

Racing to Net Zero

The role of post-16 education and skills

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Contents

Introduction

Part One: A Challenge for Us All

- 9 Shaun Spiers, Green Alliance**
Greening the Economy, Greening the Environment
- 11 Stephen Evans, Learning and Work Institute**
A More Ambitious Net Zero 'Economic, Jobs and Skills' Plan
- 13 Paul Nowak, TUC**
Workers, Skills and the Net Zero Economy

Part Two: Green Jobs and Green Skills

- 16 Duncan Brown, Emsi**
The Demand for Green Jobs and Green Skills
- 19 Ewart Keep, University of Oxford**
Labour Market Intelligence for Green Jobs and Green Skills

Part Three: Apprenticeships, Employability Programmes and Green Jobs

- 23 Jane Hickie, AELP**
Filling Green Jobs with Level 2+ Apprenticeships
- 26 Calum Carson, ERSA**
Filling Green Jobs through Employment Support Schemes

Part Four: Post-16 Providers and Net Zero

- 29 David Hughes, Association of Colleges**
FE Colleges, Upskilling, Reskilling and Net Zero
- 31 Susan Pember, HOLEX**
Adult and Community Education and Net Zero
- 34 Nick Hillman, HEPI**
Universities and Net Zero

Part Five: A Green Curriculum for Post-16 Education

- 38 Bill Watkin, Sixth Form Colleges Association**
16-18 Education and Net Zero
- 40 John Widdowson, Former College Principal**
16-18 Level 3 T Levels and Net Zero
- 42 Rebecca Conway, Federation of Awarding Bodies**
Net Zero and the 'Level 3 and Below' Curriculum
- 45 Charlotte Bonner, Education and Training Foundation**
Education for Sustainable Development and the FE Workforce
- 47 Adrian Anderson, UVAC**
Green Jobs, Apprenticeships and Higher Technical Education
- 49 Victoria Hands and Stephen Peake, The Open University**
Education for Sustainable Development in Higher Education

Appendix

- 52 Net Zero Policy Statements**
- 62 Joining Up Net Zero and Post-16 Education and Skills Policy**

Introduction

Net Zero, G7 and COP26

Nearly every nation and state in the world has signed-up to achieving Net Zero by 2050. A consensus is building that to limit the rise in average temperatures to below 2°C, countries will need to increase the pace of reduction in emissions between now and 2035.

The seriousness of the situation has prompted members of the G7 - some of the biggest economies in the world - to conclude that the rise in temperature should not breach 1.5°C. The communiqué following the meeting of the Climate and Environment Ministers in May 2021, states:

‘We will help set the world on a nature positive and climate-resilient pathway to bend the curve of biodiversity loss by 2030 and to keep a limit of 1.5°C temperature rise within reach by making our 2030 ambitions consistent with the aim of achieving net zero emissions as soon as possible and by 2050 at the latest.’

In November, nations of the world will come together in Glasgow, Scotland at COP26 – known as the Conference of the Parties – to agree joint action to reduce carbon emissions at the required rate by 2035. The United Kingdom will chair COP26.

The UK and Net Zero

The Prime Minister has stated that the UK Government will use COP26 to work with leaders from around the world to increase the pace towards Net Zero. The UK contributes **1%** of carbon emissions produced by the world each year. The implication is that the UK will also increase its own pace to reduce its share of carbon emissions to prevent global warming.

Reducing carbon emissions at a quicker rate between now and 2035 than previous plans will add to the pace of change to our economy, environment and society. Transition to a green economy at home could lead to opportunities abroad.

Post-16 Education and Skills

Global warming and the transition to a Net Zero economy and society will reshape industries, jobs and communities. New industries will emerge and others fade away, and new job roles will be created and others lost. The impact of climate change and government action to prevent it will be complex and uncertain. Post-16 education and skills is part of the solution to achieving Net Zero *but* it will also be shaped by the journey towards achieving Net Zero.

The Pamphlet

The purpose of this contributory pamphlet is two-fold.

First, the pamphlet provides an overview of climate change and Net Zero for post-16 education and skills stakeholders. It includes a summary of key policy statements by the UN and the UK government (see Appendix), as well as a review of the latest Net Zero policy in the lead up to November’s COP26 by climate change experts.

Second, the pamphlet presents the latest thinking on Net Zero by post-16 education, skills and labour market experts. Given the central position of post-16 education and skills in reducing climate change and transitioning to a Net Zero economy and society, we invited a large number of contributors to write from a wide range of perspectives.

In line with previous pamphlets, we asked contributors to conclude their articles with three specific recommendations. Importantly, however, authors made these before the Queen's Speech and the publication of the Skills and Post-16 Education Bill.

The Campaign thanks each of the contributors to *Racing to Net Zero - The Role of Post-16 Education and Skills*. We encourage everyone to consider this rich set of contributions and recommendations.

Key Themes

By way of introduction, readers may wish to bear in mind the following themes which emerge from the pieces.

Transition not Revolution but a Faster Journey to Net Zero

Left unchecked, climate change will devastate the planet. World leaders and domestic policy makers should respond by introducing interventions which support a transition to Net Zero rather than a revolution to Net Zero. Even so, climate change policies must be brought forward sooner than 2050 so greater progress towards reducing carbon emissions is achieved.

A UK Green Marshall Plan

A decision to introduce policies to reduce carbon emissions faster will ratchet up the impact on our economy and society. The implication is the UK must develop a bolder economic, employment and skills response to making Net Zero happen whilst mitigating any negative consequences of racing to Net Zero. This might be thought of as a UK Green Marshall Plan.

Estimating the Number of Green Jobs

The estimated number of green jobs to be created as the economy transitions from net zero ranges from hundreds of thousands to many millions. The Department for Business, Energy, and Industrial Strategy (DBEIS) and the Department for Education (DfE) have established a *Green Jobs Taskforce*. Providing a well informed forecast of the demand for green jobs on the journey to Net Zero will be critical for calibrating the scale of the skills response by the post-16 education and skills system.

Intermediate Level and Graduate Level Green Jobs

Current evidence suggests there is demand for intermediate level as well as graduate level green jobs. Data relating to upskilling and reskilling at Level 3 and below and Level 4-8 to meet the skills needs of different green jobs will be required.

Green Gig Jobs and the Journey to Net Zero

Data on the number of green jobs to be created as the UK economy transitions to Net Zero needs to differentiate between secure employee green jobs and insecure green gig jobs (including self-employment, agency and temporary workers). Young people and adults might turn their backs on green jobs if these employment opportunities take the form of insecure self-employment, agency and temporary work.

