

**EC
ITB***

**Skills Transferability
in the Engineering
Construction
Industry**



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This report was produced by Pye Tait Consulting on behalf of the Engineering Construction Industry Training Board.



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Report Overview

This report aims to understand the opportunities that skills transferability could offer within the Engineering Construction Industry (ECI) and from other potentially compatible industries, and the barriers that exist.

- **The principle of skills transferability** is based on a **basic set of shared skills and competences across occupations**. Its implementation in practice proves more difficult in part due to largely compartmentalised attitudes towards trades and occupations that persist, in addition to sector specific qualification requirements.
- **Skills transferability** has the potential to **play a significant role in mitigating challenges** with respect to **the industry's need to deliver** some of the **£600bn of planned UK infrastructure projects**:
 - o tackling increasing **competition for skills** between sectors in the ECI and within the wider economy;
 - o mitigating the impacts of an **ageing workforce**;
 - o adapting to **technological change**; and
 - o maintaining a **safe and competent workforce**.
- In addition, industry faces additional issues related to Covid-19 and its impacts.
 - 1) **Redeploying skilled workers** from sectors and industries facing skills leakage due to economic viability challenges; and,
 - 2) **Ensuring that industry recovery** post-Covid is approached in a way that supports increased resilience across industry and accelerates the energy transition to net zero emissions.

Top Level Conclusions:

Skills transferability and the competition for skilled workers

- The concept is driven by the persistent skills shortages affecting parts of UK industry and commerce as a whole;
- Due to the ongoing competition for skills, transferability for the recruitment and retraining of economically displaced workers is the only situation not involving a significant opportunity cost to the overall UK economy;
- The numbers of skilled people and young people entering the workforce appear to be insufficient to meet the UK's skills and replacement needs.

Employers may see potential for recruitment from other industries

- Only large employers operate on a national basis and have the resources to be able to operate in the normal recruitment channels as well as promoting themselves more generally to workers in other sectors. Smaller employers operate on a local and regional basis with restricted recruitment budgets and are less likely to use the various social media platforms to promote themselves to employees in other industries or sectors;
- employers, while relatively divorced from the concept of transferability, understand that certain economic sectors may offer excellent potential recruits as long as they can be retrained or upskilled. This may, however, involve considerable initial investment by the employer.

Large organisations taking the lead

- Large companies can operate their own schemes and initiatives but, for the vast majority of medium and smaller companies there is no economic way that they could approach recruitment via a "transferability" route due to related investment requirements.
- The UK government could help with transferability and this is being pursued to a limited extent through the National Retraining Scheme.



Summary of Recommendations

1. **An industry-wide mapping exercise to collate and catalogue skills sets and occupations** in the ECI which may be particularly suitable for skills transferability as well as which occupations and skills will be in greater or lesser demand in the future;
2. **A guide for employers on the benefits of skills transferability** to inform the recruitment process. This would be on the basis that their recruitment pool would be significantly enlarged and specialisation could be added with upskilling and retraining initiatives.
3. **To continue to develop sector specific skills passports**. Skills passports approaches are difficult to implement but represent a powerful means of demonstrating competence.
4. **Promotional campaign targeting potential transferees already working in the industry**. A database of competences for most jobs – which would allow a user to gauge their own competence in each area and then get help on how to improve the competence. The obvious basis for such a tool is the "Connected Competence" programme and the suite of ECITB technical tests that underpins it.
5. **Educational programmes should aim to equip young people with a breadth of skills** and a mind-set that allows for flexibility and the ability to recognise where skills learned are applicable. Educational institutions should have the obligation to make young people aware of the skills they are gaining and the kinds of occupations, careers and industries where these skills could be applied.
6. **The Government should look to earmark funding from the National Skills Fund and National Retraining Scheme to support adults and young people to gain transferable skills**. In the current climate, with the economy in recession and unemployment set to rise, retraining opportunities will provide a life-line for those facing redundancy.
7. Whilst focussing on matching workers made redundant with vacancies, we recommend that the **Construction Talent Retention Scheme incorporates reskilling and retraining interventions** to ensure workers are occupationally competent and can transfer easily into new roles.

01. Executive Summary

The purpose of this research is to investigate and understand the opportunities for skills transferability within the Engineering Construction Industry (ECI) and from other potentially compatible industries. It was exploratory in nature and qualitative in approach. The methodology comprised desk research and interviews with stakeholders, 30 employers, 13 stakeholders and five recruitment agencies as well as a workshop with the Nuclear Skills Strategy Group (NSSG) between late October 2019 and February 2020.

While the main research concluded prior to any major impact on the UK and its economy from the Covid-19 pandemic, the report was written in the period immediately following full lockdown and the consequent economic damage. At the time of writing the UK economy is in recession after an unprecedented drop in GDP of 20% during April 2020. Unemployment, which had been at around 1.5m at the beginning of March has grown to over 3m and is confidently expected to increase further once the Government's employment support packages (including the furlough scheme) begin to be withdrawn. It is still too early to assess the serious implications of a possible depression succeeding the current recession but parts of the ECI have been more seriously affected than others.

The most severe impacts have been felt in the oil and gas sector, which has, at the time of writing, already shed 7,500 jobs¹. The structural decline in oil and gas demand has been affecting the sector for some time, but the Covid-19 epidemic has created a "perfect storm": structural reductions in usage due to the gradual switch to renewables and the drive to "net zero" carbon, plus the massive impacts of the epidemic on road, aviation and energy demand have led to sustained depression of the oil price. Other sectors such as renewables and small scale nuclear, as well as hydrogen and CCUS, can be expected to grow as a result of UK government infrastructure plans being targeted towards investments that align with their net zero commitment. This includes a £40m investment by the UK Government in next generation nuclear technology as announced on 10 July 2020².

A reasonable conclusion at this point might be that the industry and the UK, Welsh and Scottish governments may well need to put in place measures to support the reskilling of workers for jobs in other sectors and industries not focussed on fossil fuels. This research sheds light on the barriers to, and opportunities for, skills transferability both into and between different ECI sectors.

For the purpose of this research, "Skills Transferability" is defined as:

The degree to which a person's occupation, or competence can be transferred from one sector, sub-sector, or occupation to another; where "degree" is defined as the extent to which the transfer of competence can be achieved with benefit to the receiving sector, industry, or occupation.

1. 'Occupational transferability' refers to workers who change job roles within an industry where their skills are either fully or partially transferable to the new role, allowing for progression and easy-entry training.
2. 'Sectoral transferability' refers to workers moving between sectors within the ECI, or from other industries into the ECI.
3. 'Geographic transferability' or 'Mobility' refers to the physical movement of individuals and skills from one region to another.

¹ <https://www.energyvoice.com/oilandgas/north-sea/251447/north-sea-job-cuts-rise-to-7500-oguk/>

² UK Government, 2020, £40 million to kick start next-gen nuclear technology



The needs of the Engineering Construction Industry

The ECI is a significant contributor to the UK economy and plays a vital role in ensuring the country's energy security as well as critical processing infrastructure and is crucial for the UK's transition towards a green, carbon neutral economy. Directly employing 190,000 workers, the ECI envisages additional labour demand in the coming years within specific sectors. The complexity of this situation has been significantly increased by the Covid-19 pandemic. Overall trends suggest sectors involved in renewable energy or the provision of net-zero services will experience increased demand, while the oil and gas sector in particular will see a fairly large but gradual reduction in employment (Oil and Gas UK predict 30,000 job losses, equating to 15% of the industry³) in the short term offset to some extent by a shift to energy transition projects and decommissioning projects in the medium to longer term. In this context, skills transferability may offer a potential solution to at least partly address this shift in labour demand.

ECI employers and stakeholders interviewed see potential in skills transferability, but implementation is challenging

This study finds that employers and stakeholders see opportunities in the concept of skills transferability, ranking both engineering and craft-skills related roles as well as project management and ICT roles as very transferable between the sectors within the ECI⁴, the construction industry and wider economy, though to a slightly lesser extent for the latter two. Employers and other stakeholders confirmed that skills transferability could assist in addressing skills shortages in these areas. In general, however, few employers have proactive strategies to attract and recruit workers from specific sectors, with general recruitment, upskilling or retraining being of higher preference. Other activities mentioned are those to retain their skilled workers and include financial incentives and progression routes as well continued professional development. Having said that, research for the ECITB's Labour Market Outlook report (2019), conducted in 2018, noted that recruitment from other sectors within the ECI is important. In fact, nearly half (44%) of employers recruited "externally" – mainly from construction, other sectors in the ECI, and manufacturing⁵.

³ <https://oilandgasuk.co.uk/call-for-three-stage-framework-to-help-head-off-thousands-of-job-losses-in-oil-and-gas-industry/>
⁴ Nuclear, conventional and renewable power generation, Oil & Gas, Chemical, Food and drink, Water treatment, and Pharmaceutical
⁵ ECITB, 2019, Labour Market Outlook

Work culture, recruitment practices and family are typical barriers to skills transferability across sectors and occupation and the associated issue of geographical mobility

The research indicated a range of barriers to skills transferability, some of which may be related to established and traditional work culture and recruitment practices in the ECI.

Some employers confirm they invest in upskilling and re-training of workers – for instance to keep up with technological change – mainly from their own workforce or closely related sector(s). However, others have been reluctant to do so, citing concerns about losing their upskilled or re-trained workers to other employers in the ECI.

Further barriers to skills transferability (mobility) are family commitments and age as well as the various security and vetting requirements in many areas in the ECI. These latter issues are being reviewed in the Nuclear sector. The NSSG is leading on the development of a roadmap for the sector to overcome some of the misconceptions about getting into and working in Nuclear.

Other concerns cited include the perceptions of different regulatory requirements between sectors in the ECI. That and risk management by employers to minimise the impact of recruiting candidates with less direct experience combine to restrict the ease of transferability. Technical vocabulary and role descriptors can differ between sectors (for example between the nuclear sector and other ECI sectors) and, therefore, act as an immediate barrier. Another challenge is understanding how best employers can become more attuned to skills in another industry or sector that may be "transferable".

Transferability

A number of detailed scoring questions were asked of employers and stakeholders regarding the occupations and soft skills which they regarded as being most and least transferable. The results of this scoring exercise are shown in Tables 6 and 7 of the main report.

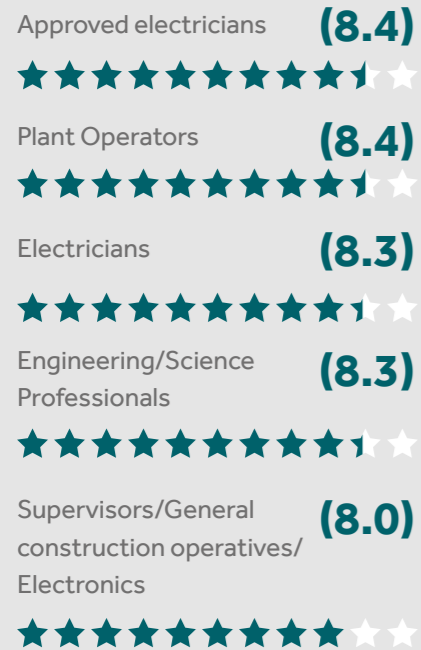
For example, where transfers of staff between offshore and onshore roles is concerned, employers tend to regard all skills as being transferable. Stakeholders on the other hand (much smaller numbers of respondents) saw almost all skills as being non-transferable with the possible exception of project managers, digital and supervisory roles. Employers scored a few skills at relatively low levels with respect to transfers from onshore to offshore; specifically designers and draughts-people, project managers and skilled concrete operators. Further research revealed that these scores were almost entirely due to the relative lack of need for such roles offshore.

Employers tended to see transfers from other ECI sectors as the most feasible for all skillsets, followed by transfers from the wider construction industry and finally transfers from outside the ECI and construction. Even for transfers from outside the ECI and construction almost all skills were given scores over six out of ten (on a scale of 1 (not at all transferable) to 10 (extremely transferable)). Interestingly, skilled concrete operators were given relatively low scores for transferability regardless of whether they were transferring from within the ECI, for construction, or from outside those two industries.

