



# MIDLANDS **GREEN** INNOVATION NETWORK

Together for net-zero

#mgin #greeninnovation

# SKILLS FOR THE GREEN REVOLUTION

Thursday 9 February 2023  
Derby Museum of Making

Delivery partners



# AGENDA

- 11.20: Introductions
- 11.25: The transition to Net-Zero and the impact on skills – Dr Polina Baranova, University of Derby
- 11.45: Practical solutions for green skills – Dr Kathryn North, Loughborough University
- 12:05: Q&As
- 12.15: The Local Skills Improvement Plan survey – Federation of Small Business (workshop with participants)
- 13:15: Lunch, networking, and opportunity to tour museum
- 13:45: Finish



#mgin #greeninnovation @MidsEngine @EnergyRA @FSBNottsDerbys

Delivery partners



# Dr Polina Baranova

Derby University

Specialist in Strategic Management  
Programme Leader for Doctor of  
Business Administration

## MIDLANDS **GREEN** INNOVATION NETWORK

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DERBY

# The Transition to Net Zero and the impact on skills

Dr Polina Baranova

[p.baranova@derby.ac.uk](mailto:p.baranova@derby.ac.uk)

09 February 2023

TEF Gold

[derby.ac.uk](http://derby.ac.uk)

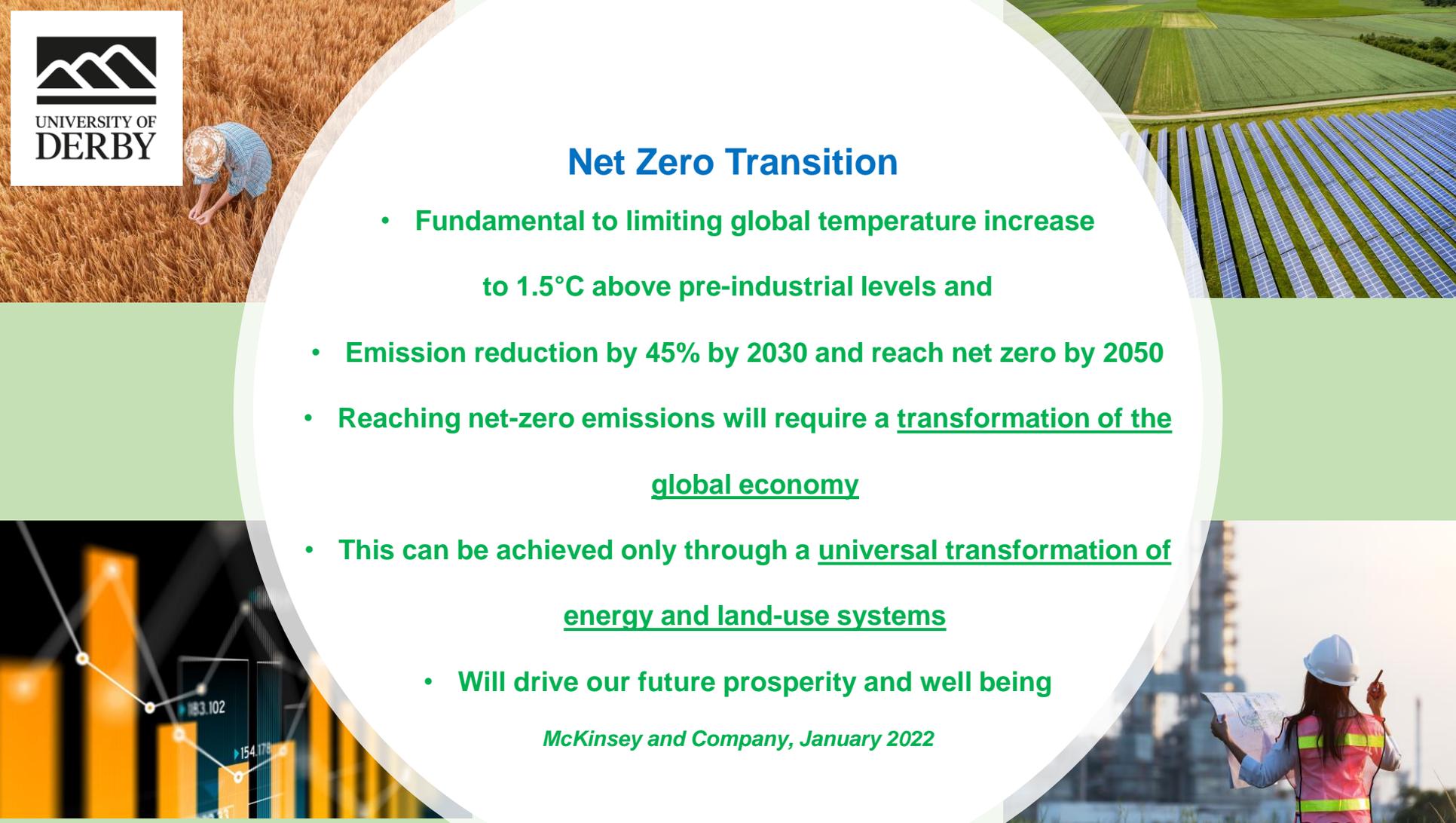


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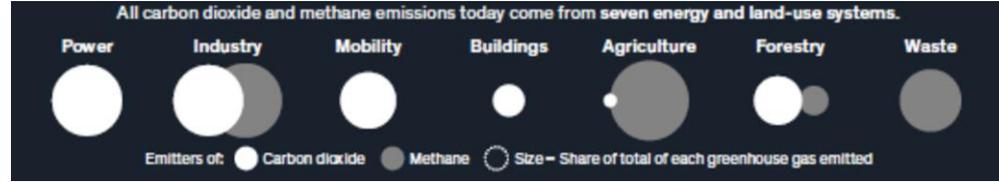
## Net Zero Transition

- Fundamental to limiting global temperature increase to 1.5°C above pre-industrial levels and
- Emission reduction by 45% by 2030 and reach net zero by 2050
- Reaching net-zero emissions will require a transformation of the global economy
- This can be achieved only through a universal transformation of energy and land-use systems
  - Will drive our future prosperity and well being

*McKinsey and Company, January 2022*



# The Net Zero Transition



Power and industry are major energy consumers and together generate about 60 percent of CO<sub>2</sub> emissions.

