Report to Government, Industry and the Skills Sector

ANNEX: Sectoral transitions to net zero

To support the Taskforce to carry out its work, the secretariat gathered a wide range of information about how certain sectors, occupations, skills requirements and qualification levels (L)[1] will change as the UK transitions to a net zero economy. This annex sets out this information. Whilst many have been identified below, this is not intended to be an exhaustive list of sectors that will undergo change in the transition.

OFFSHORE WIND

Building on the production and employment aspirations of the 2019 *Offshore Wind Sector Deal*, the *Ten Point Plan* puts offshore wind at the forefront of the UK's energy ambitions; with an aim to have 40GW of capacity by 2030. A £160 million investment into ports and manufacturing infrastructure to enable the delivery of 60% UK content in offshore wind projects means it is essential the workforce has the necessary skills to reach these targets.[2]

Occupations, skills requirements and qualification levels

- The Offshore Wind Industry Council estimate the current UK Offshore Wind workforce to be c.26,000. This is expected to increase by almost 170% to c.70,000 by 2026.[3]
- Manufacturing (L2-6), electrical engineering (L3), welders (L3-4), engineering (L4-5), project managers (L4), product development managers (L5), offshore technicians and seamen.[4]

ONSHORE WIND

The onshore wind sector peaked at 21,000 jobs in 2016 according to the ONS[5] and during that year 1.6GW of capacity was installed.[6]

Occupations, skills requirements and qualification levels

Welders (L3-4), engineers (degree level) and construction workers (L1-3).[7]

SOLAR

The solar sector peaked at 20,200 jobs in 2014 according to the ONS[8] and during that year 2.6GW of capacity was installed.[9] The upcoming Contracts for Difference allocation round is expected to incentivise significant ground-mounted solar (for delivery in a few years' time), but it is the rooftop projects that can bring rapid growth in jobs (roofers, scaffolders, electricians, fitters). Rooftop solar deployment will require strengthening of building regulations, inclusion of rooftop solar in existing programmes and removal of fiscal barriers.

Occupations, skills requirements and qualification levels

Electricians (L4), roofers (L2) and engineers (degree level).[10]

TIDAL

The Offshore Renewable Energy Catapult estimated the Tidal Stream workforce to grow to 4,000 jobs by 2030 and 14,500 by 2040 - in manufacturing, installation and operations & maintenance (O&M).[11] The cost reductions seen since 2018 indicate the actual job numbers could be higher, dependent on deployment targets.

Occupations, skills requirements and qualification levels

Manufacturing (L2-6), electrical engineering (L3), welders (L3-4), engineering (L4-5), project managers (L4), product development managers (L5), offshore technicians and seamen.[12]

NUCLEAR POWER

Nuclear power is expected to be a reliable source of low carbon electricity, playing a key role in decarbonising the UK's electricity system.

In the *Energy White Paper*[13], the government committed to do the following:

- At least one further large-scale nuclear project for final investment decision this parliament, subject to clear value for money and all relevant approvals;
- Aim to deliver by the early 2030s a Small Modular Reactor design and to build an Advanced Modular Reactor demonstrator, supported by a £385m Advanced Nuclear Fund.

Such investment commitments to both large-scale nuclear projects and next generation nuclear technologies will likely create and sustain many high-skilled jobs across the UK.

Occupations, skills requirements and qualification levels

''Nuclear-specific skills' (for example, nuclear engineers) as well as general skills (such as welders, construction workers, engineers) suitable for the nuclear sector. Illustrative examples of current skills shortages include: nuclear safety case authors (L5-6), radiation protection workers (L3-6), nuclear grade welders (L3-4), non-destructive testing (L5-6), plutonium management specialists (L6+ including NVQ level), project planning and controls managers (L3 – 8), mechanical engineers (L5 – 6), control and instrumentation engineers (L3 – 6). [14] An updated forecast of skill requirements is expected to be published in 2021 by the Nuclear Skills Strategy Group.

