

The Nuclear Workforce Assessment: Growing Together



Some Numbers....

96,000

33%

120,000

54% - 46%

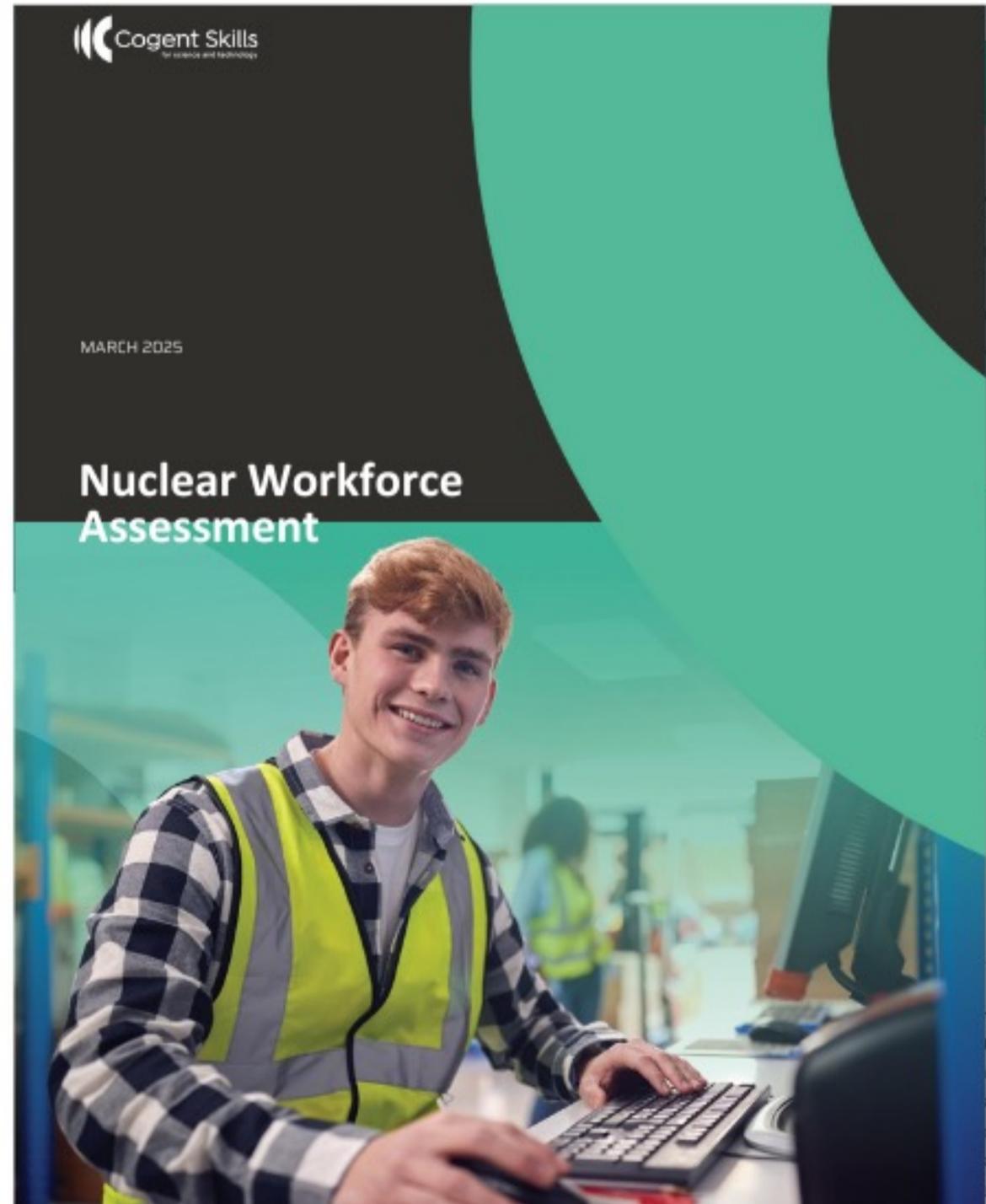
13,000



More Interesting Question....

How do we do it?

How do we know?



Cogent Skills
for science and technology

MARCH 2025

Nuclear Workforce Assessment

The report cover features a photograph of a young man in a high-visibility vest working at a computer workstation in a technical environment.

Percentage of Civil and Defence Workforce

Year	Civil	Defence
2023	57%	43%
2024	54%	46%

Number of Employees within Civil/Defence for 2023 and 2024

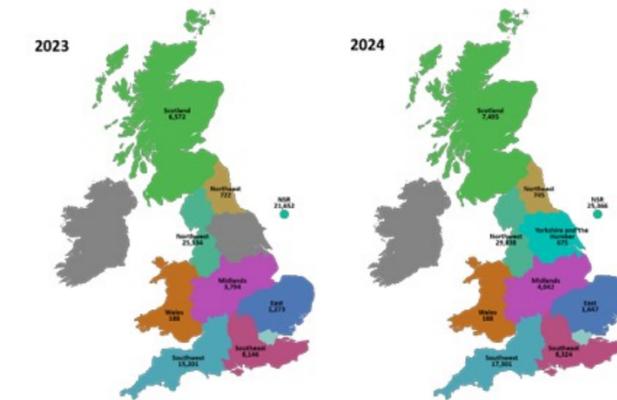
	Civil	Defence
2023	47,095	35,999
2024	51,414	41,207

The report also includes a detailed breakdown of the civil workforce into various categories such as Supply Chain, Commissioning, Operations, and Near New Build (NNB).

Nuclear Workforce Assessment

- Directly collected workforce and demand data
- Civil and defence organisations
- Current workforce and future demand to 2043

Region	Count 2023	Count 2024	Difference	% Change
East	1,273	1,647	374	29%
Midlands	3,794	4,042	248	7%
NSR	21,652	25,366	3,714	17%
Northeast	722	745	23	3%
Northwest	25,534	29,838	4,304	17%
Scotland	6,572	7,495	923	14%
Southeast	8,146	8,324	178	2%
Southwest	15,201	17,901	2,700	14%
Wales	188	188	-	0%
Yorkshire and the Humber	-	675	-	New Region



Who works in nuclear?

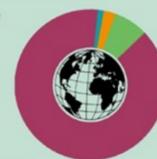
- Total numbers
- Civil/Defence sector
- Regional distribution
- Age, gender, ethnicity

WORKFORCE CHARACTERISTICS

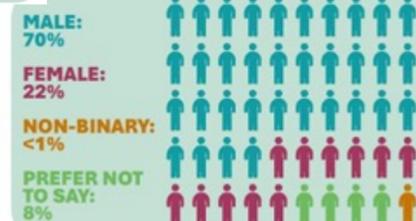
44% of the workforce are experienced at level 5 or above.

9% of the workforce are aged 60 or above. Down 1% from 2023.