Soft skills are regarded by both employers and other stakeholders as eminently transferable regardless of whether they are being transferred from within the ECI, from construction or from sectors other than ECI and construction. All scored 7.8 or above. The only skill which gives employers any concern in terms of transferability is "risk and safety management" where those skills are being transferred from sectors outside the ECI and construction (scored 7.2).

EMPLOYERS' TOP FIVE MOST TRANSFERABLE SKILLS (average scores out of ten)

1. Onshore to offshore



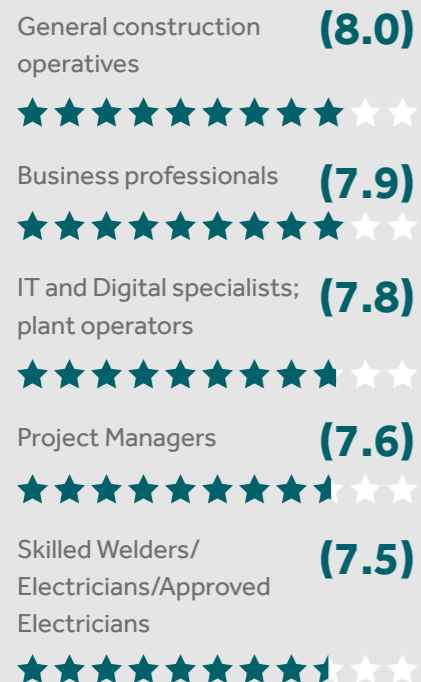
2. Offshore to Onshore



3. From other ECI Sectors



4. From the wider construction industry



5. From sectors outside ECI and Construction



Skills Transferability: Energy

From an Interview with Professor Paul de Leeuw, Director Energy Transition Institute, Robert Gordon University, Aberdeen. (Note: this interview was conducted prior to Covid-19 and related obstacles).

The energy industry of the future will have technology and innovation at its core. Against this backdrop, we will need an increasingly adaptable, flexible, mobile and technology-enabled workforce. This will inevitably have implications for all of us. In the UK alone, over 40,000 new people are likely to be required to support the oil and gas industry in the next 20 years, of which around 10,000 people will need to be recruited in technology and innovation roles that do not currently exist. Oil and gas will remain an integral part of the offshore energy mix, but as part of a more diverse and low carbon energy system, which will include new carbon capture and storage and hydrogen production facilities.

Although traditional disciplines such as operations, engineering and project management continue to be key, there will be significant new demand for expertise in areas such as low carbon energy, data science, data analytics, AI, machine learning, robotics, material science, change management, remote operations and cyber security. Most of these skills are highly transferable across the energy sector, amplifying the need for a more cross-energy focused workforce.

Professor De Leeuw believes that it is imperative that:

‘We prepare both the existing and the new workforce for the skills of the future, so we are ready to face the new challenges and can ensure the long-term sustainability of the industry. Common standards, work practices and accreditation across the energy sector will be a key enabler to ensure a more flexible, cross-sector energy workforce.’

All organisations, including the ECITB, OPITO and Governments, will have to consider how to facilitate the energy transition by providing leadership and strategic oversight. It will ensure that the sector attracts the best and brightest people to truly help change the world's energy future.

Potential ways forward

To overcome these barriers, most employers and stakeholders were open to ideas of introducing more standardised approaches to skills and competences, most prominently through the introduction of widely recognised skills passports.

How skills transferability is taken forward by the ECI will also depend on which organisation might take the lead in a strategy for the ECI or in launching new initiatives within and outside the ECI. Such an effort will have to focus on changing prevalent culture and recruitment practices. In addition, resources to introduce more standardised approaches to skills and competences will have to be mobilised, particularly as relatively smaller companies may not be able to start the effort themselves.

Cottam Coal Power Station

Image by EDF Energy



Connected Competence and Cottam Coal Power Station as UK examples

A pioneering example of skills transferability best practice is the ECITB-sponsored “Connected Competence”, a competence assurance initiative comprising six leading oil and gas companies in the UK. Unlike international examples of skills transferability, Connected Competence is not focused on re-integrating a displaced workforce⁶ in the ECI, but rather it aims to standardise competence testing across the oil and gas sector. Thereby, it helps employers to judge whether a competence gained in another ECI sector or project is transferable or whether additional training is required. This initiative is unique in its scale and dedicated focus to standardisation of competences and skills.

Another UK example is the successful transfer by EDF in 2019 of workers from the closed Cottam Coal Power Station to its nuclear division. This was supported by the ECITB and the NSSG through the ‘Accelerated Experience and Learning Programme’. This example focused on the retention of skills and workers in the ECI.

⁶ Prominent international examples of this include efforts in the United States to transfer redundant coal miners to other ECI sectors or different industries like manufacturing or even tourism. The focus here is on job creation.

02. Research questions and Methodology

The aim of the research was to understand the opportunities that skills transferability could offer, and the barriers that exist. Skills transferability is defined at the beginning of the report (section 3.3).

The research, conducted between October 2019 and February 2020, was exploratory in scope. It was focused essentially on qualitative feedback from employers and stakeholders.

The methodology comprised:

- Desk research, encompassing transferability between sectors within the Engineering Construction Industry (ECI), across other industries in the UK and internationally.
- Initial scoping interviews with stakeholders.
- A total of 48 in-depth telephone interviews were conducted as listed in Appendix 2 (four individuals were interviewed within one large organisation).
 - o The employers represented all sectors within the ECI;
 - o The stakeholders included trade associations, skills promotion programmes and skills academies;
- Involvement in an NSSG mobility and transferability workshop.

The key research questions were to:

- Explore the barriers and opportunities around skills transferability.
- Understand the extent to which certain skills and competences are transferable between ECI sectors, and from other industries into the ECI.
- Uncover any programmes or initiatives linked to skills transferability that could be successfully applied to the ECI.
- Determine the extent to which geographic mobility impacts on skills transferability; and
- Understand what companies are currently doing to address skills shortages.

These questions were posed in the context of four issues pertinent to the ECI:

1. Skills shortages.
2. Leakages (e.g. loss of skills through demobilisation of workforces)
3. Decarbonisation.
4. Perception and current status.

The definitions used in the research were agreed between ECITB and Pye Tait Consulting at the outset of the research and were used in the interviews to inform participants exactly what was meant by 'transferability' (and related terms) in the context of this research. These are set out in Section 3.3.

Case studies as described throughout this report were selected to provide a broad overview of the types of initiatives and issues which currently exist within the ECI in relation to transferability. All case studies are produced with the permission of the employer/scheme.

A list of research participants is provided in Appendix 2.

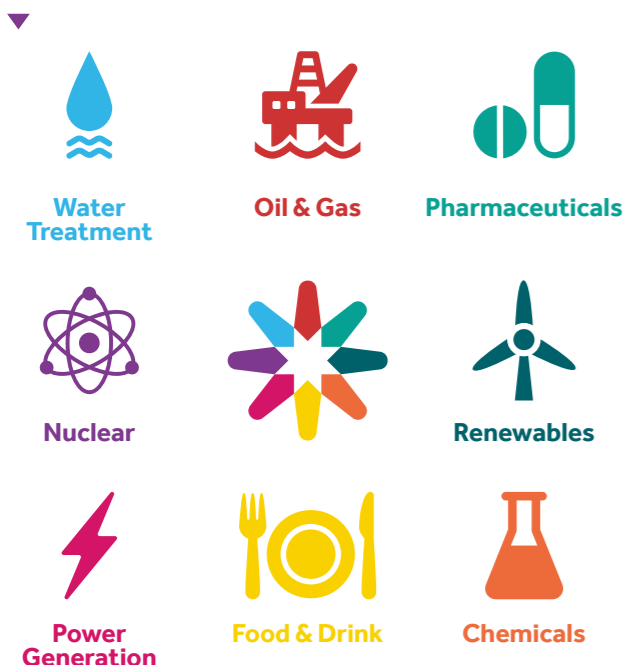
03. Introduction

3.1 Background

The Engineering Construction Industry Training Board (ECITB) is the statutory skills body for the Engineering Construction Industry (ECI) in Great Britain. A non-departmental public body sponsored by the Department for Education (DfE) and accountable to Parliament, the ECITB works with employers, governments and many others to attract, develop and qualify personnel across a wide range of craft, technical and managerial disciplines in the industry.

In the last quarter of 2019, the ECITB commissioned Pye Tait Consulting to undertake exploratory research into skills transferability in the ECI. This report provides a discussion of the concept of transferability, a review of the extent of skills transferability in the industry and a considered assessment of the value of skills transferability. It examines the range of occupations and skills which may be transferable, the reality of skills transferability, the mobility of the ECI workforce, and the wider context of skills transferability (both within the ECI and from other industries).

ECI SECTORS



3.2 ECI Overview

The ECITB's 2017 report, The Economic Footprint of Engineering Construction, produced in conjunction with the CEBR, put the total employment of the engineering construction industry at nearly 190,000, and its aggregate "employment impact" at around 745,000 people in the UK – this includes people whose jobs are partially or wholly dependent on the ECI in some way, usually through supply chain links⁷.

The industry is usually divided into a number of separate sectors, but they are not mutually exclusive.

Many ECI companies operate across two or more of the following:

- Nuclear
- Power generation
- Oil & gas
- Chemical
- Water treatment
- Pharmaceutical
- Food & drink
- Renewables.

The largest sector, by turnover and employment, is currently oil and gas. However, the structural change in the global economy which is taking place, compounded by the effects of the Covid-19 pandemic and a depressed oil price, are changing the face of the ECI in substantial and rapid ways. Demand for oil and gas has been reducing steadily over the past few years and there have been signs that the pace of reduction might accelerate as governments implement carbon reduction policies in line with their legislative commitment to net zero emissions by 2050. The virtual standstill in the aviation sector during the pandemic not only temporarily exacerbated the situation for oil and gas but may have created the conditions for an accelerated take-up of electric propulsion for land vehicles as well as accelerated scrapping of older and more fuel-thirsty aircraft and energy plants. Although remaining the largest sector, therefore, oil and gas may well give way in the medium term to the renewables sector as the largest in the ECI.

3.3 Definitions

Definitions of transferability and associated terms were agreed prior to the start of the research:

The degree to which a person, occupation, or competence can be transferred from one sector, sub-sector, or occupation to another; where "degree" is defined as the extent to which the transfer of competence can be achieved with benefit to the receiving sector, industry, or occupation.

1. 'Occupational transferability' refers to workers who change job roles within an industry where their skills are either fully or partially transferable to the new role, allowing for progression and easy-entry training.
2. 'Sectoral transferability' refers to workers moving between ECI sectors, or from other industries into the ECI.
3. 'Geographic transferability' or 'Mobility' refers to the physical movement of individuals and skills from one region to another.

Note that for clarity and ease for the purposes of this report:

- 'sector' as used throughout this report refers to the constitute parts of the engineering construction industry (ECI) for example the oil and gas sector or nuclear sector. 'Industry' refers to any other industry as a constituent part of the UK economy, outside the ECI such as (usually) an allied industry, for example, construction or manufacturing. The term 'sub-sector' refers to a smaller constituent element within a 'sector' – so, for example, bio-mass and solar are sub-sectors of renewables and gas, coal and waste are sub-sectors of power generation.
- 'competence' comprises skills, knowledge and behaviour and it is really the transfer of competence with which this research is concerned. However, in common usage, the word 'skills' is generally understood to be synonymous with 'competence', and that term has been used throughout this report.
- 'occupations' comprise a range of competences. Almost all roles include soft skills at various levels including self-management, behaviours, problem-solving, etc. together with a wide range of role-related task and job skills.

⁷ ECITB/CEBR, 2017. The economic footprint of engineering construction.