ELECTRICITY NETWORKS

Demand for low-carbon electricity is growing; the *Energy White Paper*[15] estimates the UK's electricity system could double in size by 2050. Ensuring our electricity networks are fit for purpose to manage this is crucial.

Occupations, skills requirements and qualification levels

The scale at which the workforce will need to increase in the transition is uncertain, however there is already a chronic shortage of crucial workers – especially overhead lines people.

Grid infrastructure operatives (L3-8), civil and mechanical engineers (L3-7), data analytics (L3-7), modellers and programmers (L4-8), cyber security (L4-8), environmental scientists (L3-7), overhead lines people and general grid electric system installers (L2-7), integration of electric vehicle charging / microgeneration / domestic storage / demand side response, smart metering (L3-8).[16]

SMART SYSTEMS

Smart systems and storage will be needed to ensure that significant volumes of low carbon power, heat and transport can be integrated, optimally, across our grids. The *Energy Innovation Needs Assessment* (EINA) estimated that smart systems could provide £4bn GVA and 25,000 jobs by 2050.[17]

Occupations, skills requirements and qualification levels

Skill development will be needed in smart systems specific supply chains (for example energy storage, smart product design), plus in existing more mature supply chains including (energy assessors, housing retrofit, network infrastructure).

Electricians (L4), electrical engineering (L3), Data analytics (L3-7), modellers and programmers (L4-8), electronic engineering (L3-8), control engineering (L3-8), cyber security (L4-8), integration of electric vehicle charging / microgeneration / domestic storage / demand side response, smart metering (L3-8).[18]

CCUS and HYDROGEN

Key policy announcements in the *Ten Point Plan*[19] are driving the growth of low carbon hydrogen and CCUS in the UK, including through a £240 million Net Zero Hydrogen Fund and a £1 billion CCUS Infrastructure Fund. There is a focus on bringing together these technologies in the UK's industrial clusters, creating 'SuperPlaces' in the north east of England, north west of England, the Humber, Scotland, and Wales.

The economic opportunity is significant. Deployment of CCUS would generate a strategic national asset, creating new markets for UK businesses, at home and abroad. The EINA estimates that "by 2050, accounting for projected cost reductions, the global market for power CCUS is expected to be worth £24 billion per year in turnover. The global markets for industry CCUS and CO_2 transport and storage components are expected to be substantially larger, at £181 billion and £54 billion per annum in turnover by 2050 respectively".[20] CCUS infrastructure is a key enabler for blue hydrogen projects, which contribute to the aim of developing 5GW of low carbon hydrogen production capacity in the UK by 2030. The North Sea Transition Deal is expected to support up to 40,000 direct and indirect supply chain jobs in decarbonising UK Continental Shelf production and supporting the CCUS and hydrogen sectors.[21]

Occupations, skills requirements and qualification levels

As CCUS and hydrogen are both emerging sectors, evidence is limited. Further work is needed to understand the skills and qualification levels of these skills that will be required as the sectors evolve. For hydrogen, current views from industry suggest skills will be needed in: project structuring, design and manufacturing, health and safety, commercial financial and legal services, engineering, procurement, construction and maintenance. The offshore oil and gas industry is likely to provide a substantial source of skills to the sector with some re-skilling likely to be required.[22]

The established skills base of the oil and gas sector are expected to provide critical skills for CCUS development, particularly skills needed to develop a domestic carbon dioxide infrastructure network and export CCUS worldwide.[23]

NEW HOME BUILD AND RETROFIT – BUILD FABRICATION

Improving the energy efficiency of the UK's buildings is an important element of the transition to net zero. There are about 30 million buildings in the UK and heating them accounts for approximately 19% of the UK's total greenhouse gas emissions.[24] To achieve this, the *Ten Point Plan*[25] announced several schemes with the key goal being better energy efficiency, including the Homes Upgrade Grant, the Social Housing Decarbonisation Fund and the Public Sector Decarbonisation Scheme.

