not met |
| 2018 | 41.6 | 50.0% | 52.3% | Not met |
| 2017 | 46.4 | 39.1% | 50.4% | Not met |

# Customer

## Multi-national companies (MNCs)

- **67%** say the first step in their net zero strategy will be reducing supplier emissions.
- **78%** say they will start removing slow-to-transition suppliers by 2025.
- MNCs expect to cut around **35%** of their current suppliers as they respond to net-zero pressure.



# Roadmap to Net Zero

## Where - skills

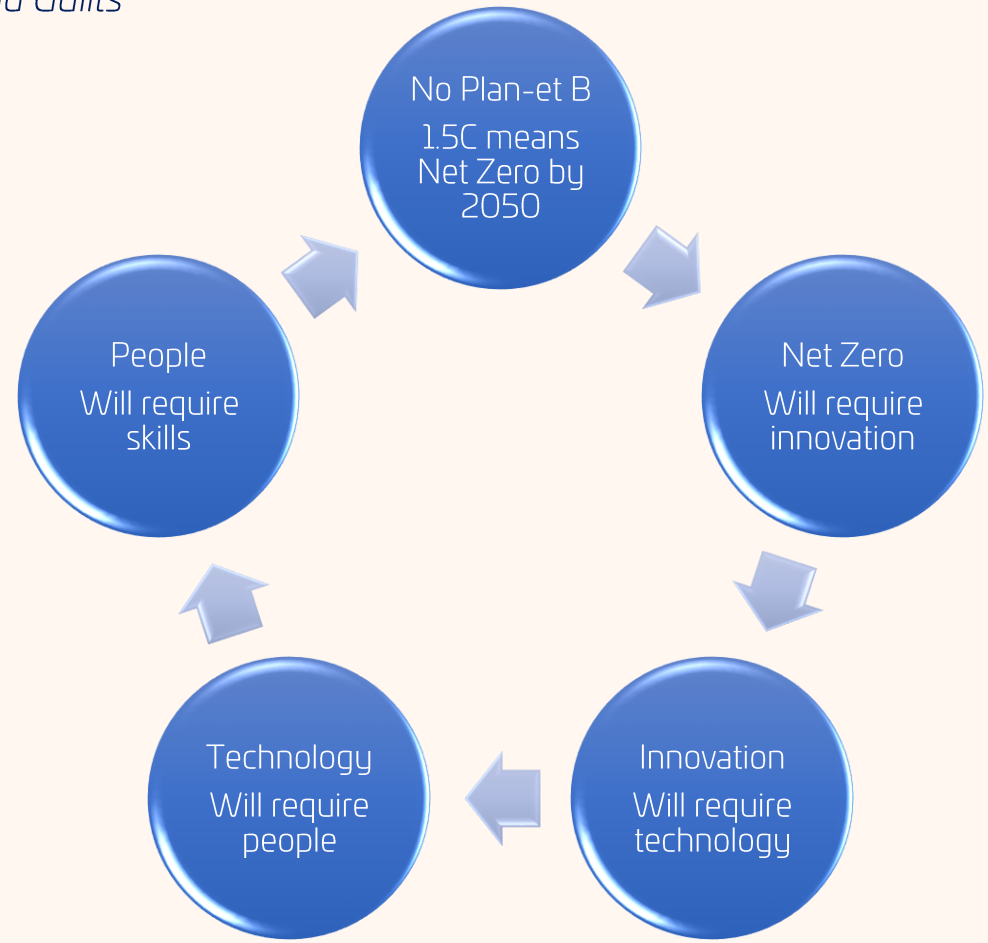
Scottish Engineering

# Skills requirement

## Transition

*Green skills are the specific knowledge, abilities and values needed to* ***promote the reduction of negative environmental impact*** *in the workplace.*
*- City and Guilts*

