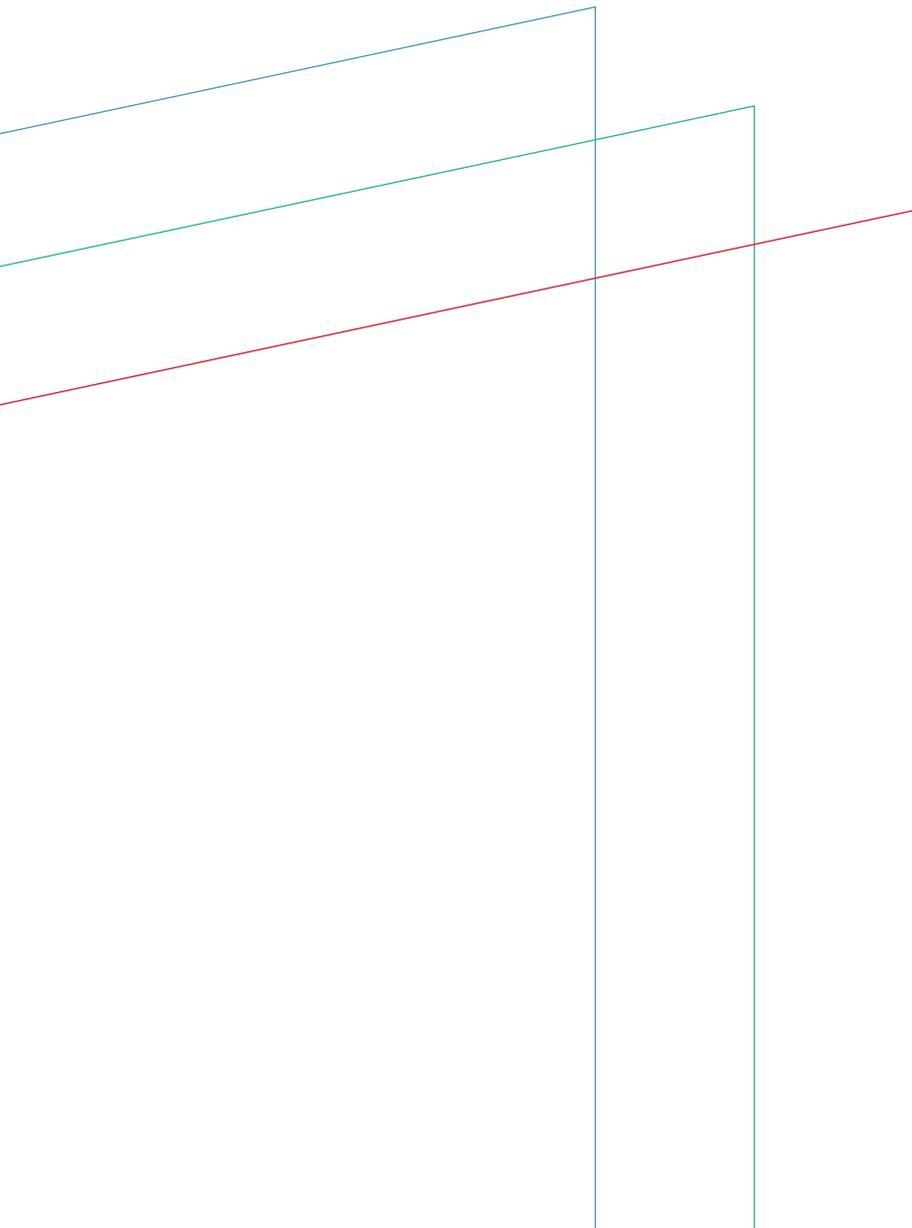


SKILLS FOR A NEW ECONOMY

INVESTING IN WORKERS AND
CLOSING THE GREEN SKILLS GAP

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EXECUTIVE SUMMARY

Central to the net zero and levelling up challenges is the development of people's education and skills. Jobs and skills are two sides of the same coin – you can't solve one without addressing the other. Yet, the UK has a significant, albeit poorly understood, green skills gap. Sectors of huge importance for the transition to a net-zero economy, such as construction and manufacturing, are struggling with skilled workforce shortages, and there are still gaps in knowledge across the economy, including the skills and jobs needed to transform and sustain our food, transport, and care systems.

The potential for job protection and creation across the economy is not being achieved. There is still little and poor integration between skills initiatives and the needs of the green transition. Recent examples of policy failures, like the Green Homes Grant, have exposed the lack of a skilled workforce and have had a material impact on workers and businesses. Similarly, the neglect of the care sector, and the offshoring of contracts in wind energy and bus manufacturing, have offshored jobs and skills that could well have been retained in the UK. Policy interventions by the UK government, including the Apprenticeship Levy and the Lifetime Skills Guarantee, have been insufficient so far in addressing the general skills deficit, let alone supporting the workforce to adapt to the needs of a low-carbon economy. Distinct policy and investment choices by the Welsh government, for example, have reflected a better performance by Welsh authorities in upskilling its population.

Across the UK, the average worker is currently below the skill level needed to access emerging green jobs. All regions of the country, except London, have an average skill level below the green jobs average, with the lowest average skill level found in the North and the Midlands. New Economics Foundation (NEF) analysis estimates that the average worker would need between six and 18 months of additional work-related training to access existing green jobs, either undertaken on the job or in an educational institution. This is set against a backdrop of declining levels of adult participation in education and skills training over the past decade. We need to address key barriers to learning, notably time and cost barriers. But there are also less tangible and more dispositional – yet important – barriers, such as a person's experience of education and lack of confidence as a learner.

Delivering a 'just transition' requires a collective effort and social dialogue. Yet, the UK government's current approach to the skills transition leaves workers' voices out of the process.¹ Compared to other advanced economies, and indeed to other nations within the UK, England has relatively limited formal arrangements for social partnership in the skills system. Only 13% of organisations in the UK currently have a collective training agreement.² In examples where social partners are extensively involved in the training system, employers tend to invest more and deliver more equal access to training.³

The challenge of making the skills transition fair is urgent. The need to rapidly decarbonise the economy has been compounded by the cost of living scandal, set against the ongoing recovery from a pandemic, the uncertainties of Brexit, and changes in the world of work due to automation. Considering these different factors, the groups most at risk of being left behind by an unmanaged transition are, predictably, workers in low-skilled, low-paid jobs; in precarious jobs, including zero-hour contracts; and in high or very high carbon-emitting jobs.

Without a bold plan for skills, levelling up and net zero will be in direct tension with one another. We outline three principles for reform to put us on a path of delivering a skills transition that is fair – meaning, tackling barriers to retraining and upskilling so that no worker is left behind – and helps close the green skills gap.

- *A skills transition through social partnership.* Set arrangements for social partnership in the skills system, that elevate workers' voices. This could begin through a reformed model of the official Local Skills Improvement Plans.
- *Targeted policy and investment to address key barriers to learning.* We need well-funded and supportive skills and employment programmes that successfully address the twin challenges of upskilling and income security. This needs to be complemented with more holistic approaches to address less-tangible barriers to learning. The UK government can start by reversing the cut to the Union Learning Fund in England.
- *A national skills and labour market strategy.* The UK government should bring together social partners to develop an overarching assessment of the varying degrees of green skills needs and green job opportunities across the whole economy. A national skill and labour market strategy would support local and regional efforts in linking green skills to green jobs more effectively, as local areas maximise the opportunities for job creation within their geography and build on their assets. Furthermore, most workers are attracted to jobs that produce a tangible sense of social value that is a distinct but often invisible component of job quality.⁴ Developing green skills in the workforce cannot be detached from ensuring that green jobs are good jobs.

INTRODUCTION

The UK has a huge task to deliver a rapid skills transition and meet its decarbonisation targets. Over the last half-century, the structural shift of the UK economy has had an impact on the skills composition of the workforce, from manufacturing and productive activity (eg energy and food production) to service-based activity. The green transition requires many of those skills that have now been lost over the past few decades, and parts of the workforce require reskilling to incorporate new technology in their activities and deliver new products.

The entire education system is of relevance to delivering the new economy. The government's 2021 *Skills for Jobs* white paper stated: "We do not have enough technicians, engineers or health and social care professionals to meet the many vital challenges we face, from building our green economy to meeting the health and care needs of our ageing population."⁵ Changes are urgently needed throughout the learning journey – from early education to further education – to build and maintain a future green society and economy.

At the same time, a significant proportion of the 2030 workforce is already in the labour market today,⁶ and we must deliver a just transition for workers and communities experiencing those changes now and in the next two decades. Our focus for this report is therefore on adult (or tertiary) education, which includes qualifications and skills produced as a result of higher (HE) and

further education (FE).¹ We have largely focused on UK government policy, which is more relevant to England, given that skills policy is a devolved matter. But where relevant, we highlight areas in which devolved governments have made different decisions.

SKILLS VERSUS QUALIFICATIONS

Skills are not the same as qualifications, although they are often treated interchangeably. The process of gaining a qualification undoubtedly builds on and improves skills, but skills can also be obtained through work experience, on-the-job training, and peer and self-guided learning, which may not result in a qualification. Qualifications provide specialist knowledge and signal a wide range of desirable attributes to employers and customers.

Both qualifications and skills matter. A workforce with a low level of qualifications is also one likely to have low levels of skills. The strength of this connection can vary between sectors and professions, with some highly skilled occupations seeing low completion of qualifications.

For this report, we have used the following frameworks to look at qualifications and skillsⁱⁱ: the Regulated Qualifications Framework (RQF), which distributes the types of qualifications an individual can attain into nine levels (entry level plus levels 1-8)ⁱⁱⁱ; and the skill levels indicator developed by the Office for National Statistics (ONS),⁷ which classifies occupations (jobs) by the skill level required to competently perform the job's duties. This competency can be acquired via formal or informal training. ONS skill levels range from 1 to 4. In general, workers in jobs at level 4 will have higher qualifications. Measuring

- i HE refers to all post-compulsory educational study undertaken in a degree awarding institution, typically a university. FE refers to all post-compulsory educational study or skills training undertaken at below degree level and outside of a higher education institute, for example in a college or through private skills providers.
- ii For the purpose of this paper and to illustrate our analysis more simply and clearly, the nine qualification levels (entry level plus levels 1-8), as defined by the Regulated Qualification Framework (RQF), have been categorised into three groups – people with high, intermediate, and fundamental qualifications. This structure is similar to, but not precisely aligned, with existing research and analysis into deficiency, as follows: *fundamental qualifications* equate to qualifications at Level 3 and below on the RQF, including all apprenticeships except higher apprenticeships and most further education; *intermediate qualifications* equate to Level 4 and Level 5 qualifications on the RQF, for example higher national certificates and diplomas, and higher apprenticeships; *higher qualifications* equate to Level 6 and above qualifications on the RQF, typically undergraduate and postgraduate degrees. A technical report is available on request.
- iii The Office of Qualifications and Examinations Regulation (Ofqual), which regulates qualifications, examinations and assessments in England, gives the guidance on using RQF. The RQF was set up in October 2015 to replace both the Qualifications and Credit Framework (QCF) and the National Qualifications Framework (NQF), by merging them together. It includes all the qualifications regulated by Ofqual: general and vocational in England, and vocational in Northern Ireland, and how they relate to each other. The RQF maps to the Framework for Higher Education Qualifications, as well as to the European Qualifications Framework. A helpful UK Qualification Comparison Chart was put together by EAL.

skill levels provides insight into the capabilities of the UK population and avoids reducing capability exclusively to the holding of qualifications.

WHAT DO WE MEAN BY SKILLS GAPS?