For new build homes, the trajectory has been set towards implementation of the Future Home Standard from 2025, setting very high fabric energy efficiency standards to avoid the need for retrofitting in the future.[26]

A target of 300,000 per year for new build homes by the middle of the 2020s and the requirement for these to be delivered to 31% lower emissions from 2022 and 75-80% from 2025.[27] The new build sector leads the development of new product development which is then transferred into refurbishment. New build may in some areas look at different solutions and therefore will need different skills although these will be more clearly defined as new technologies emerge.

Occupations, skills requirements and qualification levels

The Construction Industry Training Board (CITB) provide a detailed industry assessment of the skills challenge within the construction industry as the UK transitions to net zero. In retrofit roles, an estimated 12,000 workers would need training per year over the first four years, increasing to 30,000 per year over the following six years, resulting in an increased trained workforce of up to 230,000 by the end of the decade. This is not an estimate of new jobs created as the sector transitions; rather it is an indication of the scale of upskilling required.[28]

Currently, there is a critical shortage of retrofit designers and co-ordinators. Decarbonising the UK's buildings will require a highly qualified workforce and a broad scope of abilities incorporated in different construction occupations because, technically, it demands a fundamentally different approach from conventional construction methods.[29] This requires a grounding in theoretical understanding of energy efficiency that cannot be gained wholly 'on-the-job'. Workshop-based training in Germany and Belgium have proven more effective than apprenticeships.[30]

Within domestic buildings, skilled workers needed include energy efficiency installers and assessors (L2-4), retrofit co-ordinators (L5). For larger non-domestic buildings, higher level qualifications for design and sign-off, e.g. architects, chartered passive house designers, chartered surveyors, and building management systems installations qualifications (BEMS Level 3 NVQ).[31]

Similar challenges exist in the new build homes sector as it delivers higher fabric standards through an incremental step before implementing the Future Homes Standards in 2025. Differing to the challenge for retrofit, new build homes also has requirements for the development and roll out of relevant training to sales and customer facing teams.[32]

HEAT PUMPS

Approximately 240,000 heat pumps are operational in the UK in total.[33] The *Ten Point Plan* set out an ambition to install 600,000 heat pumps per year by 2028. The Climate Change Committee (CCC) have also modelled heat pump deployment under a pathway where the UK reaches net zero emissions by 2050, finding that in one scenario—involving both electrification of heat and deployment of hydrogen gas networks—19 million heat pumps would need to be deployed in existing homes (excluding new build) by 2050[34].The CCC have recommended that by the start of the sixth carbon budget, the heat pump industry should have scaled up to manage a million installations a year in homes[35].

In the new build homes sector, the introduction of the Future Homes Standard will drive demand for new technologies, primarily heat pumps.[36]

Occupations, skills requirements and qualification levels

Given the installation ambition set by government in the *Ten Point Plan*, the Heat Pump Association estimate the need for 35,000 installers (levels 2-4[37]) for domestic heat pump installation by 2028 to achieve this.[38] This is not an estimate of new jobs created as the sector transitions; rather it is an indication of the scale of upskilling required.

HEAT NETWORKS

Around half a million households in the UK take heat and hot water from shared heat networks at present (compared with over 20 million gas consumers). The CCC have recommended that by the start of the sixth carbon budget, heat networks should be fully low-carbon and being rolled out at scale. In their Balanced Pathway the CCC has estimated an investment requirement of £17.5 billion in total[39]. As of a 2018 report by the Association of Decentralised Energy, heat networks provide 2% of UK's heat demand[40]; research from 2015 for the CCC estimated that this will likely have to grow to 18% to meet carbon targets cost effectively.[41]

Occupations, skills requirements and qualification levels

By 2050 the sector could create between 20,000 and 35,000 direct jobs.[42]

Specialist skills required for three stages of a heat network project. (1) Design: project management, design engineering and supporting professions (legal, financial, commercial). (2) Build: project management, construction and commissioning. (3) Operations & Maintenance: engineering, operator, and technician skills. "The sector appears to be ill-equipped to respond to the surge in demand for skills that will be required to meet the growth of the sector".[43]