Skills Training and Green Gig Jobs

Even if young people and adults are prepared to move into green gig jobs, the government cannot presume they will be able to participate in the necessary upskilling and reskilling. Fully funded education and training through fee grants and fee loans is helpful but uncertain earnings means gig workers could put earning before learning.

Green Jobs and Apprenticeships

Apprenticeships are jobs. Apprenticeships can achieve the double goal of increasing levels of green employment and increasing the supply of green skills from Level 2 to Level 8.

Green Jobs and Employment Programmes

Unemployed and low-wage adults claiming Universal Credit are a source of labour to fill green jobs. The full range of job search and employment programmes administered by the Department for Work and Pensions can contribute to meeting the demand for green jobs although active labour market schemes will need to include relevant skills training - especially at Level 3 and below - so vacancies are filled.

Differentiating between Green Jobs and Green Skills

The race to Net Zero will create green jobs, and green skills within existing jobs. The post-16 education and skills system will need to respond to both.

Upskilling and Reskilling at 'Level 3 and Below'

Young people and adults will need to upskill and reskill for green jobs, and green skills within existing jobs. The post-16 sector education and skills system will need to deliver upskilling and reskilling at Level 3 and below as well as Level 4-8 as the economy and society transitions to Net Zero.

Embedding 'Education for Sustainable Development'

Providers in different parts of the post-16 education and skills system are developing strategies to embed Education for Sustainable Development in Level 2 to Level 6 qualifications and academic and vocational courses (including T levels and Higher Technical Qualifications).

Whole Institution Net Zero Strategies

There are examples in each part of the post-16 education, skills and employability sector where whole institution net zero strategies are being implemented. These strategies cover decarbonising estates, incorporating Education for Sustainable Development in teaching and learning, and providing a voice for learners of all ages to initiate change to reduce global warming.

Supporting Green Innovation by Employers

Post-16 institutions, especially universities and FE colleges, have a role to play in supporting employers to innovate in green technology. In turn, providers must supply the green skills necessary for employers to harness green technology.

World Class Research Capability

Many of the answers to the great challenges facing the world are found by world class research at universities and research foundations in the UK. This is true of the research contribution to climate change and transitioning to Net Zero by 2050.

Extra Public Funding

Extra funding will be required to enable the post-16 education and skills sector to deliver upskilling and reskilling at Level 3 and below and Level 4-8 for green jobs, and green skills within existing jobs.

The Skills and Post-16 Education Bill

In May 2021, the government published the Skills and Post-16 Education Bill. According to the Prime Minister, the new laws are the **'rocket fuel'** required to level up the country.

Prime Minister to revolutionise skills and training opportunities

"I'm revolutionising the system so we can move past the outdated notion that there is only one route up the career ladder, and ensure that everyone has the opportunity to retrain or upskill at any point in their lives.

The challenges of the last year highlight the need to rethink and rebuild, bringing our skills and education system closer to the employer market and widening the opportunities that are available for all as we build back better from the pandemic.

These new laws are the **rocket fuel** that we need to level up this country and ensure equal opportunities for all. We know that having the right skills and training is the route to better, well-paid jobs."

Source:<https://www.gov.uk/government/news/prime-minister-to-revolutionise-skills-and-training-opportunities>

The second reading of the Bill is expected in June 2021. Consultations on 'Further Education Funding and Accountability' and the 'Lifelong Loan Entitlement' are expected by the end of the summer.

Joining up Net Zero and Post-16 Education and Skills Policy

A key challenge for the government will be to join up its strategy to achieve Net Zero with the planned reform of the post-16 education and skills system. The Campaign for Learning has decided therefore to conclude the pamphlet with a short assessment of the implications of Net Zero for post-16 education and skills policy.

Julia Wright, Campaign for Learning and Mark Corney, Policy Consultant

Part One

A Challenge for Us All

Shaun Spiers, Green Alliance

Greening the Economy, Greening the Environment

Climate and Nature

Think too much about the environment and it is hard to stay cheerful. Temperatures are rising, “extreme weather events” (storms, floods droughts) increasing, species declining. Most of the focus is on climate change, but nature, too, is in trouble. The UN says that the erosion of the earth’s life support systems threatens human society. Climate and nature are two sides of the same coin: both crises must be tackled together.

Cause for Hope

But if there are plenty of reasons to be alarmed at what we are doing to our planet, there is also cause for hope. Ten years ago, serious people in British politics treated climate change as a second order issue, good for a speech or two, but not the stuff of serious politics. Ten months ago, the US President did not even go through the motions.

Around the world, with a few notable exceptions, countries are promising to cut their greenhouse gas emissions. Businesses are getting serious about the environment, not least because they understand that the young workers they want to recruit care about it. The need to tackle the nature crisis is also increasingly recognised.

COP26

The transition to a more sustainable economy and way of life is happening and will not be reversed. The growing evidence of its necessity will ensure that. The immediate catalyst for action is the UN climate conference due to take place in Glasgow in November.

Here, the world’s nations are meant to pledge reductions in their emissions sufficient to limit global heating to no more than 1.5 degrees Celsius above pre-industrial levels. Temperature rises above that point will be disastrous, particularly for the world’s poorer nations.

The rich nations of the world must also commit in Glasgow to debt relief for poorer nations and significant support to help them adapt to the climate change that is already happening. Global heating was largely caused by rich countries like ours and we have a moral duty to those who will suffer its worst consequences.

Action in the UK

In the UK, the environment featured strongly in all manifestos in the general election held in December 2019. The prime minister, Boris Johnson, has promised “the most ambitious environmental programme of any country on earth”.

The government is legally obliged to achieve “net zero” by 2050. This means that any greenhouse gas emissions the UK still produces must be offset by measures to remove them from the atmosphere. This can be done through nature-based solutions such as planting trees, managing peatland or improving soil quality, or through technology-based solutions, such as carbon capture and storage.

Make no mistake, achieving net zero will not be easy. It will require a huge national effort. Petrol and diesel cars must be replaced by electric vehicles. Homes must become more energy efficient and we must stop heating them with fossil fuels.

We need to generate much more renewable energy. We should halve our use of resources: repair more, waste less. And we will need to farm for nature and carbon, as well as food, and eat less meat.

None of this requires a hair shirt or a reduction in our quality of life. It means more nature, better health and plenty of good quality jobs as the country recovers from the pandemic.

The Great Transition

The new industrial revolution, a transition to a green economy is happening. What is in question is whether it happens fast enough to avert disaster and whether it happens with people, not just to them.

Recommendation 1

The UK government and the devolved administrations must put achieving net zero and restoring nature at the heart of their plans for economic recovery from Covid-19. The result will be warmer homes, cleaner air, more beautiful places – and lots of jobs for young people, including in the areas of high unemployment. Whether through campaigning, school strikes or just by voting, young people can put pressure on politicians at all levels to up their game.