04. What is transferability?

The transfer of skills between job roles is not a new concept. As economies evolve, people shift to adapt their core skills to new roles. When the coal pits closed in the UK in the 80s, some miners found work elsewhere in construction, demolition, tunnelling, and even in the social services (many took up work in the probation and prison services and in local social services). Marine engineers working on ports and coastal defences have adapted to work on offshore gas and oil facilities; in the 2000s many fishermen transferred to offshore supply and service vessels, and fossil-fuel power plant engineers now cross the divides to nuclear and renewables. The difference today is the speed at which change is occurring and the resulting need to plan, so that skills which have taken time and money to develop are not lost.

4.1 Skills transferability

The ECITB has identified four key challenges over the coming years with respect to the industry's need to deliver some of the £600bn of planned UK infrastructure projects. The challenges are:

- tackling increasing competition for skills between sectors in the ECI and within the wider economy;
- mitigating the impacts of an ageing workforce;
- adapting to technological change; and
- maintaining a safe and competent workforce⁸.

In addition to these stated challenges the industry faces additional issues related to Covid-19 and its impacts. Prominent among the many impacts are:

- 1) redeploying skilled workers from sectors and industries facing skills leakage due to economic viability challenges; and,
- 2) ensuring that industry recovery post-Covid is approached in a way that supports increased resilience across industry and accelerates the energy transition to net zero emissions.

Innovative approaches to recruitment and retention are vital at what is an extremely critical time for the industry. Investment is not just focused on key infrastructure projects such as rail and road capacity, but also on large-scale renewables projects, several (potential) new nuclear power stations, and the very large HS2 build. These infrastructure projects will depend very much on the UK government's post-Covid approach to economic stimuli. The forthcoming National Infrastructure Strategy (Ten-Year National Infrastructure & Construction Pipeline) and Energy White Paper are envisaged to provide further details on related planning⁹.

Previous research for the ECITB has estimated a demand for 124,000 engineers and technicians and 79,000 related roles up to 2024¹⁰ in the context that around a fifth of the engineering workforce and technicians is anticipated to retire by 2026. Labour market intelligence research undertaken by Pye Tait Consulting in 2019 revealed the challenges that ECI employers face when recruiting, with about a third of employers experiencing hard-to-fill vacancies due to insufficient applicants or due to applicants lacking appropriate skills. However, the availability of labour may be somewhat different post the Covid-19 lockdown and the resulting increases in unemployment.

The research also revealed that recruitment from other sectors within the ECI is important. Nearly half (44%) of employers have recruited "externally" – mainly from construction, other ECI sectors, and manufacturing¹¹.

Compounding the demands of current and future projects there is competition for skills within a limited pool of labour. Opening up this talent pool via transferability across projects, between ECI sectors and from outside the ECI has an attraction as a means to improve recruitment and flexibility.

An additional issue is the impact of skills leakages. Similar to related industries, such as construction, ECI projects can go through peaks and troughs in demand for labour. When specific types of employees are demobilised, skills can be lost from the ECI entirely and permanently. The structural decline in oil and gas could see relatively large numbers of employees leaving that sector.

⁸ ECITB, 2019, *Leading Industry Learning – Strategy: 2020-2022*.

⁹ *Anticipated Autumn 2020*

¹⁰ ECITB, 2019, *Labour Market Outlook*.

¹¹ *Ibid*



The impact of temporary troughs due to economic cycles and permanent troughs due to structural decline in given sectors is complicated by the fact that their duration is extremely important. A brief downturn may see employees “hold on” until an upturn gives them the opportunity to return to the sector concerned. If the trough is extended however, workers shift to other industries even where it requires significant retraining. The coal industry was a good example of structural decline leading to the permanent loss of skills to that sector. Oil and gas may well see a similar impact but the objective for the ECI as a whole will be to attempt to retain and if necessary retrain ex-oil and gas workers wherever possible.

Skills transferability initiatives might have the power to help retain skills within the industry, although they could also have an unintended consequence of opening up potential pathways out of the ECI.

Skills transferability research by Pye Tait Consulting in 2018, focusing on the construction industry, found that, while it was straightforward (in principle) to transfer into site/project management roles (due to the greater focus on ‘soft’ skills), transferability between other roles – even apparently similar technical ones – is limited due to a wide variety of sector-specific reasons such as the way training is delivered, the precise requirements of the training, the need for and costs of training for site safety, plus other less visible barriers, such as perceptions and industry norms/culture. The research also revealed a decreasing willingness for geographic mobility within construction.¹²

Since that report’s publication, a key government target of net zero greenhouse gas emissions by 2050 has focused the strategic direction of sectors served by the engineering construction industry as well as that of the ECI itself. Understanding the extent to which skilled workers can move between roles and/or within the ECI is a possible key to avoid losing this workforce as the pressure to transition away from carbon-intensive projects increases.

¹² CITB, 2018, *Skills Transferability in the UK*.

4.2 Supporting transferability through training

The ECITB invests in the recruitment and development support for apprentices, graduates and transitioning workers; this latter category covers the ECI and related industry transferees, those returning to employment after a career break, and the unemployed. Findings from the ECITB’s 2019 Labour Market Intelligence study suggest that skills transferability constitutes an important consideration for employers in the ECI.

A number of initiatives and programmes are already operating within the ECI, albeit currently on a relatively small scale, including the Connected Competence programme. This programme, which currently only targets the upstream (exploration and production) oil and gas sector, aims to standardise competence testing across the industry thereby helping employers to judge whether a competence gained in one ECI sector or project is transferable to another or whether additional training might be required.





ECITB – Connected Competence

Launched in 2015, Connected Competence is an initiative to promote transferability in the ECI. It aims to standardise the verification of technical competences of occupations and is based on the relevant National Occupational Standards (NOS). It is focused on the oil and gas sector, but the vision is to apply a standardised competence assessment framework across the entire ECI sector, intended to promote the transferability of workers across the ECI sectors.

Historically, a reluctance to collaborate between companies and a tendency for over-specification and “gold-plating” of competences has been a major barrier to a standardisation. This generally meant that contractors had to obtain competence certifications specific to individual company requirements. The need for cost reduction has been a turning point in the drive for standardisation.

Connected Competence is based on standardised testing in a specific set of occupations. It aims to:

‘Standardise base competence and training requirements for the offshore and site workforce in the UK. It streamlines training, assures the base level of competence and assists with the efficient transfer of employees between companies.’

Through knowledge and practical tests that have to be repeated every three years, workers can prove their competence in a specific skillset. This benefits employers by reducing duplication of assessments and ensures a workforce with common standardised competences. Primarily the effects of the approach are to reduce costs and streamline processes.

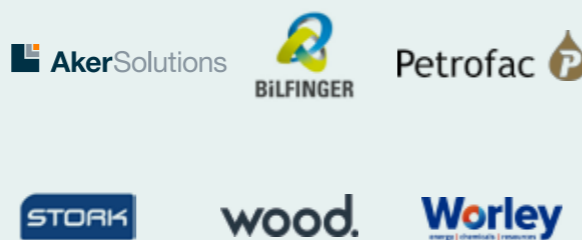
At present, Connected Competence encompasses eight trades:

- Electrical Installation
- Electrical Maintenance
- Instrument and Control Maintenance
- Mechanical Maintenance
- Pipefitter
- Plater
- Rigger (offshore only)
- Site Focal Point/Appointed Person (offshore only)

This list of trades is to be expanded in the future.

Connected Competence - Steering Group

Six major companies (Aker Solutions, Worley Parsons, Bilfinger Salmis UK, Petrofac, Stork and Wood Plc) from the oil and gas sector formed a steering group in 2015 to promote a standardised competence testing system. These companies represent 75% of the workforce in the UK Oil and Gas sector. The steering group also includes Skills Development Scotland, the Scottish Government, the Oil & Gas Council and the Oil and Gas Authority. The steering group provides strategic input and is supported by the ECITB operational team.



The ‘Assuring Competence in Engineering’ (ACE) scheme is a separate scheme for ‘on shore’ ECI sectors. The scheme is an engineering construction industry card for ensuring the competence of workers in the UK (the ACE card includes an important safety component). Card holders will have received both health and safety training and a qualification in a specific occupational skill that is recognised by the ECITB. The card is awarded as a combined CCNSG (Client Contractor National Safety Group)/ACE Card. To be eligible, the cardholder must have an ECITB vocational qualification and hold a valid CCNSG Safety Passport.

More broadly, the issue of lifelong learning has come to the fore in recent years, with political discussion around ‘skills passports’ (or similar) picking up traction (e.g. in the industry Sector Deal for offshore wind power). In recognition of skills shortages – both in the ECI and other UK sectors – the government launched the National Retraining Scheme (NRS) in 2019, - see section 6.3.

As the ECI’s workforce mainly consists of highly-trained and qualified specialists, the NRS may be of limited value to a majority of workers in the ECI in view of its initial eligibility criteria¹⁴. It may, however, play a part in retraining those with lower qualifications/experience – perhaps at a semi-skilled level – to take up roles in the ECI. There have also been calls to use the National Skills Fund for re-skilling when it is introduced in 2021.

Skills Passports

Skills passports are already in place, predominantly in the nuclear and oil and gas sectors. The Skills for Nuclear Passport (S4NP) example, detailed in section 6, has been developed with industry consultation to provide the sector with a standardised approach to skills development and recognition, ensuring the strictest security and highest training standards possible.¹⁵ Employers and stakeholders were in favour of a skills passport as it would record training programmes and competence and could be transferred across sectors, as well as speeding up vetting processes. For those working in HR, this again was a favoured approach. One stakeholder working within the oil and gas sector was critical of the bureaucracy required after TUPE transfers concerning the need to measure workers competence when they had already proven that they were competent for a similar previous project.

¹⁴ Criteria as of January 2020: age 24+, are already in work, do not have a degree-level qualification, are paid below a certain wage threshold.

¹⁵ NSAN <https://www.nsan.co.uk/services/nuclear-skills-passport>

4.3 Barriers to transferability

Below we discuss some of the challenges surrounding transferability and which may need to be considered in any future initiative or programme, or for general support to ease skills transferability across or into the ECI.

4.3.1 A complex concept

The dynamics of transferability are complex and the process is not straightforward.

For example, the gain in the transfer of skills to one particular role/sector/location represents labour and skills lost to another role/sector/location – a negative opportunity cost that is extremely difficult to factor into any skills equation. If soft skills are lost to one area of the economy the impact may be less severe than the loss of important technical skills. Equally the loss of technical skills for a declining sector (permanent or temporary) may be less severe than the same loss for a thriving or expanding sector. Where transferability is enabled there could be increased competitive pressures for roles and skills that are transferable. With a broader pool of potential employers, even across multiple sectors, the method for making opportunities visible becomes more important. This is especially the case when ensuring that SMEs in any particular sector are not penalised by their reduced ability and reach to attract recruits from non-traditional sources or sectors.

There are also two different contexts in which transferability occurs: what might be called “enforced” transfers when a sector or company declines; and “voluntary” transfers due to financial or personal factors. In both cases, however, it is possible to build a case for the process being largely “market driven”.

A further conceptual barrier is the underlying complexity of transferability. Employers told us, for example, that even between sectors within the ECI, the transfer of a supervisor – although apparently a generic skill – is complicated by the need for sector-specific knowledge, skills, and understanding. In order to manage and guide other workers the supervisor invariably requires considerable technical experience within their occupational discipline and sector.

4.3.2 Individual motivation & awareness

Transferability may, in principle, represent one solution to some of the skills challenges faced by the ECI. However, transferability relies on the willingness of individuals to move between roles, sectors and locations in the first place. Without the desire or incentive to transfer, employers will struggle to recruit transferees. Often though, individuals can simply be unaware of the opportunity that they are able to move between roles or sectors. Even if they are aware, they might then be unsure how exactly to go about transferring, and how they might obtain training to facilitate the gathering of the new or additional skills required to move successfully. Individual contractors themselves may often be discouraged from transferring due to concerns about changes to work-life balance, distance to travel and potential relocation costs (although travel and placements are often accepted to be a part of the job), and changes to pensions arrangements.