AUTOMOTIVE SECTOR

The automotive sector generated £56bn in turnover[44] and £12.2bn[45] in GVA in 2020. In 2020 the UK was the third largest market for ultra-low emission vehicles (ULEVs) in Europe (behind Germany and France) and is a global leader in their development and manufacture.[46] Of the 2.3 million cars that were registered in the UK in 2019 there were over 171,000 electrified cars (battery electric vehicles (BEVs), plug-in hybrids (PHEVs) and hybrid electric vehicles (HEVs)).[47]

The automotive industry will see significant change in the transition to net zero as we progress towards increased use of electric vehicles. According to the Society of Motor Manufacturers and Traders (SMMT) the UK will require eight giga-factories, each with a capacity of around 15 GWh per annum, by 2040, to produce two million BEVs averaged across all segments.[48]

Occupations, skills requirements and qualification levels

Industry's assessment of the scale of the skills challenge is 50,000 will require reskilling in manufacturing by 2025, increasing to 100,000 by 2035/2040.[49] In addition, the Faraday Institution estimates that between 7,500 and 10,000 workers could be needed in battery cell manufacturing in 2030[50] whilst 21,000 of the current 182,000 vehicle technicians are electric vehicle (EV) qualified.[51] Electric vehicles have fewer moving parts than internal combustion engine vehicles and as a result electric vehicles are expected to require less maintenance[52]. Therefore, there is the potential for an increase in the demand for EV skills and a reduction for traditional combustion engine skills in this sector.

Occupations and skills needed will include: charge point installers, operators, smart charging services, engineering, manufacturing, purchasing, material planning and logistics, vehicle scrappage and recycling, vehicle recovery operations, emergency services personnel, quality assurance and operations quality involved with batteries.[53]

AEROSPACE

In 2020, the UK aerospace sector supported 116,000 direct jobs and generated nearly £25bn turnover.[54]

Decarbonising aviation is difficult and will take decades, with significant technology and policy barriers. To secure UK lead in aviation decarbonisation and realise net-zero flight, the industry is targeting a 40% net reduction in emissions by 2040 (and net zero by 2050) through a mix of measures that include new low and zero-carbon aircraft technologies.[55]

On top of wider aviation decarbonisation policy, the CCC recommends that the UK continues R&D support for aircraft efficiency measures, hybrid, full electric and hydrogen aircraft development, and airspace modernisation, including using existing delivery bodies such as the Aerospace Technology Institute (ATI), Future Flight Challenge, NATS, and guided by the Jet Zero Council.[56] As announced in the *Ten Point Plan*, the newly established Jet Zero Council will focus on developing UK capabilities to deliver both net zero and zero emission technologies.[57]

Occupations, skills requirements and qualification levels

The sector will have greater reliance on digitisation and automation in industrial systems and integration.[58] Upskilling the workforce in digital skills, systems engineering, programme management and leadership will continue to be important to benefit from the opportunities green technologies could provide. The ATI estimate that, with the expected increase in investment in new technologies to decarbonise aviation and to meet the increased global passenger demand, there could be 45,000 new jobs in the sector by 2035[59], including a proportion in specialist roles.

MARITIME

In order to reach net zero in maritime, there will be a need for new means of propulsion, alternative fuels - and the accompanying landside infrastructure - as well as collaboration with partners across the supply chains.[60] The *Clean Maritime Plan* sets out the government's vision for net zero shipping in the UK. This includes an ambition for new vessels being designed with zero emission propulsion capability by 2025 where technically possible; the establishment of a number of clean maritime clusters, by 2035, which combine infrastructure and innovation for the use of zero emission propulsion technologies; and low or zero emission marine fuel bunkering options readily available across the UK by 2035.[61]

In striving to decarbonise the UK's transport sector, there is ambition to develop clean maritime technology. In November 2020 government announced £20 million investment into the Clean Maritime Demonstration Competition to support this ambition.[62]