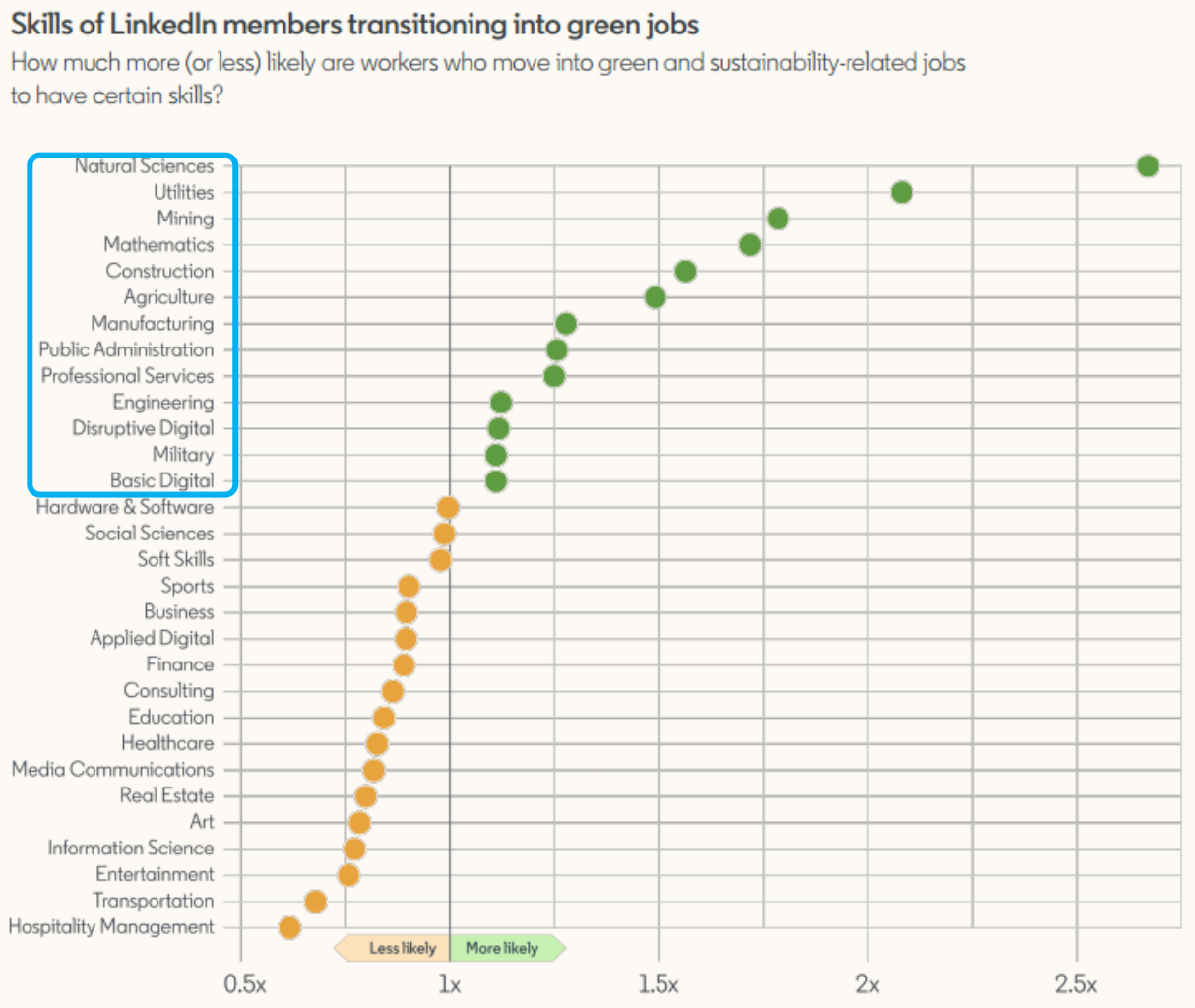
- Green skills are the knowledge, abilities, values and attitudes needed to live in, develop and support a **sustainable and resource-efficient society** (UNIDO)
- Employability – it is not about new green skills but '**greening**' of traditional skills
- Just as most roles now require digital skills, jobs ranging from procurement specialist to fleet manager to product designer to head chef can be performed in **a more sustainable way** if workers have green skills



# Skills requirement

## Employability

- Workers with green skills have been hired for new jobs at a **higher rate** than those without green skills.
- 81% of workers who transition into green jobs have at least **some green skills** or prior green experience.
- Between 2018 and 2023, the share of green talent grew by **5.4%** per year, while the share of jobs requiring at least one green skill grew by **9.2%**.