ETHNIC GROUPS:
 White: 88.2%
 Asian/Asian British: 1.3%
 Other Ethnic Group: 2.6%
 Black/African/Caribbean/Black British: 0.6%
 Mixed/Multiple Ethnic Groups: 0.5%
 Prefer not to say: 6.7%

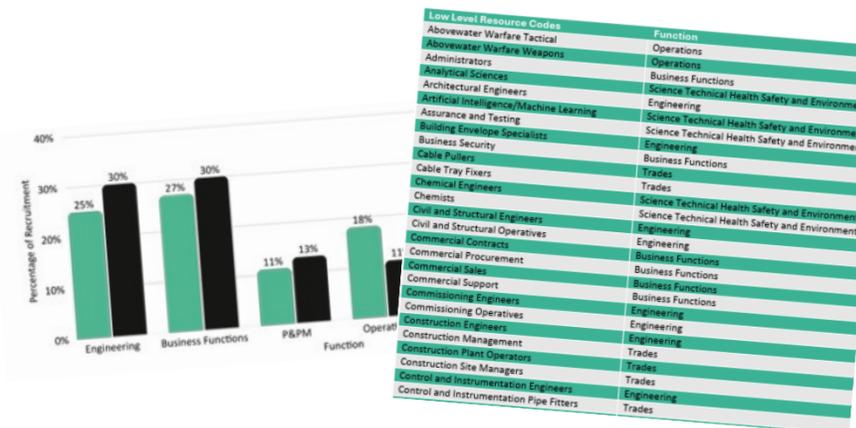


WORKFORCE GENDER PROFILE



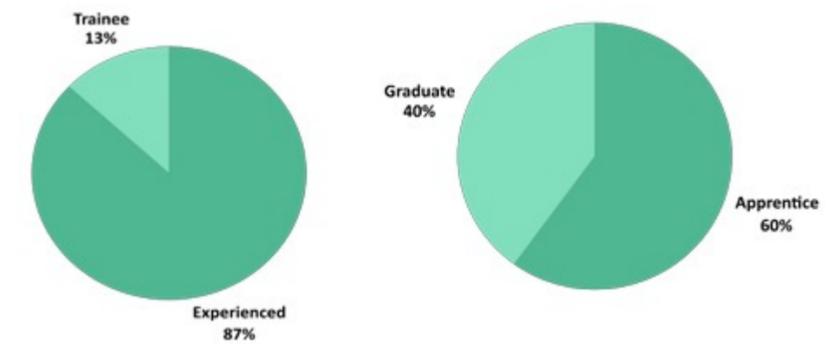
What jobs they do?

- Common job names
- Business area
- Experience - trainee to expert



Workforce movement

- New joiners
- Experienced hires
- Leavers Training/apprentices



This means I can tell you..

Increase in recruitment of young people

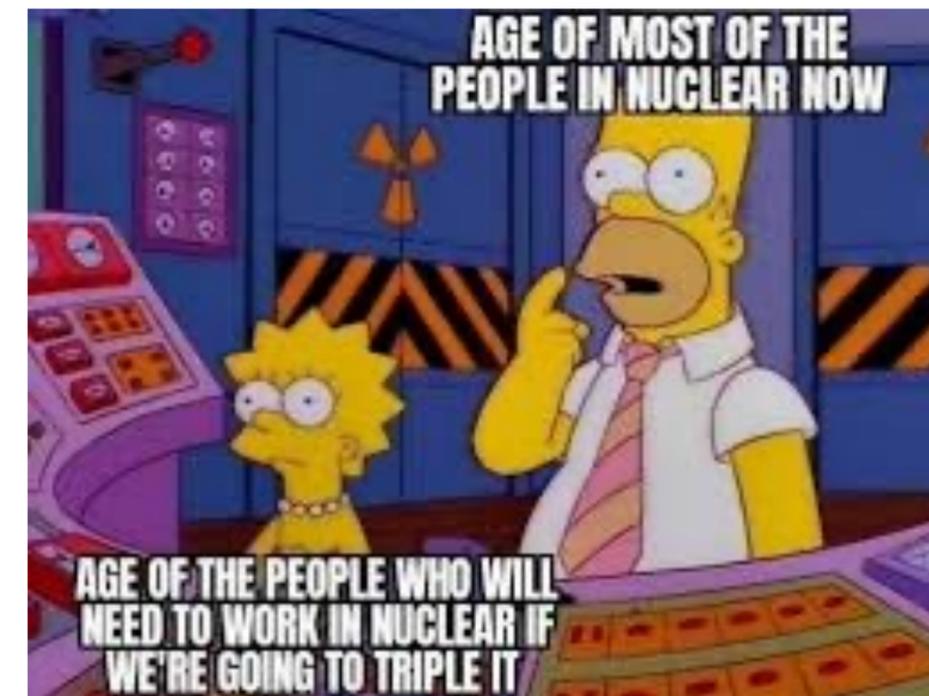
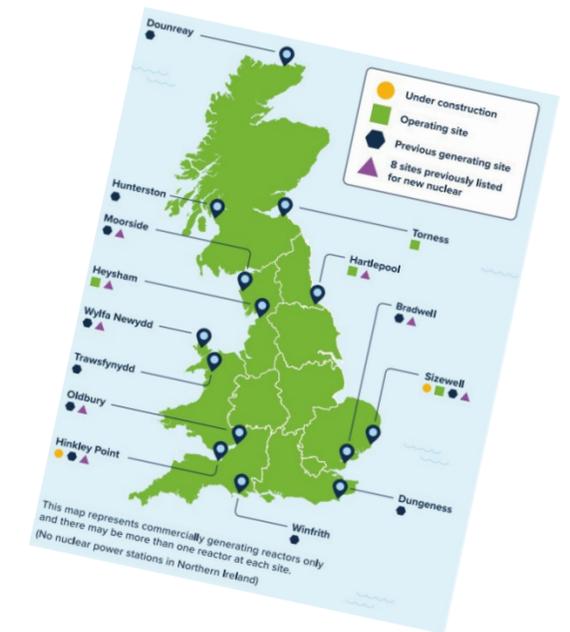
- We recruited nearly twice as many under 20's as the previous year

Future demand is a challenge

- 120,000 workers needed to replace and fill by 2030

Persistent gender gap

Still 78% male, 22% female - barely changed



Defence will drive growth into 2040's

87% of our recruits had previously worked in Nuclear

We are approaching a retirement cliff

IT'S NOT JUST ABOUT THE NUMBERS....

Qualitative Insights

- Volume matters....but criticality does too
- Skills for Nuclear & Nuclear Skills – 50:50 split



Qualitative



Quantitative

Other benefits too..

- Required collaboration - across civil & defence
- Common language needed - standardised job names → critical skills

Sharpened the mind

- Huge industry and government investment in nuclear skills



Nuclear Skills Plan
ATTRACT ◊ RETAIN ◊ ENABLE



In a Good Place....

But We Can't Afford to Stand Still

Data access

Identify skills earlier

Transfer of skills

Transfer of knowledge



Questions?