Share of emissions<sup>1</sup> per energy and land-use system, 2019, %

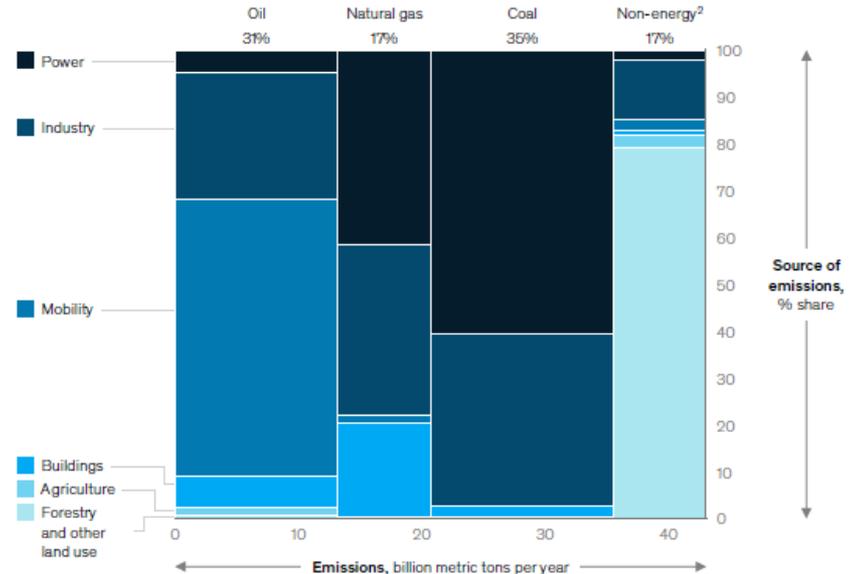


Subsectors' share of system emissions, %

System	Power	Industry	Mobility	Buildings	Agriculture	Forestry <sup>2</sup>
Power	97					
Industry	3	26				
Mobility		20	75			
Buildings		15	13	70		
Agriculture		5	11	30	96	
Forestry <sup>2</sup>		1	<1		4	100

Energy use accounts for 83 percent of the CO<sub>2</sub> emitted across energy and land-use systems.

CO<sub>2</sub> emissions per fuel and energy and land-use system, 2019, share<sup>1</sup>





# The Net Zero Transition

- **Significant:** Capital spending on physical assets for energy and land-use systems to rise by **\$3.5 trillion** per year over the next 30 years amounting to a total of **\$275 trillion**.
- **Front-loaded:** global capital spending could rise, *8.8% of global GDP in 2024-30*, before eventually going down.
- **Uneven:** developing countries and fossil fuel rich countries have high exposure to net-zero transition.
- **Exposed to risks: \$2.1 trillion** power assets could be stranded by 2050.
- **Net Zero transition** could result in a gain of **200 million** and loss of **185 million** direct and indirect jobs by 2050 worldwide;
  - Job losses in: fossil-fuel extraction, production and fossil-fuel power generation; livestock and feed-related jobs in agriculture.
  - Job creation in: renewable power, hydrogen, biofuels.
- **Rich in opportunity** in three main areas:
  - decarbonising processes and products;
  - replacing high emissions processes and product with low emissions ones;
  - new offerings to aid decarbonisation including supply-chain inputs, infrastructure and support services.



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# The Net Zero Transition: Sectors, Jobs, Skills

- **Fossil fuels, hydrogen based fuels and biofuels:** *a shift to low carbon energy sources.* Jobs would be lost in fossil fuel production, while jobs would be gained in other primary energy source industries including biofuels, hydrogen, and carbon capture.
- **Power:** *A major expansion of renewable and other low-emissions capacity.* Jobs in the power sector are more numerous due to demand for renewable electricity associated with the transition. **Steel industry:** *Investing in low-emissions production while managing higher costs.*
- **Cement industry:** *Managing higher costs and shifts in demand.*
- **Mobility:** *Shifting to low-emissions vehicles and managing up-front capital costs and job reallocation* between internal combustion engine-based value chains and low emissions-based value chains.





# The Net Zero Transition: Sectors, Jobs, Skills

- **Buildings:** *Retrofitting buildings and equipment with low-emissions energy sources and raising energy efficiency for new construction.* Job gains associated with the transition would be front-loaded when the majority of building insulation would be installed.
- **Food and agriculture:** *Reforming production and changing consumption patterns.* Job losses would primarily be driven by diet shift from ruminant meat to poultry; job gains would primarily be driven by increased demand for biomass used to produce biofuels.
- **Forestry and other land use:** *Financing forest protection and restoration while supporting people's livelihoods.* Job gains would be concentrated in the transition's early years, when more reforestation occurs.



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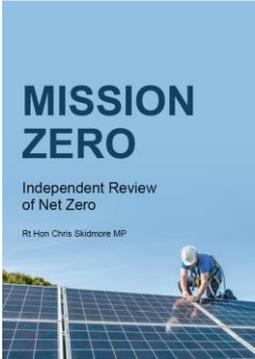


# The Net Zero Transition: UK

- Services-based economy with **a low exposure to net-zero transition.**
- High consumer emissions per capita, thus requiring management at a consumer level. *For households, this could mean adopting behavioral changes and spending more up-front on low-emissions goods including EVs.*
- High potential in:
  - **Low emission energy generation, including wind**
  - **CO2 abatement due to reforestation**
  - **CO2 storage potential**
  - **Climate-change mitigation related patents**
- Rich stocks of technological capital - *average R&D spend is about 2.3 percent of GDP, compared with about 1 percent for other countries. The average number of patents related to climate-change mitigation is about 1,100, compared with about 550 for the rest.*
- Service-based economy can also provide services, such as financial or information services, in support of the transition.



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# The Net Zero Review: Key Messages

- Net Zero create a new era of change and opportunity for UK business:
  - 1 trillion global market opportunity for British businesses by 2030
  - Job creation potential of 480,000 by 2030
  - 500,000 jobs just from decarbonisation by 2050 by the British Energy Innovation Assessment
- Key sectors where growth opportunities are to come from:
  - Offshore wind;
  - Carbon capture and storage;
  - Green finance

***We are in an international race for capital, skills, and the industries of the future. We must act quickly, and in collaboration with our international partners, to cement the UK as a prime destination for international capital and unlock export opportunities for British businesses around the globe.***