When we talk about skills gaps, we mean one of two things: the skills required by employers are either in shortage or not available in the workforce; and skills mismatches, which include both the under-skilling and over-skilling of workers, in relation to the skills required of them to perform their current job effectively.

Several studies have documented high levels of a skills mismatch in the UK.⁸ In 2017, an Organisation for Economic Co-operation and Development (OECD) study found that 40% of workers in the UK are in the skills mismatch category: 25% are underqualified for their occupation (among the highest mismatch of the countries analysed), and 15% are over-qualified for their jobs.⁹ These mismatches can place limits on productivity and act as a drag on the pay progression and job satisfaction of individuals. In the 2019 Employer Skills Survey by the ONS, 66% of employers with skills gaps said it had affected their company's performance;¹⁰ 90% felt that their business performed better when their employees had vocational qualifications¹¹; and 94% of employees said they would stay at their company longer if it invested in their career.¹² Studies have shown that undertaking continuous education and training can also increase job satisfaction.¹³

THE PURPOSE OF THIS REPORT

The skills transition is a key pillar of a just transition – the rapid and managed decarbonisation of our economy, delivered through social dialogue, which produces jobs, training and skills, social protection, and community stability, while leaving no worker – or community – behind. With this in mind, this report set out to do the following:

- *Assess the inequalities of the skills transition.* What are the barriers to retraining and upskilling and how are current policy and investments supporting workers to access skills and jobs for the new economy?

- *Better understand the green skills gap in the UK.* We know that there is one and that it is hindering progress towards delivering net zero targets.¹⁴ But what does it mean, and how is it manifesting across the economy?
- *Contribute to furthering the discussion and identifying solutions that meet the needs of workers and the new economy.* How can we put just transition principles^{iv} into practice to deliver a skills transition that invests in the workforce and closes the green skills gap?

We have reviewed the nascent literature; analysed available data; assessed existing policies; and spoken to unions, educators, local authorities, business representatives, and policymakers. Technical appendices are available on request.

Our guiding principle is that the outcome of any industrial transition is determined by what is actively done, as well as what gets neglected and they are political choices.

iv The Just Transition Declaration, supported by the ILO and signed by the UK government in November 2021 at COP26.

1. THE BACKDROP TO THE SKILLS TRANSITION

In 2021, one of the priority recommendations by the nationally convened Green Jobs Taskforce (GJT)¹⁵ was for a collective effort to tackle barriers to retraining and upskilling so that no worker is left behind by the transition to net zero.¹⁶

1.1 WORKERS MOST AT RISK FROM AN UNMANAGED TRANSITION

According to the Social Mobility Commission, one in four of the UK's low-paid workers will never escape low pay – a problem due largely to low skill levels.¹⁷ Occupations that are often in low-skill, low-pay sectors (including elementary sales and storage occupations and many administrative roles) are also the most at risk from changes in work due to automation.¹⁸ In England, 9 million people lack at least one of what is considered basic skills: digital, functional literacy, or numeracy. This means that about 20% of the workforce struggles with basic quantitative reasoning or has difficulty with simple written information, which places them at a great disadvantage in an increasingly digital world.^{19,20}

Precarious work is prevalent in sectors already associated with low-skilled and low-paid occupations. Current estimates of the number of workers in precarious jobs in the UK stand between 3 and 3.6 million people, including those in low-paid self-employment.^{21,22} More than 1 million people are currently on zero-hours contracts and over half of those in self-employment earn less than the minimum wage.²³ Different studies have indicated that these workers are more likely to be women, from ethnic minorities or migrant workers, and, on average, five to six years younger than non-precarious workers.²⁴ Workers in precarious jobs struggle with income insecurity, as they can be let go and laid off at very short notice, and rarely receive social benefits²⁵; this is likely to present barriers for many in participating in skills training. Furthermore, only 23%–25% of precarious workers are at unionised workplaces, compared to more

than 50% of non-precarious workers,²⁶ which means they mostly lack collective representation.

Previous NEF analysis²⁷ of current emissions across industrial sectors shows that 3.4 million people – 12% of the working population – have jobs with high or very high greenhouse gas (GHG) emissions.²⁸ Not all these jobs are at risk. Some are in industries that will remain important, for example, agriculture and waste collection, treatment, and disposal services, but will need to significantly reduce their emissions with likely implications for workers' roles and skills requirements. Others, like in the offshore oil and gas industry, are not compatible with a low-carbon economy and must be phased out, with a just transition ensured for workers.

1.2 BARRIERS TO PARTICIPATION IN LEARNING

Those with the lowest or no qualifications are much less likely to get an education and training than those already highly qualified. The Learning & Work Institute (L&WI) has grouped different barriers to learning into two main categories. *Situational barriers* arise from an individual's personal and family situation, including affordability, childcare arrangements or other caring responsibilities, transport links, work and other time pressures, and a lack of digital equipment or broadband for online learning. *Dispositional barriers* relate to the attitudes, perceptions, and expectations of individuals, including their perceptions of age, lack of confidence, and lack of digital skills for online learning.²⁹

Both dispositional and situational barriers are more likely to be raised by women than by men, and by respondents from BAME (Black, Asian and Minority Ethnic) backgrounds (49%) than from white backgrounds (39%).³⁰ Addressing these barriers is critical to unlocking the rapid skilling up of the country.

Financial and time barriers are the most common and felt more acutely by those most in need of training. Better levels of social security support than what is currently available would help ensure that when industrial change threatens to, or does indeed, lead to job loss, the financial impact on families is lessened. Better funded and supportive skills and employment programmes would also help people access the training they need to secure new and better jobs.

But there are also less tangible – yet important – barriers to learning, such as a person’s experience of education and lack of confidence as a learner. This indicates a need for initiatives targeted at reaching those furthest from the education system.

1.3 THE PRODUCTION OF QUALIFICATIONS AND SKILLS

Investment and participation in skills training have been in decline in the past decade. This has been particularly led by dramatic falls in the uptake of FE,³¹ RQF Levels 4 and 5,³² and part-time education.³³ In 2019, the L&WI recorded the lowest-ever rate of adult participation in learning since its annual survey began in 1996.³⁴

The 2021 *Adult Participation in Learning Survey (APLS)* found that the longer individuals remain in full-time education the more likely they are to learn as an adult, ie education has a positive feedback loop.³⁵ For example, our analysis of ONS data indicates that those in an occupation of skill level 3 or 4 tend to spend more years in education (ie obtaining higher level qualifications) than those in skill level 1 or 2. Around 79% of workers in jobs requiring skill level 4 have qualifications at RQF levels 4 or above, compared to just 16% in skill level 1 (Table 1).

Although not a guarantee, the literature suggests that the highest qualifications tend to lead to the highest returns, that academic qualifications lead to higher returns than vocational ones at the same level, and that qualifications gained later in life tend to secure lower returns than the same qualifications earlier on.³⁶ Gaining a qualification at RQF level 3, which is equivalent to A levels, could increase an individual’s earnings by 10% and increase their probability of being employed.³⁷

The UK government’s plans to grow the green economy are focused on highly skilled jobs.³⁸ To access highly skilled jobs (skill levels 3 and 4), the majority of workers (64%) would require a qualification of RQF level 4 or above. This means achieving at least a qualification equivalent to a higher apprenticeship or higher national certificate (HNC), but in the majority of cases (86%), this means completing some form of HE. Qualifications at RQF levels 4 and 5, most commonly HNCs and Diplomas, have also seen a rapid decline in recent years (from 229,000 active learners in 2014-15 to 161,000 in 2020-21).³⁹ These qualifications, taking one to two years to complete, are more accessible to individuals with financial, caring, or health constraints than an undergraduate degree, particularly when undertaken later in life.

TABLE 1: BREAKDOWN OF QUALIFICATIONS HELD BY UK WORKERS IN EACH OCCUPATIONAL SKILL LEVEL. JOBS WITH HIGHER SKILL LEVELS TYPICALLY NEED HIGHER QUALIFICATION LEVELS THROUGH TRAINING AND EDUCATION

		Skill level requirement of occupation/job			
Highest qualification (RQF) level	Example qualification(s)	1	2	3	4
Level 4 and above	Degree, Higher National Diploma	16.3%	30.6%	44.5%	79.1%
Level 3	Level 3 diploma	17.3%	21.1%	18.7%	8.3%
Trade apprenticeships	Intermediate apprenticeship	3.6%	3.4%	7.1%	1.3%
Level 2	GCSE	40.8%	32.8%	20.8%	8.3%
Other qualifications		9.2%	6.7%	5.0%	2.0%
No qualifications		12.4%	5.3%	3.7%	0.9%

Source: NEF analysis of ONS Labour Force Survey.⁴⁰

Finally, upskilling and retraining for several occupations are preceded by the need for basic skills (literacy, numeracy, and digital). Participation in basic skills learning in England has fallen by 60% over the last decade.⁴¹ Young people (16–24 years old) in England leave the school system with lower literacy skills, and especially lower numeracy attainment, than young people in other developed countries.⁴² Only 4 in 10 adults are aware that free basic skills courses are available, but 1 in 5 said they could be encouraged to take up a course if it were delivered online or if course times fitted around work or home commitments.⁴³

1.3.1 Regional inequalities

We know that the stall in productivity growth has been a key contributor to a lost decade of wage growth. Variations in the share of high-skilled workers explain up to 90% of place-based disparities in wages across the UK.^v

To assess regional levels and inequities in the production of qualifications and skills, we compiled a database of skills and qualifications data at the local authority district level in England and Wales. We divided forms of education and training into three levels: fundamental, intermediate, and higher. We then grouped performance levels by authorities under the categories of ‘carbon intensity’ and ‘levelling-up need’. We looked at whether a local authority area was underperforming or overperforming the national average in each educational domain and trends in performance levels.^{vi} We found significant variation in the production of skills and qualifications across regions of the UK, with similar trends showing for areas with higher carbon intensity and for areas most in need of levelling up.

Local authorities with higher carbon intensity
Looking at local authority districts by average carbon intensity of local employment, emissions on a per-job basis are concentrated in a minority of authorities – 49/338 district authorities fall into the highest grouping (Group 1). These areas are concentrated outside of London and the South East and are more commonly found on the coast.^{vii,44}

Table 2 shows how areas with the highest carbon intensity (Group 1) perform well delivering fundamental skills (FE and apprenticeships), with close to two-thirds of authorities exceeding the average. At higher qualification levels, delivery declines. Areas in Group 1 perform notably worse in the delivery of higher apprenticeships, and undergraduate and postgraduate education, and face major challenges in retraining their graduates – owing primarily to a lack of adequate educational and social infrastructure.

Local authorities in need of levelling up
Table 3 repeats this analysis, this time dividing authorities by their levelling-up prioritisation – with Group 1 representing the authorities with the highest levelling-up priorities. Similar trends to those shown in Table 2 can be seen, underscoring the intersection between high-carbon areas and relatively less affluent areas. One exception is the relatively strong performance of levelling-up target areas in the delivery of level 4 and 5 qualifications, but this finding must be caveated, as achievement of level 4 and 5 qualifications is extremely low across the board.