Skills for a Changing Energy Landscape



Jude Knight, Head of Skills for Clean Growth, Cogent Skills
Project Lead for the Hydrogen Skills Alliance

“A new era of clean electricity for our country offers a positive vision of Britain’s future with energy security, lower bills, good jobs and climate action. This can only happen with big, bold change....” —

Rt Hon Ed Miliband MP, UK Energy Secretary, 13 December 2024



THE WORKFORCE AND SKILLS GAP

The UK clean energy economy will support 860,00 jobs by 2030. Potentially 400,000 will be additional jobs.

Clean energy jobs are growing 5x faster than overall UK employment

The risk – industries scale faster than the skills needed to do the job safely

EMERGING INDUSTRIES FACE A UNIQUE SET OF SKILLS CHALLENGES

Visibility of demand

Lack of scale and uncertainty of demand in a demand led skills system



Public perception

Awareness & preconceptions of the hydrogen industry & potential careers

Nascent technology

Rapid growth anticipated. Innovation will drive as yet unknown skillsets



Global and local competition

Competition for similar skill sets which are in high demand

Current Roles impacted

New skills will be required for existing roles but are, as yet, unmapped



Lack of anticipatory investment

Skills development delayed until certainty of project

Provider capacity

Lack of provider capacity and expertise to deliver hydrogen specific training



Cross-sectoral challenges

The diversity and demographics of adjacent industries



A Strategic approach is needed

Why?

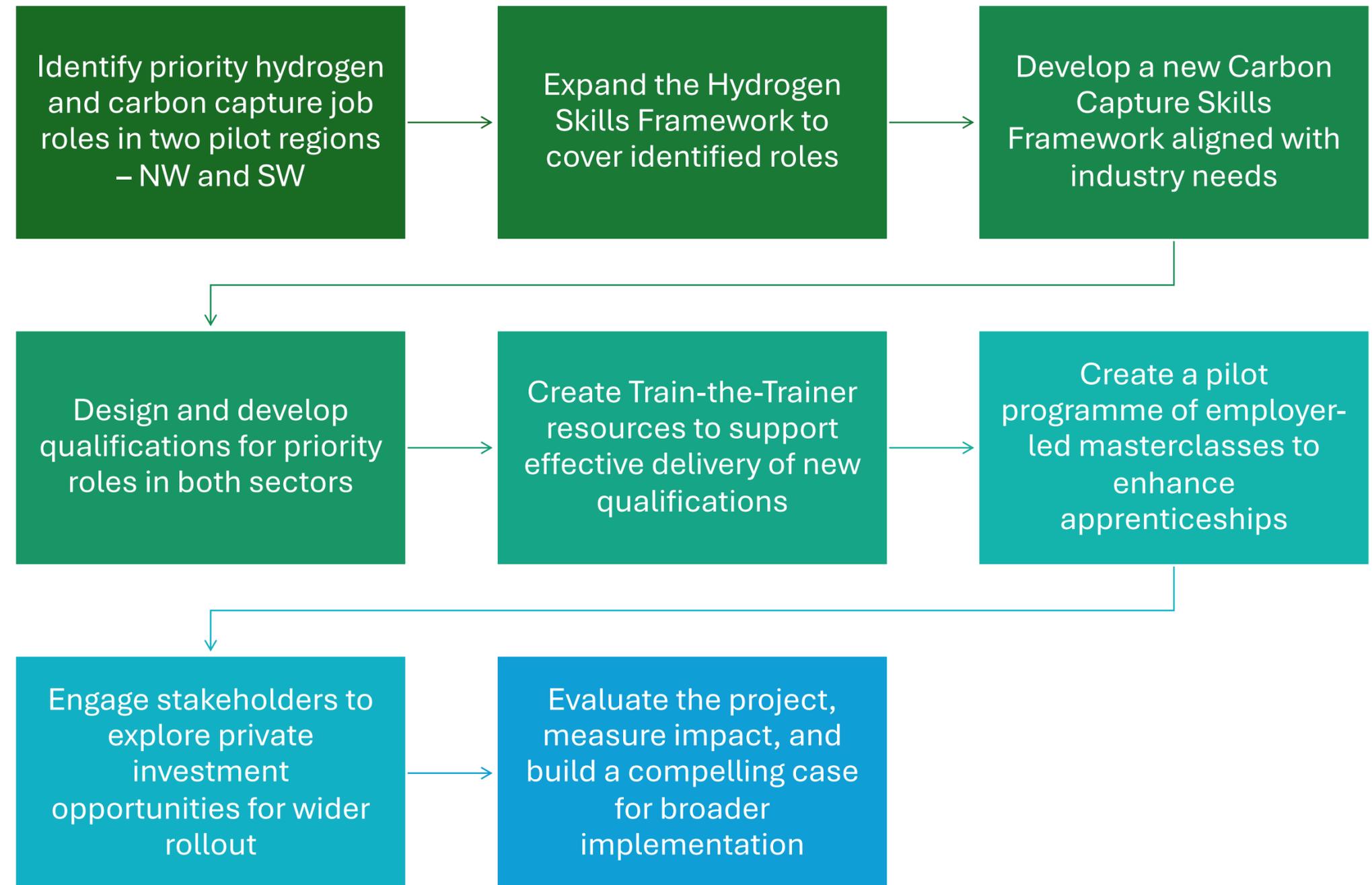
- Rapid technology evolution and regulatory change.
- Increasing emphasis on process safety and compliance.
- Competition for talent across the wider clean energy sector.

How?

- Skills Frameworks/training standards
 - Identify impacted job roles and new knowledge requirements
 - Align with regulatory expectations and embed process safety.
- Future-Proofing: Anticipate emerging roles and competencies, not just current needs.



THE HYDROGEN AND CARBON CAPTURE SKILLS ACCELERATOR



Production Roles			Chemical/Process Engineer/ Hydrogen Process Engineer	Process Control Technician	Process Operator
	Theme	Knowledge Statement	Engineer	Technical & Trade	
HYDROGEN INDUSTRY					
1	Hydrogen Industry UK Net-zero targets, alternative fuel sources, hydrogen usages, legal and compliance regulations	Understand the current position of the hydrogen industry within the wider net-zero ambition and the potential future uses. Understand the UK low-carbon hydrogen standard and relevant legal and compliance regulations.	✓	✓	✓
2	Hydrogen Industry Background on hydrogen production, storage, distribution and use	Understand the global need for the hydrogen transition and how it can be produced, stored, and transported, and its benefits/uses in the energy mix (including environmental impact and safety considerations).	✓	✓	✓
3	Hydrogen Industry Recognition of hydrogen and waste product interchangeability in other industries	Understand how hydrogen and any associated waste products in its production process (e.g. oxygen and carbon) can be repurposed and provided to use cases (i.e. chemical processes) in other industries.	✓	✓	✓
HAZARDS, RISK AND CONTROLS					
4	Hazards, Risks and Controls Risks and hazards	Understand the difference between risks and hazards and how to identify them; Simple (Dynamic) to Advanced Haz-Op and predictive analysis.	✓	✓	✓
5	Hazards, Risks and Controls Hydrogen Properties	Understand the processes required to convert gases into others and indicators of the interchangeability of various gases (in terms of heating or calorific value). Understand hydrogen's chemical properties, its forms (gas & liquid), structure, volumetric and energy density, how it differs from other gases, how it interacts with other materials, and its property risks (including how it affects handling, e.g. odourless, leaks quietly, rises quickly due to lightness).	✓	✓	✓
6	Hazards, Risks and Controls High pressure gas systems and vessels	Understand the high pressures hydrogen is piped and tubed through in gas systems relative to other gases and the impact on pipeline/vessel design, operation and safety in planning and construction (e.g. what materials, sizing and density are to be used for hydrogen pipes).	✓	✓	✓