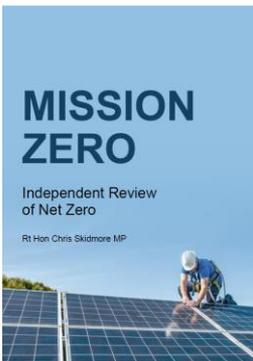
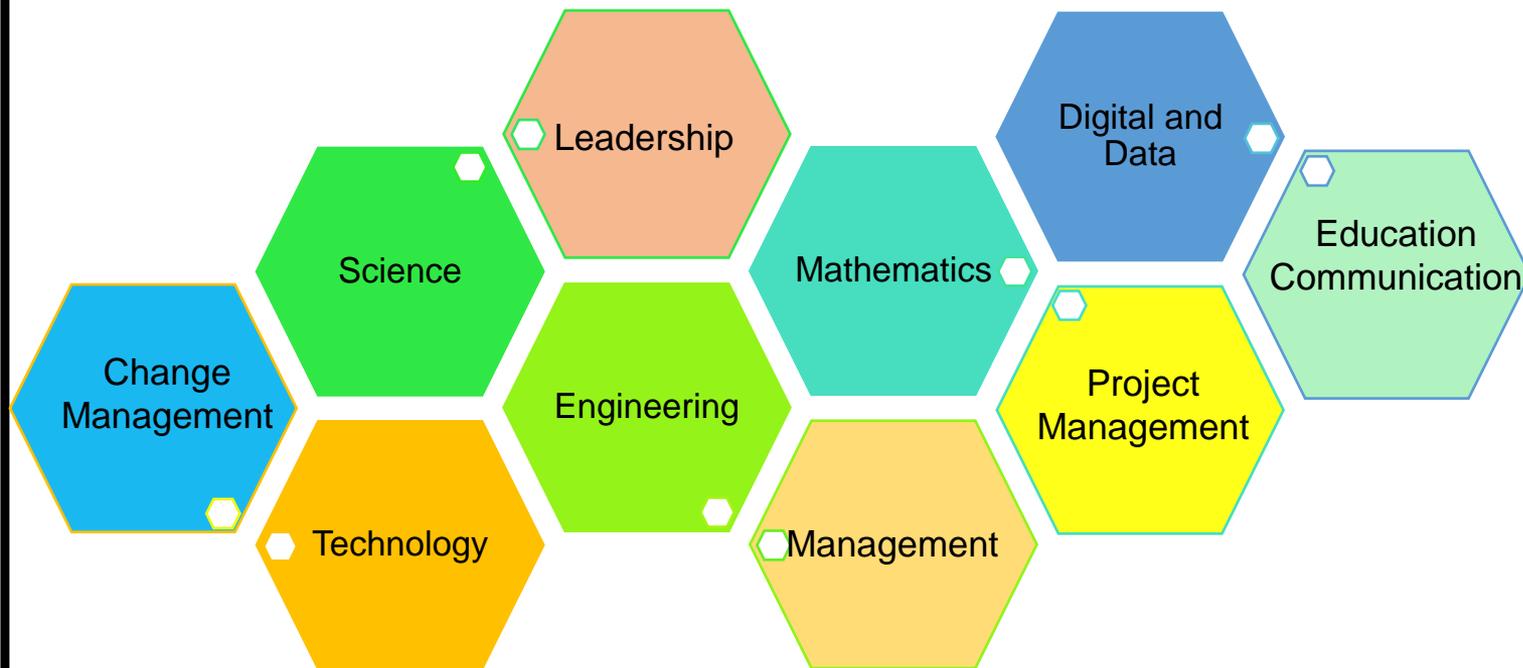
***Failing to do so will mean missed opportunities.  
(Skidmore Report, February 2023)***

# The Net Zero Review: Skills in Focus

- Skills are critical to net zero transition in all sectors.
- Must ensure the pipeline and the right mix of skills to deliver the transition.
- A **shift in mindset about the mix of skills** for the economy across all sectors.
- This challenge is exacerbated by an existing decline in skills:
  - 5-30% decline in tradespeople across the sectors over the past 3 years.
- Green Jobs Taskforce Report:
  - **UK sectors that are to experience significant growth:** offshore wind; electricity networks, smart technologies; buildings retrofit and construction of new builds;
  - **Green sectors to grow ahead of transition:** hydrogen, CCUS, climate resilience, nature conservation and restoration;
  - **Sectors experiencing significant transformation:** automotive; heating and cooling, circular economy and resource efficiency, oil and gas.

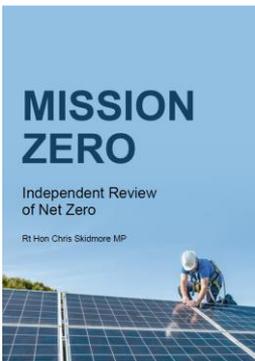


# The Net Zero Review: Skills in Focus



# The Net Zero Review: Skills Strategy

- Help people to access training and re-training.
- Awareness raising about where the opportunities lie.
- Clear and coherent pathways.
- Strengthening the role of education sector to develop STEM skills from school and higher education.
- ***Building capacity in local areas where the jobs will be created.***
- Long-term policy will benefit net-zero skills development and support:
  - Employer investment in training and development;
  - Development of training solution in the locality.
- Increasing flexibility of the Apprenticeship Levy.
- Availability of shorter, more intensive, training schemes alongside apprenticeships for rapid skills development.
- ***A net zero skills passport to simplify and streamline retraining needed to move into new green jobs.***





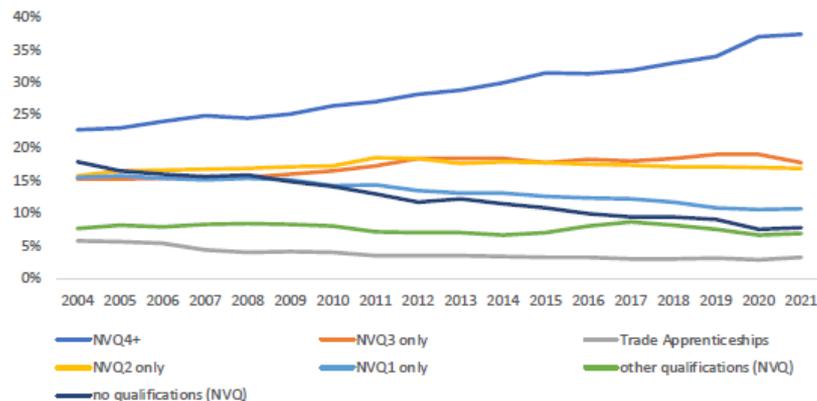
# Net Zero Skills: MIDLANDS

- Employment rate was 74% when compared with 75.1% in the UK.
- 37.6% of the working age population were educated to NVQ 4+ qualifications in the Midlands Engine area against the UK average of 43.5% in 2021.
- no qualifications increased from approximately 473,800 in 2020 to 489,900 in 2021 (3.4%): 16,100 more people without any qualifications.
- 61,710 apprenticeship starts 2020-21 – a drop of 1.8%.
- 1 in 4 England's energy and low carbon jobs.

What businesses say: The largest demands for skills development are in the areas of

- Energy and resource efficiency;
- Installing and using sources of renewable energy;
- Access to green finance.