Occupations, skills requirements and qualification levels

The number of UK seafarers has declined in recent years, and there is currently a global shortage of 16,500 maritime officers.[63] This is partly due to a trend of larger ships being staffed by fewer seafarers overall. This trend will continue to grow, as the sector increases its digitalisation and automation, which will be of importance to the changes needed for net zero.[64]

The skills profile of the maritime sector will change significantly over the next 30 years. The focus of training (set at the International Maritime Organisation) will change as vessel subsystems, most notably propulsion, are adapted to the need to decarbonise and the skills required of crew, particularly marine engineers, will broaden to encompass this transition. The importance of science, technology, engineering, and mathematics (STEM) subjects will increase as jobs become more data driven in response to new technology. Industry roles will be multidisciplinary, potentially requiring the ability to create, operate and maintain autonomous and technological systems. Future UK seafarers will be expected to transition easily between sea and shore-based roles, using transferable IT based skills, and continuing professional development that allows them to update skills in line with technological advances.[65]

Qualified seafarers (L2-7) able to operate advanced fuel systems, both at junior rating (L2-4) and senior engineering (L4-7) will be needed.[66]

RAIL

A key component of the UK's transport, more railway lines will need to be electrified. The government will invest tens of billions of pounds towards enhancing and renewing the rail network.

At present, 38% cent of Britain's railways are electrified.[67] The decarbonisation of the rail network by 2050 is a large-scale infrastructure programme and Network Rail has forecast it would require the delivery of 355 single track kilometre (STK) of electrification per year from 2024. At present 15,400 STK of track in Great Britain is unelectrified.[68]

The CCC has recommended that government should set out a clear vision to deliver net zero in rail and support Network Rail in delivering the ambition to remove all diesel-only trains by 2040. This is expected to cover a mix of zero-emission technologies (e.g. battery-electric, hydrogen and track electrification).

Occupations, skills requirements and qualification levels

Analysis by The National Skills Academy Rail estimates the current size of the UK rail workforce is approximately 250,000. Modelling forecasts that between 7,000 and 12,000 additional workers will be needed per year over the next 5-10 years, for a total of up to 120,000 additional people. The demand for skills in the rail sector is expected to peak in 2025, with the most prominent skills gaps at levels 3 and 5. The need for more workers is heightened given the age profile of the workforce: 28% are aged 51 or over and by 2025, the sector could see 15,000 people retire. In addition, the current rail workforce is 16% female and 84% male; "attracting new talent from a more diverse talent pool could help to plug these growing gaps".[69]

Demand is expected to be highest for train drivers, maintenance operatives and customer service assistants. By 2025, it is forecasted that between 3,000 and 5,000 of these roles will be needed annually. Again by 2025, between 1,000 and 2,000 of the following occupations are forecasted to be needed annually: maintenance technicians, operators, engineers, operations managers, and project managers.[70]

GREEN PUBLIC TRANSPORT AND CYCLING

The *Ten Point Plan*[71] reaffirmed the commitment to provide £5 billion on buses, cycling and walking over five years, as announced by the Prime Minister in February 2020.

Bus Back Better, the National Bus Strategy[72] for England published in March 2021, reaffirmed the commitment to introduce at least 4,000 zero emission buses and set out a roadmap to a zero emission bus fleet. The government will invest £120 million in zero emission buses. This is in addition to £50 million to deliver the first all electric bus town or city. The government will set a legal end date for the sale of new diesel buses and set an expectation for when the entire bus fleet will be zero emission.

As set out in *Gear Change*[73], of July 2020, the cycling and walking funding will support construction of thousands of miles of segregated cycle lane and create more low-traffic neighbourhoods to stop rat-running and allow people to walk and cycle. The vision is for half of all journeys in towns and cities to be cycled or walked by 2030, going further than the 2025 aim to double cycling. The government will also launch a national programme of support to increase uptake of electric bikes.

Occupations, skills requirements and qualification levels

The *Ten Point Plan*[74] reported that up to 3,000 jobs could be delivered by 2025 through this investment.