- v The 2021 Autumn Budget and Spending Review described how ‘empirical evidence points to the importance of capitals for local outcomes’. ‘Human capital – encompassing the level of education, skills and health of the people living in a region – is the largest measurable driver of regional disparities. Higher levels of human capital will create a more skilled and therefore productive workforce, which will in turn boost wages in the long term.’ (pg. 20).
- vi To assess regional levels and inequities in the production of qualifications and skills we compiled a database of skills and qualification data at the local authority district level in England and Wales. This database contains 17 datasets compiled from a range of secondary sources for 338 local authority districts (all England and Wales districts as of 2019 boundaries). Full details on these data and how they were processed are available on request.
- vii We analysed the carbon intensity of the industrial makeup of each local authority district in England and Wales. Our method follows that set out in NEF’s 2021 Powering the Transition report.⁴⁴ This approach interpolates the emissions intensity of each area using a national inventory of emissions by subsector, measured on a per-job basis. The approach should therefore be treated as indicative only, as it cannot fully capture the carbon intensity of industrial practices specific to highly localised areas. For example, jobs at all UK airports will be associated with the same average air-travel emissions level, ignoring any variation specific to the type and nature of local air travel (eg short vs long-haul). Nonetheless, the approach serves as a useful indicator of those areas with the highest industrial emissions intensity, accurately highlighting authorities with large proportions of their workforce employed in carbon-intensive industries such as oil and gas, road haulage, aviation, cement and steel production. For the analysis, local authority districts were grouped into three categories. Group 1, all authorities with an average emissions-per-job greater than half of one standard deviation above the mean. Group 2, other authorities above the mean, and Group 3, authorities below the mean.

TABLE 2: PROPORTION OF LOCAL AUTHORITY DISTRICTS IN EACH CARBON-INTENSITY LEVEL OUTPERFORMING THE NATIONAL AVERAGE SKILLS AND QUALIFICATIONS PRODUCTION RATE ACROSS DIFFERENT INDICATORS.

Carbon grouping	Carbon intensity level		
	Group 1	Group 2	Group 3
Count of authorities	49	50	239
Average tonnes of carbon per job per year	34.0	17.5	8.9
FE	57.1%	42.0%	41.0%
Apprenticeships	63.3%	64.0%	36.8%
Higher Apprenticeships	40.8%	46.0%	51.9%
Levels 4 and 5	26.5%	44.0%	24.7%
On-the-job training	40.8%	40.0%	43.1%
Undergraduate	22.4%	28.0%	47.3%
Postgraduate	14.3%	36.0%	45.2%
Graduate retention	16.3%	14.0%	35.1%

Source: NEF analysis.^{viii} Proportions are from a total of 338 local authority districts that have been grouped by three levels of carbon intensity.

TABLE 3: PROPORTION OF LOCAL AUTHORITY DISTRICTS IN EACH LEVELLING-UP TARGET LEVEL OUTPERFORMING THE NATIONAL AVERAGE SKILLS AND QUALIFICATIONS PRODUCTION RATE ACROSS DIFFERENT INDICATORS.

Carbon grouping	Levelling-up prioritisation		
	Group 1	Group 2	Group 3
Count of authorities	109	111	118
FE	77.1%	39.6%	16.1%
Apprenticeships	64.2%	45.0%	26.3%
Higher Apprenticeships	41.3%	49.5%	56.8%
Levels 4 and 5	40.4%	26.1%	17.8%
On-the-job training	55.4%	36.9%	43.2%
Undergraduate	33.9%	34.2%	53.4%
Postgraduate	21.1%	42.3%	53.4%
Graduate retention	20.2%	31.5%	35.6%

Source: NEF analysis of educational attainment data.

To explore further the regional variability, Table 4 highlights the proportion of the UK government's levelling-up target areas (109 local authority districts).^{ix} which are critically under or over-performing at each level of education (fundamental, intermediate, higher). Here, critically under/over performing is described as delivering qualifications at least 5% below/above the national average rate.

Only 10 levelling-up target areas are critically underperforming in the production of fundamental skills (apprenticeship and FE enrolment).^x These authorities primarily span more rural areas encompassing medium to large towns, notably in Norfolk and the Peak District. Urban areas dominate the 26 authorities critically underperforming at the intermediate skills level (higher apprenticeship, RQF levels 4 and 5), including Liverpool, Manchester, and Nottingham. However, five authorities critically underperform at both fundamental *and* intermediate skills levels – Canterbury, Derbyshire Dales, Gravesham, High Peak, and Rother – all of which are more rural authorities. Critical underperformance at the HE level is widespread. The majority of levelling-up target areas underperform when it comes to delivering undergraduate and postgraduate education to their working-age population. Compounding this, the majority of levelling-up areas have a significant problem retaining locally the graduate-level workers they produce, with many relocating to larger urban centres in the years following graduation.

It should not be surprising that many levelling-up target areas are performing well delivering fundamental skills. This has historically been the case, and this is the level at which the UK government has targeted a number of its recent policy announcements. This investment may help to lift those areas still underperforming at the basic (literacy and numeracy) and fundamental (RQF level 3 and below, including apprenticeships except higher apprenticeships and most FE) skills and qualifications levels.

Interestingly, Table 4 shows several Welsh authorities bucking the trend with rates of upskilling, significantly outperforming the national average. Almost all (82%) of the 17 levelling-up priority areas in Wales overperform at the fundamental level. Welsh authorities are also over-represented among those overperforming at the intermediate and higher levels (there is little overlap between these two Welsh groupings, with some authorities excelling at the intermediate level and others at the higher level). This performance by Welsh authorities appears to reflect policy and investment decisions made by the Welsh government, which has put significantly more emphasis on upskilling and reskilling than the UK government, with several programmes additional to the UK government's offer.

The impact of these successes is challenging to quantify but is likely a driver behind Wales's relatively strong performance increasing the overall percentage share of higher-skilled jobs in the economy in recent years. As reported by the Institute for Public Policy Research (IPPR), Wales saw a 25-percentage-point increase in the proportion of all jobs classed as high-skilled between 1998 and 2018.⁴⁵ In turn, this could have contributed to Wales's success in increasing worker productivity, and closing its relative gap in output per hour with the rest of the UK over the past two decades.⁴⁶

Although support provided in England is focused at the lower qualification levels (RQF levels 2 and 3), devolved administrations (ie mayoral combined authorities (MCAs) can supplement this with bespoke programmes, which may explain relatively stronger performances in places like the West Midlands.

ix UK government levelling up target areas - <https://www.gov.uk/government/publications/levelling-up-fund-round-2-updates-to-the-index-of-priority-places>

x In order to be classed as 'critically underperforming', a local authority must be achieving less than 95% of the national average delivery rate in both of the indicators assigned.

TABLE 4: ASSESSMENT OF HOW 109 LEVELLING-UP LOCAL AUTHORITY TARGET AREAS ARE UNDER OR OVER-PERFORMING AT DIFFERENT EDUCATION AND SKILLS LEVELS.

	Indicators	Measure (relative to the mean rate)	Number of authorities	Notes
Critically underperforming				
Fundamental education	FE and apprenticeships	<95%	10	Primarily rural-town areas, for example High Peak, Derbyshire Dales, King's Lynn and West Norfolk, Rother, Gravesham. Canterbury performs particularly poorly.
Intermediate education	RQF levels 4 and 5, higher apprenticeships	<95%	26	Major urban areas, for example Liverpool, Manchester, Newcastle Upon Tyne, Leicester, and Nottingham.
Higher education	Undergraduate and postgraduate education	<95%	60	Many of the UK's most deprived areas, for example Blackpool, Knowsley, Kingston Upon Hull, and Stoke-on-Trent.
Graduate retention	Net graduate migration rate	>10% net outflow	59	The majority of authorities are losing recent graduates to internal migration.
Over-performing				
Fundamental education	FE and apprenticeships	>105%	54	Mostly northern and Welsh areas, including 82% of levelling-up priority areas in Wales.
Intermediate education	Level 4 and 5 education and higher apprenticeships	>105%	12	Four northern authorities, four West Midlands, and four Welsh authorities (Bridgend, Caerphilly, Neath Port Talbot, and Torfaen).
Higher education	Undergraduate and postgraduate education	>105%	10	Six out of these 10 authorities are Welsh: Newport, Swansea, Cardiff, Carmarthenshire, Conwy, and Wrexham.
Graduate retention	Net graduate migration rate	<0% (ie net inflow)	22	Primarily urban areas including Liverpool, Manchester, Newcastle Upon Tyne, Nottingham, and London boroughs.

Source: NEF analysis.

Given the link between higher qualification levels and higher skilled and better-paid jobs, significant work is needed to bring education delivery up to standard in held-back communities. This includes tackling the minority of areas critically underperforming in the production of fundamental qualifications, and the widespread deficit in the delivery of intermediate and higher qualifications. The upskilling and retraining required to expand access to green jobs necessitates a well-functioning and well-funded FE system. But, as our later analysis shows, to bring green jobs to levelling-up target areas, this system will need to support workers to reach higher skill levels than those addressed by the government's current policy targets. Critically, this will also mean addressing inequities in both the delivery and retention of HE qualifications, including higher apprenticeships and degree-level qualifications as well as the pre-degree-level qualifications (RQF levels 4 and 5) which universities historically had responsibility for.

1.4 THE POLICY FRAMEWORK

The policy framework for adult education is a complicated system. In early 2022, the UK government's *Levelling Up* white paper included a new 'skills mission' targeting 200,000 more people for training every year by 2030, including 80,000 more in areas with the lowest skills levels. *Annex A* provides some details and a brief analysis of some of the latest government-supported skills programmes.

At the end of 2021, the government announced the National Skills Fund (NSF) – a £2.5bn fund (£3bn when including funding for devolved administrations),⁴⁷ to finance programmes that support the post-pandemic economic recovery and help meet future skills needs. The commitment was launched lacking in detail.⁴⁸ We don't know how much of the fund remains to be allocated, whether spending will be repeated in future years (as seems likely for new entitlements), or how much relates to day-to-day versus capital spending (at the moment, it seems to loosely cover both types of spending).⁴⁹

Analysis by the Institute for Fiscal Studies (IFS) indicates that considered together, current government plans are unlikely to help those with low-skill levels, who have few qualifications, while providing extra help to those who left school with good GCSEs or equivalent qualifications. There is some hope through Skills Bootcamps and the Multiply programme. But these are new, relatively untested initiatives which are not geared towards formal qualifications.⁵⁰ We also need to better understand what kind of apprenticeships are being created and who is accessing them. An analysis by the London Progression Collaboration (LPC) showed that since 2014-15, entry-level apprenticeship starts in England plummeted by 72%, while at the same time starts in higher-level apprenticeships, often taken up by older people, grew by 400%. The decline in entry-level apprenticeships mainly affects young people, and those out of work, on zero-hour contracts, in in-work poverty, or at the end of their careers. The LPC also found that apprenticeship starts in small and medium enterprises (SMEs) fell by more than 36% soon after the apprenticeship levy was introduced in 2017.⁵¹

The lack of adequate support for groups most in need threatens the delivery of a skills transition that leaves no worker behind, which is also a key part of levelling up poorer areas of the country.⁵²

In January 2021, the UK government announced the new Local Skills Improvement Plans (LSIPs) programme, starting with eight pilot areas.⁵³ The programme is the only visible government initiative towards building local skills strategies.

In April 2022, the Skills and Post-16 Education Act was published, enshrining LSIPs into law. The Act makes no mention of trade unions, nor do its guidelines set an approach to assess the skills aspirations of individuals and workers. Employer representative bodies were given a statutory role (only they can "lead" on the plans) to develop new LSIPs.⁵⁴ This has been a missed opportunity by the government to promote and guide social dialogue.

xi <https://www.legislation.gov.uk/ukpga/2022/21/enacted/data.pdf>. It defines a LSIP as a plan which '(a) is led by an employer representative body for the specified area, (b) draws on the views of employers operating within the specified area, and any other evidence, to summarise the skills, capabilities or expertise that are, or may in the future be, required in the specified area and (c) identifies actions that relevant providers can take regarding any English-funded post-16 technical education or training that they provide so as to address the requirements mentioned in paragraph (b).'