## MIDLANDS ENGINE QUALIFICATION LEVELS:



MIDLANDS ENGINE

STATE OF THE REGION EXECUTIVE SUMMARY

DECEMBER 2022



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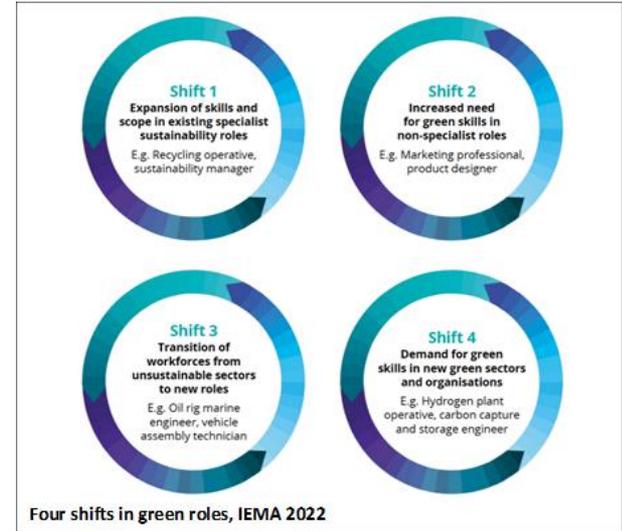


[Green Growth Trends in the East Midlands 2022 : University of Derby Repository](#)

# Business support towards Net Zero

## Skills development

- [The Green Entrepreneurs Scholarship Fund](#) supports individuals by retraining them with the skills needed to enter the field of alternative energy.
- [Net Zero Accelerator Programme](#)
- [Midlands Net Zero Hub](#) – upskilling to deliver energy efficiency projects.
- £13m in East Midlands Institute of Technology: University of Derby, Loughborough College, Loughborough University and the Derby College Group.
- £5.4m – training centre for low carbon construction – WNC,NTU, Ashfield District Council.
- Regional universities expanding sustainability/environmental degree offers.
- Research institutes specialising in sustainable engineering, low carbon technologies and renewables:
  - Institute of Innovation and Sustainable Engineering (UoD);
  - Institute for Advances Manufacturing (UoN);
  - Centre of the Build Environment (NTU).



Green your organisation:  
a blueprint for a green  
workforce transformation

# Key Messages

- The Net Zero transformation will result in job creation and job losses.
- Sectors and communities will be affected to a varying degree.
- Upfront investment in skills development opportunities, programme, mechanisms – could assist effective capacity building at local levels.
- **For businesses:**
  - Net Zero is the business growth opportunity of the 21<sup>st</sup> century.
  - Skills are critical for being able to engage and grow sustainably.
  - Align your skills strategy with your sustainable business growth strategy.
- **For policy:**
  - *Upskilling* is essential to growth.
  - Access to customised, focused and digitalised training solutions for net zero skills development.
  - Collaborative work across training providers, government, business to develop place-specific skills development solutions.
  - *Transformational approach* in business support for the net zero transition.

# Dr Kathryn North

Loughborough University

Head of Skills for ERA & HyDEX  
Director of C-DICE

## MIDLANDS **GREEN** INNOVATION NETWORK

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Delivery partners





Accelerating the new hydrogen economy in the Midlands

# Practical approaches to skills for the net zero transition

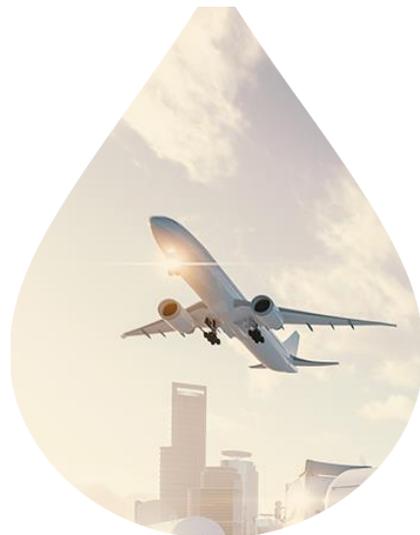
Dr Kathryn North

Director C-DICE

Head of Skills ERA and HyDEX

Midlands Green Innovation  
Network

9<sup>th</sup> February 2023



# Overview

- Background
- What we know about green skills
- Gaps in knowledge about gaps in skills
- Opportunities with ERA and beyond



# Imperatives for Developing Green Skills

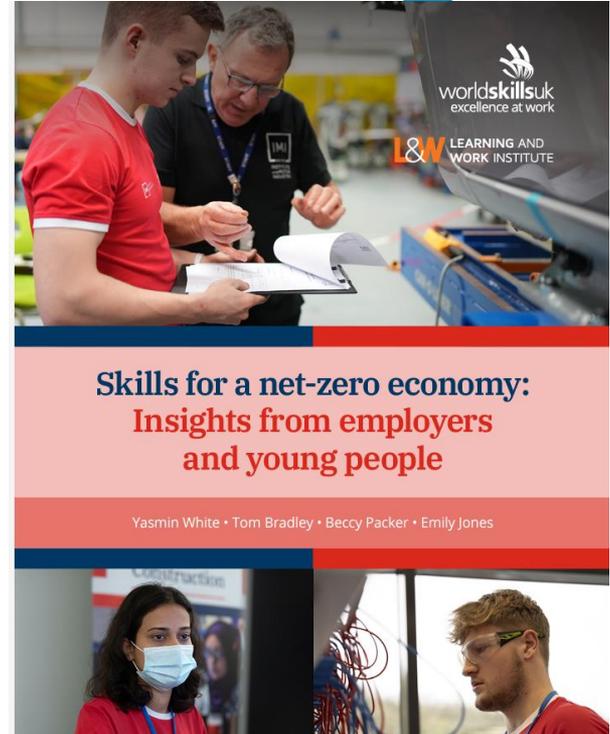
- Decarbonisation
- Energy security/resilience: diversification, renewables, nuclear, energy storage
- Skilled workforce and job transitions cross-cuts delivery in different sectors
- Sunset jobs, 'greening' jobs, new green jobs
- Diversity for a just transition
- Skills gap



# Green Skills Definition

The skills needed to promote a green economic recovery focused on reducing UK carbon emissions. This can range from technical green skills such as those relating to construction, engineering, or manufacturing, to more general green skills such as project management, change management, leadership, education management and communication skills.”

World Skills UK report: <https://www.worldskillsuk.org/news/uk-to-miss-net-zero-target-without-improved-green-career-advice/>



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I&W LEARNING AND WORK INSTITUTE

**Skills for a net-zero economy:  
Insights from employers  
and young people**

Yasmin White • Tom Bradley • Becky Packer • Emily Jones

CATAPULT  
GATSBY

**MANUFACTURING  
THE FUTURE WORKFORCE**

In partnership with  
TWI NPL

University of Chester  
mace

**Enabling Skills for the Industrial Decarbonisation  
Supply Chain**

University of Chester  
Mace  
November 2022

IRENA  
International Renewable Energy Agency

**Renewable Energy and Jobs  
Annual Review 2022**

**12.7**  
million jobs  
in 2021

In collaboration with  
International Labour Organization

www.irena.org



nationalgrid

**BUILDING THE  
NET ZERO ENERGY  
WORKFORCE**

**Green Jobs  
Barometer**

Monitoring a fair transition to a green economy  
December 2022

pwc

IET The Institution of  
Engineering and Technology

**IET skills for net zero  
and a green recovery  
2020 survey**

Examining the engineering skills  
needed to meet net zero

sponsored by  
YouGov

theiet.org/skills

**GREEN  
JOBS  
TASKFORCE**

Report to Government,  
Industry and the Skills Sector

# Sunset jobs: how great is the impact?



Demand for jobs > people in energy sector

East and West Mids green jobs are 2-2.2% of jobs advertised (up from 1.1-1.2% in 2021)