Life Sciences Skills Demand

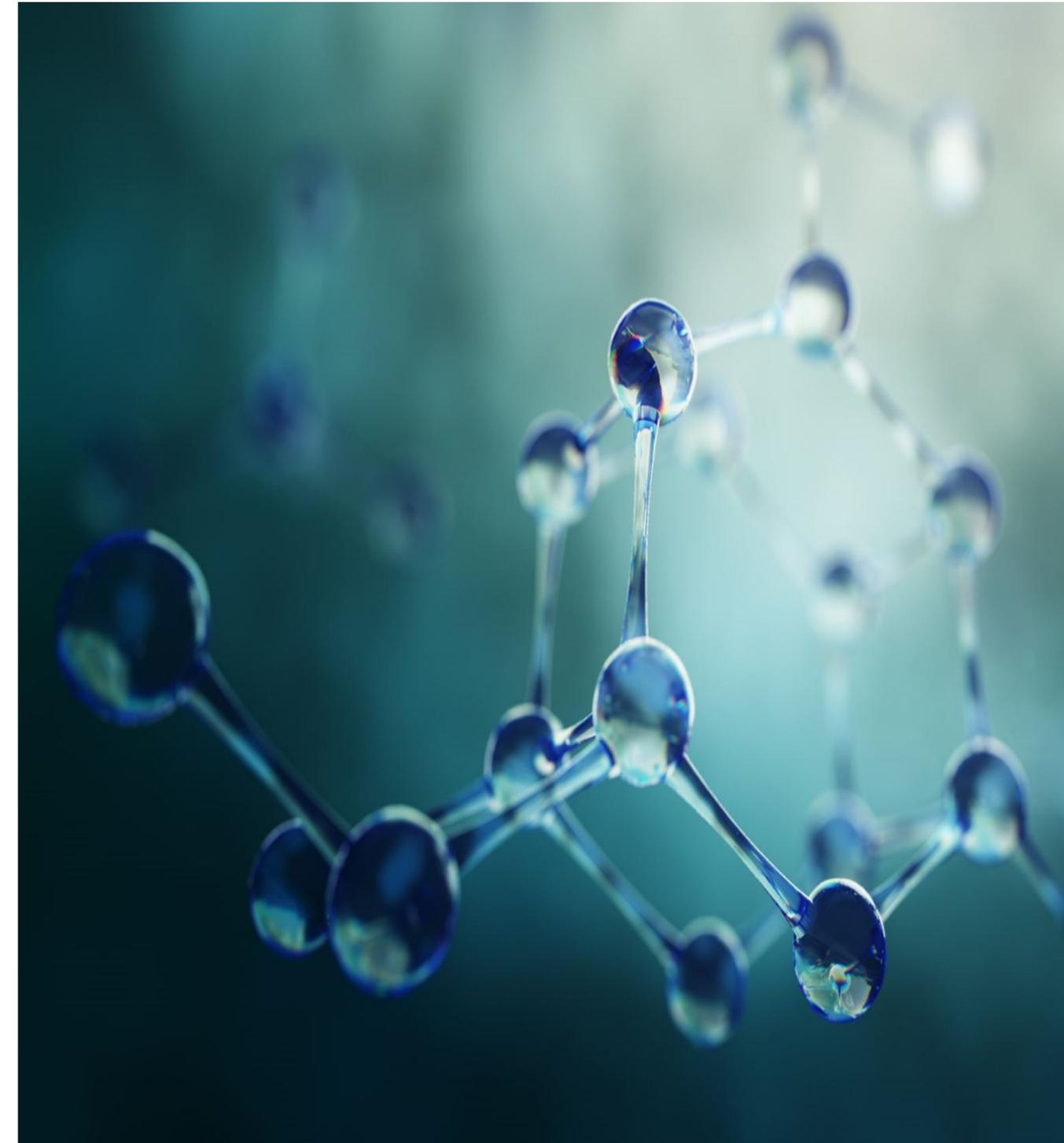


Fay Treloar, Head of Skills - Life Sciences, Cogent Skills

Strategic Role in the UK Life Sciences Skills System

Positioning & Mandate

- Cogent Skills - UK's designated skills body for the science industries
- Oversee the Science Industry Partnership (SIP) – the employer-led coalition shaping skills strategy for the sector.
- Core contributor to national workforce strategy through the Life Sciences Futures Group which leads the development of sector-wide skills frameworks Skills Strategy 2030, Life Sciences Sector Skills for Growth 2035



Why Workforce Matters

The Life Sciences Sector Plan places people and skills at the heart of productivity, resilience and global competitiveness.

- Life Sciences is a priority UK growth sector with ambitions to scale innovation, manufacturing and patient impact.
- Rapid scientific and technological change is reshaping roles faster than traditional education and training systems adapt.
- Workforce capability underpins:
 - Translation of research into commercial impact
 - Resilience of supply chains and manufacturing
 - The UK's attractiveness for inward investment

Bottom line

Without a future-ready workforce, the Life Sciences Sector Plan cannot be delivered.