1.4.2 Declining public investment in adult education

It is hard to get consistent estimates for the total overall spending (employers, individuals, and government spending) in adult skills training in the UK. In 2018, the UK's overall spending on tertiary education institutions was 2% of GDP, above the OECD average of 1.4%. However, UK public spending was 0.6% of GDP, below the OECD average of 1%.⁵⁴ Although employers fund the majority of all UK training, they tend to prioritise already senior, high-skilled employees. Larger employers are also more likely to invest in training than smaller employers (those with fewer than 50 employees). Most other training is paid for by individuals themselves – if they can afford it. Free courses run by the government make up about 3% of all accessed training courses.^{xii}

The FE funding system in England has undergone several changes in recent years, and its public budget is distinct from that for HE.⁵⁵ Currently, FE providers are allocated funds from different sources depending on the type of courses they provide and the age of their students.⁵⁶ Most government skills investment is through the Adult Education Budget (AEB), with funding for apprenticeships provided by employers via the apprenticeship levy. Public spending on adult education and apprenticeships has been in decline. Between 2010–11 and 2020–21, it fell by 38% in real-terms, including a 50% fall in spending on classroom-based adult education (excluding HE).⁵⁷ The drop in spending on adult education partially reflects a greater focus on apprenticeships,^{xiii} although the levy has been underused, with £2 bn unspent in 2019–2021.⁵⁸

The October 2021 Budget and Spending Review (BSR) committed to giving the Department for Education (DfE) an average increase in real-terms funding of 2% per year between 2021–22 and 2024–25.⁵⁹ This includes £3.8bn per year by 2024–25 for skills, including increased apprenticeship funding and 100,000 additional classroom hours for T-Level students.⁶⁰ However, total spending on adult education and apprenticeships will still be 25% lower in 2024–25 as compared with 2010–11.⁶¹

xii Greater Manchester Combined Authority study (by New Economy) of 2017.

xiii Despite spending on apprenticeships rising by 36% in real terms between 2010–11 and 2020–21, the number of new apprentices has been in decline. In 2011–12, 515,000 people started an apprenticeship in England; this number was 390,000 in 2018–19. Between July 2020 and September 2021, the government estimated a total of more than 85,000 new apprentices, 25% of those were aged over 25. Apprenticeships are funded by the Apprenticeship Levy (in operation since May 2017) – a 0.5% tax on all employers with an annual wage bill of £3m or more. Employers can draw on funds to support training from approved providers. But the apprenticeship levy has not been fully utilised. Nearly £2bn of levy funds have gone unspent in 2018–19, equivalent to an additional 72,000 apprenticeship starts at the maximum funding of £27,000. As funding for the majority of apprenticeships is well below this, hundreds of thousands of additional apprenticeships could have been funded. Many employers treat the levy as a tax, with 45% of levy-payers reporting having not spent any funds within the two-year expiry period, often because there are no appropriate programmes.

2. THE GREEN JOBS AND SKILLS CHALLENGE

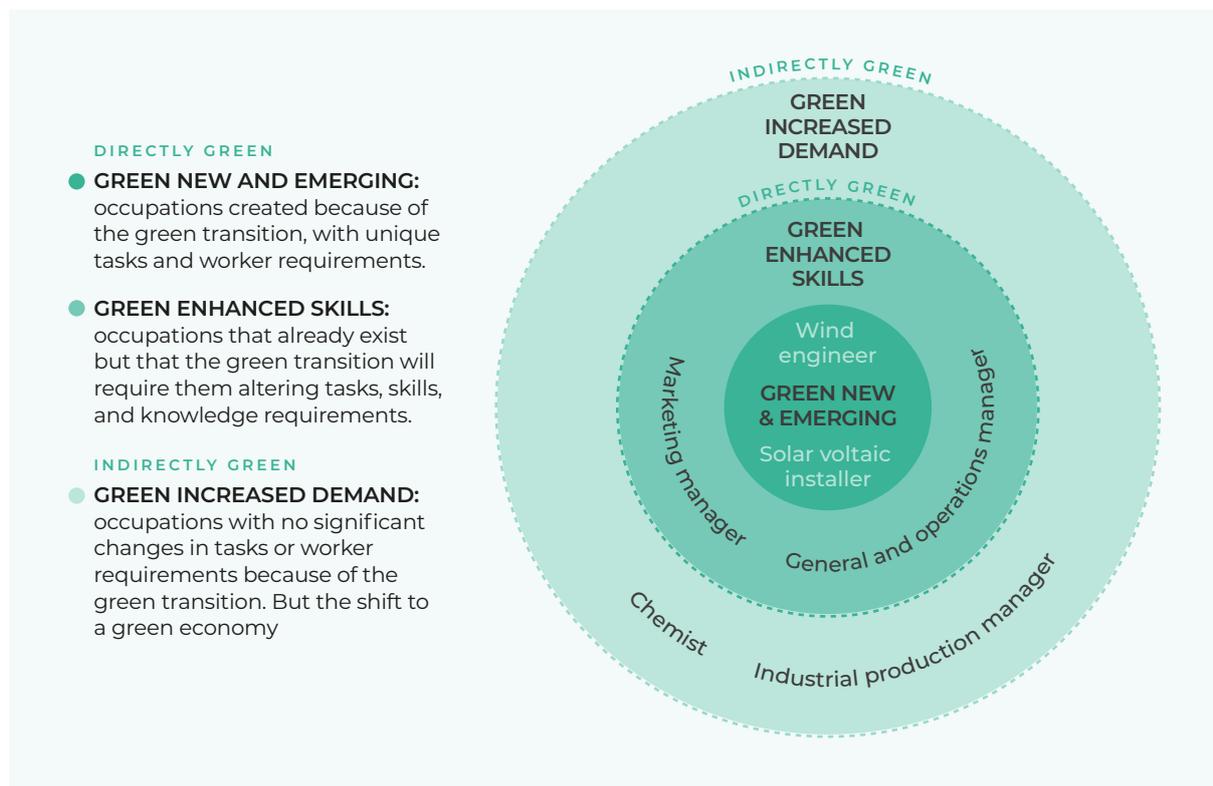
In 2021, the UK government’s Ten Point Plan set an ambition to support 2m jobs in the green economy and its supply chains by 2030.⁶² The government has also admitted that claims about green jobs creation lack explanation and data on how the targets will be achieved.⁶³ According to the Office for National Statistics (ONS) Low Carbon and Renewable Energy Economy (LCREE) survey⁶⁴ (which are the main figures used by policymakers when talking about the existing green economy, including electricity and services, and energy-efficient products), between 2014 and 2019, the number of jobs in the green economy has gone down, not up, indicating that the green economy is yet to really take off.⁶⁵

2.1 DEFINING THE GREEN ECONOMY

It is difficult to distinguish the role of green skills in high-level assessments of skills gaps and mismatches. That’s because there isn’t a consensus on what the green economy is. The lack of an operational definition for green jobs and skills is intrinsically linked to a lack of a national vision for the green economy.

Back in 2009, O*NET – a primary source of occupational data and information for the USA – described how “green economic activities and technologies will have different effects on different occupations; therefore it is essential to move beyond simply applying a broad label such as ‘green.’”⁶⁶ O*NET classifies any occupation that will be affected by greening as a green job. A consequence of this is that non-green occupations are not necessarily ‘dirty’ under this definition; rather, they are occupations that are not directly or indirectly judged to be affected by the zero-carbon transition into a new economy. The O*NET method is the basis of the Grantham Institute’s classification (Figure 1).

FIGURE 1: OCCUPATION-LEVEL CLASSIFICATION OF GREEN JOBS WITH VARYING GREENNESS OF JOB CATEGORIES, DEVELOPED BY O*NET IN THE UNITED STATES.



Source: Grantham Research Institute on Climate Change and the Environment, 2021.⁶⁷

Make UK, in their assessment of the manufacturing industries, found that many of the skills they identified as needed for the green economy already exist, or require additional training, knowledge, and experience. So, rather than the creation of new jobs, for many businesses and workers, there is a need to 'green' current jobs, much like the need to 'green' manufacturing processes.⁶⁸

Further work on this classification would therefore paint a more diverse picture of skills needs. On one hand, this would place a greater focus on protecting existing jobs and investing in the upskilling of the current workforce; on the other hand, it would help shift the thought that all green and low-carbon jobs will be the exclusivity of highly skilled workers.

The ONS has ongoing work to refine understanding and measurement of the green economy, including looking at issues of the quality of work and diversity within the green economy.⁶⁹ Building on previous NEF work,⁷⁰ we argue that care, health, and education jobs should be included under the Green Increased Demand category of green jobs. These sectors are essential to getting us through the green transition, and crucially, to sustaining a new economy with high levels of wellbeing.

2.2 SKILL LEVELS IN GREEN JOBS VERSUS NON-GREEN JOBS

According to our analysis of ONS data, the average skill level for all jobs in the UK is 2.79. This means that the average worker in the UK is in a job below skill level 3.^{xiv} To analyse the average skill level of green vs non-green jobs, we have used an existing green jobs classification by the Greater London Authority (GLA).⁷¹ It is important to note that we found all current classifications of green jobs limiting, but the GLA one provided us with the most comprehensive list we could find. Based on the GLA classification, our analysis suggests that the current average skill level for green jobs is 3.06 (meaning workers with jobs at a minimum of skill level 3), and 2.69 for non-green jobs. This implies that the average worker does not meet the current minimum skill level required for green jobs; they would require additional work-related training to access existing green jobs, either undertaken on the job or in an educational institution.

Table 5 shows how all regions of the country, except Inner and Outer London, have an average skill level below the green jobs average (3.06). There are regional differences between the south and the north. But it's a complex picture.

The proportion of green jobs in the UK economy is currently 27.31% of the total number of jobs. South Yorkshire and the West Midlands contain the greatest proportion of green jobs within their local economy, slightly above the national average. However, those jobs are typically at the lower end of the skill level spectrum (and hence potentially lower paid). For example, the most common green jobs in London and the South East are programmers and software development professionals, and finance and investment analysts and advisers, whereas the most common green jobs in South Yorkshire and West Midlands are lower-skilled by comparison (eg elementary storage occupations, customer service occupations).^{xv} This trend likely reflects the generally lower qualification levels achieved in these regions. Educational attainment is notably below average in the Y&H region and the West Midlands, with 138,000 and 198,000 workers, respectively, requiring upskilling for the two regions to catch up with the UK average.

These regional differences might also indicate a reinforcing cycle: the opportunities for green jobs in different places might be reflecting the existing skills make-up of the country. Only around 30% of the jobs in South Yorkshire and West Midlands are of skill level 4. Furthermore, if jobs are not available in certain areas, high-skilled workers will move, reinforcing an outflow of skills from the north to London, for example.

Beyond the high-level statistics, a 2021 study based on a nationally representative survey of 2,000 UK workers, conducted by the Centre for Employment Relations, Innovation and Change (CERIC) at the University of Leeds, found that "workers in lower-skilled occupations are more likely to feel that they will need to change jobs and are much less likely to say that they have skills relevant for the green transition."⁷² This emphasises the need to look at the production of skills and qualifications in the UK, and the training system's ability to support those in the jobs most at risk from changes in the world of work, including the shift to a green economy.

xiv Applies to occupations that normally require a body of knowledge associated with a period of post-compulsory education (such as time spent in college) but not normally to degree level.

xv NEF analysis of ONS Labour Force Survey (LFS), using the GLA Economics green jobs classification.

TABLE 5: AVERAGE SKILL LEVEL FOR GREEN AND NON-GREEN JOBS ACROSS REGIONS, AND PROPORTION (PER REGION) OF GREEN AND NON-GREEN JOBS (OF THE TOTAL NUMBER OF JOBS IN THAT REGION).