Coupled with this is often the lack of a clear method by which individuals’ prior learning and experience and skills can be recognised and/or accredited by potential employers. Generally, those with higher skill levels tend to have a greater degree of specialisation within their sector. This, on the one hand, might make it appear potentially harder for them to transfer as they may be regarded as possessing ‘niche’ skills but, on the other, professional recognition should ease the path of transferability.

Prior learning and skills are sometimes not recognised by employers. According to one employer, the qualifications of those who have come from the armed forces are not always recognised by employers or they are perceived to lack relevance. Conversely, other employers praise ex-armed forces personnel for their leadership skills and strong abilities in health and safety as well as risk management. Upskilling may still be required and some of the employers surveyed have either provided training in-house or have used external training for ex-armed forces recruits.



4.3.3 Multi-skilling and qualifications

There has traditionally, as witnessed in the construction industry, been a reluctance from trade unions and some employees to embrace the idea of multi-skilling and transferability. There are underlying concerns that multi-skilling may in fact lead to a “de-skilling” of specialist trades. A lack of sector support in such a way can hold up change.

Other stakeholders thought that qualifications in general can be a hindrance as certain employees cannot progress to specified levels without certain qualifications even if they have the correct skills and experience. For example, although it is possible to reach chartered status without completing a Masters in Engineering (M.Eng) in a specific discipline such as Electrical or Mechanical Engineering, many employers actively prefer to recruit individuals who already hold an MEng qualification to smooth their path to CEng.

‘Some employers will take on an occasional exceptional candidate without M.Eng but it’s unlikely, to be honest, because there is a plentiful supply of those who do have it.’

Industry Body

4.3.4 Perceptions of need & costs

Employers participating in the in-depth interviews for this research mentioned a number of barriers to transferability. The most common are the need – whether justified or not – for candidates to have demonstrable experience in the ECI sector in question, and the employer’s perception that they must have specialist skills on entry to be able to successfully fulfil the role.

One employer noted that larger employers are potentially better able to ‘absorb’ this cost.

‘An electrician may have the skills but will have no idea about the ECI or what electrical work is like because they only have a domestic experience. It’s not really about having the technical skills but the experience of the sector. Unfortunately, those without the relevant experience won’t be given the opportunity over somebody who does have the relevant experience.’

HR Director, ECI

Another commonly raised barrier centres around the perceived lack of willingness of employers to invest the time and money in individuals to re-train them to work in their new role or sector.

The authors were told that one of the underpinning benefits of the ECITB levy, being a collective skills investment fund, is that employers –when investing in training – may lose individuals to competitors but they will also have the opportunity to pick up others also trained through the levy, thus saving further training costs.

A recruiter also mentioned the recruitment process as flawed and therefore hindering transferable skills being utilised, stating recruitment in the ECI has ‘pushed out flexibility for formality’.

Previously, we were told by a recruitment agency, a worker could move from one sector to another from a similar role with experience of using the same equipment. They would get allocated to a team to keep them on track and they would pick up more of the role ‘on the job’, but this scenario appears to have disappeared in the agency’s experience. Employers want to hire someone whom they know has done the job before, not someone who they know could probably do it.

‘There are some workers who work in the oil & gas sector who are highly skilled These skilled workers however cannot move sector because they’ve been [stuck] in oil & gas for so long and are seen as unemployable by other sectors. People’s CVs now need to demonstrate they’ve worked in maybe 2 or 3 different [sectors] to be employable.’

Recruiter



4.3.5 Misconceptions

Specialist skills

A number of employers and stakeholders interviewed at an NSSG mobility and transferability workshop in January 2020 pointed to considerable barriers to skills transferability due to the specialist skills within the nuclear sector that are not required by, or available in, other industries or sectors.

In addition, some leading engineering employers feel that there are limitations to shared competences and qualifications. For instance, a general qualification for Engineering is seen as not being useful due to the need for specialist domain knowledge. This concern may not apply on the same scale to craft trades (e.g. Level 2 and Level 3) as most interviewed employers confirmed that welders or steel fixers, for example, may perform their work in almost any sector.

T-Level¹⁶, though not offered as a future opportunity for the ECI by employers or stakeholders, may have the potential to attract more talent to the ECI sector as they have the broader foundation, include on-the-job placements, and focus on general engineering before specialisation begins¹⁷. This does not mean that the concept and practice of transferability should be confined to T-Levels alone, but rather need to be applied throughout a career, to ensure barriers limiting transferability are minimised.

Sector-specific regulatory requirements

One employer stated that there was a general lack of understanding of the comparability of regulatory requirements for different ECI sectors. For example, individual recruiters and managers assume that they cannot employ workers on a nuclear works site who are not from a nuclear background and/or assume there will be a lot of complicated procedures to follow in order for them to do so.

The regulations, however, may not be as strict as they assume them to be, but recruiters are unwilling to take that risk, due to time constraints.

Language and terminology

The technical terminology used in different ECI sectors also leads individuals to assume that transferring to another ECI sector would be unfeasible.

‘There is a mentality of ‘if it works in one sector it cannot possibly work in another’, driven by different terminologies and different languages used.’

Chief Engineer

¹⁶ T-Levels are two year courses in England that are equivalent to three A-Levels. They have been developed in conjunction with employers and deliver a mix of classroom and on-the-job training. Scotland offers Foundation/Graduate Apprenticeships and Wales is currently working on its new Curriculum for Wales.

¹⁷ <https://www.gov.uk/government/publications/introduction-of-t-levels/introduction-of-t-levels>

Transferability and the Nuclear Sector

Reducing misconceptions has led to work being undertaken by the NSSG in a series of workshops and skills meetings. At a Nuclear Skills Summit (one of a series of events at which transferability has been an important agenda item) held on 12 March 2020, the concept of transferability and how it may be applied to the UK nuclear sector was discussed with the aim of identifying a more concrete way forward to implement skills transferability in practice.

Discussions at the summit focused on transferability in the context of competency frameworks and security vetting as well as related requirements. The plans cover an assessment of the nuclear sector's appetite for a common competency framework. A feasibility study is planned to investigate the potential of developing a nuclear sector-wide database of competencies. The future demand for job roles in the next two years and possibly beyond is to be examined through a review of the Nuclear Workforce Model.

Vetting and security checks can be a hurdle for efficient deployment of workers onsite. Attendees agreed that they can often represent an unnecessary bureaucratic burden and thus also represent a barrier to transferability. A shared, common standard of security clearance and or vetting recognised across the industry combined with a standard period of validity may improve mobility. This is now being worked on as a result of the most recent Nuclear Skills Summit. In addition to gaining agreement on a common security framework for the nuclear sector, induction modules for staff are to be harmonised across sites and tailored to the individual staff member's role and security clearance requirements.

The nuclear industry's Safety Directors' Forum (SDF) is to be engaged in related discussions on harmonisation.

Other key outcomes of the discussion included the recommendation to more closely align the nuclear sector with the Nuclear Institute Nuclear Delta Standard¹⁸, which sets benchmarks in the fields of Nuclear Safety Culture, Nuclear Security Culture and Nuclear Technology & Safety.

18 <https://www.nuclearinst.com/Nuclear-Delta>

4.3.6 Mobility

Factors affecting mobility

Employers and other stakeholders were asked as part of our study to rate, on a scale of one to ten (where one is not significant and ten is very significant), how certain factors might act as barriers to mobility. Although scoring is slightly different between the two groups, the ranking in importance of the list of potential barriers is virtually identical. Both stakeholders and employers place the impact on family and home life as the most significant barrier, with impact on social life next (for employers this is of equal importance to access to public transport).

Table 1: Factors acting as barriers to mobility

	Stakeholders	Employers
Impact on family	8.7	7.7
Impact on social life	8.0	5.6
Commute time	7.3	-
Private transport costs	5.8	5.1
Temporary relocation	5.8	5.1
Access to public transport	5.5	5.6
Access to private transport	5.5	5.0
Public transport costs	5.2	4.8

Base: 30 employers, and 13 stakeholders.
Source: Pye Tait research 2020.

Both groups of interviewees note that workers are increasingly seeking flexibility within their job roles, such as the ability to work from home, flexible hours, etc. They also note an increasing awareness of mental health and wellbeing.

As employers develop new ways of retaining staff, and as the staff themselves exhibit an increasing desire to remain in a given location, the problems of attracting workers from other industries and from other sectors within the ECI are compounded. Where possible, more flexible work patterns may therefore help in making a workforce more mobile and available for transfer opportunities.

Employers and other stakeholders commented that family and career circumstances as well as age play a significant role in workers' willingness to be mobile; for instance, workers with young children may be reluctant to relocate or be mobile due to family ties, care responsibilities for children or having to arrange new schooling for children. Also, in many families, both partners have careers meaning that a partner's job may not be easily transferred to a new location. Other stakeholders said that employers may need to provide assistance and support with relocation – and financial incentives – to encourage people to want to overcome this upheaval.

The decision on the part of an individual to transfer to a new job role, different sector or an entirely new industry is a major life-change and the difficulty of the decision may increase with age.

We were informed that there are important barriers to mobility on an individual level, including:

- Family ties – school ties for children
- Travel distances
- Need to retrain
- Costs of relocation (including possibly higher housing costs)
- Need to adjust to new regions/area
- Age
- Pension concerns
- Concerns about job security in the new role/sector
- (where relevant) prejudice about relocating to the north of England

In parallel, we were told that employers are taking a number of initiatives designed to retain staff, reducing the attractiveness of transfer whilst available work levels remain buoyant. Amongst these are:

- Enhanced pension schemes
- Flexible working hours
- Work-from home schemes
- Employee support schemes (wellness, etc)
- Incentives

19 Sutton Trust & University of Bath (2018), *Home and Away - Social, ethnic and spatial inequalities in student mobility*

20 Dr Philip Augar (2019) *Review of Post-18 Education and Funding*

21 University of Bath (2019), *Social mobility and the geography of higher education choice*

Young workers without ties are more likely to be mobile. However, we were told by stakeholders and employers alike that the nation is undergoing a major generational shift around lifestyle and expectations between younger and older workers. Younger workers now tend to see relocation for work as a relatively low-importance possibility, rather than as a 'must-do' career necessity (as it might have been seen in the past). Younger workers also tend to believe that options to be able to work flexibly and to work from home should be part of a standard package of work. Our employer feedback acknowledges that ways of working have changed in these respects and that this undoubtedly affects mobility and transferability and, to an extent, limits the ability of the ECI to attract younger workers.

Various studies provide further evidence that mobility at graduate level has changed over the years and impacts adversely on the pool and diversity of future recruits to the ECI. One reason for such change in mobility ambitions by younger people has been linked to the introduction of university fees and other costs. A reluctance to build up debt inducing students of certain social class and income groups to choose local universities in a bid to reduce accommodation and other costs has been well noted in a number of studies¹⁹. It is a central argument in the Review of Post-18 Education and Funding, authored by Dr P. Augar (2019)²⁰. In this context, degree apprenticeships may offer a suitable and possibly mutually beneficial alternative.

The research points to varying mobility across ethnicities, with people of Pakistani or Bangladeshi origin being less mobile. Furthermore, attitudes to mobility also have a geographical dimension, with students in Northern England, Scotland and Northern Ireland being less mobile than in other regions²¹.

Efforts to promote skills transferability and workforce mobility will therefore have to consider these factors.

4.3.7 Recruitment Methods

Stakeholders argue that candidates who, on paper, may have the capability to undertake a role are often screened out by recruitment agencies and head-hunters as they lack the direct experience of working in the ECI in a similar position. Added to this is a low appetite for skills transferability amongst workers who typically remain with the sectors they know.