Recommendation 2

To support the transition, the UK needs a skills revolution. We are still training people to build houses that will need retrofitting in a few years’ time or to farm unsustainably or to plan for car dependent new settlements (housing estates in the middle of nowhere, sometimes built without pavements or cycle lanes). This is foolish.

Recommendation 3

Meeting the environmental challenges of the next 30 years will require ingenuity and innovation. There are challenges to which we simply do not yet know the answers. If the UK can provide the answers and pioneer new ways of working, we will not only perform service to the world; there will be economic benefits to the UK economy. Higher education and research funding must support the transition to a level it has not yet done.

Stephen Evans, Learning and Work Institute

A More Ambitious Net Zero 'Economic, Jobs and Skills' Plan

Achieving Net Zero UK Style

Achieving a net zero economy by 2050 will require enormous changes in our economy and in how we live our lives. It will create new jobs, displace existing jobs, change the skills required in many roles, and require all of us to change our behaviours.

How do we deliver such a huge transformation? In the US, President Biden has proposed a \$2 trillion climate plan, with the twin aims of reducing greenhouse gas emissions and creating high quality green jobs. This is part of a stimulus to boost recovery from coronavirus, as well as tackling climate change.

The UK and US governments have the phrase 'build back better' in common, but beyond that there's two big differences in approach.

Scale

We shouldn't underplay the transformation that has already taken place in the UK economy, but we'll need to accelerate progress to hit net zero by 2050 while the green measures introduced as part of economic stimulus are pretty small next to the US. The economy has just taken a huge hit from the pandemic, and employment has taken 3-7 years to recover after previous recessions. And so, what better time to accelerate that green transition than now?

Join-up

President Biden is clear that he wants this investment to create high quality, well paid jobs and to focus on growing these in areas that have suffered economically, like the Rust Belt (in some senses the US equivalent to the UK Government's aim of 'levelling up'). We'll see how he does this in practice, but the ambition is clear and explicit.

In the UK, disjoints in policy and delivery abound. BEIS is responsible for our approach to climate change, the Department for Education is responsible for skills in England with devolved administrations responsible elsewhere in the UK, and DWP is responsible for employment policy. Meanwhile, local government also has a range of responsibilities for economic growth, regeneration, skills and employment.

We need practical measures to join all of this up. Yet the only mention of the green economy in the Skills for Jobs White Paper for England is to say we don't currently have enough higher technical skills to deliver it, while 'levelling up' and 'unemployment' each gets just a solitary mention. I know it's easier to call for more joint working than it can be to do in practice, but we should have a higher ambition and clear actions.

What would a more ambitious approach look like?

First, accelerate green investment as far as possible. That means green energy, but also so much more, including the role of adult education in promoting awareness of climate change and the measures people can take themselves. Our work on Life Skills in Europe included a strand on environmental capabilities, showing how this can be delivered in practice.

Second, make this part of economic recovery plans, focused on 'levelling up' the country and creating high quality jobs accessible for those out of work today. That means thinking about what we invest in, where we invest, and how we ensure local people have the skills for the new jobs created.

Third, understand the practical skills and employment needs of the move to net zero. In a previous role, I worked with employers to help identify the skills and jobs the 2012 Olympics and Crossrail would need and when. Requirements to take on local people and apprentices were built into contracts, and skills and employment programmes aligned to these needs.

There are similar examples across the country. We need to turbocharge this type of practical approach, and that needs to be driven locally.

Fourth, better help to enable people and employers adapt and update skills in existing jobs. That needs a broad approach to workforce development (including, but not limited to, apprenticeships). Perhaps Help to Grow, which will support with leadership and management, can help businesses develop the skills they need to make the most of new green opportunities.

Fifth, the big and unpredictable changes ahead mean we need to provide people with high quality and up-to-date information, advice and guidance.

Contribution to Levelling Up

Most people are in favour of green skills and jobs. The challenge comes in specificity. Government investment can create immediate opportunities, and we should be ambitious in making sure that contributes to levelling up and benefiting local people.

Recommendation 1

We need to be more ambitious in driving the transition to net zero and make this a central part of both economic recovery and levelling up, with a focus on high quality jobs and local opportunities.

Recommendation 2

We must understand the employment and skills needs generated from green investment and work in partnership locally to link employers, people and learning and skills providers.

Recommendation 3

We must help people and businesses understand the challenge presented by Net Zero and enable them to adapt by investing in adult education and workforce development, learning from existing green skills programmes.

Workers, Skills and the Net Zero Economy

The Great Transition

The transition to Net Zero is a huge opportunity to retool the UK's industry for a clean future and create large numbers of good quality green jobs. But this will only happen if government steps up to take much more ambitious action on skills, infrastructure, job creation, R&D and union engagement.

More Green Jobs, More Green Skills

TUC research shows that fast-tracking investment in green infrastructure could create over a million decent green jobs over the next two years. Looking further ahead, recent University of Leeds research suggests that as many as three million jobs around the UK will require significant change and/or upskilling and a further three million are in occupations that will see increased demand for their work. Many of the jobs needed to get us to Net Zero are skilled positions, from power network engineers to forest managers to building retrofit co-ordinators.

A Badly Managed Transition

But the jobs of the future will not magically appear by themselves. The big risk we face is a badly managed industrial transition. The UK could lose secure, skilled, unionised jobs in some of the hardest-to-decarbonise sectors.

Our steel plants need significant R&D investment to eventually make zero-emissions steel using green hydrogen - and stay competitive internationally. Our ports and fabrication yards are missing out on contracts to supply large-scale new offshore windfarms, due to lack of supportive policy and investment in upgrades. Creating the green jobs of the future requires an active industrial and skills policy, and investment into both infrastructure, Research and Development, and skills provision.

Sectoral Skill Demands

The skills challenge of Net Zero is not the same in every industry.

Some industries, from rail transport to plant nurseries, will need a greatly expanded skilled workforce largely using existing qualification standards.

Other occupations, like car mechanics and boiler engineers, will likely need new modular training to adapt to changing technology.

In construction, building Net Zero Energy Buildings and retrofitting old housing stock will require significant up-skilling across the workforce, to incorporate energy literacy and a co-ordinated whole-building approach.

The Skills Challenge

We need to boost opportunities for young people by expanding apprenticeships and other high quality training programmes with good pay that can support progression to green jobs. These entry routes need to be open and accessible to all with targeted bursaries for currently underrepresented and marginalised groups.

Workers will need an entitlement to paid time off work to undertake retraining. This is particularly important for workers in high carbon industries that will be most impacted by the necessary technological shifts.