Region of residence	Weighted average skill level: green jobs	Weighted average skill level: all jobs	Weighted average skill level: non-green jobs	% of non-green jobs to total jobs	% of green jobs to total jobs
National level	3.06	2.79	2.69	72.69%	27.31%
Tyne & Wear	2.96	2.70	2.61	74.90%	25.10%
Rest of the Northern region	2.86	2.64	2.55	72.16%	27.84%
South Yorkshire	2.79	2.66	2.6	70.67%	29.33%
West Yorkshire	2.89	2.73	2.66	71.98%	28.02%
Rest of Yorkshire & Humberside	2.98	2.70	2.59	73.03%	26.97%
East Midlands	2.87	2.70	2.63	73.32%	26.68%
East Anglia	2.99	2.71	2.60	71.67%	28.33%
Inner London	3.48	3.08	2.93	73.47%	26.53%
Outer London	3.33	2.99	2.86	73.65%	26.35%
Rest of South East	3.15	2.86	2.75	72.25%	27.75%
South West	3.12	2.78	2.66	73.35%	26.65%
West Midlands (metropolitan county)	2.82	2.65	2.58	70.50%	29.50%
Rest of West Midlands	2.94	2.77	2.69	69.05%	30.95%
Greater Manchester	3.06	2.73	2.61	72.87%	27.13%
Merseyside	2.87	2.65	2.57	74.17%	25.83%
Rest of North West	3.00	2.71	2.61	73.64%	26.36%
Wales	2.96	2.73	2.65	72.94%	27.06%
Strathclyde	2.96	2.69	2.60	74.75%	25.25%
Rest of Scotland	3.02	2.76	2.65	71.64%	28.36%
Northern Ireland	3.01	2.75	2.65	74.67%	25.33%
<i>Sample size</i>	<i>11,011</i>	<i>40,320</i>	<i>29,309</i>	<i>NA</i>	<i>NA</i>

Source: NEF analysis of ONS Labour Force Survey (LFS),⁷³ using the GLA Economics green jobs classification (technical report available on request).

2.2.1 Closing the green skills gap

While skills can be obtained through self-guided study and work experience, the policy instrument available to the government is the delivery of qualifications. The skills gaps described can

therefore be converted into 'equivalent qualification time', ie– the commensurate amount of time spent in formal education required to lift an individual to the required skill level.

TABLE 6: AVERAGE CUMULATIVE TOTAL QUALIFICATION TIME HOURS OF A WORKER AT EACH SKILL LEVEL.

Skill level	Average cumulative hours of TQT non-green jobs	Average cumulative hours of TQT green jobs
1	1,303	1,088
2	1,904	1,459
3	2,564	2,239
4	4,071	3,716
Total	2,665	2,601

Source: NEF analysis of ONS Labour Force Survey (LFS)⁷⁴

To quantify this gap we used the government's Total Qualification Time (TQT) metric, which assesses the total hours of independent study and classroom learning required to complete an RQF qualification. At the lower end (levels 1–3) of the RQF, each level typically requires 400–600 hours of TQT; between levels 4 and 7 this rises to 1,200 hours of TQT per level. The implication of this is that one year of full-time undergraduate study, which equates to one RQF level, takes 1,200 hours of TQT. This is equivalent to three terms of 11 weeks of active study each, as seen in a typical university year.

Based on the current distribution of qualifications held by workers at each skill level, we calculated the average cumulative lifetime TQT of a worker at each skill level. The results are shown in Table 6, broken down across green and non-green jobs. The first insight of this analysis is that TQT is higher among non-green jobs when compared with green jobs at the same skill level. This gap likely relates to the lower rates of qualification among professions classed as green.

Having established the number of TQT hours required, on average, to move up a skill level, we can quantify the gap in skills levels between green and non-green jobs in a time metric. Figure 2 presents this data as weeks of full-time training, per person, in each UK region (LFS regions). When presented as per-person regional averages, the green skills challenge appears manageable. Using this approach the region with the largest skills gap is the North East (excluding Tyne and Wear) – referred to by the LFS as 'the rest of the northern

region' – which requires around 14 weeks, or 3 months, of full-time training per worker to bring the average skill level of the population up to the average required to access green jobs. This figure represents only the average worker; in reality, many will already hold the level required, while others will need significantly more training.

Framed at a total population level, this implies 235,000 years of full-time training provided to a population of around 900,000 people. Delivering this by 2030 would require the North East (excluding Tyne and Wear) to deliver just over 29,000 additional years of training per year to its population. If this were rolled out as a programme of part-time adult learning targeted at workers not currently participating in learning, this would require an increase in the rate of adult participation in learning of around 6.5 percentage points.

According to the Learning and Work Institute (LWI), as of 2019, pre-pandemic, the rate of adult participation in learning sat at around 17% of the population at the UK level. LWI data suggests the rate in the North East may be slightly lower, but regional data is subject to greater uncertainty. Lifting this rate 6.5 percentage points to 23%–24% would return adult participation to levels seen in 2001 and 2002, and also seen in 2021, a year which was strongly impacted by the Covid-19 pandemic.⁷⁵ In other words, through a concerted upskilling drive, focused on adult part-time learning, closing the green skills gap is achievable, even in the UK's most challenging region.

FIGURE 2: AVERAGE WEEKS OF EDUCATIONAL TRAINING REQUIRED PER PERSON TO LIFT THE AVERAGE SKILL LEVEL OF UK REGIONS TO THE AVERAGE REQUIRED FOR A GREEN JOB, ASSUMING A 35-HOUR FULL-TIME TRAINING WEEK.

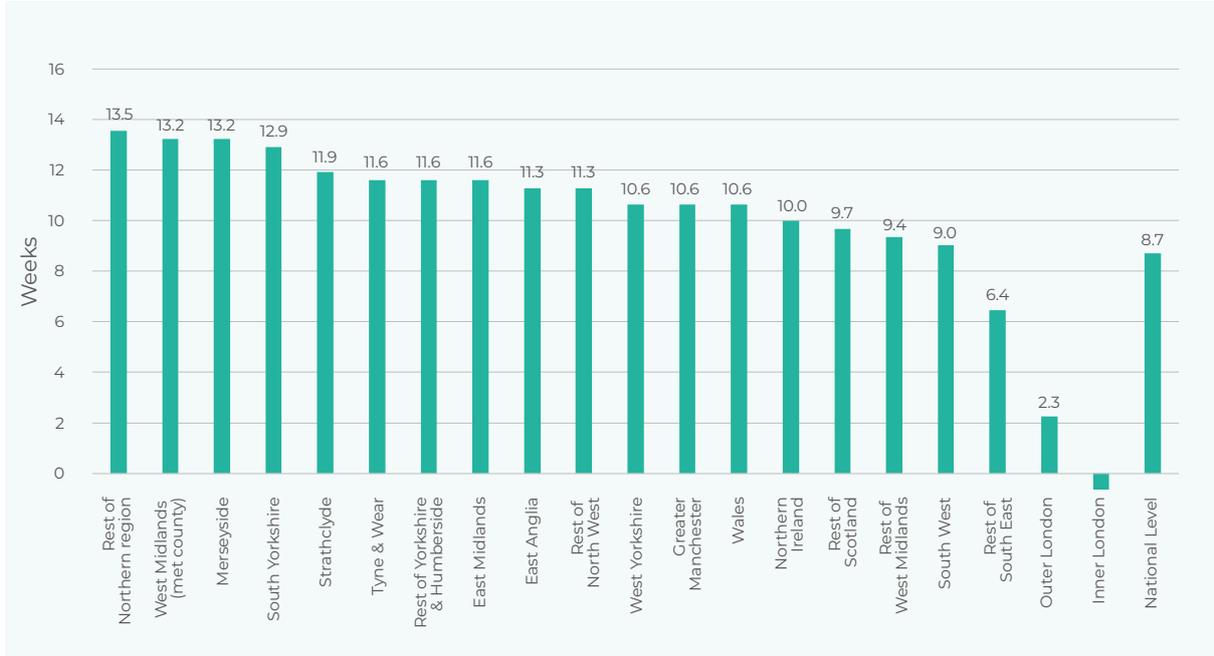
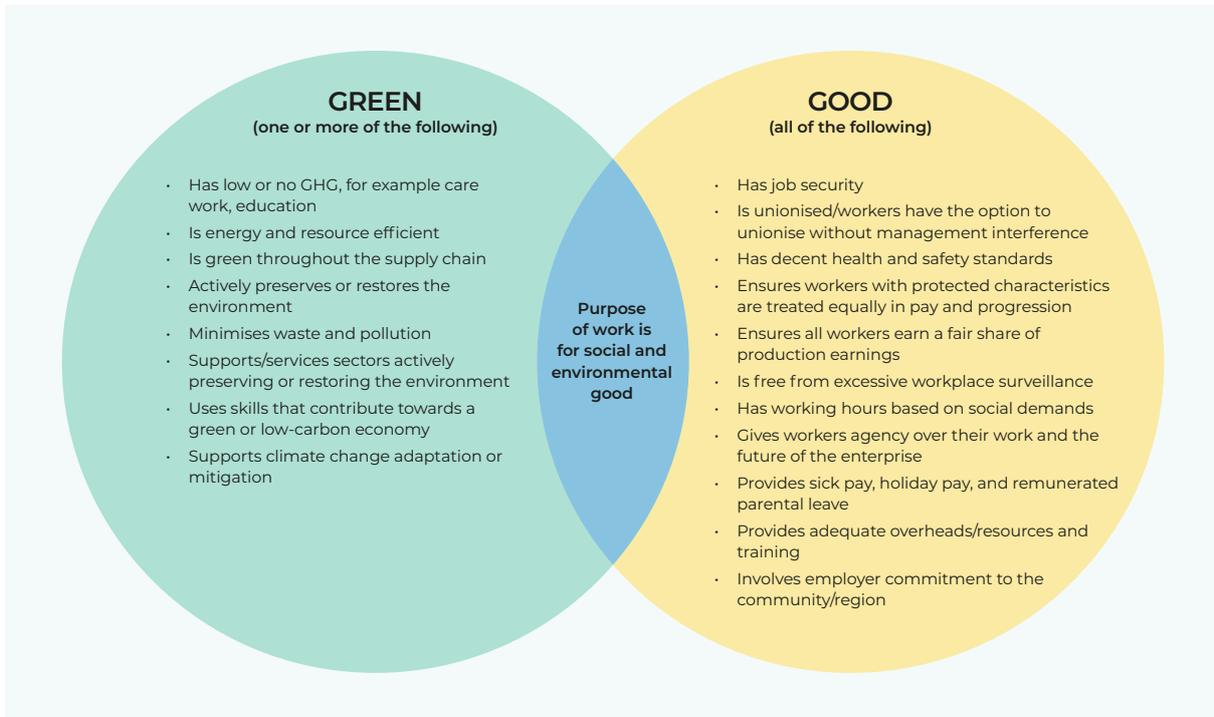


FIGURE 3: NEF FRAMEWORK FOR GOOD GREEN JOBS.