Minimal jobs in coal



Oil and gas skills likely to transfer



# What is on the horizon for green skills?



- Green industrial revolution is unprecedented pace and scale of change
- Lots of unknowns
- Adoption/adaptation unknown
- Energy supply/mix

Knowing what skills and at what level will be needed and where is hard to predict

Investment pipelines and planning are essential



# The Future Green Skills Gap



Energy sector

Supply chain

Construction

Education

Manufacturing

Leadership/management

# What are the opportunities?

# Opportunities: Apprenticeships

- Different levels
- Green apprenticeship advisory panel
- Trailblazing takes years (6) – integration into current standards?
- Requires industry engagement to develop new apprenticeship standard
- Embedding sustainability throughout



# Opportunities: Skills Bootcamps (post 19)



Skills Bootcamp	Location of training	Provider
Domestic electrical installer	Online	<a href="#">Trade Skills 4 U</a>
Domestic retrofit coordination and risk management	Nottingham	<a href="#">Nottingham Trent University</a>
Electric vehicle maintenance	Nottingham and online	<a href="#">Nottingham College</a>
EV charging installer	Online	<a href="#">Trade Skills 4 U</a>
Heat pump installation	Stockport	<a href="#">ECTA Training</a>
Industrial health and safety advisor	Online	<a href="#">Gen2</a>
Introduction to building pathology	Nottingham	<a href="#">Nottingham Trent University</a>
Introduction to heritage and conservation	Nottingham	<a href="#">Nottingham Trent University</a>
Introduction to retrofit	Nottingham	<a href="#">Nottingham Trent University</a>
Introduction to sustainability in construction	Nottingham	<a href="#">Nottingham Trent University</a>
Solid wall insulation	Leicester	<a href="#">Provincial Seals Ltd</a>

Skills Bootcamp	Location of training	Provider
Domestic electrical installer	Online	<a href="#">Trade Skills 4 U</a>
EV charging installer	Online	<a href="#">Trade Skills 4 U</a>
Green and sustainability	Birmingham and online	<a href="#">Aston University</a>
Green heating technologies	Birmingham	<a href="#">Hybrid Tech</a>
Industrial health and safety advisor	Online	<a href="#">Gen2</a>
Net zero and smart energy transition	Newcastle-under-Lyme and online	<a href="#">Keele University</a>
Net zero together	Online	<a href="#">University of Birmingham</a>
Retrofit assessor	Stafford and online	<a href="#">Retrofit Academy</a>
Retrofit coordinator	Stafford and online	<a href="#">Retrofit Academy</a>
Smart energy transition	Newcastle-under-Lyme and online	<a href="#">Keele University</a>
Spray foam insulation	Coventry	<a href="#">Coventry College</a>

<https://www.gov.uk/guidance/find-a-skills-bootcamp>

# Opportunities: Doctoral Training and beyond

## ERA Skills Academy

- High level skills for energy researchers
- Future leaders and innovators
- Engagement with industry e.g. Net Zero Heroes webinar series

<https://www.era.ac.uk/NetZero-Heroes>

## Opportunities to engage

- Industry placements/secondments
- Support proposals for Centres for Doctoral Training

<https://www.era.ac.uk/ERA-Skills-Academy>

# FIVE YEARS OF ERA SKILLS

A REVIEW OF IMPACT AND ACHIEVEMENTS



# Centres for Doctoral Training (CDTs) under Development with ERA Partners



**Bio-NET CDT:** Aston University, University of Nottingham, University of Warwick, Queen's University Belfast

**Engineering Hydrogen Net Zero :** Loughborough University, Cranfield University, Strathclyde University

**Net Zero Chemicals:** Loughborough University, University of Nottingham, University of Surrey, University of Liverpool

**Sustainable and Circular Construction Systems (SuCceSs):** Loughborough University, University of Birmingham, MTC

**Digital Engineering:** Loughborough University, Cranfield University, Coventry University

**Decarbonisation of Heating and Cooling:** University of Birmingham, Loughborough University, University of Warwick

**Hydrogen preparation:** University of Leicester, University of Manchester/Henry Royce Institute, University of Bristol, University of Oxford

**Net-Zero Heavy-Duty Transportation:** The University of Nottingham, University of Birmingham, Cardiff University

# Centres for Doctoral Training examples



## NET ZERO CHEMICALS CENTRE FOR DOCTORAL TRAINING (CDT)

### VISION

The proposed CDT for Net Zero Chemicals aims to provide training to equip a new generation of skilled professionals with the multidisciplinary expertise and entrepreneurship to successfully transform the chemical sector and deliver environmentally sustainable manufacturing.

We identify three multidisciplinary training areas to drive innovation to achieve this vision:

- disruptive technologies enabling a circular system including but not limited to CO<sub>2</sub> to chemicals, waste and biomass to chemicals, green hydrogen etc.
- whole system thinking; and
- routes to the realisation of socio-economic impact.



The CDT will be based on the expertise in the [National Interdisciplinary Centre for the Circular Chemical Economy](#). We will take a unique whole system approach to ensure that our discoveries have commercial and societal impact and to provide our cohort of early-stage researchers with exposure to an extensive range of challenges for Net Zero faced by the Chemical Sector.

Online session for stakeholders to learn more about NZ  
Chemicals CDT bid 15<sup>th</sup> Feb 10:30 to 12:00:

<https://www.eventbrite.co.uk/e/stakeholder-event-for-net-zero-chemicals-cdt-centre-for-doctoral-training-tickets-523068781807>

**EPSC Centre for Doctoral Training in Engineering Hydrogen Net Zero**

A cross-cutting research approach to accelerate the affordability, scalability and sustainability of hydrogen

A Centre for Doctoral Training (CDT) is a collaboration between universities, industry and other interested organisations combining research and expertise to support and train PhD students focussed on a strategic area of research within guidelines set by UKRI and the EPSRC.

The UK government is looking to grow the use of hydrogen from 5TWh to 500TWh in 2050. In addition, today's carbon intensive methods of producing hydrogen through steam methane reformation need to be changed to green hydrogen through renewable generation (GovUK 2022 hydrogen strategy). The rate of uptake of this hydrogen must be at least twice as fast as electric vehicle (EV) uptake to meet these targets (historical data and Department for Transport anticipated EV uptake, 2022).