# Skills requirement

## Green Job barometer

| 01 | 02 | 03 | 04 | 05 |
|---|---|---|---|---|
| **Green job creation** | **Wider benefits from green jobs** | **Sunset jobs to disappear** | **Carbon intensity of jobs** | **Green workplaces** |
| The relative density of green job advertisement as a total of job advertisements. | The multiplier effect of direct new green jobs in creating additional employment, whether indirectly or induced via employment effects. | The number of jobs lost by 2030 as a result of a transition to environmental sustainability, in the absence of worker reallocation or upskilling. | Carbon dioxide emissions per employer. This provides information about the carbon intensity of different sectors and regions. | Worker sentiment about what the green transition means for their own role and workplace. |

### What is a green job?

The first contribution of the Barometer was to produce a clear definition of green jobs based on the objectives linked to different jobs. Jobs are considered 'green' if their roles involve the following:

**Producing and providing environmentally friendly products and services** (e.g. producing solar panels or other forms of renewable energy, also includes environmentally friendly version of traditional products like energy-efficient light bulbs).

**Adapting work processes to become more environmentally friendly or use fewer natural resources** (e.g. beer brewed in solar-powered breweries, or operations that are managed from wind-powered offices).

**Supporting the green economy indirectly** (e.g. environmental advisors in business consulting, law and accounting).

**2023 Green Jobs Barometer economic region ranking**

| | Overall ranking | Pillar 1: Green job creation | Pillar 2: Additional jobs impact | Pillar 3: Sunset jobs to disappear | Pillar 4: Carbon intensity of jobs | Pillar 5: Green workplaces |
|---|---|---|---|---|---|---|
| Scotland | 1 | 1 | 2 | 8 | 8 | 3 |
| London | 2 | 5 | 1 | 12 | 1 | 1 |
| South West | 3 | 2 | 9 | 6 | 3 | 9 |

**Table 1:** Green jobs postings from Q3 2021 to Q2 2022, by region

| | 2023 | 2022 | Position | Move | Green ads 2023 | Green ads 2022 |
|---|---|---|---|---|---|---|
| Scotland | 4.0% | 3.3% | 1 | = | 26,479 | 24,610 |
| South West | 2.7% | 2.4% | 2 | = | 24,245 | 32,285 |
| North West | 2.5% | 2.3% | 3 | = | 25,944 | 31,896 |