Other than the recruitment of ex-military personnel, recruiters are not generally aware of any initiatives promoting skill transferability either into the ECI or to other industries.

05. Transferability in the ECI



5.1 The transferable workforce

Achieving an idea of the size of the transferable workforce was an objective of this study. We know, for example, that around 14% of the total construction workforce originated from other sectors²². Three employers in the ECI were able to estimate that the figure for the ECI industry is probably nearer to 8%-10%.

Based on conversations with employers and other stakeholders it would seem reasonable to estimate that somewhere between at least one and two percent of employees in any given sector within the ECI will look for work in another sector in any given year²³.

To illustrate the possible scale of potential transferees in this way (from within the ECI and from other industries to the ECI), the table below lists a selection of occupations of relevance. In theory, almost all Standard Occupation Classification (SOC) codes could be relevant to some extent, but we have shown only examples of the managerial, technical and skilled trades that are common occupations within the ECI. The table shows the totals employed within the SOC codes in 2019 and the numbers who might consider transferring ranges between 36,507 and 73,014 workers respectively. Note that these totals represent all people within the given SOC codes in the entire UK who might consider a change of sectors.

²² CITB CSN data kindly shared with the authors.

²³ Based on seven (larger) employers who estimated that between one in a hundred and one in fifty of their workforce leave to take up work in non-ECI sectors.

Table 2: Potential Transfer Pools in UK economy - Selected SOC Codes

		Total	1% transferable	2% transferable
1121	Production managers and directors in manufacturing	309,200	3092	6184
1122	Production managers and directors in construction	199,700	1997	3994
2121	Civil engineers	92,300	923	1846
2122	Mechanical engineers	79,300	793	1586
2123	Electrical engineers	56,400	564	1128
2124	Electronics engineers	30,400	304	608
2129	Engineering professionals n.e.c.	126,700	1267	2534
213	IT and Telecomms Professionals	1,043,900	10439	20878
2461	Quality control and planning engineers	33,800	338	676
2462	Quality assurance and regulatory professionals	110,100	1101	2202
3112	Electrical and electronics technicians	35,900	359	718
3113	Engineering technicians	103,400	1034	2068
3114	Building and civil engineering technicians	22,200	222	444
3115	Quality assurance technicians	34,300	343	686
3119	Science, engineering and production technicians n.e.c.	53,500	535	1070
313	Information Technology Technicians	209,600	2096	4192
5215	Welding trades	60,900	609	1218
5216	Pipe fitters	6,400	64	128
5241	Electricians and electrical fitters	262,300	2623	5246
5245	IT engineers	35,600	356	712
5249	Electrical and electronic trades n.e.c.	80,900	809	1618
5250	Skilled metal, electrical and electronic trades supervisors	38,400	384	768
5311	Steel erectors	7,700	77	154
5312	Bricklayers and masons	76,600	766	1532
5314	Plumbers and heating and ventilating engineers	193,600	1936	3872
533	Construction and Building Trades Supervisors	66,600	666	1332
8141	Scaffolders, staggers and riggers	26,700	267	534
8142	Road construction operatives	23,600	236	472
8143	Rail construction and maintenance operatives	10,000	100	200
8149	Construction operatives n.e.c.	115,300	1153	2306
8221	Crane drivers	12,400	124	248
8222	Fork-lift truck drivers	93,000	930	1860
TOTALS			36507	73014

Hypothetically, if two percent of electricians and electrical fitters (SOC code 5241) decide to swap industries in any given year, the result is an available pool of around 5,000 skilled people. It is clear only a small proportion might be available to or consider the ECI. The problem for any sector seeking to take advantage of these available pools of labour is that of reaching the individuals concerned and overcoming some of the barriers listed in the previous section.

The table (3) below contains **exemplar** competences and job roles. The chart has been developed with general civils and industrial construction in mind – some companies in fields like light industrial construction may find it easier to transfer staff while sectors such as nuclear may find it more difficult.

Table 3: Construction/Electrician into Engineering Construction Matrix (based on interviews with employers and other stakeholders)

	Concretor	Bricklayer	Electrician	Supervisor	Technician	Project Manager
Health & safety knowledge/adherence	Light	Light	Light	Light	Light	Light
Problem solving	Light	Light	Light	Light	Light	Light
Communications	Light	Light	Light	Light	Light	Light
Risk assessment	Medium	Medium	Medium	Dark	Dark	Dark
Time management	Light	Light	Light	Light	Light	Light
Working with precision and accuracy	Light	Light	Light	Light	Light	Light
Knowledge of building materials/fabric	Dark	Dark	Dark	Dark	Dark	Dark
Understand/work to construction plans	Dark	Dark	Dark	Dark	Dark	Dark
Use of machinery/tools	Dark	Dark	Dark	Dark	Dark	Dark
Working to plans/specifications	Dark	Dark	Dark	Dark	Dark	Dark
Measurement and calculation	Light	Light	Light	Light	Dark	Dark
Practical skills/manual dexterity	Light	Light	Light	Light	Light	Light
Installation of components	Dark	Dark	Dark	Dark	Dark	Dark
Concreting	Dark	None	None	None	None	None
Supervision	None	None	None	Light	None	None
ECI job-specific skills	Dark	Dark	Dark	Dark	Dark	Dark
Electrics/electronics	None	None	Dark	None	None	None

Key to retraining required: None Some Significant Full retrain

5.2 Employer/Stakeholder Views on transferability

We asked a number of questions of employers and sector stakeholders about the subject of transferability and most were positive about the theory and potential, but unsure or sceptical regarding the feasibility of targeting “transferees”. Their views on specific aspects were as follows.

Potential ECI transferability opportunities

The majority of interviewees felt there was potential that would enable their sector to benefit from transferable skills from other sectors within the ECI but claimed that specialist skills in each sector would hinder easy transferability. One interviewee said that skills transfer is already taking place in the chemical sector and a number of workers move from nuclear to chemical because they have similar safety training and expertise. In general, employers and stakeholders believed that sector-specific issues are at the base of many of the barriers to transfers.

From industries outside the ECI

We were told that companies would rather wait for a candidate to emerge with the skills they need rather than offer training to candidates without experience or knowledge of their specific ECI sector. Some interviewees were sceptical about non-ECI workers joining the industry, saying that some of the roles and skills were too specialist to be simply transferred and there was no point in looking for these skills outside the ECI.

The value of transferability in the ECI

Skills transferability is generally viewed as a useful way of tackling skills gaps and shortages in the ECI, although perhaps less useful than retraining or upskilling existing individuals as Table 4 below suggests. The ECI sector is rapidly transforming, with nuclear sites being decommissioned, meeting the net zero carbon target by 2050 and the introduction of new digital and technological roles, driving change. Research participants thought, as a result, the ability to transfer skills would be very important in adapting to innovation and change.

The Nuclear Workforce Assessment (NWA) looks at forecasting skills supply and demand across the nuclear sector in the UK.

‘Transferability is key to meeting inflow demand as well as diversifying thought – increased effort is needed to ensure talent is attracted from other industries. Currently, 60% of new recruits are from outside the (ECI) sector.’²⁴

²⁴ Nuclear Skills Strategy Group Nuclear workforce Assessment 2019 https://www.nssguk.com/media/2019/nssg-nuclear-workforce-assessment-summary19_web.pdf



Skills transferability in Chemical Engineering

Skills transfer is relatively commonplace in the Chemical Engineering sector. Civil engineers frequently work across different sectors. This cannot be as easily applied for craft skills as they are more specialist. Project engineers are more likely to be able to transfer their skills between different sectors. Nevertheless, clients may still expect project engineers to have a strong background in a specific discipline and be able to provide evidence. However, there are certain skills and knowledge which may be transferable. For example, a worker with knowledge of turbo and turbine machinery may more easily transfer from other sectors into oil and gas and vice-versa.

The sector uses job fairs to attract candidates from outside the normal pool. Leading companies in the sector cooperate with ex-forces initiatives which are focused more on project management. Ex-military personnel tend to be open to mobility too as they are used to it from their service.

However, there are barriers to successful transferability. In the UK the system for professional regulation works in a specific way. There are 40 different engineering institutions and professional bodies licensed by the Engineering Council to award professional status.

Employers work with these professional bodies (as far as is possible) to ensure the accreditation and professional registration process is what the industry wants and needs but qualifications can be a barrier in this context. A degree level qualification is frequently demanded by employers and often graduates are qualified to MSc level already. They are, therefore, already very specialised. Some employers may hire an exceptional candidate on occasion without a Master's degree but this then can require a less straightforward progression to Chartered status.

Mobility is a key selling point for the industry and crucial for its success. Workers who join the industry usually see the travel as an opportunity. The projects dictate the travel needed, and the workforce is usually willing – in the case of graduates, particularly, travel opportunities are sought after. Age may impact the willingness to travel, however. Employers therefore invest in incentives for travel assignments. Related reluctance may be due to the common fact that often both partners have careers and therefore there are other considerations to take into account, for instance family commitments or schooling of children, etc.

For this research we asked employers and stakeholders to rate various approaches to filling skills shortages.

Table 4: Rating of potential approaches to address skill shortages within the ECI

	Employers average	Other Stakeholders average
Upskilling	8.1	8.7
Retraining	7.0	7.1
Transferring relevant occupations from other ECI sectors	6.7	8.0
Transferring relevant occupations from sectors outside the ECI	6.2	5.8

Source: Pye Tait Consulting; 2020 (please rate on a scale of 1 (not at all transferable) to 10 (extremely transferable) – as potential answers to the current skills shortages in your own sector of the ECI?)

Upskilling, the process of teaching current employees new skills in their current role, is regarded as the most valuable approach to tackling skills gaps. We were told by numerous employers and stakeholders that they are already offering internal mentoring, on-the-job, cross-disciplinary upskilling, and external courses. Some are specifically aimed at upskilling ex-military. Others offer to fund degree apprenticeships (including the use of the apprenticeship levy) and financially support degrees and PhDs. The main emphasis on upskilling is to help workers progress within the sector/company starting at semi-skilled levels and progressing to skilled roles through to technical and management positions.

To address skills shortages or to adapt to technological change, etc., employers currently are more likely to offer retraining (whereby employees learn an entirely new role) for those in specific roles or if an opportunity has arisen where they have retrained someone that they already know has the basic competences for the role.

Upskilling and retraining are not, however, the same as “transferability” in the sense used in this study. In order to retain current staff, especially experienced staff, employers emphasise the need to encourage personal and professional development by providing enhanced training courses, upskilling, mentoring programmes, financial incentives and opportunities to progress and grow within the company.

Stakeholders feel that more investment is needed in training and upskilling, especially digital awareness and high-tech skills, and that employers need to be prepared to spend the time and money training and investing in workers skills and career progression. Employers, in particular, are more sceptical than other stakeholders of the value of transferring staff.

Nevertheless, some employers repeated their concerns that, if they offer training for transferred staff they might then lose those people after having paid for their re-training. Others feared that, if efforts to encourage skills transferability were successful, companies would find themselves battling high levels of attrition. As mentioned earlier, the authors feel that the mechanics of the Industrial Training Act and the related Industrial Training Levy may ameliorate these concerns over the medium and long term as it functions like a skills investment fund, enlarging the pool of trained professionals. It is therefore very likely that companies that may lose trained employees to another competitor may benefit from being able to hire other trained professionals from the growing pool.

Ways to tackle competition for skills in the ECI sector and the wider economy

The vast majority of employers and other stakeholders proposed two main approaches to mitigate the ongoing competition for skills in the ECI:

1) Expand and diversify the potential workforce by investing more in early interventions in primary and secondary schools of all types and in all areas.

This means promoting the industry as a viable and credible career option, transforming the often negative perception of the ECI, and clarifying the different pathways and opportunities available, thereby encouraging younger people to consider a trade/career early on in the industry. This also includes promoting careers amongst parents to change perceptions, if needed and particularly for under-represented groups.