This rapid growth path is challenging in several areas including

- cost
- supply chain and waste chain development and scalability
- social acceptance and behaviour change
- solutions for different system configurations
- new technology requirements; processes, materials, storage, interfaces, energy interactions, adoption

The Engineering Hydrogen Net Zero CDT is based on solving these challenges to enable the lowest cost green hydrogen to decarbonise industry and domestic energy use.

# C-DICE: Postdoctoral Development Opportunities



des19ncor



HS2



breTRUST



UKCRIC (Infrastructure and cities)

Cambridge  
Heriot-Watt  
Southampton  
Leeds  
Edinburgh  
UCL  
Sheffield  
Newcastle  
Manchester  
Bristol  
Cardiff

Posdoc.  
Pipeline

Loughborough  
Birmingham  
Cranfield

Warwick

ERA (Energy research)

Keele  
Aston  
Leicester  
Nottingham



The Alan Turing Institute

Prosper.



Delivering net-zero,  
transforming postdoctoral  
development

# C-DICE: Postdoctoral Development Opportunities



## Win £30K in the C-DICE sandpit on dispersed industrial decarbonisation

The C-DICE sandpit is a unique development activity for postdoctoral researchers to learn how to write quality research proposals and [Read more](#)



## Digital Task Force for Planning Webinar - 3 March 2023, midday

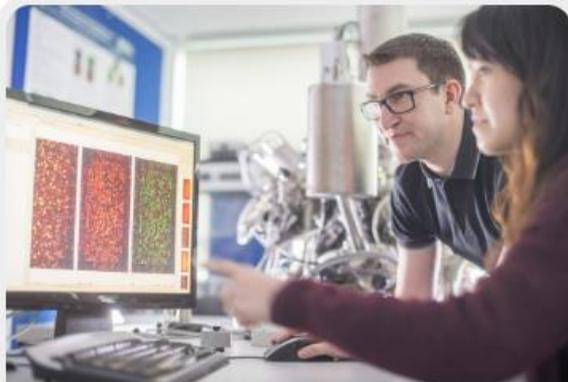
This lunchtime webinar will introduce researchers to the Digital Task Force for Planning ([www.digital4planning.com](http://www.digital4planning.com)) - an innovation-led Social Enterprise [Read more](#)



## System Dynamics for Transport Webinar - 8 March 2023, midday

PLEASE NOTE NEW DATE 8 March 12:00-13:00 System Dynamics is the study of the dynamic behaviour of systems, in [Read more](#)

# Collaborations through secondments and placements for doctoral-level researchers



## Industrial Secondment: Modelling of Heatsink for 1kW Peltier Based Heating and Cooling Recirculating Chiller

C-DICE is delighted to offer a fantastic opportunity for two three-month secondments for postdoctoral researchers with industrial partner Trust Pro. [Read more](#)



## Industrial Secondment: Route Optimisation for Last Mile Deliveries using Artificial Intelligence / Machine Learning

C-DICE is delighted to offer an exciting opportunity of a 9-week secondment for postdoctoral researchers with industrial partner, Ride Commerce. [Read more](#)



## Industrial Secondment: Developing Funding Streams to Support Future Management of Green and Blue Infrastructure

C-DICE is delighted to offer an exciting opportunity for a 3-month secondment for postdoctoral researchers with charity partner, Hay Mills Read [more](#)

# C-DICE: Training Opportunities



## Reflections on the Inaugural Early Career Research Net Zero Conference and the work across C-DICE in 2022

It can be quite easy, as a researcher, not to stray too far from our main disciplinary area but the [Read more](#)



## What is a micro-credential and why would you want one?

C-DICE offer micro-credentials for some of its training and development activities. These are an excellent way to demonstrate your knowledge. [Read more](#)



## Hydrogen from biowaste: a research technology development workshop

Co-created by the BECCS-BEIS funded project team and C-DICE, this bespoke workshop brought together an array of stakeholders as part [Read more](#)

# C-DICE funding to support industry collaboration

<a href="#">Networking Grant</a>	Knowledge exchange and collaboration between universities and/or industry	£1,000	Travel and subsistence	Quarterly, see webpage
Visiting Fellowship / Secondment	Knowledge exchange and collaboration between universities and/or industry to undertake a collaborative project around net-zero and either infrastructure, cities or energy	£5,000 per month for up to 6 months	Salary, travel and subsistence, some consumables	Open call
Industrial or Policy Internships	Projects derived by industry or non-academic third parties	Variable, depending on length of project	Travel and subsistence, some consumables	Open call – potential hosts to contact C-DICE.
Partnership Grant	C-DICE postdocs, academics, or facilities managers to host postdocs from outside of C-DICE partners or abroad. May be used by C-DICE postdocs to host industry collaborators in exceptional circumstances.	£1,000 (UK), £2,000 (international)	Travel and subsistence	Open call

<https://www.cdice.ac.uk/postdoctoral-researcher-development-funding-opportunities/>

Delivering net-zero,  
transforming postdoctoral  
development



## Opportunities in HyDEX: Hydrogen expertise in Midlands Universities

Skill Aspects	University of Birmingham	University of Nottingham	Cranfield University	Keele University	Loughborough University	Warwick University
Hydrogen Fundamentals						
Hydrogen production and conversion						
Legislation and applicable regulations						
Risk assessment						
Acceptable materials						
Appliance design						
Installation procedures						
Metering						
Tightness testing						
Commissioning						
Leakage detection						
Operation and maintenance						
Fuel Cells						
Hydrogen Storage						
Hydrogen Politics and Markets						
Fuel Cells Electric Vehicles						
Bio Energy						
Hydrogen for Transport						
Distribution & grid infrastructure						
Modelling and simulation						
Hydrogen economy & financial market opportunities						
Environmental Impact Assessments						
Hydrogen Safety						

Course Level	Aston University	University of Birmingham	Cranfield University	Keele University	Loughborough University	University of Nottingham
PhD						Sustainable Hydrogen Centre for Doctoral Training EPSRC Centre for Doctoral Training in Resilient Decarbonised Fuel Energy Systems
MSc		Fuel Cells & Hydrogen Technologies	Advanced Chemical Engineering	Environmental Sustainability and Green Technology	Renewable Energy Systems Technology European Masters in Renewable Energy	
PG Diploma			Advanced Chemical Engineering			
PG Certificate			Advanced Chemical Engineering			
Professional Short Courses (CPD)	Practical Process Engineering	KnowHy - online hands-on programme for technicians				
Webinar or Event	Energy & Bioproducts Research Institute (EBRI)					

# Understanding the skills needs: HyDEX Survey



- Survey
- 50 respondents
- SMEs to large multi-nationals.
- > 50% of organisations were in Midlands.
- 20% had an international or global presence.
- Range of experience – new to hydrogen to active involvement for >10 years.
- The majority of responders interest in hydrogen related to **project development** or **research and development**.
- Other areas of interested included:
  - engineering, procurement and construction
  - consultancy
  - suppliers
  - client end use
  - local government