# Skills requirement

## Green Job in Scotland

**1,869**

**extra green roles advertised in Scotland, contrasting the reduction of overall demand for green skills across the UK**

**60%**

**of occupations command an average pay premium of 23% for entry-level green roles**

**4.04%**

**of all jobs advertised in Scotland are considered as green, a proportion 74% higher than the UK average**

| Sector | Number green jobs (absolute) | | | % of green jobs | | |
|---|---|---|---|---|---|---|
| | 2021 | 2022 | 2023 | 2021 | 2022 | 2023 |
| Financial and insurance activities | 285 | 1,374 | 2,217 | 0.97% | 3.16% | 5.57% |
| Other service activities | 3 | 612 | 598 | 0.85% | 2.68% | 2.91% |
| Human health and social work activities | 239 | 494 | 272 | 0.18% | 0.40% | 0.27% |
| Professional, scientific and technical activities | 3,849 | 9,143 | 11,410 | 7.20% | 12.15% | 16.17% |
| Administrative and support service activities | 490 | 1,305 | 1,283 | 2.09% | 2.95% | 3.73% |
| Agriculture, forestry and fishing | 48 | 80 | 31 | 17.45% | 6.23% | 3.71% |
| Information and communication | 141 | 1,753 | 2,401 | 0.24% | 3.19% | 4.92% |
| Construction | 1,215 | 2,337 | 2,571 | 2.64% | 4.51% | 6.22% |
| Arts, entertainment and recreation | 14 | 65 | 39 | 0.70% | 1.82% | 2.49% |
| Mining and quarrying | 24 | 8 | 38 | 63.16% | 4.65% | 8.07% |
| Manufacturing | 294 | 712 | 415 | 2.45% | 3.81% | 4.62% |
| Electricity, gas, steam and air conditioning supply | 1,302 | 2,256 | 1,638 | 27.43% | 31.98% | 28.51% |
| Wholesale and retail trade, repair of motor vehicles and motorcycles | 205 | 1,788 | 1,148 | 0.33% | 1.53% | 1.07% |
| Education | 55 | 163 | 102 | 0.14% | 0.49% | 0.52% |
| Public administration and defence, compulsory social security | 453 | 1,343 | 1,186 | 3.44% | 3.71% | 1.69% |
| Accommodation and food service activities | 86 | 1,013 | 476 | 0.25% | 1.27% | 1.14% |
| Water supply, sewerage, waste management and remediation activities | 9 | 90 | 37 | 11.25% | 36.44% | 23.87% |
| Transportation and storage | 418 | 1,308 | 617 | 1.08% | 2.82% | 1.49% |