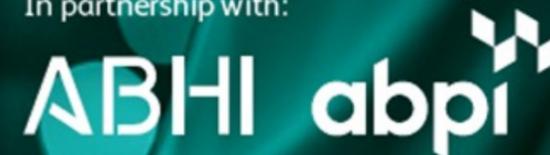


A report produced by Lightcast
for the Futures Group



**Life Sciences 2035:
Developing the Skills
for Future Growth**
Main Report

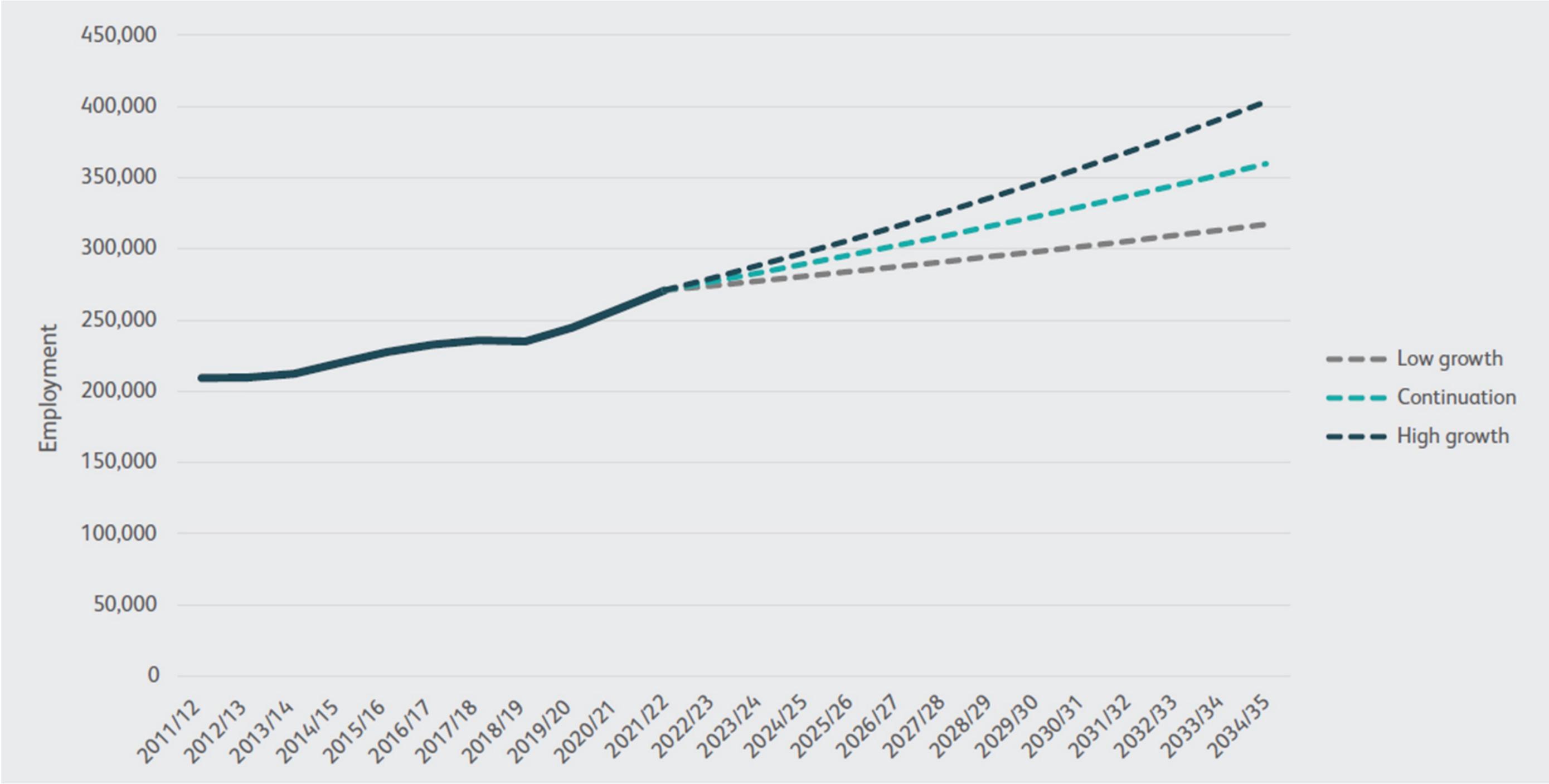
In partnership with:



POWERED BY
Cogent Skills

ent Skills
science and technology

Total employment in the Life Sciences over time and future projections (to 2035)



Rapid innovation is reshaping life sciences

Priority Skills Areas

- Advanced manufacturing & scale-up skills
- Bioprocessing, validation, quality, regulatory compliance
- Manufacturing-ready

Advanced therapies capability

- Cell & gene therapy production
- Specialist quality, regulatory and compliance

Hybrid and interdisciplinary skills

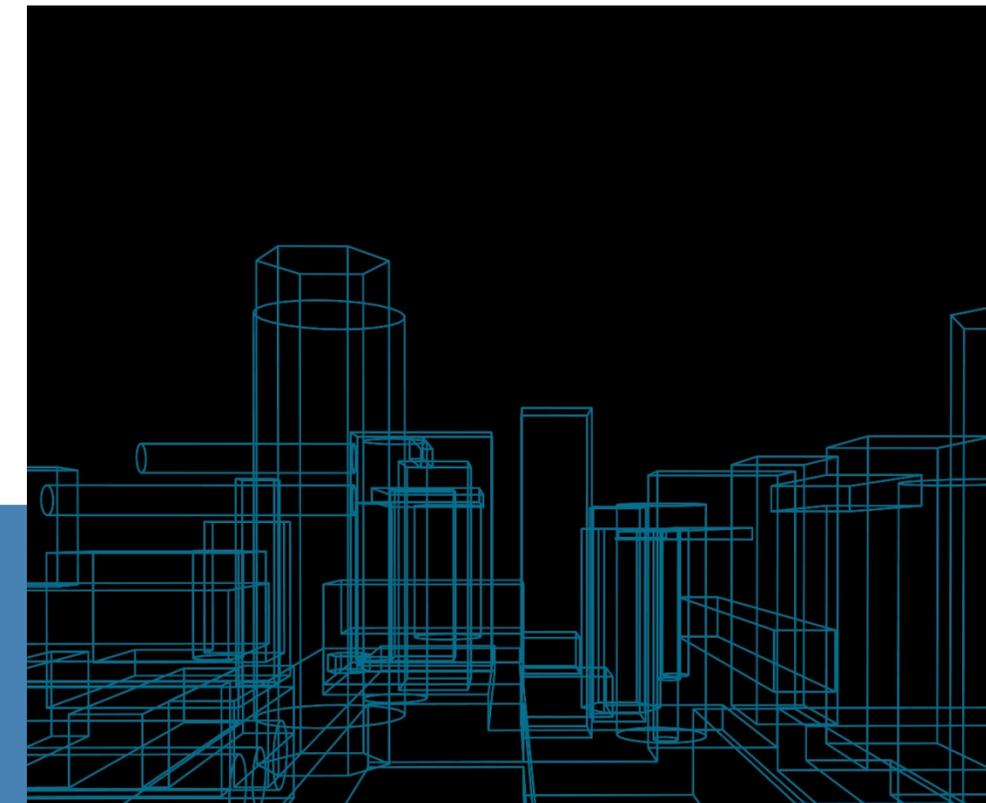
- Science + engineering + data + regulation
- Systems thinking and problem-solving

Digital, data and AI skills

- Data science, AI, digital engineering embedded within scientific roles
- Ability to operate at the interface of data