Source: NEF.⁷⁶

2.3 THE QUALITY OF JOBS

Announcements about the economic benefits of the green transition are usually good at churning out numbers, but they rarely talk about the quality of jobs, or where jobs will be located. The CERIC survey found that at least 10% of workers think that they might need to move away to find employment because of the green transition.⁷⁷

In 2021, NEF's *Powering the Transition* report published a framework for good green jobs (Figure 3). The CERIC survey adapted this framework to ask workers about their perceptions of whether jobs in the green economy will be good. They found that only 2 in 5 workers think that better quality jobs will arrive because of transitioning to a greener economy.⁷⁸ Only around 15% of workers expect to be able to access green jobs that have better pay and conditions than the job they currently have, and over a quarter (27%) feel that they will need to learn new skills – this proportion is 33% for Y&H workers.⁷⁹

This is not surprising. There is as yet no guarantee that green jobs are good jobs. Trends in the labour market are of deregulation and work casualisation. In the UK, job quality has decreased in recent years across a range of indicators including further reductions in collective bargaining power and working conditions, a rise of zero-hour contracts and agency workers, and a proliferation of outsourcing and subcontracting.⁸⁰

Although some research has suggested that workers are mainly motivated by higher pay, progression, and social status, most of the respondents to the CERIC survey who expressed interest in working in green jobs (n 1,306) cited “the interesting nature of jobs in the green economy” as the most important factor, followed by the “perceived meaningfulness work that helps reduce or halt climate change”.⁸¹ Promoting green jobs as both interesting and socially valuable should not diminish the importance of high-quality jobs or suggest that working conditions are not a primary concern of many workers. Rather, these findings indicate that workers are attracted to jobs that produce a tangible sense of social value that is a distinct but often invisible component of job quality.⁸² Developing green skills in the workforce cannot be detached from ensuring that green jobs are good jobs.

2.4 FILLING THE GAPS

There have been some attempts to specifically quantify the green skills gap at the national level. The Grantham Institute at the London School for Economics (LSE), and the think tank Onward, have both come up with similar estimates of about 10.5% of the workforce (roughly 3.2 million workers) currently in need of reskilling as a result of the green economy.^{83,84,85} However, both methods have limitations. Onward is based on the LCREE survey, and it privileges specific technical skills needed to “green the giants”^{86,87} of industry, rather than skills aligned with an economy based on reduced energy demand, consumption, and stronger social infrastructure, for example through growing the care sector. The Grantham Institute’s method considers green skills as those required by existing green sectors. It, therefore, obscures the need for whole sectors, whether classed as green or not, to overhaul their activities and therefore adapt their skills to reduce emissions.

2.4.1 Skills challenges across sectors

There have been increasing levels of skills-shortage vacancies across the economy – from 85,000 in 2011 to 210,000 in 2019 – with over 1 in 3 vacancies hard to fill in the construction and manufacturing sectors.^{xvi}

According to the LSE, construction, manufacturing, and transport are the sectors with both the greatest skills challenges – up to 25% of workers needing reskilling – and the best opportunities to make the most of existing skills.⁸⁸ Of 218,000 apprenticeship starts supported in 2018–19, just under 9,000 (4%) were in construction.⁸⁹ Between 2016 and 2020, the UK’s apprenticeship starts in engineering and manufacturing fell from 75,000 to 52,000.⁹⁰ Manufacturing businesses have said that the greening of their activities can be difficult to implement and are often hindered by the lack of technical and green skills within the UK workforce.⁹¹ In February 2022, the Minister for Skills announced a new Apprenticeships in Manufacturing (AiM) group to grow the number of high-quality apprenticeships in the manufacturing sector, including the number of small and medium enterprises (SMEs) offering apprenticeships and apprenticeships in new and net zero sectors.⁹²

Being able to identify the most needed skills across sectors can help avoid competition for skills between sectors. For example, we know that we need to increase the offer and uptake of STEM (science, technology, engineering, and math) skills. But, since 2012 the number of vocational qualification certificates awarded for STEM has fallen by 33%.⁹³ There is – and there will continue to be – growing demand by businesses for skills in leadership, emotional intelligence, and communication – the sort of skills that if available across the workforce, could give more workers a chance to secure a good, well-paid job.

We have done a high-level analysis of the green transition and skills’ needs across different industries, using our expanded definition and classification of green jobs (Section 2.1). Table 7 illustrates the potential for job protection and creation in all industries reviewed, as well as the skills and workforce challenges that must be overcome. It demonstrates how there’s enough information to guide investment in skills training, linked to growing the green economy, and the geographical distribution of some of those needs.^{xvii}

TABLE 7: GREEN TRANSITION AND SKILLS NEEDS ACROSS A FEW SELECTED INDUSTRIES

Sector	Transition needs and opportunities for job creation	Reskilling needs and example occupations	Challenges	Geographic concentration
Manufacturing	More low-carbon solutions (eg low-carbon hydrogen, domestic and industrial retrofit, deployment of carbon capture, utilisation, and storage (CCUS) solutions); production of low-carbon goods (eg EVs, battery technology, green steel, heat pumps and increased remanufacturing – using recycling methods). Yearly demand for 124,000 engineering roles across the UK economy. Smart systems technologies including battery storage could create 24,000 jobs.	Significant overlap with existing skills (eg 11.5% of current vehicle technicians are EV qualified). ⁹⁴ 50,000 workers in automotive need retraining or upskilling by 2025. ⁹⁵ Increase in demand in resource efficiency, carbon accounting, and lean manufacturing skills. Green skills needs at RQF levels 4+. Production operators and equipment technicians require level 2-3 qualifications. Occupations: a range of engineers, production operators, and equipment technicians (75% of jobs in gigafactories).	An ageing workforce that might find it difficult to reskill, especially to radically different processes. Without public intervention, some multinational companies are moving manufacturing jobs overseas. The sector is also highly ‘un-diverse’.	Concentrated in areas with existing capacity for example, North of England, the Midlands and Wales. Opportunity to create new manufacturing centres that are more spread out across the country.
Public transport and mobility	Significant expansion of public transport networks, including electrified buses and trains, to reduce car travel. ⁹⁶ And a need to redesign towns and cities to support more sustainable mobile infrastructure, for example walking and cycling.	Minimum reskilling needs, for example, upskilling of public transport drivers to adapt to electrified vehicles. Better utilisation of urban design and planning skills. Occupations: bus and train driver, architect, designer, urban planner, maintenance technician.	Low pay and conditions, and poor service, by private operators. A cultural shift is required to increase sustainable mobility options such as walking, cycling, and taking public transport.	Public transport access is unevenly distributed. Potential to deliver needed investment in the Northern Powerhouse Rail project and other projects in the North and to expand bus networks, particularly in rural and coastal areas.

xvii Some sectors are missing from our table. For example, the GJT looked at sectors that are important to enable decarbonisation, such as science and innovation for climate change, green finance, and the circular economy. In the medium (2030-2039) to long-term (2040-2050), we might see the development of more technologically advanced concepts e.g., hydrogen storage in salt caverns, synthesis of fuels from captured carbon dioxide. These have not yet been deployed at scale and the full extent of the skills required is currently unknown. GJT says these sectors need to grow and be made appealing to younger generations to continuously attract new entrants, especially given the ageing workforce in the engineering and energy sectors.

Construction	Urgent need to retrofit all buildings, more sustainable methods and materials for new builds. Low-carbon infrastructure including new rail and active travel networks. 50,000 new retrofit coordinators and 50,000 new heat pump installers by 2030; 86,500 project managers with an understanding of the retrofit process by 2028. ⁹⁷	Significant skills gaps in low-carbon materials and methods in buildings and infrastructure. Upskilling of insulation installers and gas engineers. More demand for surveying, design and energy evaluation, logistics and onsite assembly skills. CITB estimates training 12,000 workers p/a (for four years) in retrofitting buildings; between 7,500 and 15,000 heat pump installers p/a within 7 years. ⁹⁸ Occupations: surveyor, plasterer, floorer, energy assessor, glazier, engineer, trades supervisor.	Hard to coordinate skills provision due to sector fragmentation; an ageing workforce; and a lack of diversity and inclusion. A critical shortage of retrofit designers and co-ordinators, coupled with education and training being mostly focused on new builds using traditional onsite techniques, and insufficient emphasis on low carbon systems. ^{99,100}	Retrofitting housing will create jobs in all UK regions. Particular attention should be given to areas with poor housing stock, in particular in the West Midlands, North West England and Scotland. The challenge is great: 80%–85% of today's homes are likely to still be standing in 2050 and even homes built in 2021 will need to be retrofitted to meet our climate objectives.
Energy	Rollout of renewables (onshore and offshore wind, solar, floating wind, marine energy) and energy efficiency across sectors. About 100,000 new jobs in offshore wind, and 27,000 in onshore wind by 2030. ¹⁰¹ 400,000 new workers by 2050 to expand and upgrade electricity networks. ¹⁰²	Construction, installation, operations, maintenance, and asset management skills. Overlapping skills with the oil and gas industry (e.g., advanced first aid, rescue, offshore-specific skills. ¹⁰³ Occupations: renewable energy technicians, engineers, scientists (eg marine biology, geophysics).	Project-by-project approach (due to a lack of public policy direction) makes it harder to scale up investment in hiring, apprenticeships, and training. ¹⁰⁴ Need for policy to support less established technologies (eg offshore and marine renewables). ¹⁰⁵	Everywhere. Floating wind and marine energy provides opportunities to expand the renewables sector into new geographic areas.
Agriculture	Shift towards a more labour-intensive agroecological system, energy and water-efficiency methods, expansion of sustainable horticulture, less chemical-intensive methods and more UK self-sufficiency.	More sustainable food production, cultivation and land management methods and technology. Occupations: farmer, farmworker, food systems specialist, agricultural technician and inspector, agroecologist.	Sector lacks a transition plan. An ageing workforce and strong reliance on seasonal migrant workers, often with very low pay and conditions. Review of land ownership models and regulatory framework to incentivise changing practices.	Mainly rural and coastal, but opportunities to expand by encouraging small-scale urban and peri-urban agroecology.
Nature restoration	Expanding woodlands, tree planting, rewilding, restoration of peat bogs and coastal habitats, monitoring and administering marine protected areas. There is also a need to bring more social scientists into nature projects.	Some occupations may require upskilling in technical and social sciences. Occupations: forest manager, biologist, social scientist, conservation worker, ecologist, and environmental engineer.	Need to make the sector more accessible to racialised minorities. The potential for carbon sequestration through the restoration of coastal and marine habitats is still low on the policy agenda.	2/3 of land most suitable for tree planting is in places with higher-than-average labour market challenges e.g., much of Scotland, parts of Wales and parts of the Southwest; coastal communities with carbon-absorbing seagrass.

3. SKILLS POLICY REFORM

The current skills and education system in the UK is structured to serve the needs of the market economy, not necessarily the needs of people and places. Nonetheless, it is failing both. Businesses are struggling to secure the skills they need, which in turn impacts negatively on productivity and growth. Although we have legally binding targets to achieve a low-carbon economy, we are nowhere near having a workforce ready to deliver the big decarbonisation projects we need in the next two decades.

When asked about the green transition, workers are more than willing to move into new roles should their current ones become obsolete, but they say that funded access to quality training and skills development to support them through any adaptations required, as well as job quality, are essential.^{106,107} In addition to helping people to navigate a changing world, green skilling the workforce will be vital to increasing productivity, which has stagnated over the last 12 years,¹⁰⁸ and a chance to invest in long-term training infrastructure and a renewed culture of lifelong learning.¹⁰⁹

Furthermore, skills policy cannot be just about technical skills. The McKinsey Global Institute estimates that, by 2030, more than 10 million workers in the UK could be under-skilled in leadership and management, decision-making, and advanced communications.¹¹⁰

This report has particularly focused on the challenge of delivering what we call a ‘just skills transition’: tackling existing barriers to retraining and upskilling so that we close the green skills gap and leave no worker behind. Delivering this requires a managed, collective effort and social dialogue, a task that government initiatives so far have not been able to address.

We outline three particular reforms: a skills transition through social partnership, targeted policy and investment to address key barriers to learning, and a national skills and labour market strategy.