# Roadmap to Net Zero

## How – programme

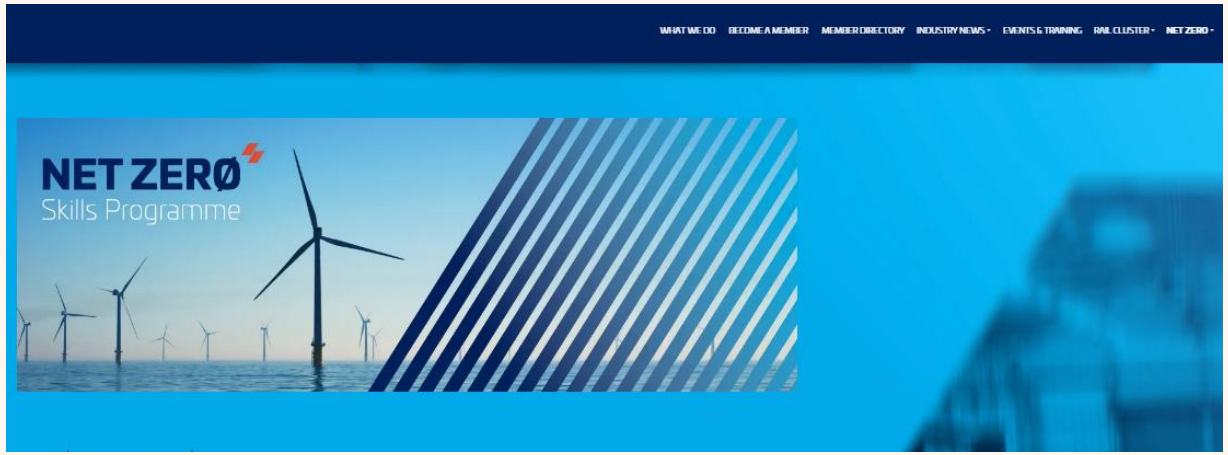
Scottish Engineering

# Net-Zero Support Programme

Skills Development Scotland

## Microsite

> https://www.scottishengineering.org.uk/net-zero-skills/




## One-to-One

> Please make a note of interest to:
>> scoteng.org.uk
>> 0141 221 3181

Eric Boinard
Net Zero Project Lead
ericboinard@scottishengineering.org.uk

Scottish Engineering

# Programme

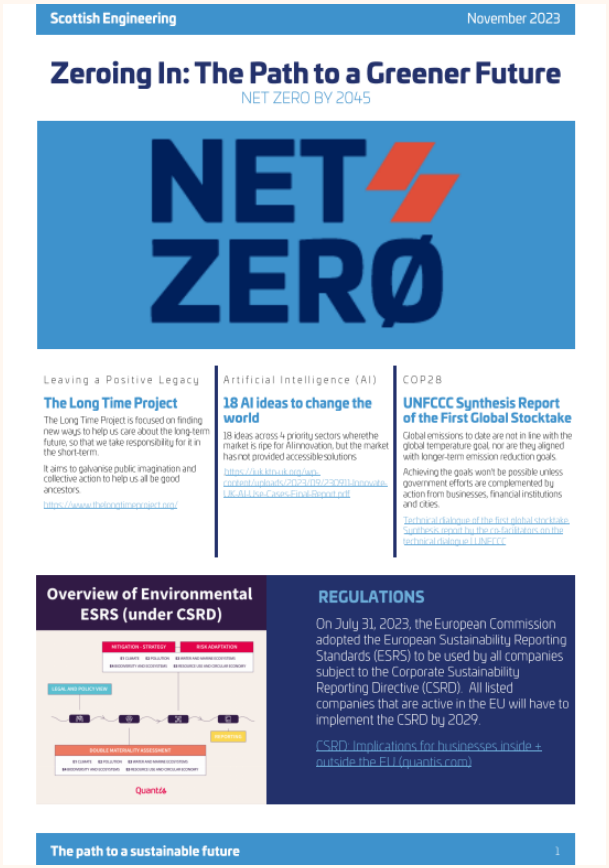
## Webinars


- **Awareness series** (1 and 2) – Net Zero lean thinking:
  - The 5Ws and 2Hs of Net Zero, part 1
  - The 5Ws and 2Hs of Net Zero, part 2
- **Chapter series** (3 to 6) - based on Scottish Government Climate Change Plan eight chapters:
  - Chapter 1: Electricity and Chapter 8: Negative Emissions Technologies
  - Chapter 2: Buildings, Chapter 3: Transport and Chapter 4: Industry
  - Chapter 5: Waste and the Circular Economy
  - Chapter 6: Land Use, Land Use Change and Forestry (LULUCF) and Chapter 7: Agriculture
- **Net Zero series** (7 to 9)
  - Standards, which one to choose – Selecting the right methodology, including Excel file with more details for each standard
  - Summary of 2021 including findings and learnings from our 1-to-1 programme
  - Roadmap – Building a SMART roadmap
- **Feedback series** (10 to 16)
  - Scottish Engineering ambition with Babcock and Wilcox Diamond Power
  - From Ambition to Solutions:  Ideation and Innovation
  - Offsetting not Greenwashing with Texo Group
  - Net Zero and Energy costs with RWG
  - 2022 review with Aggreko
  - Challenges and AI with Highland Springs
  - Carrots and Sticks with Highland Metals

Scottish Engineering

# Programme

## Newsletter


Scottish Engineering November 2023

Zeroing In: The Path to a Greener Future

NET ZERO BY 2045

NET ZERØ

Leaving a Positive Legacy

**The Long Time Project**

The Long Time Project is focused on finding new ways to help us care about the long-term future, so that we take responsibility for it in the short-term.

It aims to galvanise public imagination and collective action to help us all be good ancestors.

https://www.thelongtimeproject.org/

Artificial Intelligence (AI)

**18 AI ideas to change the world**

18 ideas across 4 priority sectors where the market is ripe for AI innovation, but the market has not provided accessible solutions

https://ukktn-uk.org/wp-content/uploads/2023/09/230911-Innovate-UK-AI-Use-Cases-Final-Report.pdf

COP28

**UNFCCC Synthesis Report of the First Global Stocktake**

Global emissions to date are not in line with the global temperature goal, nor are they aligned with longer-term emission reduction goals.