# Expertise & increase in readiness is needed



## Greater expertise is required

- >50% thought there is insufficient expertise and capacity in their organisation for Hydrogen projects.
- Majority thought personnel with specialism and technical skills were lacking
- 46% viewed the lack of supply of skilled workers as a risk

**Majority organisations stated that the maturity of the Hydrogen economy represented a potential risk for them.**

- Over half declared that the below areas presented a potential risk to their business:
  - Technology readiness
  - Supply chain readiness
  - Lack of understanding on the benefits of Hydrogen

## What technical competences are considered essential for the Hydrogen economy?



Hydrogen storage



Hydrogen Safety



Regulatory knowledge



Hydrogen production design

## What should training include?



Policy/Regulations



System Integration



Energy Modelling tools



Climate change and sustainability



Future industry growth

# Delivery mechanism for development



- Apprenticeships did not appear to be highly sort after or desirable.
- >70% did not value credit bearing courses more highly than CPD/Micro credentials style courses.
- Hybrid was considered the method most suitable to teach about renewable energies and hydrogen technologies

# Next steps for HyDEX Skills

- Midlands-based Universities expertise mapped and shared via HyDEX
- CPD/Short courses under development
- Introductory video materials
- Working with Schools e.g. National (Green) Careers Week
- Link to regional policy work
- Link to demonstrators
- Support Hydrogen Skills Academy Developments (Freeport)





# Summary

- There are lots of opportunities for green skills
- Future demand and gaps not fully clear
- We need to act quickly to future proof the workforce
- Please contribute to discussions, advisory board meetings, surveys and focus groups



## Any Questions?

<https://hydrex.ac.uk/skills/>

[www.cdice.ac.uk](http://www.cdice.ac.uk)

<https://www.era.ac.uk/ERA-Skills-Academy>

Any questions?



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# Forthcoming Events

- Protecting Your Ideas: Thurs 2<sup>nd</sup> March, Birmingham
  - Sustainable Product Design, Thurs 20<sup>th</sup> April, Leicester
  - Future Innovations, Thurs 18<sup>th</sup> May, Coventry
  - Funding for Green Innovation, Thurs 22<sup>nd</sup> June, Loughborough
  - Making Your Business Greener, Thurs 20<sup>th</sup> July, Nottingham
  - International Opportunities for Green Innovation, Thurs 10<sup>th</sup> August
- 
- If you have ideas for future events, email [Nick.King@era.ac.uk](mailto:Nick.King@era.ac.uk)
  - [www.mgin.co.uk](http://www.mgin.co.uk)
  - #mgin #greeninnovation



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# The Local Skills Improvement Plan

John Read, Arup



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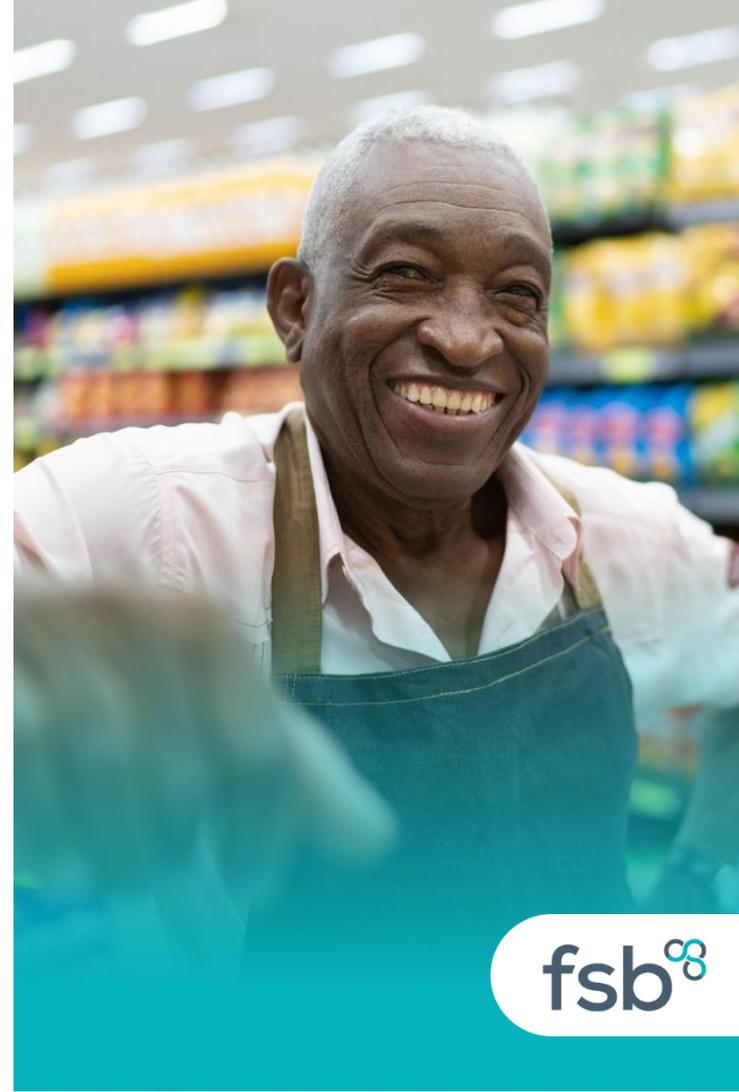
# Federation of Small Businesses – Local Skills Improvement Plan Workshop

fsb<sup>co</sup>



# Agenda

1. Introduction (10 minutes)
2. Breakout session to explore issues and opportunities relating to skills in your sector (45 minutes)
3. Next steps and close (5 minutes)



# Introduction

**John Read**  
**Arup, on behalf of FSB**



# An introduction to FSB

Established over 45 years ago, we are a non-profit making and non-party political organisation that's led by our members, for our members.

Members get an exclusive package of great value business services including advice, financial expertise, support and a powerful voice heard in governments across the UK.

FSB is also the UK's leading business campaigner, focused on delivering change which supports smaller business to grow and succeed. Our lobbying arm starts with the work of our team in Westminster which focuses on UK and English policy issues.



# Purpose of the LSIP

The LSIP will set out the key priorities and changes needed in the local area to make technical education and training more responsive and closely aligned to local labour market needs.

It will provide an agreed set of actionable priorities that employers, providers and stakeholders in Derbyshire and Nottinghamshire can influence and get behind to drive change.

The LSIP will **place employers at the heart of the local skills system**, and facilitate direct and dynamic working arrangements between employers and providers.