3.1 A SKILLS TRANSITION THROUGH SOCIAL PARTNERSHIP

Social partnership is a working relationship between trade unions and employers, aimed at improving the prosperity of the company and its employees. It refers both to cooperation at an employer level and to institutional arrangements for dialogue at a national, sectoral, or local level.¹¹¹

Many advanced economies have long-established institutions – either at the national or regional level – which are based on social partnership, and provide strategic oversight over the skills system.¹¹² Table 8 provides an international comparison of social partnership approaches. In Germany, in addition to agreeing on the overall National Skills Strategy, trade unions are involved in leading several of the actions, including working with employers to understand how the changes to the world of work will impact workers.^{113,114,115} In the UK, the Welsh government’s Council for Economic Development is organised on a tripartite basis so that the employers’ voices are balanced by those of the workers.¹¹⁶

Compared to other advanced economies, and indeed to other nations within the UK,^{xviii} England has relatively limited formal arrangements for social partnerships in the skills system. Only 13% of organisations in the UK currently have a collective training agreement.¹¹⁷ This needs to change. We need to set formal arrangements for social partnerships in the English skills system. A shift to a social partnership approach could begin through a reformed model of Local Skills Improvement Plans (LSIPs).

xviii In Scotland, the government has set an ambition for Just Transition Plans that not only address emissions’ reduction in line with Scotland’s net zero target by 2040, but that also supports the delivery of National Just Transition Outcomes (NJTOs). The NJTOs still lack specificity, measurable goals and targets, but the initiative provides a national direction and framework for social partners to engage in discussions about how just transition goals will be achieved.

TABLE 8: INTERNATIONAL COMPARISON OF SOCIAL PARTNERSHIP APPROACHES.

	Ladder of social partnership	Type of social partnership	Countries
 Tendency for higher levels of investment in skills and training	Sharing of decision-making power	Social partners define and manage the training system	Austria, Denmark, Germany, Iceland, Italy, Netherlands
	Formal role in strategic planning	Social partners contribute to the definition of the training system	Belgium, Canada (AB and BC), Finland, France, Japan, Luxembourg, Mexico, Norway, Poland, Slovenia, Switzerland, Turkey
	Formal consulting role	Social partners have a consulting role	Canada (QC) Czech Republic, Estonia, Greece, Ireland, Israel, Latvia, Lithuania, New Zealand, Portugal, Slovak Republic, Spain, Sweden
	No formal role	There is no statutory requirement for social partnership	Hungary, United Kingdom, United States

Source: Figure adapted from OECD 2019, Figure 3: Social partner involvement in the governance of education and training systems in some advanced economies.¹¹⁸

The benefits of a social partnership approach include the following:

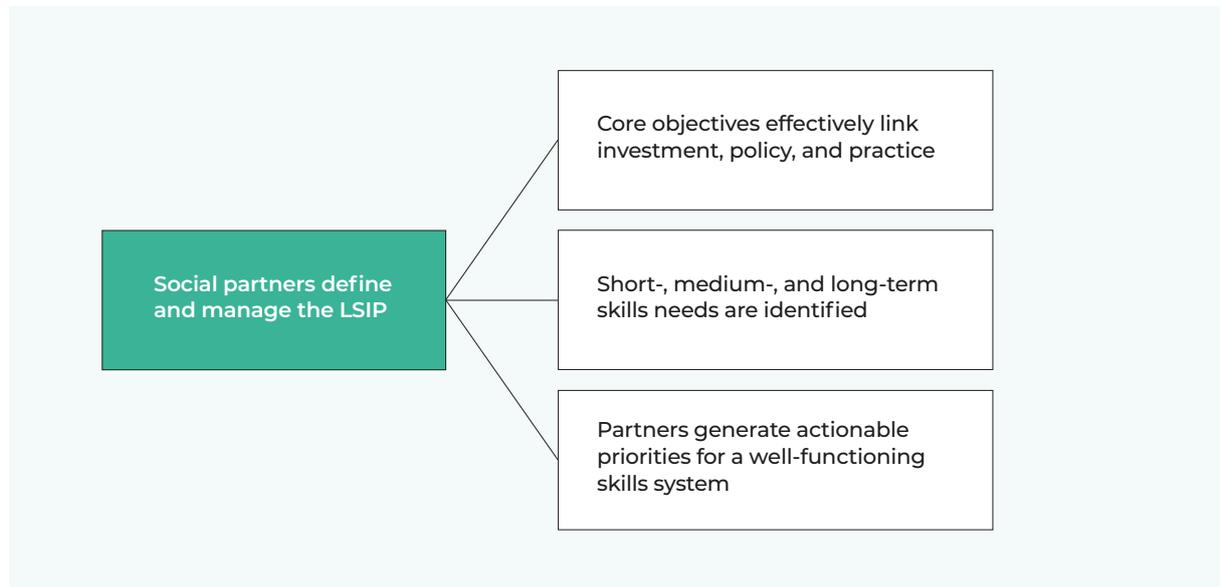
- The ability to adapt gradually to changing economic conditions, through collective bargaining systems based on quality industrial relations and government-backed space for social dialogue.¹¹⁹
- Increased investment and more equal access to training by employers.¹²⁰ Training schemes based just on employers' needs, rather than the needs of workers and adults seeking work, risk leaving out millions of people in precarious employment, self-employment, and unemployment.¹²¹
- Better representation of the longer-term needs of employees, including ensuring that training is sufficiently broad and transferable.¹²² When employers are both designing training standards (eg apprenticeships), and an employer-led body is signing them off, there is an inevitable risk to quality.¹²³

3.1.1 A reformed model of Local Skills Improvement Plans

The UK government's current guidance for LSIPs defines them as *a process for change* as well as *a report*. Building on proposals by the Trades Union Congress (TUC)¹²⁴ and further education (FE) college leaders, a reformed model for LSIPs should follow four key principles:

- **Social partners define and manage the LSIP.** Social partners should include (at a minimum) employers, unions, education providers (FE and higher education (HE)), and local and mayoral combined authority (MCA) governments, as opposed to the existing model, which is employer-led only.
- **Core objectives effectively link investment, policy, and practice.** A comprehensive picture of the existing skills challenge and system is more likely to be achieved when social partners are involved. Core objectives should include the development of training opportunities that respond to workers' needs to engage in learning.

FIGURE 4: PROPOSED REFORMED LSIP MODEL.



Source: NEF.

- *Short-, medium-, and long-term skills needs are identified by employers as well as the workforce.* Skills audits where workers have an established channel to report their training needs and concerns in relation to possible lack of skills would give employers across sectors a better sense of existing skills in the workforce and how these can be better used. This would also give workers more voice in training, ensuring that they feel confident in facing the green transition. This stage should establish a cycle of responsibilities between public investment in jobs and skills (including considering the roles of MCAs as commissioners of adult skills provision and other stakeholders such as local enterprise partnerships (LEPs) and local job centres); employers' response to the needs of the transition (eg greening their activities and investing in reskilling its workforce); education providers' response to training needs; and workforce engagement in training.
- *Demands of social partners are brought together to generate actionable priorities for a well-functioning skills system.* This could also include good jobs charters to set the conditions to improve existing job quality and ensure every new job meets those standards. The priorities identified here can then be actioned by the social partners (eg bidding for an LSIF) based on an action plan that outlines roles, responsibilities, and accountability. The existing LSIP guidance states that "new

provision to reflect employer need will only work if learners then choose to go on those courses", hence the crucial need to elevate workers' voices in this process.

Furthermore, FE providers have called for one overarching model that better integrates LSIPs and the Strategic Development Fund (SDF), to strengthen their strategic capacity and responsibility to work alongside LSIP partners to develop their offer to employers in the locality, including on innovation and advice to employers, alongside skills provision.¹²⁵ There should also be greater consideration of the differences between large companies and SMEs, and particular attention should be paid to those in informal contracts or self-employed. Small Business Councils and SME consortia can play an important role in identifying and pooling SME training needs, as well as organising programmes that cater to these needs.¹²⁶

3.2 TARGETED POLICY AND INVESTMENT TO ADDRESS KEY BARRIERS TO LEARNING

To raise the qualifications and skills levels of the average worker and ensure that those most vulnerable can access green and better jobs, we must address key barriers to participation in learning, including affordability, time, and less-tangible barriers (such as the situational and dispositional barriers which we highlighted above).

3.2.1 Tackling the twin challenges of upskilling and income security

There are currently no policy solutions that successfully address the twin challenges of upskilling and income security. Well-funded and supportive skills and employment programmes can help people access the training they need to secure new, well-paid, jobs. Decent levels of social security support can help ensure that, when industrial change threatens to, or does indeed, lead to job loss, the financial impact on families is lessened.

Different countries have adopted different co-funded models between government and employers, or co-funding coalitions of employers, to support workers' upskilling. Examples of incentives to businesses include income tax deductions and public grants for subsidising training, especially for small businesses.¹²⁷ In Singapore, the government's Lifelong Learning Endowment Fund both subsidised the provision of training on the supply side and provided credit for individual training accounts to inspire and empower learners on the demand side.¹²⁸

In the UK, the Welsh government's ProAct scheme, established in response to the 2008 recession, tied the wage subsidy for short-time work to the provision of training. The policy, which had a relatively short lifespan between 2009 and 2010, performed admirably under evaluation, protecting over 1,800 jobs at a value of nearly £75m, with positive feedback from both employers and employees, and strong financial returns.¹²⁹

In October 2021, NEF launched a proposal for a Future Skills Scheme,¹³⁰ which builds on lessons from the ProAct scheme. The scheme's primary objective is to upskill and reskill those members of the UK's workforce who are in jobs that are vulnerable to disruption and economic restructuring. The scheme would offer training support to people while they are in work rather than after they have become unemployed, to help reduce time spent unemployed and retain worker confidence and job readiness.

NEF's previous analysis suggested Welsh government's bespoke package delivers upskilling to some 32,000 additional adult learners every year, with these programmes focused almost exclusively on supporting individuals with more challenging circumstances to access training for work.¹³¹ As

we explored in Section 1, the support provided in England is focused at the lower qualification levels (RQF levels 2 and 3) but it is unlikely that levelling-up achievement at these levels will be enough to bring green jobs to held-back communities. The greater levels of support provided in Wales span right from the lowest to the highest levels of qualification and training, with the Welsh government also offering a more generous financial support package for HE.

3.2.2 Tackling less-tangible, dispositional barriers to learning

Financing mechanisms are not enough to increase the level of engagement in learning. It needs to be complemented with more holistic and proactive approaches that effectively address less-tangible, dispositional barrier.

The UK has examples of place-based skills development initiatives operating at the workplace, community, and local authority levels. The TUC's Union Learning Fund (ULF), the Workers' Educational Association (WEA), and council-run adult and community learning (ACL) programmes all have a track record of addressing the particular challenges of reaching the groups most at risk of being left behind by the transition. These initiatives can have a locally contextualised and delivered offer, as well as a tailored approach to support those furthest from the education system – or most at risk of being left behind by national programmes – to gain confidence and access skills and training. However, these initiatives are often at the margins of discussions about the skills transition – if considered at all by policy and investment at the UK government level.

At the end of March 2021, after 23 years, the UK government revoked the ULF in England, despite it having helped hundreds of thousands of workers access learning through a network of 40,000 Union Learning Representatives (ULRs) from 50 unions, in over 700 workplaces. In its June 2020 report on skills, the Industrial Strategy Council made several observations about the benefits of ULRs and the ULF in meeting government objectives.¹³² The relationships unions have with employers allow them to negotiate employer support and time off to train. Learners can access support through their workplaces, relevant to their work, and at a time and place convenient to them.