According to a Bicycle Association report of 2018[75], cycling contributes around £5.4 billion a year to the economy, with the larger share of this, £4.1bn, coming from wider impacts, particularly reductions in loss of life, and reduced pollution and congestion. Products associated with the cycling industry contribute £0.7bn, while tourism attributable to cycling contributes, at least, a further £0.5bn. Cycling generates around 64,000 FTE jobs in the UK including jobs in tourism, sales and repair, cycle delivery, manufacturing, and cycle infrastructure. The government's aim to double cycling by 2025 suggests there is potential for the economic contribution of cycling to be considerably larger.

A more recent April 2021 report by the Bicycle Association[76] found that the cycling market (direct products and services) is now valued at £2.31 billion in 2020, an increase of 45% since 2019, with e-bike sales to nearly triple by 2023.

FORESTRY

Over £500 million of the £640 million Nature for Climate Fund is dedicated to trees. The government aims to treble woodland creation, reflecting England's contribution to meeting the UK's overall target of planting 30,000 hectares per year by the end of this Parliament. The England Tree Planting Programme will make sure that the right trees are planted in the right places, that trees and woodlands are better protected, that more green jobs are created in the forestry sector and that people have greater access to trees and woodlands.[77]

Occupations, skills requirements and qualification levels

The 2020 *Annual Business Survey* reported an average employment of 16,000 in the UK forestry sector in 2018.[78] The sector estimates a shortage over the next five years of over 2,000 people primarily employed in forestry or who require forestry skills but work in adjacent sectors such as farming.[79]

Establishment and maintenance operatives (L2), harvesting operatives (L2), nursery crop technicians (L3), forest works supervisors (L4), forest managers (L5-6) as well as wider skills needed among land managers, surveyors and farmers to plan woodlands, plant and manage trees.[80]

AGRICULTURE

The Sustainable Farming Incentive, the Local Nature Recovery scheme and the Landscape Recovery scheme will reward the delivery of environmental benefits by paying for sustainable farming practices, improving animal health and welfare, reducing carbon emissions, creating and preserving habitat, and making landscape-scale environmental changes.

Between 2021 and 2024, the government will support farmers to manage their land sustainably and prepare to take part in environmental land management schemes.[81]

Occupations, skills requirements and qualification levels

Skills will be needed in the following areas; soil husbandry, carbon auditing and advice, tree and biomass management, conservation and biodiversity.[82]

NATURE CONSERVATION AND RESTORATION

Restoration of habitats such as peatland, grasslands, saltmarsh and seagrass meadows will provide natural carbon sinks.

Occupations, skills requirements and qualification levels

Significant expansion across environmental and conservation professionals, such as countryside rangers, forestry workers and horticultural tradespeople. There are currently few existing training opportunities or qualifications in peatland or other restoration. There is a need to increase training schemes to meet the labour demand.[83]

CLIMATE CHANGE ADAPTATION

A wide range of sectors will need to adapt to climate change (e.g. housing & built environment; local government; infrastructure; flood defences).

Occupations, skills requirements and qualification levels

Skills are needed to support adaptation measures in housing & built environment[84]; local government[85]; infrastructure[86]; flood defences[87]).

WASTE / CIRCULAR ECONOMY

A more circular model of economic activity will enable built assets, products and materials to be kept in use for longer through sharing, leasing, repair, remanufacture and refill. This will contribute to climate mitigation and adaptation efforts both in the UK and across the global supply chain.

Research from 2015 suggests the growth of these sectors will support between 54,000 and 102,000 net jobs across UK regions.[88]

For example, a significant proportion of electrical products consumed in the UK are imported (with over 80% produced abroad), therefore shifting towards a more circular economy has the potential to decrease demand for imported goods and increase jobs locally, especially through repairs.[89]

Occupations, skills requirements and qualification levels

Sorting and reprocessing (L1-3), repair and manufacturing (L3-6), circular economy business planning/development (masters level – engineers, material scientists, managers) plus lifelong learning building on existing business skills.[90]

SCIENCE AND INNOVATION

The PM's Council on Science and Technology (CST) has recommended that government should bring together public sector funders to develop a bold, coherent, mission-driven programme of public sector research and innovation investment to achieve net zero.