And a properly managed transition to Net Zero adds further weight for a properly resourced post-16 further education sector, including appropriately recognised and rewarded FE staff. With a long-term funding settlement alongside strategic funding, FE colleges and staff would have the capacity and capability needed to create strategic hubs for green skills at colleges across the country.

Trade Unions Lead the Way

Trade unions internationally have successfully led the way in retooling for Net Zero. Canadian unions negotiated to retool several automotive factories in Ontario to make electric cars, with backing from employers as well as federal and provincial government. US unions are working with the State of New York and with employers to guarantee the right on-the-job training and union representation to every job in building offshore wind farms off the New York state coast.

The UK can meet the challenge too, by bringing unions, employers, local governments, and the training sector to the table to plan for a Just Transition. This social partnership approach underpins the high-quality skills systems in many other countries.

Recommendation 1

The Government should establish Just Transition Commissions at the national and regional levels, with representation from employers, unions, and the skills sector to manage the transition to Net Zero.

Recommendation 2

The Government should resource the FE sector to update vocational qualification standards to align with Net Zero, using Strategic Development Funding to create regional Centres of Excellence for Net Zero at FE colleges.

Recommendation 3

The Government should align infrastructure investment with a pathway to Net Zero and require framework agreements with unions for major infrastructure projects, incorporating retraining entitlements for workers.

Part Two

Green Jobs and Green Skills

The Demand for Green Jobs and Green Skills

Current Green Jobs

For all the talk about the transformation of the economy to meet the challenges of Net Zero, the number of green jobs in the UK economy is relatively small and stable. According to the latest release Low carbon and renewable energy economy (LCREE) published by the ONS, there were around 202,000 full-time equivalent jobs in the sector in 2019, with no significant change since the Office for National Statistics started measuring it in 2014.

Current Green Businesses

The ONS survey around 25,000 workplaces each year to ask them about the 'green' nature of their business. That's necessary because the demands of Net Zero don't really feature in the Standard Industrial Classification, the main way we classify the economy into different sectors. Even categorising workplaces in this way doesn't result in quite the dynamic Net Zero economy we might be hoping for, with little hint of a green industrial revolution just yet.

Green Jobs in All Sectors, Existing Jobs needing Green Skills

Certain sectors of the economy can be classified as green – such as agriculture and energy – and these green sectors will have green jobs. But perhaps the Net Zero revolution goes beyond green jobs in green sectors to green jobs in all sectors. Similarly, the Net Zero revolution goes beyond the creation of green jobs in all sectors to existing jobs needing green skills.

Job Greenification

To test the hypothesis of job greenification in terms of both more green job roles and more jobs requiring green skills we cannot just rely on traditional labour market information because we're focusing on subtler questions.

Rising Demand for Green Jobs

More granular data is available via the Job Posting Analytics data held by Emsi which has around 50 million unique job ads recorded on the internet since 2016.

Using our job title library, 365 different green job titles - ranging from recycler to solar analyst to sustainability manager – have been identified. As we're looking at the individual job level, these roles can exist within dedicated green workplaces, but also in factories and offices in traditional industries. Even so, they are all explicitly green jobs.

There are around 139,000 job ads within these titles since 2016. In contrast to ONS data which is based on green-focused workplaces, here we see more much extensive growth in green jobs. Between 2016 and 2019, recruitment demand jumped by 35 per cent growth in recruitment demand from 2016 to 2019.

The impact of Covid-19 put a dampener on demand for green jobs in 2020 as it did elsewhere. But we are seeing that recruitment demand in 2021 isn't just recovering or returning to trend – it is accelerating. In the first four months of 2021, recruitment demand was 29 per cent up on the same period in 2019. Leading the charge have been job ads in roles concerned with renewable energy (up 55% since the start of 2016), followed by technical environmental work (up 50%) and environmental health and safety (20%). While some jobs are more likely to be temporary – in conservation or education – overall green jobs are no more temporary than the wider labour market (22% non-permanent for green jobs versus 21% generally).

Further information on green jobs can be found via Open Skills library provided by Emsi. Using the same family of job titles, over 100 items can be identified, ranging from ISO 14000 to soil science to marine conservation. Looking for all job ads with these sorts of skills, we have over 1.1 million job ads -- nearly ten times as many as for explicitly 'green'-titled jobs, showing that while green jobs are growing, more and more jobs have environmental responsibilities. Again, growth is robust: 215,000 job ads in 2016 rising to 273,000 in 2019, growth of 27 per cent over those three years.

Rising Demand for Green Skills in Existing Jobs

Demand is also rising for existing jobs needing green skills. Jobs needing green skills are in no way confined to explicitly environmental job titles. For example, jobs needing green skills includes jobs titled as engineering technicians, metal production workers, civil engineers and business development managers. Even though it is true that green-titled jobs are growing, by far the largest part of demand seems to be in adding new green skills to jobs well established in our economy.

Sources of Rising Demand for Green Jobs and Green Skills in Existing Jobs

In fact, there is an overlap of rising demand for green jobs and demand for green skills in existing jobs. Any industry using significant amounts of energy and raw materials is likely to see demands for green skills as well as green jobs. Consequently, despite commentary that the transition to Net Zero will mean the creation of high-skilled and high-quality jobs, the demand for green skills takes place at many skill levels – yes, some graduate level jobs but also many at lower and intermediate skill levels; 49% of green skills needs are advertised in roles typically requiring a degree, compared to 44% of job adverts in general.

Future Demand

These data give a sense that understanding the emerging Net Zero economy, especially as it creates jobs and skills demands in the labour market, requires patience. Such a sweeping change, with far-reaching implications for many sectors requires not just the creation of new industries, but the seeding of expertise within many of our existing industries. Policy makers will need to think long and hard about how best they can ensure that the labour market can adapt to these new demands.

Recommendation 1

The Department for Business, Energy and Industrial Strategy alongside the Department for Work and Pensions, and Department for Education must develop labour market and skills intelligence which captures both the demand for green skills in existing job roles as well as demand for more green jobs.

Recommendation 2

DBEIS, DWP and DfE should monitor both the roles being hired and the skills being hired, and how these vary by industry and region to assess underlying green labour market demands.

Recommendation 3

The government must develop a post-16 education and skills strategy which ensures green skills can complement current skills in existing jobs as well as training and retraining for green jobs.

Labour Market Intelligence for Green Jobs and Green Skills

Joint DBEIS and DfE Green Jobs Taskforce

Given the importance attached by the UK Government to achieving Net Zero, the consequent employment and skills needs are rising up the policy agenda. Whitehall has responded by establishing a joint Department for Energy and Industrial Strategy and Department for Education Green Jobs Taskforce (GJT). A report is expected hopefully at some point in June. This will set out high level skills and employment projections, and a roadmap for action from sectors, employers and education and training providers.