Achieving the goals won't be possible unless government efforts are complemented by action from businesses, financial institutions and cities.

Technical dialogue of the first global stocktake: Synthesis report by the co-facilitators on the technical dialogue | UNFCCC

**Overview of Environmental ESRS (under CSRD)**

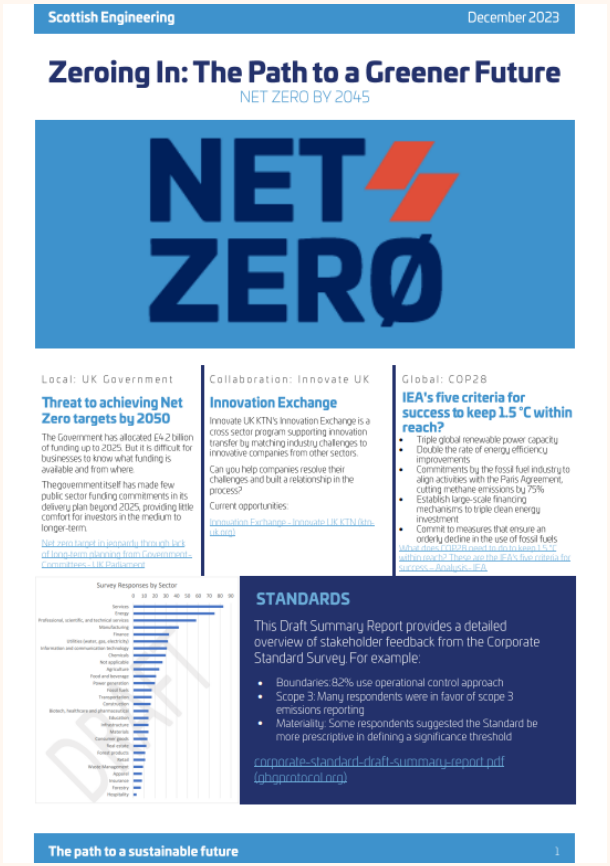
Quantis

**REGULATIONS**

On July 31, 2023, the European Commission adopted the European Sustainability Reporting Standards (ESRS) to be used by all companies subject to the Corporate Sustainability Reporting Directive (CSRD). All listed companies that are active in the EU will have to implement the CSRD by 2029.

CSRD: Implications for businesses inside + outside the EU (quantis.com)

The path to a sustainable future 1


Scottish Engineering December 2023

Zeroing In: The Path to a Greener Future

NET ZERO BY 2045

NET ZERØ

Local: UK Government

**Threat to achieving Net Zero targets by 2050**

The Government has allocated £4.2 billion of funding up to 2025. But it is difficult for businesses to know what funding is available and from where.

The government itself has made few public sector funding commitments in its delivery plan beyond 2025, providing little comfort for investors in the medium to longer-term.

Net zero target in jeopardy through lack of long-term planning from Government - Committees - UK Parliament

Collaboration: Innovate UK

**Innovation Exchange**

Innovate UK KTN's Innovation Exchange is a cross sector program supporting innovation transfer by matching industry challenges to innovative companies from other sectors.

Can you help companies resolve their challenges and built a relationship in the process?

Current opportunities:

Innovation Exchange - Innovate UK KTN (ktn-uk.org)

Global: COP28

**IEA's five criteria for success to keep 1.5 °C within reach?**

- Triple global renewable power capacity
- Double the rate of energy efficiency improvements
- Commitments by the fossil fuel industry to align activities with the Paris Agreement, cutting methane emissions by 75%
- Establish large-scale financing mechanisms to triple clean energy investment
- Commit to measures that ensure an orderly decline in the use of fossil fuels

What does COP28 need to do to keep 1.5 °C within reach? These are the IEA's five criteria for success - Analysis - IEA