Of the government-funded training that reaches lower-skilled workers and those in deprived areas, 29% of this money still goes to adults in the most affluent 40% of areas.¹³³ The cut to ULF in England has further diminished opportunities for those already further from the education system.¹³⁴ With the loss of funding in England, many of the Learning Projects ended, leaving trade unions and ULRs without that support. Devolved ULFs continue in Scotland and Wales, and the South Yorkshire MCA decided to fund a Skills Project Worker to continue to work with unions and their ULRs in recognition of the value union learning brought to the area.¹³⁵

3.3 A NATIONAL SKILLS AND LABOUR MARKET STRATEGY

There is still little and poor integration between skills initiatives and the needs of the green transition. The potential for green job protection and creation across the economy is not being achieved. The government's new British Energy Security Strategy, for example, has failed to back the measure that would make the most significant difference to household energy bills and create jobs: building retrofits.

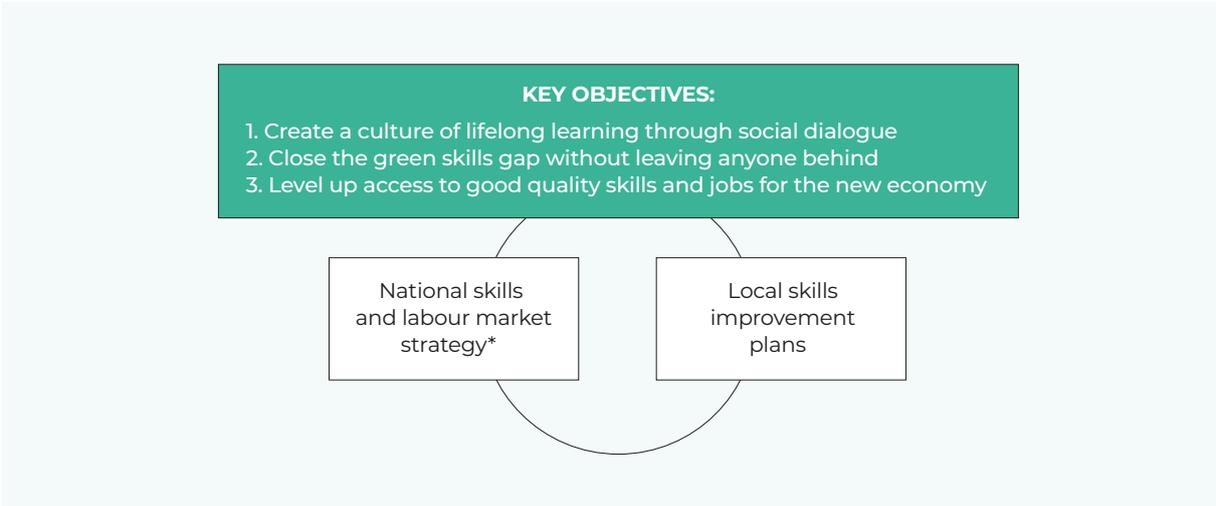
Back in Section 2.4, we looked at how there's enough information across several sectors important to the new economy to guide investment in skills training, with benefits for skills development and job creation across the country. As outlined in Section 1.4, we found that policy interventions, including the Apprenticeship Levy, the National Skills Fund (NSF) and the Lifetime Skills Guarantee have so far been insufficient in addressing the general skills deficit, let alone supporting the workforce to adapt to the needs of a low-carbon economy.

The UK government should develop, alongside social partners, a national skills and labour market strategy, which provides an overarching assessment of the varying degrees of green skills needs and green job opportunities across the whole economy. A national strategy would support local and regional efforts in linking green skills to green jobs more effectively, as areas maximise the opportunities for job creation within their geography and build on their assets.

Crucially, to succeed, a national skills and labour market strategy must be supported by the following:

- *Increased public investment in adult education.* More work is needed to assess the level of investment needed, but at a minimum, we should revert to 2010–11 levels of spending.¹³⁶
- *Greater devolved control over the skills system at the regional level.* In June 2022, the mayor of Greater Manchester, Andy Burnham, called for full devolution to mayoral regions of the post-19 skills system, and a stronger role in technical and professional education for 16–19-year-olds to make sure there is a real connection and line of sight between the technical education offer and jobs in our labour market.¹³⁷ Following the launch of the *Levelling-up* white paper in March 2022, the mayor of West Midlands, Andy Street, said that more power over skills funding is needed.¹³⁸
- *Programmes at national and/or regional and local levels to support SMEs' access to knowledge and information on climate and environmental sustainability.* A great challenge to the green skills transition is that most businesses don't know what their green skills needs are and sometimes are not even sure what needs to happen to green their business. A national programme should make available knowledge of carbon literacy, green skills, resource efficiency, and environmental awareness.

FIGURE 5: PROPOSED POLICY STRUCTURE AND OBJECTIVES TO DELIVER THE SKILLS TRANSITION. A NATIONAL SKILLS AND LABOUR MARKET STRATEGY SETS THE OVERALL FRAMEWORK TO SUPPORT LOCAL PLANS, WHICH IN TURN PROVIDE CHECKS AND BALANCES FOR THE NATIONAL STRATEGY.



Source: NEF. *A national skills and labour market strategy should outline the skills needed to help deliver on the government's net zero target, adaptation to climate change, and other environmental goals; and how the workforce will be supported to train and access local good jobs.

4. CONCLUSIONS

Skills and jobs are two faces of the same coin. You can't solve one without addressing the other. Greater investment in adult education in the UK must be part of a coherent programme of greater public investment and policy direction to protect and create the jobs needed to deliver net zero targets and sustain a low-carbon economy.

Understanding and addressing the many challenges facing the skills transition are critical to not only meeting the needs of workers now but also to helping transform the skills and education system so that it serves the needs of people and places.

This is particularly crucial at a time when the UK is facing an unprecedented cost of living crisis. The high cost of essentials, such as home heating, food, and transportation, set against the low levels of state support for living costs while studying, threatens to render education, upskilling, and retraining inaccessible to those who need it most.

Policy schemes so far have been set with limited timeframes and undermined employers' confidence and investment in training. Crucially, any further work must better address the quality of jobs and where jobs will be located, promoting green jobs as both interesting and socially valuable, and ensuring they are good, well-paid, unionised jobs.

In this report, we have outlined three key principles for reform to put us on a path of delivering a skills transition that is fair – meaning, it tackles barriers to retraining and upskilling, so that no worker is left behind – and helps close the green skills gap.

- A skills transition through social partnership.
- Targeted policy and investment to address key barriers to learning.
- A national skills and labour market strategy.

By making these choices as a government and as a society, we can ensure that a fair skills transition to a new green economy is finally realised

ANNEX A

ANALYSIS OF CURRENT GOVERNMENT SKILLS INITIATIVES

Intervention	What is it and who is it for?	How is it working? Is it addressing the green skills gap?
Kickstart Scheme	Short (six-month) work placements for those aged 16–24 who are on universal credit and are deemed to be at risk of long-term unemployment. ¹³⁹	Too early to assess the impact of this scheme. No target has been set, apart from an ambition to create hundreds of thousands of work placements. By September 2021, over 63,000 young people had started a Kickstart job. ¹⁴⁰ It is not clear yet how the Kickstart Scheme is helping to address the green skills gap.
Apprenticeships	At least 20% of working hours in off-the-job training for 1–5 years at intermediate (GCSE) to degree level, funded by the Apprenticeship Levy. ^{xix} Available to over 16-year-olds not in full-time education. Some support is limited for those with an Education, Health, and Care Plan. ¹⁴¹	Seen as entry-level roles, often extremely low-paid (as little as £4.30 p/h for 16–18-year-olds or 19+ in their first year). Despite spending on apprenticeships rising between 2010–11 and 2020–21, the number of new apprentices has been in decline. Programmes do not suit all employers. ¹⁴² Levy funds are capped at £27,000 but more advanced programmes in, for example, engineering can cost £100,000. ¹⁴³ One hundred sixty-one apprenticeship standards can or do contribute to net zero. ¹⁴⁴ The government has set some green apprenticeships (eg wind turbine maintenance and operations, engineering technicians, and environmental practitioners) ¹⁴⁵ but gaps still exist. For example, updating apprenticeship standards to provide green and low-carbon skills.
T-levels	Two-year course equivalent to 3 A-levels in vocational subjects, including a 9-week work placement. Entry requirements are set by individual institutions, but it is expected that students will have completed GCSEs.	Introduced in 2020–21 and students will not begin to graduate until 2025. Only 44 institutions offered any of the first three T-levels when they were launched, and of these, two-thirds missed their enrolment targets. ¹⁴⁶ There are 193 approved providers, some of which only offer one T-level while others have not yet launched their offer. ¹⁴⁷ Of the subjects available so far none are specifically aimed at green skills. For example, 'construction' only has a small portion of the core content dedicated to "sustainability and the environmental impact of construction".

xix Apprenticeships are funded by the Apprenticeship Levy (in operation since May 2017) – a 0.5% tax on all employers with an annual wage bill of £3m or more. Employers can draw on funds to support training from approved providers.

<p>Free level 3 courses for jobs (part of the Lifetime Skills Guarantee, LSG)</p>	<p>No tuition fees, for adults without A Levels or equivalent, to access RQF level 3 (400+ qualifications considered a priority by the government, eg adult care, some construction-related, hospitality, accountancy and digital skills).¹⁴⁸ Full-time learners eligible for universal credit still receive it while studying.</p>	<p>The lack of a long-term funding settlement creates uncertainty that could undermine investment.¹⁴⁹ It is available for about 33% of the adult population (18–64 yrs) but excludes for example 1 million low-paid workers.¹⁵⁰ Many people will not be eligible as the guarantee is available only to those without A-levels or equivalent qualifications. It excludes a long list of sectors,¹⁵¹ including some hit hardest by the pandemic, such as tourism and travel, sport, and the performing arts.</p> <p>It does not include key courses required for urgent decarbonisation and energy-efficiency projects e.g., domestic retrofit training.</p>
<p>Lifelong Loan Entitlement (part of LSG)</p>	<p>A student loan for the equivalent of four years of post-18 education (aimed at RQF levels four to six), which can be used flexibly across learners' lifetime, full or part-time, for modules or full qualifications. Available to any adult wanting to pursue HE.</p>	<p>Only starts in 2025. Not clear how the scheme interacts with existing student loans. For example, whether those who have already accessed 3+ years of loans for a first degree will be entitled to the full four years. Many learners need grants rather than loans to avoid the debt entailed. A sensible proposal but lacks detail. Courses classed as "approved higher technical qualifications" will be eligible for extra funding, but it is not clear how this will be determined and what will happen to other courses.¹⁵²</p>
<p>Skills Bootcamps (part of LSG)</p>	<p>Public funded, up to 16 weeks of training courses, for over 19-year-olds employed, self-employed, or recently unemployed. Guaranteed job interview; or access to a better role if training with an employer; or access to new opportunities for the self-employed.¹⁵³ More than 100 courses available in digital, green and HGV driving, and technical skills (incl. engineering, construction and manufacturing).</p>	<p>Launched in 2020 in eight pilot areas. Most courses don't require prior knowledge of the subject; some may have additional entry requirements. Opportunity to build up sector-specific skills and fast-track to an interview with a local employer.¹⁵⁴ Additional investment from the government from the National Skills Fund, due to high demand, to enable greater availability across the country and a wider range of course subjects on offer.</p> <p>£8m of the total funding is going to construction and engineering courses.^{155, 156} Retrofit courses are only currently available in London and the East of England.¹⁵⁷ Upcoming roll-out of courses in solar energy installation, sustainable agriculture, nuclear energy deployment, and green transport.^{158, 159}</p>

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