Coherent and effective responses from providers to these relatively high-level projections will require further work. We will need more detailed projections and timelines from individual sectors and industries that can accommodate the fact that some types of green job (e.g those associated with offshore wind and the de-carbonisation of large industrial clusters like Teesside) will be concentrated in particular locations.

The Engineering Construction Industry Training Board (ECITB), which represent the firms that build power stations, factories and pipelines, has already created a model report for their sector (see Towards Net Zero: The implications of the transition to net zero for the Engineering Construction Industry).

Other sectors need to deliver equally coherent and detailed forecasts of what will be needed, by when and where.

Green Skills for New Jobs and Existing Jobs

A key point that is already emerging from existing forecasts about green skills is that while a lot of media attention is focused on entirely new occupations and skill sets, many of the skill requirements will be met by re-training or upskilling the existing adult workforce. Green skills are not just about new jobs and new entrants to the labour market. Both changing skill requirements within existing jobs and entirely new occupations are likely to occur on a relatively large scale. Knowing what skills, at what levels and where in the country they will be needed is essential to crafting an effective response.

Training and Retraining

The garage trade is one example. Some mechanics will need to acquire new skills to be able to service electric vehicles. Others will need to re-train for another occupation, as electric vehicles will require less frequent and complex servicing than internal combustion drive systems currently demand.

Plumbers will need to learn about heat pumps and gas engineers may be required (depending on how widely it is adopted) about hydrogen and mixed fuel boiler installation and servicing.

Granular Labour Market Intelligence

These kinds of re- and upskilling demands require detailed monitoring and the generation of granular Labour Market Intelligence (LMI). If employers, professional bodies and sectoral organisations cannot provide the required information in a timely manner, skill shortages may well ensue.

Transmitting Labour Market Intelligence

Having generated the required LMI, there will be a need to ensure that it is transmitted to all those who need to use it to make plans – IfATE, universities, colleges and private training providers, professional bodies, Local Enterprise Partnerships, Mayoral Combined Authorities, and awarding bodies. Given that we have more of a skills marketplace than a system in England, and a very fragmented one at that, the question of who will take the lead in coordinating the dissemination of LMI and ensuring that a coherent response emerges, is at this stage unclear.

Yet LMI will only be of use if it enables providers and the policy and funding infrastructure that supports them to make sound forward plans and strategic investment decisions, thereby delivering the new staff and new teaching facilities, new qualifications and micro-credentials that will be needed.

Careers Information, Advice and Guidance

On the other side of the equation – student demand – it will be vital that LMI on green skills feeds into coherent careers information, advice and guidance (CIAG), for both young people and for adults. If people are unaware of the opportunities that are going to be emerging, they will not seek to acquire the skills that will be needed.

It is also the case that many of the new and changing occupational requirements driven by Net Zero will be in occupations and industries that currently suffer major problems with workforce diversity. High quality CIAG can help to start to change this.

Level 4+ Green Skills

Many of the skills needed will be at a relatively high level (level 4 and above) and therefore relatively expensive to provide. As a consequence, coordination between and specialisation amongst providers will be required, as not every provider will be able to afford to tool up to deliver everything.

Recommendation 1

Sectoral and professional bodies need to deliver to providers detailed forecasts of future skill need and to monitor the development of these demands as they evolve.

Recommendation 2

LMI needs to feed through into high quality CIAG for young people and adults that can help ensure that individuals are aware of the new employment opportunities that moves to net zero are creating.

Recommendation 3

There needs to be oversight and coordination of the education and training response to green skills, so that investment decisions and forward planning can provide a joined-up and coherent pattern of provision that meets needs and avoids major skill shortages.

Part Three

Apprenticeships, Employability Programmes and Green Jobs

Filling Green Jobs with Level 2+ Apprenticeships

The Rise of Apprenticeships, the Rise of a Net Zero

Modern Apprenticeships were introduced in England in 1994. John Major was Prime Minister leading a Conservative Government. Veteran rocker Neil Young was writing songs about the ozone layer. Employers started talking about the world becoming 'carbon neutral'.

Today, we just call our flagship employer skills programme Apprenticeships and employers should be aiming to be net zero instead of premises being Part L compliant. The point is that none of this is new. Climate change has become a more obvious challenge and potentially even more damaging. Apprenticeships are part of the critical post-16 education and skills response to it.

New Entrants and Existing Employees filling Green Jobs

Apprenticeships are jobs and so they have the potential to fill green jobs as they arise. In turn, green apprenticeships can be filled by new entrants – especially young people – but also but existing employees – usually older workers. As such, filling green jobs with apprenticeships can help to embed a net zero culture within organisations.

Future Jobs, Future Apprenticeships

Future demand for apprenticeships will involve the eye-catching jobs such as offshore wind engineers and project managers but we should be equally aware that in sectors like rail, greening of existing roles as opposed to new green jobs will be normal. For example, the digitisation of the railways will provide green jobs as it will make the network more efficient.

One key message from employers is that the demand will not just be met from recruiting new apprentices. Firms will need to take advantage of apprenticeships being for all ages and to upskill existing members of the workforce.

A Big Role

Bearing in mind these advantages to the Net Zero agenda of green apprenticeships, it is also important to ask how big a role apprenticeships can play in the green agenda. Our view at AELP is very large indeed.

In November 2020, the government promised £4bn worth of investment to stimulate private sector co-investment to help create 250,000 green jobs. Most of these jobs will be found in the manufacturing, energy supply and construction sectors, accounting for 82% of turnover and 74% of employment although infrastructure and electric vehicle manufacture are starting to make an impact.

Demand for Level 2 and 3 as well as Level 4+ Apprenticeships

It is important for the government to recognise that employers are demanding green jobs which require Level 2 and Level 3 apprenticeships and not just Level 4+. Apprenticeships are being used to train plumbers, electricians and ventilation and heating engineers, as well as engineering professionals, environment professionals and finance and investment analysts.

Green Jobs Taskforce and Apprenticeships

The government has established a Green Jobs Taskforce between the Department of Business, Energy and Industrial Strategy and the Department for Education to develop an action plan for creating the necessary new green jobs and skills. An important task is to define whether green jobs require training at Level 2 and Level 3 relative to Level 4+ and for each determine where apprenticeships can help employers meet their needs.

Level 4+ Apprenticeships

A major attraction for apprentices on a work-based learning programme where employers are investing in new technologies and equipment all the time is that they can be more up to date on the required skills compared with, say, many university students who are learning on kit which might be 10 to 15 years old. But this presents two major challenges to IfATE and its panel. The higher level green apprenticeships can last three years and the relevant standards need to be able to respond to technological changes during that period.