Many respondents seemed unaware of the range of apprenticeships or funding options as they cited the need for more apprenticeships, with an emphasis on funding apprenticeships for career changers and older workers, as well as for young people and school leavers. It was noted in the interviews that to encourage school/college leavers into the industry, best practice involves employers working more closely with local colleges, offering work experience, taster days, placements and taking on more apprentices, even where immediate demand is not present.

2) Standard competences and wider use of the resulting frameworks.

A number of employers and stakeholders recommended an enhancement of the standardisation of competence frameworks across all sectors within the ECI and occupational roles. They argued that this would help free-up blockages in the movement of skills from one sector to another and that it would also assist individuals to see to what extent their own skills are compatible with the needs of different sectors and roles. In this context, one employer specifically referred to Connected Competence currently aimed at the upstream oil and gas sector.

Promotion of transferability

The majority of survey participants were aware that skills transferability is being discussed and is a key issue for the ECI, and, they noted, for the government. Few respondents were aware of initiatives and programmes already taking place. The idea of skills passports as an approach to promote standardised competence was generally welcomed. They believe that help is needed for employers to either fund approaches or perhaps make them mandatory across the ECI as a way to encourage transferability.

As funding is a concern for surveyed employers and stakeholders with regards to rolling out initiatives and programmes to help support skills transferability, they suggested it would be beneficial to know which initiatives are already successfully taking place in support of skills transferability. Establishing a common ECI sector framework would be attractive if feasible and effective.

Several respondents argued that there needs to be less emphasis on specialist skills, which prove difficult to transfer to other sectors, whereas general skills could be more widely promoted. These would meet the needs of businesses provided initiatives and training could be put in place to deliver the specialist skills needed. A small number of research participants stressed their belief that the focus on transferability was a “red-herring”. One said that the industry has been working on transferability for decades – it is called various names: upskilling, retraining, recruitment - and the various audiences for transferable skills are too difficult to reach to spend scarce resources on them.

5.3 Skills Shortages & Transferability

Table 4 below illustrates the main skill areas that employers find most difficult to recruit, from the survey in 2018 of 793 employers. They have been listed in order of importance and major on engineering professionals but include a number of technically qualified roles including specialised project-related skills²⁵. A number of these roles and skills were again listed by employers and stakeholders in this study as current skill shortages.

Table 5 Key skills shortages in ECI sector

1.	Engineering-related technicians
2.	Engineering & science professionals
3.	Skilled mechanical, electrical, instrumentation and electronic trades
4.	Project personnel, including expeditors, estimators, cost engineers and planners
5.	Design & draughtsperson
6.	Construction operatives
7.	Plant/Process occupations
8.	Directors and managers of business functions
9.	Business professionals

While the Offshore Wind²⁶ and the Nuclear Sector Deals²⁷ with the UK government discuss addressing skills shortages (in part) via transferability, it is interesting to note that the Automotive and Aerospace Sector Deals predominantly seek to address their own industry skills shortages via the creation of new talent pipelines into the sectors. They do not list, as a high priority, the concept of skills transferability and/or workers from other industries. The Automotive Sector Deal refers to the National Retraining Scheme to up-/re-skill workers, and to additional investment in STEM education, but does not address transferability or mobility of workers²⁸. Transferability is not considered within the Aerospace Sector Deal, which instead focuses on a skills mapping exercise to uncover sector skills needs and to boost diversity²⁹.

²⁵ Based on 793 ECI sector employers surveyed for the ECITB Labour Market Outlook, 2019

²⁶ <https://www.gov.uk/government/publications/offshore-wind-sector-deal>

²⁷ <https://www.gov.uk/government/publications/nuclear-sector-deal>

²⁸ HM Government (2018), Automotive Sector Deal

²⁹ HM Government (2018), Aerospace Sector Deal



Soft and fundamental skills

Soft skills typically comprise skills such as communication, collaboration, team-working, management, health and safety etc. Fundamental skills are those like maths and English which form the basis of all occupations. There are strong arguments that digital literacy forms a third fundamental skill area for all employees but there is a national lack of clarity as to where “digital literacy” ends and “digital skills” begin. The former is arguably an important soft skill while the latter forms vital skillsets in different ways for different job roles.

The general understanding from employers and stakeholders is that soft skills are widely transferable, more so than occupational skills, and are recognised in the industry as valuable skills.

However, they believe a number of soft skills such as team-working and communication can be learned on-the-job. Employers had more of an insight than stakeholders on the feasibility of transferring different soft skills, agreeing that each category depends on the project and a worker’s background. Written and spoken English as well as maths were rated as the most transferable soft skills.

However, soft skills such as problem solving are considered less transferable by both employers and stakeholders when moving across industries.

‘The theory of problem solving is transferable but the actual element of it is technical. You may have good skills addressing a problem, but industry experience is needed to address how someone would tackle the problem in question.’

HR Director

Occupational-specific skills

Employers and stakeholders were asked to rate – on a scale of 1 (not at all transferable) to 10 (extremely transferable) – the extent to which a variety of ECI-specific occupations could be transferred into a sector within the ECI from: a) other ECI sectors; b) the construction industry; and c) outside ECI or construction. In addition, respondents in the oil and gas sector were asked to provide similar ratings of transferability from offshore to onshore, and vice versa.

Table 6 overleaf shows that ratings received from employers and from stakeholders are relatively high, indicating their belief that there is potential for transferability for occupations from other sectors or industries into the ECI.

Occupations judged to be most transferable from other sectors within the ECI include engineering and science professionals and technicians, project managers, IT specialists, and a range of electrical/electronic and skilled construction roles. Across the board most of the listed roles are rated as being transferable within the ECI by employers.

Scores for transfer from construction were lower – only general construction operatives scored 8 – but most occupations were rated close to or over 7.

Where transfers into the ECI from non-ECI/non-construction industries are concerned only plant operators, business professionals and IT specialists scored over 7.

The ratings of transferability between offshore and onshore (and vice versa) were generally positive. Many of the low scores clearly involved skills which were rarely used in certain locations – such as designers and draughts-people, project managers and concreting specialists moving offshore.

As shown in Table 7 below employers and stakeholders were also asked to rate – on a scale of 1 (not at all transferable) to 10 (extremely transferable) – the extent to which a variety of soft and fundamental skills could be transferred into the ECI as before.

On the whole, employers and stakeholders rate highly the transferability of soft and fundamental skills, providing an average rating of 8 out of 10 or higher for most pathways. Overall, as with job-specific skills, the highest potential for transferability is seen between sectors in the ECI, followed by transfers from the wider construction industry.

Employers rate the transferability of maths, and of spoken and written English as marginally greater than stakeholders do, while stakeholders in turn rate the transferability of various aspects of management slightly higher than employers.

Table 6: Employers' and stakeholders' rating of transferability of ECI-specific occupations into ECI from elsewhere

Occupation/Sector transferring from to ECI	Employers					Stakeholders				
	Other ECI sectors	Wider construction industry	Outside ECI and construction	Offshore to onshore	Onshore to offshore	Other ECI sectors	Wider construction industry	Outside ECI and construction	Offshore to onshore	Onshore to offshore
Engineering and science professional roles	8.5	7.4	6.5	8.6	8.3	8.1	7.5	6.5	5.5	5.5
Designers and Draughtspersons	7.7	7.1	6.1	6.5	5.7	7.6	6.8	5.2	5.5	5.5
Engineering-related technician roles	8.0	7.3	6.3	8.3	7.8	8.4	7.6	6.2	5.5	5.5
Project managers	8.1	7.6	6.6	7.3	6.3	9.1	8.3	6.9	8.0	8.0
IT and digital specialists	8.2	7.8	7.2	8.2	7.8	8.8	7.8	7.5	6.0	6.0
Other business professional roles	8.3	7.9	7.4	7.5	7.0	7.9	7.3	6.1	4.5	4.5
Supervisory roles	7.6	6.8	6.1	8.4	8.0	9.1	8.7	7.1	6.5	6.5
Skilled metal trades (general)	7.2	6.9	6.1	7.8	7.2	7.0	6.4	5.0	5.5	5.5
Skilled pipe fitters	7.8	7.3	6.7	8.3	7.7	7.0	6.3	4.7	5.0	5.0
Skilled steel fixers	7.4	7.2	6.7	8.2	7.6	7.2	6.7	4.7	4.5	4.5
Skilled concrete operatives	7.1	6.7	5.7	6.7	5.8	7.0	7.0	5.8	4.5	4.5
Skilled welders	7.8	7.5	6.4	8.3	7.7	7.7	6.3	5.0	4.5	4.5
Electricians	8.0	7.5	6.7	8.7	8.3	8.1	6.8	5.9	4.0	4.0
Approved electricians	8.0	7.5	6.7	8.7	8.4	8.1	7.3	6.9	5.0	5.0
Electronic trades	7.9	7.3	6.6	8.2	8.0	7.8	7.0	6.5	5.5	5.5
General construction operative roles	8.1	8.0	6.5	8.2	8.0	7.7	7.2	6.5	4.5	4.5
Plant operators	7.9	7.8	7.0	8.6	8.4	7.3	6.7	5.9	3.5	3.5
Process operative roles	6.6	5.9	5.4	8.3	7.3	6.4	5.7	5.0	-	-

Base: 13 stakeholders and 30 employers. Source: Pye Tait research 2020.

Table 7: Employers' and stakeholders' rating of soft-skills transferability

Employers			
	Other ECI sub-sectors	Wider construction industry	Sectors outside the ECI and construction
Spoken English	9.7	9.6	9.4
Written English	9.4	9.2	9.0
Maths	9.1	9.0	9.0
Problem solving	8.5	8.3	8.0
Team working and communication	9.1	9.0	8.7
Management and leadership	8.4	8.2	7.9
Risk and safety management	8.2	7.9	7.2
Health and safety	8.6	8.2	7.9
Project and time management	8.7	8.3	7.8
30 respondents			
Stakeholders			
FROM:	Other ECI sub-sectors	Wider construction industry	Sectors outside the ECI and construction
Spoken English	9.4	8.9	9.1
Written English	9.2	8.9	9.1
Maths	8.9	8.4	8.6
Problem solving	8.6	8.2	8.4
Team working and communication	9.1	9.0	8.9
Management and leadership	9.0	8.6	8.4
Risk and safety management	8.8	8.5	8.5
Health and safety	9.2	8.7	8.9
Project and time management	8.7	8.5	8.3
13 respondents			

NB Each chart is treated as a separate table for analysis purposes. The colour coding of scores is relative to scores within the same table.

06. The Wider Context

6.1 Displaced workers and the mobile workforce

Skills transferability, in terms of the definition applied in this report, has an extremely patchy record both in the UK and internationally. This is almost certainly due to the difficulty of applying the complex and overarching concept of skills transferability to still quite compartmentalised industries based on core skills sets and occupations.

Initiatives tend to be very localised or sector-specific (see case study examples below). They focus more on job creation and shifting to other industries, sectors or markets, than on the specific transfer of skilled workers into other roles and sectors. Targets have usually been that of alleviating the effects of redundancy as opposed to attempting to solve medium or long term skills shortages and gaps.

Many of the examples are related to industrial transitions such as coal mining and fossil fuel power. The initiatives have been largely driven by specific economic circumstances. A key example of such an industrial transition is the transfer of workers from the Cottam Coal Plant to the nuclear sector, outlined below.

Cottam Coal Power Station

On 30th September 2019, the Cottam power station ceased generation after operating for 51 years in North Nottinghamshire. When the closure was announced the Cottam team established their own 'People Hub' to work with staff to ensure they were able to explore new opportunities, securing the right future for them.

It was important to EDF Energy to retain their skilled and qualified workforce who held essential behaviours, attitudes and expertise in the sector. In order to retain and transition these individuals, EDF Energy worked with the Nuclear Skills Strategy Group (NSSG) and ECITB to assess how the skilled workforce could transition into EDF Energy's nuclear workforce, namely Hinkley Point nuclear power station in Somerset.