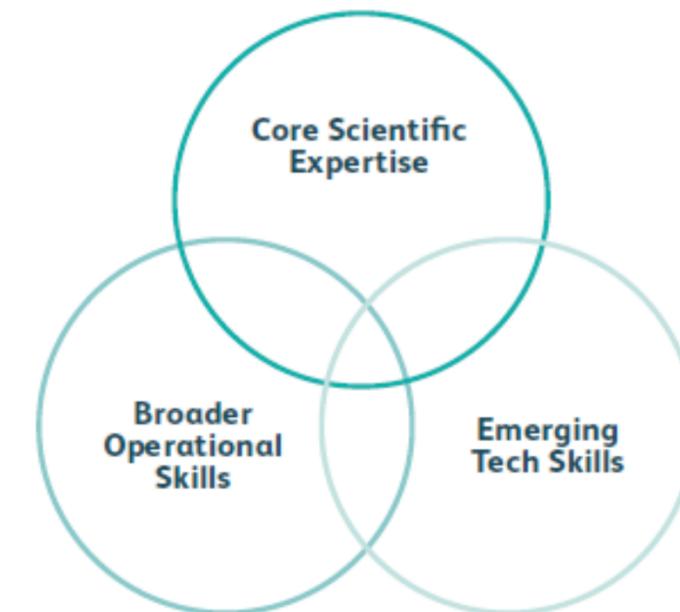
Leadership, resilience and adaptability

- Change leadership, continuous upskilling, SMEs



Occupations with the highest projected recruitment demand by 2035

Broad occupation (SOC4-digit)	Additional jobs	Workers leaving
Biochemists and Biomedical Scientists	3,450	3,550
Biological Scientists	3,370	3,460
Laboratory Technicians	3,130	2,740
Research and Development (R&D) Managers	2,470	2,540
Programmers and Software Development Professionals	2,240	2,300
Physical Scientists	2,210	2,270
Other Researchers, Unspecified Discipline	1,900	1,950
Production Managers and Directors in Manufacturing	1,630	1,740
Business and Related Research Professionals	1,650	1,700
Chemical Scientists	1,630	1,680



Top 10 most advertised roles in BioPharma and MedTech, April 2023 – March 2024

Occupation	BioPharma job postings	Occupation	MedTech job postings
Business Development/ Sales Manager	1,450	Software Developer/Engineer	1,570
Healthcare Administrator	1,380	Sales Representative	1,180
Account Manager/ Representative	1,330	Healthcare Administrator	1,110
Marketing Manager	1,300	Business Development/ Sales Manager	1,070
Chemist	1,280	Customer Service Representative	820
Project Manager	1,180	Account Manager/ Representative	790
Natural Science Research Manager	940	Marketing Manager	730
Sales Representative	920	Office/Administrative Assistant	690
Laboratory Technician	900	Project Manager	610
Medical Director	870	Medical Scientist	570

What happens if we do not meet skills demand?

Impact on Industry

- Delayed scale-up, commercialisation and deployment of innovation
- Reduced productivity and global competitiveness
- Skills gaps limiting adoption of new technologies
- Higher churn

Impact on Employment & Talent

- Broken or unclear talent pipelines into science and growth sectors
- Fewer high-quality, long-term jobs created
- Lower retention as people leave sectors or regions due to limited progression
- Lost opportunity to grow and retain

Impact on the UK Economy

- Missed growth, investment and export opportunities
- Slower delivery of clean growth and science ambitions
- Weakened regional clusters and innovation ecosystems
- Reduced return on public investment



Life Sciences – A priority Growth Sector



Action 16: Build a training and skills system that delivers a diverse and highly skilled Life Sciences workforce

Skills England will work with Life Sciences employers and gain insight from devolved governments to understand the skills needs of the sector, ensuring training and qualifications meet those needs. This will enable all Life Sciences employers to engage meaningfully with training and education partners, supporting them to enhance careers information, advice, and guidance to inspire and attract learners into Life Sciences careers. (Lead: DWP/Skills England)

Action 17: Maximise the use of existing programmes and deliver specific new programmes to improve sector-specific skills in identified high-priority areas.

This will include a focus on specialist AI and entrepreneurial skills and will respond directly to industry feedback on where current skills gaps are precluding growth and investment. New Turing AI Pioneer Fellowships will improve AI skills across multiple scientific and research domains, including Life Sciences. We will also continue to support the development of highly qualified research talent – including clinical researchers – and supporting the Centre of Excellence in Regulatory Science and Innovation (CERSI) programme to ensure the next generation of skilled regulatory professionals. (Lead: OLS)

Action 18: Promote UK strengths to exceptional international Life Sciences talent through the Government's Global Talent Taskforce initiatives and ensure the visa system enables the movement of world class talent.

As well as building a robust pipeline of skilled workers in the UK, it is critical UK firms can access the most highly skilled globally mobile talent who can help. (Lead: DBT)

Why now, more than ever we need a strategic whole system approach

Life Sciences as a priority growth sector - Key government commitments

The challenge

- Employers experience skills needs in real time
- Education and training systems plan years ahead
- Fragmentation across policy, funding, providers and employers

A whole-system approach enables

- Shared understanding of future skills demand
- Faster response to innovation and technology change
- Coordinated action across industry, education and government

What a Whole-System Approach Looks Like in Practice

- Employer-led skills foresight and demand signalling
- Shared, trusted labour market and skills data
- Co-created curricula and pathways in rapid response to sector needs



Strengthening Industry Links Through Structured Placements



Research from the University of Cambridge (2024) found that in 2020, the UK produced more STEM graduates per 100,000 people (1,393) than the USA (1,317), India (690), and China (650).

STEM Study vs STEM Employment

- Almost half (46%) of UK degrees (undergrad & postgrad) are in STEM subjects ([UK STEM skills pipeline 2025](#))
- Yet as little as 13% of STEM graduates enter professional scientific & technical roles immediately after graduation ([University of Cambridge 2024](#))
- Many STEM graduates move into other sectors — including finance, public services, education, and general business roles (University of Cambridge 2024)

Despite a strong pipeline of STEM graduates, relatively **few enter core STEM roles** straight after university. Many move into other sectors, not always by choice, but because they **lack clear exposure to industry pathways**. This mismatch highlights why programmes like **structured placements are so important, they connect academic learning with real-world roles** and help learners see a **direct route into relevant employment**.

The Value of Collaboration

Academic knowledge alone isn't enough, industry wants work-ready people.

- Skills gaps remain across technical sectors
- Employers struggle to recruit job-ready talent

52% of employers said young people aren't generally 'job-ready'

- CIPD

Skills shortages across different sub-sectors of STEM and at various levels of education are estimated to cost the UK economy £1.5 billion a year.

- **University Of Cambridge**

Placements create a two-way value exchange

Employers want

- Graduates who understand real workplaces, real pressures & real standards

Institutions want

- Higher learner employability
- Stronger reputation
- Repeat employer partnerships



Research Partnerships and co-designed Curriculum

Bridging academia and industry to deliver collaborative research partnerships

Universities and industry partners work together on applied research, ensuring innovation is driven by real-world challenges and emerging sector needs.

Co-Designed Curriculum

Programmes are jointly developed with employers to align academic learning with current technologies, practices, and regulatory requirements.

Industry-Led Insight

Employers shape course content through advisory boards, live projects, guest lectures, and access to cutting-edge facilities and expertise.



“Placements are an effective way for us to **nurture and create top talent**, which will be integral to our growth. They **bring new ideas, fresh perspectives and new energy** to our business and help us to address the biggest healthcare challenges that patients face now and in the future.