Updating Apprenticeship Standards

As we move forward, we can anticipate demand for research and development skills and environmental impact skills as part of a broader range of skills that will be needed to respond to the emergence of new green technologies. In this context, it is very encouraging that the Institute for Apprenticeships and Technical Education (IfATE) has set up a Green Apprenticeships Advisory Panel to advise on what new apprenticeship standards might be needed. The panel works closely with the Green Jobs Taskforce.

Role of Qualifications

Another challenge relates to the rather odd and confusing stance that the government has taken on qualifications within an apprenticeship ever since standards were first mooted after the Richard review in 2012. Ministers started off by saying that recognised qualifications should be excluded from standards altogether and then had to back off when the employers on the trailblazers voiced strong objections. But a debate, which is very relevant to Green Apprenticeships, has begun again on the role of qualifications, whether they should be mandated and whether there is more of a role for credentialing like we see for example in nursing. With green technologies advancing so rapidly, there is a question over whether qualifications still offer a good proxy for assessing competence.

Green Apprenticeships for Women

For the first time, women now account for more apprenticeship starts than men but when it comes to green apprenticeships, much more needs to be done, especially at technician level. Apprenticeship recruitment also needs to reflect more of our diverse population. A point often made is that branding jobs as engineering puts off young women and the use of terminology for green apprenticeships requires careful consideration to help employers and apprenticeship providers market opportunities to students in schools and colleges.

Recommendation 1

In the context of the work by the Green Jobs Taskforce, the government needs to recognise the demand for Green Jobs requiring upskilling and reskilling at Level 2 and 3 through apprenticeships as well Level 4+ apprenticeships.

Recommendation 2

The government must review the value of mandated qualifications within an apprenticeship standard as green technologies potentially outpace the context of qualifications.

Recommendation 3

The government must set out a Green Apprenticeship Strategy for Women to extend participation in apprenticeships from Level 2 to Level 5 and beyond.

Filling Green Jobs through Employment Support Schemes

The Employment Support Sector and Net Zero

The Employment Related Services Association (ERSA) is the representative body for the employment support sector. The sector has a central role to play in the UK's challenge to become net zero by 2050, and our members have a series of tools at their disposal to contribute to this aim.

To reach net zero, every sector needs to examine their regular practices, and establish more sustainable forms of working. The employment support sector is no different, but through its work it can also facilitate the greening of a wider number of other industries, and help prepare the UK workforce for the transition to a net zero economy. It has a key part to play in translating the promises of political leaders into detailed reality.

Specialist Providers

The employment support sector encompasses a huge range of specialist providers delivering skills provision, employability programmes, and in-work support, among a myriad of other services. They deliver services to people at every stage of their employability journey, from those ready and able to start work, to those already in work and seeking to progress towards new roles.

Job Search leading to Green Jobs

Through the establishment of an ongoing dialogue with both commissioners of employability provision and employers themselves, the sector can help to facilitate the road to net zero by prioritising job search and employability schemes that lead jobseekers into Green Jobs.

Skills Training leading to Green Jobs

Skills training providers within the sector can also do their own part, by developing new pathways that can equip individuals with the skills and training that will enable them to thrive within such roles. Through the formation of such programmes, the employment support sector can play a vital role in helping workers better exploit the new roles and opportunities that technologies such as carbon capture, hydrogen and bioenergy can bring.

Collaboration

Examples of policymakers, employability providers, and employers working together in such a joined-up manner can already be found within other nations. In Germany, for example, a "Coal Commission" was created in 2018 to identify those roles that would be most impacted by the phasing out of coal-fired power stations by 2038, and how new Green Jobs could be created in alternative energy industries such as green hydrogen. Providers and employers then worked together to identify the relevant individuals most suitable for these roles.

Net Jobs in Net Zero

We would urge the UK Government to learn from such examples, and to strengthen the links between commissioners, providers, and employers to better plan for and exploit the strategic employment opportunities that the road to net zero can provide. It is a regrettably unavoidable fact that travelling down this road will eliminate some existing roles within some industries, as Green Jobs are created in others: by working together, the Government, employers, providers, and workers can help to ease this transition.

Whitehall-Wide Coordination

The government has created a Green Jobs Taskforce between the Department for Business, Energy and Industrial Strategy, and the Department for Education. This is a welcome move. Going forward, however, the Department for Work and Pensions - the department responsible for job search and back to work schemes for unemployed people – should also be part of the GJT to ensure unemployed adults can be signposted to green jobs.

Recommendation 1

Commissioners of employability provision should prioritise and incentivise the facilitation of Green Jobs into future strategies. They can play a key role in keeping the transition to net zero on the agenda of employment support providers, through both prioritising the net zero agenda and incentivising provider's own efforts in this area.

Recommendation 2

Employment support providers should seize the opportunity to embed a focus on Green Jobs into their programmes and services. Providers should work in tandem with the sectors that they interact with to find ambitious and creative routes to link jobseekers with Green Jobs, emphasising the clear business case for doing so to employers.

Recommendation 3

Skills training providers should place a greater focus on providing participants with the skills needed for Green Jobs. Ensuring that the right skills and training is available to properly equip individuals for Green Jobs and the transition to a low-carbon economy is of paramount importance. Ongoing in-work support and progression is also critical, as new roles are created and new opportunities emerge as we progress closer and closer to 2050.

Part Four

Post-16 Providers and Net Zero

David Hughes, Association of Colleges

FE Colleges, Upskilling, Reskilling and Net Zero

Colleges and COP26

Climate change has finally moved up the political agenda globally and public opinion seems to have shifted as people demand rapid change and urgent actions to protect the planet for future generations. There is a stronger realisation that climate change requires significant adaptation by all of us individually and by every organisation if our economic recovery post-pandemic is going to lead to a fairer and better society.

Colleges are both responding to the net zero challenge and driving the change that is needed. They are making an impressive effort to deliver the change needed for their local people, employers and communities, with many signed up to the FE Roadmap developed by the UK Climate Commission for FE and HE.

Like many of the brilliant things colleges do, they are doing things despite the system, not because of it. Together with our partners EAUC, Universities UK and GuildHE we are working in the lead up to COP26 to highlight the need for investment in skills and education to make the changes necessary for the pace and scale of change needed to support learning. But there is so much more FE colleges can do with the right funding and flexibility.

Upskilling and Reskilling

Colleges can assist by upskilling and reskilling young people and adults in sectors that urgently need to adapt. Construction, energy, agriculture and transport are sectors where the challenge of Net Zero is already pressing, and where upskilling is needed at all levels, at Level 4-5 certainly but Level 2 and Level 3 as well.