The ECITB-funded Accelerated Experience and Learning Programme (AELP) is aimed at sector jumpers.

As part of the AELP many of the technical skills and behaviours required in the nuclear sector were identified as being comparable to those working in the coal station including a similar safety and security culture as well as the turbines and control room..

AELP was built on existing operational and generic knowledge and skills. The accelerated programme recognised the technical competence and experience of workers from Cottam and equipped them with the components needed to guarantee they were a 'suitably, qualified and experienced person' (SQEP) in twelve rather than eighteen months³². The intensive training programme was cost-effective and reduced the speed to competence.

³⁰ <https://www.edfenergy.com/media-centre/news-releases/cottam-power-station-powers-down-after-half-century>

³¹ <https://www.fenews.co.uk/featured-article/40480-skills-shortages-in-nuclear-sector-point-the-way-to-dealing-with-wider-challenge-for-uk-industry>

³² <https://www.nssguk.com/media/1741/edf-energy-coal-to-nuclear-transfer-scheme-final.pdf>



While surveys have suggested that skills transferability is perceived as having considerable potential to address skills shortages and prevent leakages of talent to other sectors, it seems there are in reality very few initiatives designed to implement skills transferability in practice, as yet.

Skills Transferability in Nuclear Decommissioning

One approach to the issue of skilled displaced workers is illustrated by the needs of the nuclear decommissioning industry. A number of power plants will have to be decommissioned in the next decade and all will require skilled workers. The Nuclear Decommissioning Authority recently created new subsidiaries for Sellafield and Magnox which directly report to the NDA and cooperate to move staff between sites.

Few skills in the nuclear sector are core nuclear skills, the rest are often highly transferable which means that transferability for the sector also takes in many other sectors. The Nuclear Sector Deal (agreed with the UK government) promotes sector transferability:

‘The government will work with the sector to enable bespoke programmes that support transitioning between sectors, including civil and defence.’

There are ongoing discussions and seminars on skills transfer and other topics via the Total Decomm platform. Through this platform, discussions with the Oil and Gas sector, defence, renewables, rail, and water have taken place. In the near future, aerospace and chemicals are to be engaged as well. Across sectors, professionals and experts agree that in terms of skills, these industries have a lot in common. They envisage a process of cross-industry learning and qualifications in the medium term and are also examining the National Retraining Scheme.

Cottam Coal Power Station

Image by EDF Energy



6.2 ECI - Existing initiatives UK and International

Connected Competence

Connected Competence – as already explained in section 4.2, is an industry initiative, developed by the major contractors working within the Upstream Oil and Gas sector and supported by the ECITB.

UK - Oil and Gas Transition Fund

This £12m initiative by Skills Development Scotland ran from 2016 to 2019. It was aimed at re-integrating oil and gas workers into the general labour market following the industry’s downturn in Scotland. It focused on retraining and repurposing skills for the wider energy, engineering or manufacturing sectors through training grants. The person concerned was required to prove that there would be employment opportunities in their new sector of choice. Talent Retention Solutions (TRS) as a platform operates across manufacturing, engineering and technology to permit skilled workers to find places in new industries from sectors in which they are in relatively low demand.

The Fund was, therefore, not an initiative necessarily designed to transfer oil and gas workers to other sectors in the ECI. In part, this was due to the large number of workers that were made redundant. In June 2020, the Scottish Economy Secretary, Fiona Hyslop, revealed that Scotland is considering relaunching this scheme in the context of damage to North Sea Oil and Gas resulting from the Covid-19 epidemic and a depressed oil price.

One lesson from the programme was that barriers to mobility included the preference of many workers to remain in a particular region. The programme supported 3,669 workers in total, at an average cost of around £3,270 per person. Of these, 69% found another job in the oil and gas sector, while 31% transitioned to other sectors. Of the latter, 13% found work in renewable energy or other engineering. Thus, while this programme resulted in a significant degree of skills retention in the ECI sector the result was largely driven by the preferences of individual workers.



Oil and Gas

The Offshore Employee Engagement Forum was established with a focus on how they attract new talent into the oil and gas sector, with transferable skills in mind, and also to ensure that their current workforce is not left behind. They offer existing workers retraining and reskilling for the eventual decline in the industry. The Offshore Contractors Association (OCA) and Oil and Gas UK are sponsors of an apprenticeship scheme which makes sure that oil and gas apprenticeships have a future in the ECI, not just in one sector alone.

One HR Director working across the oil and gas, chemical, pharmaceuticals, energy and utilities sectors discussed their successful five to six-week intensive reskilling programmes aimed at those already working within the ECI, or non-ECI workers who come from a construction background. The intensive reskilling programmes take place in a classroom environment to avoid hazards but are set up as if they are onsite. An example was how the skills of plumbers and scaffolders can be transferred into the industry. Every person who attends the training courses was offered a job working in a variety of sectors in the ECI with this particular company. These programmes are now part of an ECITB campaign and will be offered again in early 2020.

NSSG

The NSSG's Nuclear Roadmap for sector transferability will examine the skills challenges in the nuclear sector. The vision is to establish 'clear, common and simple routes in place to define standardised requirements, provide training and optimise movement of skilled professional and trade staff, both into the Nuclear sector from other sectors and within the sector.' This can be achieved by reducing barriers to entry, improving innovation in delivery through learning from other sectors and enhanced diversity in resources and thought as well as optimising deployment and development of available people resources. The roadmap will work to increase recruitment and transferability on key programmes, develop a common competency framework adopted by all licensees and contractors and standardised certification and approval requirements.³⁴ Competence-based systems like the Nuclear Skills Passport that connect competencies and recognise skills were valued at the NSSG Skills Transferability workshop and are already in existence. The passport would also work to streamline the inductions so that a candidate could work at another site without time and resources being spent on another introduction.

National Skills Academy for Nuclear

The National Skills Academy for Nuclear (NSAN) is a member-based organisation whose focus is on ALL skills for nuclear, rather than just nuclear skills. NSAN helps member organisations to enhance skills, increase workforce productivity and deliver cost effective solutions to the industry. Some of NSAN's most relevant training courses, solutions and standardised approaches recognise competence and skills and facilitate transfers within and across sectors:

NS4P An online system which contains the nuclear industry's agreed Competence Framework.

The NS4P is an industry recognised standardised approach to skills development and recognition. It provides members working in the nuclear sector with a standardised approach to skills assessment, development and recognition. It replaced the previous Nuclear Skills Passport (NSP) which had been frequently used by many companies but had become more of a depository for certificates. NSAN members requested a more dynamic method of verifying and recording an individual's competence and training. The NS4P is flexible as it can be used in full, in part or customised to individual requirements and can be used by an employer or an individual user.

The NS4P is a transferable record of competence that:

- Supports workers in demonstrating they are a Suitably Qualified and Experience Person (SQEP)
- Increases flexibility and mobility across the sector
- Helps individuals and employers to identify skills and gaps
- Facilitates effective working between companies by providing a 'common language' of competence

The Competence Framework sets a best practice benchmark where competences are sorted into Core Knowledge and Behaviours (e.g. industry knowledge, safety and security, communication and teamwork), Business Enablers and Technical Competencies linked to disciplines (e.g. Mechanical Engineering, Project Management and Quality).

³⁴ NSSG Delivery Plan Roadmap Sector Transferability



Coal miners in the United States

In the 1980s, the UK closed down a large number of coal mines and implemented a wide range of retraining schemes for redundant miners. In the USA similar schemes have been initiated in this century to transfer former coal miners into the generic labour market. The aim is not to create a core workforce of cross-sector specialists, but rather to retrain and re-integrate a sizeable force of displaced workers.

The solar energy sector has quite similar requirements in terms of technical competence and attention to safety and there are individual company examples of coal miners transitioning into this sector³⁵. There are also examples of similar initiatives in wind energy. Gold Wind Americas, a subsidiary of Xinjiang Goldwind Science & Technology Co., is planning to train former coal miners to work in wind energy. The use of the word “transferability” in the following quote is clearly intended more in the sense of “competence compatibility”.

‘The transferability stems from miners’ aptitude for technical work and thinking, and their familiarity with working in line with important workplace safety measures.’

Gold Wind³⁶

The programme in Wyoming is designed to create 400 jobs. According to Wyoming newspaper reports, over 1,100 coal miners have been laid off since 2016 due to the closure of mines and the collapse of mining firms³⁷.

³⁵ <https://poweringpastcoal.org/insights/economy/sunnier-times-ahead-for-coal-workers-in-renewables-tech>

³⁶ <https://www.nytimes.com/2017/05/21/business/energy-environment/wind-turbine-job-training-wyoming.html>

³⁷ <https://www.cnbc.com/2019/10/08/trumps-pledge-to-save-us-coal-is-failing-leaving-wyoming-in-crisis.html>; <https://thehill.com/policy/energy-environment/451308-two-montana-coal-mines-close-idling-700-workers>

6.3 Non-ECI - Existing initiatives UK and International

National Retraining Scheme

The National Retraining Scheme is the UK government’s new programme to “help adults retrain into better jobs, and be ready for future changes to the economy, including those brought about by automation.”

The scheme received £100 million in 2018 to test, develop and deliver the first elements of the scheme. “Get help to retrain” is available to eligible adults in six areas across England during 2020.

It is aimed initially at people who:

- are already in work
- are aged 24 and over
- do not have a qualification at degree level
- are paid below a certain wage threshold – this threshold will be tested with people earning low to medium wages as the scheme develops

It aims to:

- support people already in work to move into better jobs through training and tailored advice
- complement existing training programmes for adults
- encourage people to develop their flexibility and resilience in the world of work, so they can take advantage of new opportunities

It will provide:

- tailored advice and guidance from a qualified adviser
- functional skills training, initially focusing on English and maths
- flexible online and blended learning, a mix of online and face-to-face provision, enabling more adults to access training
- in-work vocational training, learnt on the job

The NRS will run in six selected areas the north east, Liverpool, Leeds, Cambridgeshire, the West Midlands and the south west through 2020 and perhaps longer before being reviewed and rolled out further.



UK Construction industry

A 2018 CITB study³⁸ showed that there is potential for skills transferability but that there is little interest or motivation among employees and employers to take action.

Such initiatives as exist are largely limited to individual companies. The study revealed evidence of workers entering the construction sector from other skilled roles, e.g. electrical trades, skilled metal trades, and from the oil and gas sector. In addition, some workers are entering construction from non-manual roles in other sectors such as science and technology. Employers confirmed that there is a degree of skills transferability between oil and gas and construction, but said they are reluctant to invest time and money in training oil and gas workers, as they expect them to return to their original industry (lured by more competitive wages) once the economic outlook improves.

Individual companies which have undertaken infrastructure work – including rail and highway construction, bridge building, and industrial plant construction – run schemes designed to attract recruits from other sectors (and from the military).

These include **Skanska** which has an internal programme designed to encourage and support transferability between roles/occupations. The **Bring Your Difference**, scheme allows existing employees to apply for a 12-week secondment in a different role or department. For example, people from corporate functions like finance, could have a taster of a commercial role or a site-based role supervising a project. At the end of successful secondments, there is an opportunity to make the move permanent. Secondments are open to all but are particularly encouraged from roles that are traditionally easier to recruit.

Kier, in conjunction with CITB, has operated the **Step in, Step up** initiative designed to attract people from other sectors. The programme (worth around £298,000) was financed jointly, covers most trades and specialisms, and allows training to take place in the evenings or at weekends.

Medical Technology in Australia

The Medical Technology (MedTech) industry in Australia appears to be retraining displaced workers for their companies. Cook Medical has been re-training displaced workers from the clothing industry in Brisbane. The company emphasises that the skills and competences used in the clothing industry such as sewing are akin to the specialised skills required in Medical Technology. The Deloitte report showed that there is appetite for skills transferability in the MedTech sector. Nevertheless, there are no overarching frameworks in place and the sector is not taking the lead in promoting skills transferability.