- Jazz Pharmaceuticals

Placement Options/Journey

UNDERGRADUATE PLACEMENTS

Short-term industry projects, internships, or sandwich years
Embed applied skills while still studying
Early exposure to real workplace standards and culture

GRADUATE PLACEMENTS

Structured 6–12 month placements after graduation
Often sector-specific (science, engineering, manufacturing)
Deepen technical knowledge and professional competencies

GRADUATE OR POSTGRADUATE SCHEMES

1–3 year programmes offered by employers
Rotational experiences across departments
Mentoring, training, and accelerated development
Often lead to permanent employment

This journey provides multiple **touchpoints with industry**, which strengthens employer relationships and ensures that curriculum remains aligned with workplace needs.

By thinking about placements as part of a continuous career journey, we can help learners transition from education into meaningful employment while also deepening our institutional partnerships.

Key Features of Effective Placements

Clearly defined learning objectives/training plan

Aligned to occupational standards, programme outcomes, and employer needs to provide clear expectations for learners and employers

Industry-relevant tasks and responsibilities

Meaningful work that reflects real roles, tools, and processes, not observation only. Ensures practical skills development aligned to real job roles

Named workplace mentor or supervisor

Responsible for day-to-day guidance, expectations, and support

Regular reviews and structured feedback

Scheduled check-ins between learner, employer, and institution

Integration with academic assessment

Reflection, evidence, or projects linked directly to workplace activity

Effective placements results in stronger trust and repeat employer engagement

Structured Placements Strengthen Employer Engagement

Placements as a collaboration mechanism

Structured placements require joint planning, agreed outcomes, and shared responsibility — creating meaningful collaboration rather than informal work experience.

Regular, purposeful engagement points

Placement design, learner preparation, reviews, and feedback create multiple touchpoints that keep institutions and employers in ongoing dialogue.

From hosts to partners

Employers move beyond “providing a placement” to shaping roles, mentoring learners, and influencing how programmes align with real industry needs.

Real-time insight into workforce demand

Placements give institutions direct feedback on emerging skills, behaviours, tools, and standards — keeping curriculum and delivery relevant.

Stronger, longer-term relationships

Over time, placements become a foundation for repeat engagement, co-designed programmes, graduate recruitment, and talent pipelines.

Delivering High-Quality Placements at Scale

Inconsistent placement quality

Without clear structure, learner experiences vary widely, affecting employer confidence

Employer capacity and capability constraints

Many STEM employers, particularly SMEs, lack time and resources to support placements

Misaligned expectations

Academic learning outcomes and employer priorities are not always clearly aligned

Variable learner workplace readiness

Differences in professional behaviours, communication, and applied skills increase mentoring demands

Administrative and compliance complexity

Health & safety, safeguarding, insurance, and coordination create significant operational burden

Cogent Skills Placement Support



Utilising Industrial Placements **saves** time with minimal additional responsibility. Cogent Skills manage all the support between your Placement and University



Enables you to **lower** your risk; keeping Industrial placements off your headcount to keep your business fluid.



Expert recruitment of Industrial placements with **quality** checks to make sure you get the best candidates

Cogent Skills Service Includes

- End to end candidate management (Recruitment through to End of Contact)
- Full Recruitment Service
- Employing the placement on behalf of host employer
- Issue the contract of employment, assume responsibility of compliance with agency working regulations, eligibility of entitlement to work in the UK and any additional regulatory requirements.
- Assume responsibility for the candidates' wages, tax, National Insurance as well as the administration of holidays, sickness, and absence.
- Work with the host employer to develop a personalised training plan around the job role
- Pastoral support, mentoring and coaching for candidates. Setting goals and monitoring performance & progress development with our Skills Account Managers.

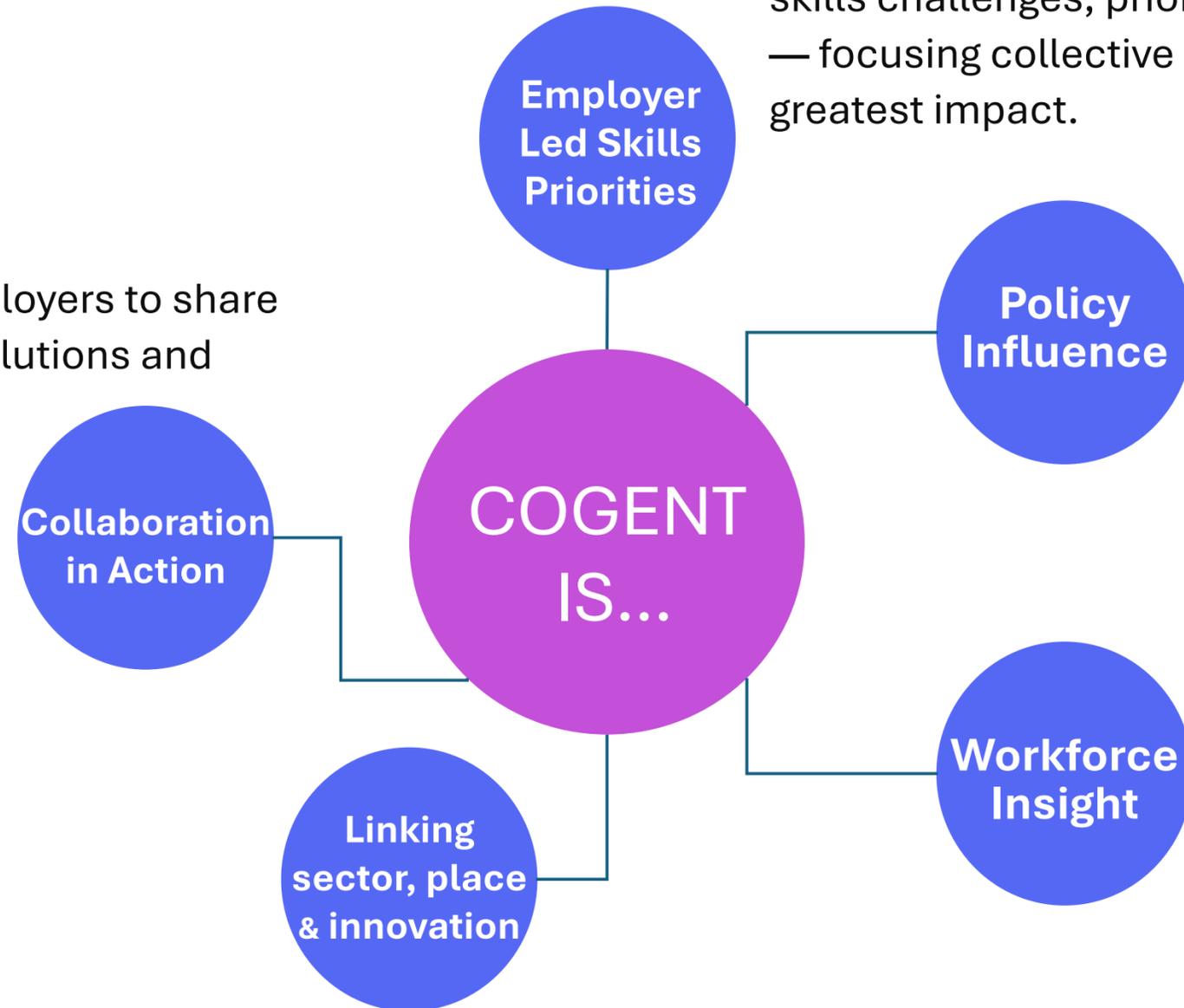
Collaborative Solutions

The role of employer-led partnerships and sector alliances in shaping policy and practice.