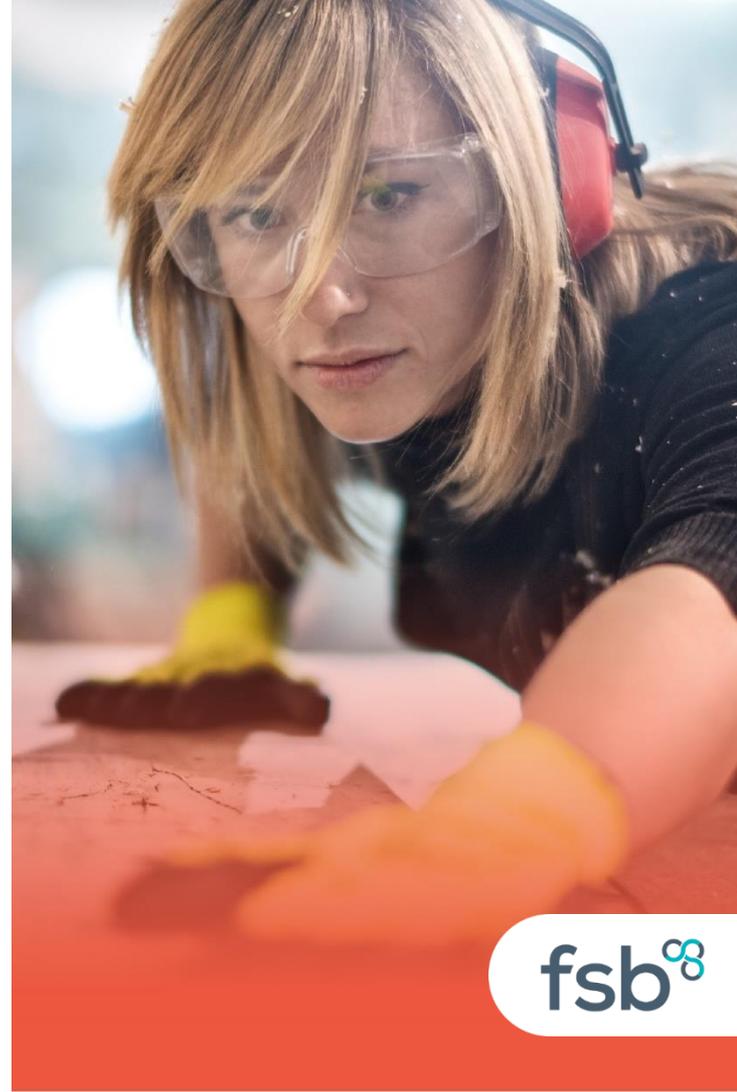
FSB as the designated Employer Representative Body (ERB), will lead development and review of the LSIP, working with employers, providers, local stakeholders, and our consultants Arup.

For further details, please visit: <https://www.fsb.org.uk/local-skills-improvement-plans.html>



# Activity to date

- Introductory meetings with the Department for Education and project plan agreed
- Discussions with D2N2 LEP on available data, joining up with D2N2's People and Skills Board and B6 Group
- Stakeholder mapping to identify key contributors to an LSIP Steering Group, and establishment of the Steering Group
- Held an introductory 'Partnerships for Growth' event on 15 December to publicise the project and engagement opportunities, and encourage participation
- Online survey launched
- Online and in person focus groups held with employers, training providers and strategic stakeholders
- One-to-one telephone interviews ongoing



# Today's session

**John Bayes**  
**Arup**



**fsb**<sup>03</sup>

# Session objectives

In order to produce a meaningful LSIP **we need your contributions as local employers.**

You will be asked to join breakout groups as an opportunity to:

- Discuss skills challenges and opportunities in the green technology sector; and
- Identify **actionable priorities** to address these challenges and opportunities.

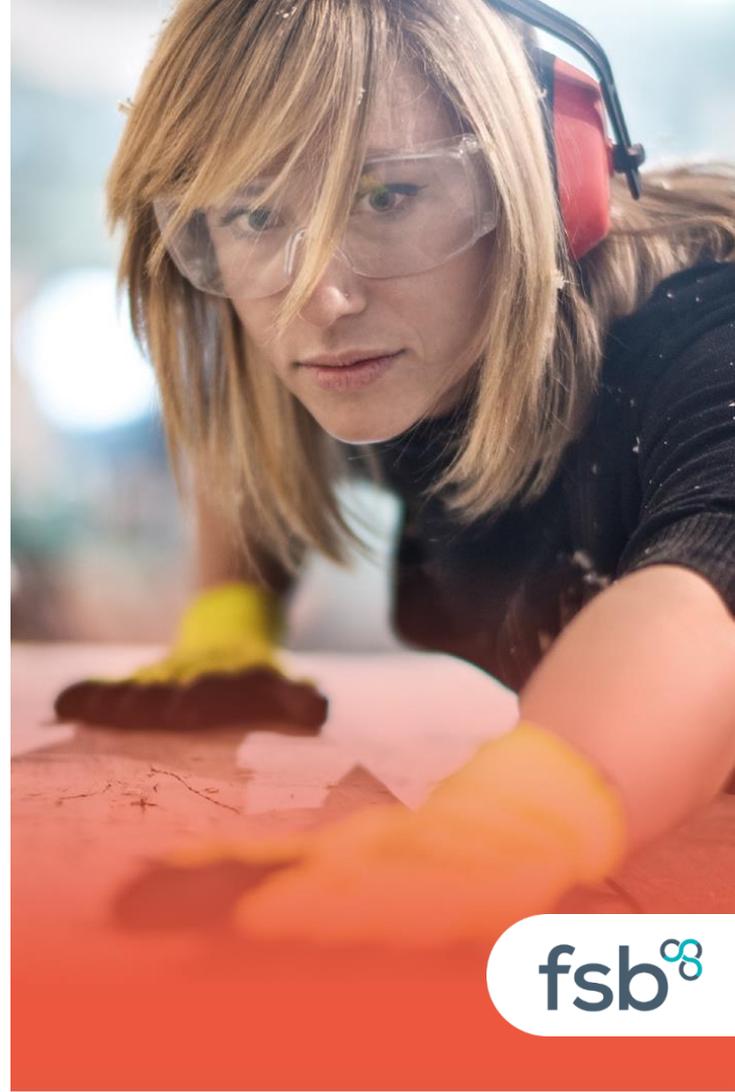


# How your feedback will be used

We will takeaway feedback from the session and combine it with that from earlier focus groups, telephone interviews and survey responses.

We will then analyse the feedback, and prepare a report summarising the feedback and suggested actionable priorities.

The feedback report will be used by FSB to inform the LSIP, to ensure it addresses the needs of the local skills system.



# Breakout sessions



fsb<sup>os</sup>

# Next steps

## Others ways you can contribute:

- Respond to our online survey
- Sign up for a one-to-one telephone interview

## LSIP timeline:

- One-to-one telephone interviews – ongoing until mid February
- Online survey period – closes on 10 February
- Feedback analysis and reporting – will continue through February
- LSIP report preparation – from March to April
- Submit final LSIP to Secretary of State – May



**Thank you.**



**fsb<sup>cs</sup>**

Thanks for coming

Enjoy your lunch!

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