They are also well placed to persuade many adults who are either unemployed, on low incomes or in precarious employment to retrain for jobs that support the net zero economy. Most face barriers to studying and training which current reforms to Post-16 education and skills must address.

Local Partnerships

The danger, however, is that their demand for new skills often comes too late, when the jobs arrive and there is no time for training. We need innovative approaches and new ways of working to be developed for colleges to work with businesses to anticipate future skill and job and needs. That is not easy unless the government invests as well, and strong local as well as national partnerships are supported.

Embedding Education for Sustainable Development

In parallel to appropriate funding and the development of local partnerships, every course must include sustainability. Impressive initiatives like the Carbon Literacy Project are already providing much needed resources.

Supporting Teaching and Learning

Colleges have shown they are more than willing as they lead on the Net Zero agenda but they need significant resources to really deliver. This includes investing in CPD for staff, in innovative technology and equipment, in curriculum development and in engagement with employers to support their innovation.

Supporting the Voice of Students

We also know that students want their voice heard over climate change. A recent Zurich survey showed that 2.4million young people said climate challenge is the number one issue facing the world, with 17% suffering from “eco-anxiety”. Their voice must be central to the future of colleges, and so too must adults who require retraining and upskilling to progress into good jobs.

Supporting Students as Citizens

Colleges have a pivotal role as educators. We at AoC believe colleges support people to be active and responsible citizens by helping them learn the skills they need to thrive and to understand the world in which they live and work. It’s a grand vision, but education is more than narrow skills or knowledge. It has to provide confidence, agency and understanding to students of whatever age or stage. If that vision is right, then the green agenda requires colleges to think and plan carefully how and what they teach in this time of great change and enormous challenges.

Recommendation 1

We need to transform what we teach and train by supporting strategic partnerships between colleges and employers, and embedding “education for sustainable development” in all curriculum specifications. This must be backed by policy commitments and investment from the UK Government to achieve ambitious carbon reduction targets, with coherent and consistent messaging for industry on expectations for the future to give them confidence to invest too.

Recommendation 2

We must empower more people to access the skills they need to drive the net zero carbon economy by using the Skills and Post-16 Education Bill to unlock education and training to everyone that needs it through a mixture of loans, grants and welfare support. Upskilling and reskilling is needed at Level 4-6 but also Level 3 and Level 2.

Recommendation 3

We must invest in colleges so they have the resources they need to deliver on skills that drive a net zero economy, including the estates and technology sufficient for training and the money to attract the right people who are supported with their own development.

Adult and Community Education and Net Zero

An All-Age Agenda

It is more important than ever that we keep up the momentum in the fight against climate change. In recent years, our young people have embraced the Net Zero agenda, spearheading the cause. It is now time for more adult learners to join in and for ACE providers to extend their approach. We can learn a lot from our schools colleagues and, because of the extensive reach of adult community education, we can and should endeavor to influence wider society.

The Net Zero agenda is all age, personal and societal. It is relevant to young adult learners who are looking for their first job, to workers who are looking to retrain into a green industry, and those facing retirement who may want to put back into the community by green volunteering. This is an agenda for all, its about new jobs, new attitudes and ways of working and, through our 500,000 learners in the adult community education sector, we can begin to shift perspectives.

2021 Environment Bill

Hosting the 2021 United Nations Climate Change Conference (COP26) in the UK puts the spotlight on what we are already doing in this country and provides an impetus to do more. In preparation for COP26, a new Environment Bill was announced, in March 2021, which seeks to protect the environment for the next generation and, in practical terms, will create a duty on government departments to be guided by five internationally recognised environmental principles when making policy – integration, prevention, rectification, polluter pays and not postponing action.

Net Zero Embraced by the Whole FE System

The whole FE system must embrace Net Zero. We need changes to the content of what is taught. We need to ensure the concept of net zero is embedded in all courses. We need our learners and teachers to embrace the agenda and we need enough practical resources to make the topic interesting and engaging.

We need to change the way teachers are trained, with tailored CPD for all teachers in all subjects which keeps up to date and embraces change. We need our careers colleagues to talk about the new green industries and explain that, for most jobs, there are green issues. We need to explain the agenda for everyone and not just for those who will work in a green industry.

We need organisational change. For example, our self-assessment reports and Ofsted inspection reports should include observation and comment on success in this area. We need support mechanisms, such as the Education and Training Foundation (ETF), to have examples of good practice. We need our governance documents to include a scrutiny and advocacy role for governors in green matters. We need to ensure our funding reflects the costs of going green and compensates and encourages our activities.

Seizing the Moment

Adult community education must not sit on the fence. The ACE sector must play its part in determining Net Zero solutions. The time has arrived for ACE providers to extend their approach. We must set stretching new goals, rethink our curriculum offer - so it supports all learners in understanding the impact of their actions on the climate and the environment - and provide underpinning examples of where we should target our resources.

Recognising our Reach

Adult Education is uniquely placed to help bring about transition and transformation in our society. We have several examples of good practice as recently recognised in the Green Gown awards. The sector reaches learners from all parts of society, provides courses from over 10,000 locations, and is operating in every town and city in the country. We need to use this reach to work with partners and set local goals around participating in green activity and volunteering.

An ACE 'Net Zero' Policy

The ACE sector needs to have its own policy which recognises its community reach and how it is often pivotal to supporting local strategies for adult services. Each centre, service and college needs to have their own policy which embraces the national policy and is tailored for local need.

We should start by applying the five internationally recognised environmental principles of integration, prevention, rectification, the polluter pays and not postponing action to the adult community education sector. We need to think about our core business and what we can change to ensure these principles are embedded in all our work, including vocational training, improving basic skills, ESOL and integration, family learning and personal wellbeing courses.

Becoming Net Zero Organisations

Equally, ACE providers must consider carefully how and where learning materials are sourced and staff are trained. We must invest in renewable energy to reduce the energy consumption of our buildings. In doing so, we will position ourselves as sustainable place-based leaders in our sector, bringing together different community services to support this agenda.

Recommendation 1

Adult Community Education providers should develop Net Zero policies ensuring Net Zero is embedded in the curriculum to support adults integrating into the community, progressing into green jobs or jobs requiring green skills, encouraging family learning and improving personal wellbeing, including older adults nearing retirement or already retired.

Recommendation 2

Adult Community Education providers should also develop Net Zero strategies which are outward facing – so that their Net Zero policies are integrated with wider adult services provided in their Local Authority.

Recommendation 3

Community centre champions should be trained and early adopters recognised and rewarded by the ACE sector.