Survey Responses by Sector

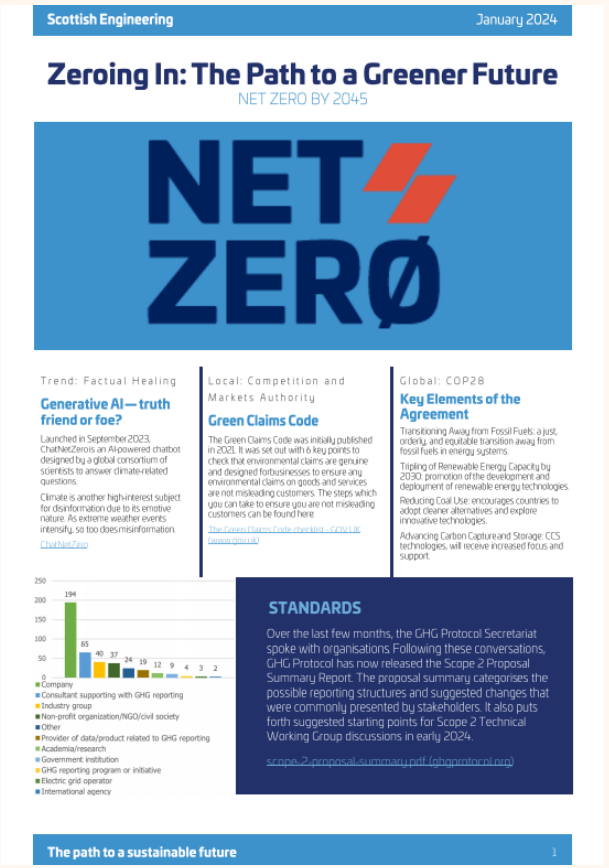
**STANDARDS**

This Draft Summary Report provides a detailed overview of stakeholder feedback from the Corporate Standard Survey. For example:

- Boundaries: 82% use operational control approach
- Scope 3: Many respondents were in favor of scope 3 emissions reporting
- Materiality: Some respondents suggested the Standard be more prescriptive in defining a significance threshold

corporate-standard-draft-summary-report.pdf (ghgprotocol.org)

The path to a sustainable future 1


Scottish Engineering January 2024

Zeroing In: The Path to a Greener Future

NET ZERO BY 2045

NET ZERØ

Trend: Factual Healing

**Generative AI — truth friend or foe?**

Launched in September 2023, ChatNetZero is an AI-powered chatbot designed by a global consortium of scientists to answer climate-related questions.

Climate is another high-interest subject for disinformation due to its emotive nature. As extreme weather events intensify, so too does misinformation.

ChatNetZero

Local: Competition and Markets Authority

**Green Claims Code**

The Green Claims Code was initially published in 2021. It was set out with 6 key points to check that environmental claims are genuine and designed for businesses to ensure any environmental claims on goods and services are not misleading customers. The steps which you can take to ensure you are not misleading customers can be found here:

The Green Claims Code checklist - CCW (UK) (www.gov.uk)

Global: COP28

**Key Elements of the Agreement**

Transitioning Away from Fossil Fuels: a just, orderly, and equitable transition away from fossil fuels in energy systems.

Tripling of Renewable Energy Capacity by 2030: promotion of the development and deployment of renewable energy technologies.

Reducing Coal Use: encourages countries to adopt cleaner alternatives and explore innovative technologies.

Advancing Carbon Capture and Storage: CCS technologies, will receive increased focus and support.