The CST has also emphasised the need to continuously evaluate the technology roadmaps to assess progress in research, development and deployment needs and act on this information to modify, amplify or reverse the trajectory of technological development.

Occupations, skills requirements and qualification levels

Skills supporting the UK's climate resilience will likely be needed including scientific and technical skills such as modelling and interpreting climate change projections. Furthermore, a central theme of the *Energy White Paper* was to highlight the important of innovation in the engineering of effective low-carbon technologies such as clean hydrogen and CCUS, which will support change across the whole energy system. These endeavours will increase demand for highly skilled roles, which will be required at higher qualification levels.

GREEN FINANCE

As a component of the *Ten Point Plan*[91], green finance is essential to delivering the investment needed in innovation and deployment of low-carbon technologies.

Occupations, skills requirements and qualification levels

General professional qualifications for those working in finance e.g. CFA, CMA, ACA, CIMA, CII/Actuarial training etc. These institutions are actively working towards the inclusion of green finance related modules in each course through the Green Finance Education Charter. They are also encouraging more standalone green finance courses delivered by relevant professional bodies. This is in response to identified skills gaps for the industry.[92]

UPSTREAM OIL AND GAS

The North Sea and indigenous oil and gas supply have been at the heart of the UK's energy and industrial strategy for over fifty years. The UK already has the capability and skills within the existing sector to lead in new and emerging energy technologies such as CCUS and the hydrogen economy as well as to support the growth of new sectors such as offshore wind. If existing sector players are prepared to invest, it has the potential to play an important part in the energy transition and retain vital skills across key regional hubs around the country, supporting the CCUS and hydrogen 'SuperPlaces' clusters.

Occupations, skills requirements and qualification levels

Prior to Covid-19, domestic oil and gas production, and its associated employment, was already declining from peak levels due to the maturity of the UK Continental Shelf and the general market instability for oil and gas prices.[93] This will be particularly felt in Scotland, where there remains a high reliance on the oil and gas industry (over 10% of workers in Aberdeen are directly employed by the sector).[94]

It is also worth noting that currently around 44% of downstream oil sector employees and around 40% of chemicals sector employees hold a degree or equivalent level qualification (Levels 6 and 7+). Future demand for chemical engineers, technicians and specialist roles is expected to increase, but many are already included in the shortage occupations list.[95]

The North Sea Transition Deal aims to support and anchor the expert supply chain that has built up around oil and gas in the UK, to both safeguard and create new high-quality jobs. The Deal will transform the sector in preparation for a net zero future and catalyse growth throughout the UK economy. The North Sea Transition Deal is expected to support up to 40,000 direct and indirect supply chain jobs in decarbonising UKCS production and supporting the CCUS and hydrogen sectors.[96]

COAL

Coal mines continue to close in the UK, ahead of the phase-out of unabated coal generation in Great Britain in 2024.[97]

Occupations, skills requirements and qualification levels

Employment in coal mining within the UK peaked at just over one million workers in 1920; the size of the workforce has continued to decrease ever since. In more recent years, the coal mining workforce had fallen to less than 4,000 workers.[98]

STEEL

To reach net zero, the UK's two blast furnace (BF) sites will need to decarbonise; options include hydrogen direct reduced iron coupled with Electric Arc Furnace (EAF) production or deployment of CCUS. The majority of UK steel production by volume is currently produced by BF, accounting for 93% of the sector's carbon emissions.[99] The existing EAF production sites in the UK are already considered 'green'.

Occupations, skills requirements and qualification levels

The UK finished steel industry currently directly employs c. 35,000 workers[100] and indirectly supports another 44,000 jobs.[101] EAF production is less labour intensive than BF production. Therefore, a move towards more EAF production in the UK steel industry would likely lead to a fall in steel employment. It is also likely that adopting EAF production would result in some change in the skills requirements of the steel workforce compared to today.

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