WHAT COGENT IS DOING ACROSS SECTOR COLLABORATIONS

We create space for employers to share challenges, co-design solutions and deliver initiatives



We bring employers together to identify shared skills challenges, priority roles and future needs — focusing collective effort where it will have the greatest impact.

We represent employers at senior government and industry forums, ensuring science workforce needs shape funding, policy and reform.

We provide independent, employer-driven labour market intelligence to support planning, investment and growth.

Working in partnership with a wide range of partners and stakeholders

EMPLOYER-LED PARTNERSHIPS

Cogent Skills brings industry together to address current and future skills needs.

Science Industry Skills Partnership – Aligning employers, educators and government to strengthen the science skills pipeline.

Nuclear Industry Skills Partnership – Coordinating industry-led action to meet critical nuclear skills demands.

Hydrogen Alliance – Supporting workforce development for the emerging hydrogen economy.

Why collaboration matters:

Provides a **single, trusted industry voice**

Aligns skills supply with employer demand

Enables long-term workforce planning in strategic sectors

Cogent Skill's role:

Independent industry **convener and facilitator**

Turning employer insight into **practical skills solutions**



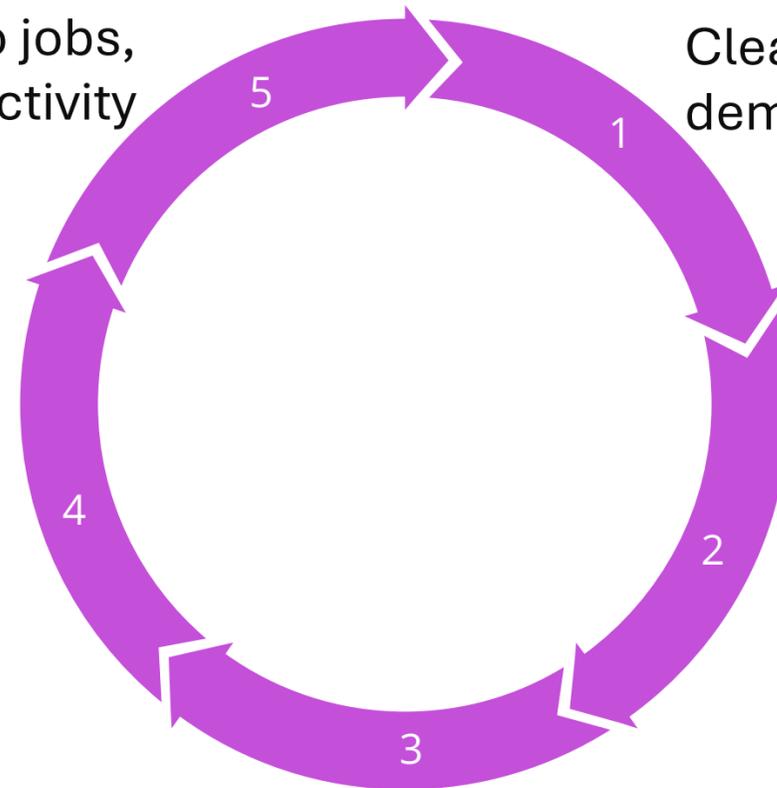
OUTCOMES & IMPACT OF COLLABORATION

Shift conversations from inputs to outcomes — skills that lead to jobs, growth and productivity

Clearer articulation of future skills demand across priority sectors

Greater visibility of workforce needs

Stronger alignment between employers, educators and policymakers



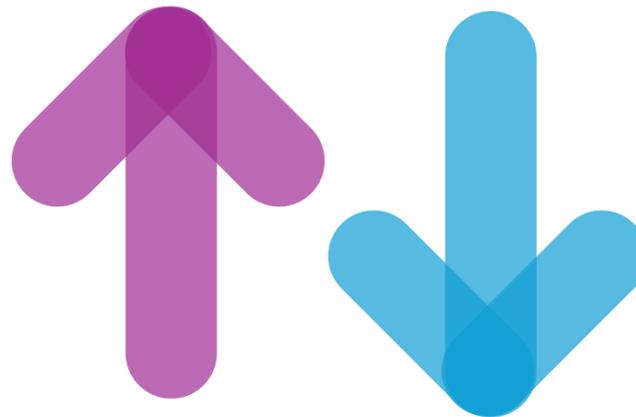
Improved responsiveness in training and apprenticeship design



KEY LEARNINGS FROM COLLABORATION

What works

- Focus beats breadth — fewer priorities, greater impact
- Employer-led evidence carries weight with policymakers
- Place-based insight strengthens national influence
- Skills, innovation and workforce planning must move together



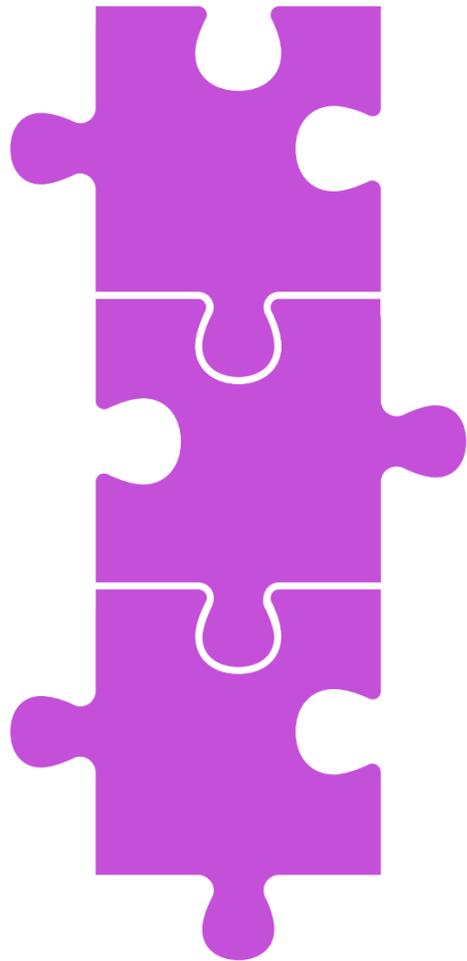
What doesn't

- One-size-fits-all solutions
- Isolated sector conversations
- Skills designed without looking ahead to future workforce needs

COLLECTIVE IMPACT

Skills, policy and delivery are too often:

- Fragmented - Duplicated - Disconnected across sectors and regions



What acting as one system means

- Stronger collaboration across employers, sectors and places
- Shared priorities and common language
- Open sharing of insight, data and learning
- Scaling that works — not reinventing it locally each time

Importance of Community

- Provides a shared space to connect:
 - Employers
 - Researchers and innovators
 - Skills bodies, trade associations, local growth plans and delivery partners
- Enables alignment between talent, research, and innovation priorities
- Connects place-based ecosystems into a wider UK-wide network