Company
Consultant supporting with GHG reporting
Industry group
Non-profit organization/NGO/civil society
Other
Provider of data/product related to GHG reporting
Academia/research
Government institution
GHG reporting program or initiative
Electric grid operator
International agency

**STANDARDS**

Over the last few months, the GHG Protocol Secretariat spoke with organisations. Following these conversations, GHG Protocol has now released the Scope 2 Proposal Summary Report. The proposal summary categorises the possible reporting structures and suggested changes that were commonly presented by stakeholders. It also puts forth suggested starting points for Scope 2 Technical Working Group discussions in early 2024.

scope-2-proposal-summary.pdf (ghgprotocol.org)

The path to a sustainable future 1

Scottish Engineering

# Programme

## Training (WIP)

## Unlocking Success in Net Zero

### Our Extended Online Course Highlights

**Course highlights**

- Dive Deeper: Unlike this short overview, our extended online course offers a deep dive into each of the steps described today
- Comprehensive Modules: Meticulously crafted modules that cover extensively each step
- Learning Resources: Access a wealth of resources, including downloadable materials and recommended readings
- Flexible Learning: Designed to fit into your busy schedule. Access course materials anytime, anywhere, and learn at your own pace.
- Certificate: Upon successful completion of the course, you will receive a certificate

**Course benefits**

- Accelerate progress towards Net Zero goals
- Encourage sustainable practices for a greener future
- Enhance workforce efficiency
- Implement cost reductions through sustainability
- Facilitate a better workplace culture

Invest in yourself and unlock a world of possibilities with our extended online course – "Unlocking Success in Net Zero."
Enroll Now: [Course Enrollment Link]

# 7 Steps

## SMART roadmap to Net Zero

S M A R T

DESIRABILITY | VIABILITY | FEASIBILITY

Consumer | Customer | Supplier | Organisation

VISION | MOTIVATION | CAPABILITY | ROADMAP

| 1. Vision and ambitions | 2. Timing: base and target years | 3. Boundaries | 4. Methodology | 5. Resources | 6. Track progress | 7. Verify compliance |
|---|---|---|---|---|---|---|
| Specific | Timebound | Measurable | Measurable | Achievable | Achievable | Relevant |
| Why, What | When | Where | How | Who | How much | Share |

Design thinking

Lean thinking

Discover

Define

Develop

Deliver



Scottish Engineering

# Roadmap to Net Zero

## How much – scale

Scottish Engineering

# Reporting

## Measuring and managing small and medium enterprises' GHG emissions

- There are 5.5 million small and medium enterprises (**SMEs**) in the UK, comprising over **99% of businesses** and around **50% of total GHG emissions** from UK businesses.

- The **UK government** is working with Bankers for Net Zero, the British Business Bank and a range of industry stakeholders, to **automate SME sustainability reporting** on a national scale.

- Enabling banks to help their SME customers to **track GHG emissions, including scope 3 GHG emissions**, will help unlock further **access to capital** to help achieve net zero goals. Bankers for Net Zero plan to feature the pilot programme of this at **COP28** (Dec'23).

Scottish Engineering

# Taxing

## Institute for Fiscal Studies and LSE recommendations

- If the government were willing to be ambitious, replace a raft of existing policies with a **single carbon tax**, or with an **emissions trading scheme**
- There is certainly scope to **extend the ETS well beyond** the 29% of emissions it currently covers, even if it never covers all emissions
- **Taxes on aviation** are low relative to its emissions, particularly for long-haul flight
- The government should bring in a **border tax** on emissions embedded in **imports** (CBAM)
- The **carbon tax** level **needs to be raised**. A carbon tax consistent with net-zero emissions by 2050 would start at £50 per tonne of carbon dioxide.

Scottish Engineering

# Takeaway

## Net Zero: an opportunity

- Why: as well as a financial opportunity it is an opportunity to leave a positive legacy
- Who: current (reskilling) and future (upskilling) employees
- What: best practice - methodologies, standards, pledges, legislation
- When: now but no later than 2050, aiming for 2045 (Scotland)
- Where: skills - promoting the reduction of negative environmental impact
- How: education, facilitating, demystifying
- How much: carrot and stick - reporting and taxation

Scottish Engineering

Scottish Engineering

# Thank you

scoteng.org.uk | 0141 221 3181

Scottish Engineering