Career Transition Assistance Australia (CTA) is an initiative set up by the Australian Government's Department of Employment, Skills, Small and Family Business designed 'to help mature-age job seekers to build their confidence and skills to become more competitive in their local labour market'.

STEM

One of the stakeholders we spoke to for this research is the director of a project which helps ex-STEM workers return to the industry. The programme is as much about transferability of skills as simply going back to work. It works with employers to view CV gaps in different, more positive, ways and supports employers in recruiting, developing and retaining talent enabling highly qualified and experienced candidates re-start their careers after a break in employment. The programme facilitates paid short-term employment placements for these candidates offering them support in advice, career coaching, networking opportunities and mentoring. All candidates who go through the programme can restart their career in a permanent position⁴⁰. The stakeholder said that employers have difficulty in understanding this project as an opportunity to transfer skills from qualified and experienced individuals into ECI sectors and view it only as people from outside the ECI wanting to find work. Interestingly, an employer we spoke to has worked with this programme and successfully

welcomed candidates with STEM backgrounds, for example engineering tutors, on an internship basis and supported them into positions in the ECI.

CPD for Graduate STEM students in United States

There are initiatives in the US which seek to upskill STEM students and graduates with more transferable skills in communications, management and leadership, which are not offered in most STEM university programmes and have become essential employer requirements. To the extent that the initiatives support the upskilling of STEM graduates to take work in a variety of non-STEM sectors they qualify as "transferability" programmes. A priority goal is the preparation of STEM PhDs for non-academic careers.

Innopharma Education, Eire

This organisation, with close ties to FE and HE providers such as Trinity College, Dublin offers a wide range of upskilling and retraining courses designed to feed the pharmaceutical industry. The courses are now slightly more diverse and help learners to swap careers across a wider span of sectors. In a narrower way the offer is similar to the concept behind the UK's National Retraining Scheme. It links with the Irish government's "Springboard" initiative.

It has helped thousands of people gain pharmaceutical and med-tech qualifications, and over 70% of these people are now employed in all regions of Ireland's pharma and med-tech industry. Its intake in 2018 was reportedly over 600 students, and almost 40% of these students were working in other adjacent life science or engineering industries but looking to upskill for roles in pharmaceuticals.

Ex-Offender Initiatives

There are many good examples of ex-offender initiatives. HM Prison and Probation Service undertakes much work to help offenders into sustainable careers, along with offender learning through ESF and ERDF funded projects which aim to get offenders back into work and normal life. Other supporting initiatives include the Mind The Gap project, Be Onsite, A Fairer Chance, Bounce Back, Mitie Foundation, and Nacro;

38 CITB (2018), *Construction and Built Environment: Skills Transferability in the UK*, Pye Tait Consulting

07. Conclusions and Recommendations

The Covid-19 pandemic will change the world in more ways than we can fully anticipate. Even in the event that a successful vaccine is developed and deployed, the lessons and impacts of this pandemic will have lasting and possibly permanent effects. Aside from the potentially serious economic impacts and the implications for UK government spending and future debt repayment, the pandemic will change the way businesses operate in quite profound ways and may have lasting impacts on the way in which individuals see their job roles and their readiness to change locations and career paths.



Remote working has arguably been transformed by the pandemic in a matter of three months from a niche-but-growing phenomenon into what may well be the most common way that many individuals deploy their skills in the future. Face-to-face meetings may well become the exception rather than the rule and the use of technology and apps to allow remote inspection looks set to become much more widely used. All of this changes the way that managers and supervisors plan and communicate but it will also have profound implications for everything from public transport and car use to how (and whether) companies use their office space.

The recession (possibly depression) which follows the worst of the pandemic in the UK will affect the recruitment market. High levels of unemployment in the short to medium term may permit companies to recruit more easily but any recruitment will still have to take place in the context of skills gaps and shortages.

The bottom line is that we have no clear idea yet as to how the Covid-19 experience will impact on the engineering construction industry but we do know that companies will need a great deal of help in: a) recovering from the lockdown period; b) acquiring new technology skills to permit them to make best use of the rapid implementation of digital, AI and robotics in all industries; and c) developing ways to use their staff in the most efficient and effective ways in the "new normal".

7.1 Top Level Conclusions

Transferability is a complex and convoluted concept and, as mentioned by several stakeholders and employers, may well be misunderstood. However, the principle of skills transferability is relatively simple as it is based on basic set of shared skills and competences across occupations. Its implementation in practice proves more difficult, as this research has shown, in part due to largely compartmentalised attitudes towards trades and occupations that persist, in addition to sector specific qualification requirements.

The term implies a single issue but it is, in reality, a Russian-doll of distinct but interlinked issues each of which is focused on different target audiences and theoretically requires different approaches.

For the Engineering Construction industry it breaks down into four over-arching topics:

1. Geographical mobility;
2. Occupational mobility - between skillsets/ occupations;
3. Skills transfer between sectors within the ECI; and
4. Skills transfer between other industries and the ECI.

Skills transferability and the competition for skilled workers

- The concept is driven by the persistent skills shortages which affect parts of UK industry and commerce as a whole;
- Due to the ongoing competition for skills, transferability for the recruitment and retraining of economically displaced workers (e.g. ex-military or workers from sectors in decline) is the only situation not involving a significant opportunity cost to the overall UK economy;
- The numbers of skilled people and young people entering the workforce at present appear to be insufficient to meet the UK's skills and replacement (e.g. due to retirement) needs.

Employers may see potential for recruitment from other industries

- Only large employers operate on a national basis and have the resources to be able to operate in the normal recruitment channels as well as promoting themselves more generally to workers in other sectors. Smaller employers operate on a local and regional basis with restricted recruitment budgets and are less likely to use the various social media platforms and their mechanisms for filtering ads for local areas to promote themselves to employees in other industries or sectors;
- This research has shown that employers, while relatively divorced from the concept of transferability, understand that certain other economic sectors (e.g. Administration, Hospitality and services and presently unskilled workers from Construction and Manufacturing) may offer excellent potential recruits as long as they can be retrained or upskilled.
- This may, however, involve considerable initial investment by the employer.

Large organisations taking the lead

- Large companies can operate their own schemes and initiatives but, for the vast majority of medium and smaller companies there is no economic way that they could approach recruitment via a "transferability" route due to related investment requirements, for instance to promote themselves widely as an employer to other sectors;
- The UK government could certainly help with transferability and this is being pursued to a limited extent through the National Retraining Scheme.

7.2 Recommendations

The following actions are proposed:

1. based on the results of this research, industry bodies and stakeholders should collaborate to complete an industry-wide mapping exercise, collating and cataloguing skills sets and occupations in the ECI which may be particularly suitable for skills transferability as well as which occupations and skills will be in greater or lesser demand in the future;
2. based on the mapping exercise, the ECITB should work with the trade associations to develop a guide for employers on the benefits of skills transferability to inform the recruitment process. This would be on the basis that their recruitment pool would be significantly enlarged and specialisation could be added with upskilling and retraining initiatives. The guide could advise employers working with recruitment agencies on practices that avoid applying rigid and demanding criteria to filter candidates in the first instance. It may also help them understand and think more widely about opening up paths of entry.
3. To continue to develop sector specific skills passports (for instance, a single energy sector skills passport). Skills passports are difficult to implement but represent a powerful means of demonstrating competence (especially within the ECI and for use between sectors). Initiatives such as Connected Competence are seen as very valuable by employers but also individuals who value ways of evidencing their career "journey". The idea of a journey in which you gain and can evidence new and additional skills is very attractive to younger people and would benefit older transferees⁴². This may also assist in tackling widely observed and ingrained practices of sector-specific recruitment and compartmentalised understanding of occupations and skills.
4. Promotional campaign targeting potential transferees already working in the industry. This could involve an ECI-wide funded equivalent to Step in, Step up⁴³ – promoted through a well-publicised website and online database but – crucially – supported by links to very relevant training and upskilling opportunities; help for individuals to compare their own skills with the competences needed by ECI sectors. A database of competences for most jobs – which would allow a user to gauge their own competence in each area (including soft skilled plus specialist and job-specific competences) and then get help on how to improve the competence. The obvious basis for such a tool is the "Connected Competence" programme and the suite of ECITB technical tests that underpins it.
5. Educational programmes should aim to equip young people with a breadth of skills and a mind-set that allows for flexibility and the ability to recognise where skills learned are applicable. This applies equally to both hard and soft skills, and educational institutions should have the obligation to make young people aware of the skills they are gaining and the kinds of careers and industries where these skills could be applied. In the case of apprenticeships, where young people will be applying their skills in a specific context, the off-the-job element of the programme should include general careers-orientation that identifies skills the alternatives industries where they could be applied. The new T Levels in England are potentially a step in the right direction by covering more than one discipline before specialisation. A conscious effort will need to be made to equip young people with the capability to identify the different industries and roles in which their skills could be applied.

⁴² Institute of leadership, 'Millennials and what they want' 57% of the millennial workforce expect to move job within two years, while 40% will move within one year.

⁴³ Morgan Stanley's 2018 Step In, Step Up programme was a two day insight programme, providing an in-depth introduction into investment banking alongside a comprehensive overview of how various divisions and roles interact with one another. Participants gained an understanding of an investment bank's various functions and departments through hands-on skill sessions, a tour of a live trading floor, and unique networking opportunities. Programme attendees actively learnt through case-studies, group presentations, panel sessions, interactive workshops and networking. <https://www.morganstanley.com/people-opportunities/students-graduates/programs/early-insights/step-in-step-up-program-emea>

6. The Government should look to earmark funding from the National Skills Fund and National Retraining Scheme to support adults and young people to gain transferable skills. In the current climate, with the economy in recession and unemployment set to rise, retraining opportunities will provide a life-line for those facing redundancy. Programmes should focus on recognising and utilising existing skills rather than a full retrain. In the ECI, for instance, training and reskilling could focus on preparing the workforce for net zero projects. Reskilling and training should be aligned with future projects and should take into account future skills needs.
7. Whilst focussing on matching workers made redundant with vacancies, we recommend that the Construction Talent Retention Scheme incorporates reskilling and retraining interventions to ensure that workers are occupationally competent and can transfer easily into new roles.

08. Appendix

Appendix 1: Research Participants

Individuals at the following companies kindly gave of their time to be interviewed by Pye Tait for the purposes of this research. The views in this report are those of the authors.

Companies

1. AHL Pipework
2. Ainscough Wind Energy Services
3. Air Products Ltd
4. Altrad
5. Worley Parsons
6. Bilfinger UK Ltd.
7. Cavendish Nuclear
8. Fluor
9. GR Carr
10. Herne UK
11. Intellect (Uk) Limited
12. Laker Vent Engineering
13. M&N electrical (now part of Hydro)
14. Matom (UK)
15. Mechatherm
16. ODE (Offshore Design Engineering Limited)
17. Pipex Limited
18. RB Plant Construction
19. Saipem
20. Solarkinetics Ltd.
21. Stork
22. Subsea7 + 3 other individuals at different sites
23. Tata Steel
24. Ultramag
25. Valero Energy Ltd.
26. Wheeler and Wood PLC
27. Wood PLC

Stakeholders

1. BMS Performance (recruitment agency)
2. British Fluid Power Association
3. Cogent Skills
4. Construction Scotland Innovation Centre
5. C-Tech (recruitment agency)
6. EDF
7. Engineering Construction Industry Association (ECIA)
8. Independent Expert in Offshore
9. Joint Industry Board in electrical contracting industry
10. Kinetic (recruitment agency)
11. Morson Group (recruitment agency)
12. National Skills Academy for Nuclear (NSAN)
13. Nuclear Industry Association (NIA)
14. Offshore Contractors Association
15. Orion Group (recruitment agency)
16. SELECT
17. STEM Returners
18. Thermal Insulation Contractors Association (TICA)



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