Universities and Net Zero

The Meaning of a Statue

There are not many statues of women in the UK – one assessment suggests that only [one-in-five UK statues](#) are of women, and almost none of them is of a young or contemporary woman. Yet, when Greta Thunberg's statue was recently unveiled at the University of Winchester, there was one of those synthetic rows. It turns out that, where statues are involved, construction is almost as controversial as destruction. Whether or not it was appropriate for the University to spend their own money on commissioning the piece, the episode shows three important things.

Environmental Awareness

First, it reminds us that not all higher education institutions are the same. Winchester has a history of environmental awareness, hosts a number of interesting works of modern art and, spurred on by its religious heritage, is always conscious of its ethical role. So, it would be unfair to accuse the institution of insincerity, whether or not other universities might have been guilty of 'greenwashing'.

Part of Net Zero

Secondly, it reminds us that the higher education sector has a direct role to play in tackling climate change. The challenge is probably greater for bigger research-intensive institutions, with – for example – huge numbers of international students making multiple flights each year and considerable endowments, which have sometimes been invested without much of an eye on environmental awareness. Moreover, many universities are the biggest – or one of the biggest – employers in their region, and most have a big physical footprint. So any comprehensive reduction in carbon emissions needs to include them.

Delivering the Green Agenda

Third, it reminds us that higher education institutions are not insulated from the wider concerns of society. They are of society not set aside from it, especially in an age when more than half of all young adults make it to higher education. Society should value universities because, at their best, they can serve as the thread that binds the very fabric of our society and communities together. They do this through the provision of skills to local employers, through transforming the lives of millions of students every year and through pushing forward the boundaries of human knowledge. They are also intertwined with the rest of society in other ways, such as through the stonking investments made by the Universities Superannuation Scheme, which has recently committed to net zero for greenhouse gasses by 2050.

Embedding Sustainability into Institutional Planning

One overarching change that institutions can make is to embed sustainability in their own planning. The University of Manchester recently topped the Times Higher Education Impact Rankings. That is a huge achievement for such a vast institution but it was no accident. The University's commitment to sustainability is at the core of what they do, as reflected in their Strategic Plan, which promises to 'align our work with the United Nations Sustainable Development Goals (SDGs)'. Putting such commitments formally into institutions' plans for the future not only reflects the desire for action that exists among most students and staff but also encourages wholly new initiatives.

At a practical level, a second thing that universities can do is to lead by example. The University of Cambridge's north-west development, for example, neutralised a huge amount of potential opposition by embedding sustainability – for example, in its building standards, its energy use and even the recycling of rainwater for irrigation and flushing toilets. It shows that the desire of institutions to continue expanding and improving need not always fly in the face of environmental concerns. The new Waterside campus of the University of Northampton is another example of what can be done, and the institution recently won an Investors in the Environment Award in part for the use of new technology to reduce the consumption of resources.

Research into Net Zero

University research is crucial in the race to net zero. This is often subsidised (and occasionally entirely paid for) from universities' own resources. As a country, we have strength in breadth, with expertise across the board, in social science, behavioural economics and anthropology as well as STEM areas, and interdisciplinary approaches are crucial to tackling the world's grand challenges.

Transition not Revolution to Net Zero

The ideas outlined above might be viewed as less radical than those proposed in a debate paper published by the Higher Education Policy Institute in December 2020 ([Beyond business as usual: Higher Education in the era of climate change](#)). People must evaluate whether a more radical approach might be more effective but recognise the destructive forces that inevitably come with revolution. In the higher education sector as with the nation as a whole, we need to bring people with us if we are to ensure deep and lasting change. Stopping tube trains or digging tunnels under Euston Station are unlikely to build the broad coalition of support that is necessary. The Green Agenda should not be used by anyone as a backdoor route to foisting their own personal hobbyhorse on everyone else. The idea that greening universities necessitates introducing a basic income in society, for example, is mystifying. Tackling climate change is too important for such silly games.

Recommendation 1

Environmental sustainability should be embedded in university strategies.

Recommendation 2

Universities should lead by example.

Recommendation 3

Universities should fund and complete relevant research in the race to net zero.

Part Five

A Green Curriculum for Post-16 Education

Bill Watkin, Sixth Form Colleges Association

16-18 Education and Net Zero

Reaching Net Zero

The UK Government announced a ten-point plan for a Green Industrial Revolution in November 2020. More recently, it made a commitment to make more rapid progress to reaching Net Zero before the 2050 deadline. The truth is many organisations can feel a bit overwhelmed, and sixth form colleges are no different.

In terms of net zero, sixth form colleges fall into two camps: some are ahead of the game, joining the Race to Zero campaign by the United Nations and developing whole-college based net zero strategies, whilst others are considering their first steps.

Three Areas

In the context of whole-college net zero strategies there are three areas sixth form colleges as a whole should consider: decarbonising college estates, developing a green curriculum appropriate for all 16-18 students, and empowering 16-18 year-olds to debate and act over climate change.

Decarbonising College Estates

Some SFCs are well down the road of reducing their carbon emissions. More and more are looking at ways in which they can reduce their carbon footprint and contribute towards the UK's net zero target, with many developing their own carbon management plans and internal reduction targets.

Progress in decarbonising the estates of sixth form colleges has been assisted by the launch in September 2020 by the Department for Business, Energy and Industrial Strategy of the Public Sector Decarbonisation Scheme delivered by Salix Finance. The aim is to encourage green investment, unleash innovation, back businesses and support the Government's net zero and clean growth goals.

The scheme provided bodies such as sixth form colleges with £1bn of grant funding to deliver stimulus to the energy and heat decarbonisation sectors, support jobs and deliver significant carbon and financial savings. Technologies installed include cavity wall insulation, LED lighting, occupancy and daylight controls, biomass and gas boilers and voltage optimisation.

Greening GCSEs and A levels, Greening Vocational Level 2 and 3 Qualifications

The natural tendency is to equate curriculum reform with respect to climate change and green skills with vocational qualifications – including Level 3 T levels – either through the insertion of units within existing vocational qualifications or developing new green vocational qualifications. But the Education for Sustainable Development strategies for the 16-18 sector must extend to the 51% of students in 16-18 education on A level only programmes and the 7% who currently combine A levels with applied general qualifications.

As is well known, sixth form colleges main offer to 16-18 year-olds is A levels and A levels combined with vocational Level 3 courses including BTECs. Progression rates into full-time Level 6 first degrees – including STEM and non-STEM – provided by universities and colleges are extremely high.

Empowering 16-18 Year-Olds

Introducing sustainable practices into the curriculum can help provide 16-18 year-old students the opportunity to increase their knowledge and skills around climate change and the importance the younger generation has in making a difference to their college and wider community. These practices are ones which can be taken forward into their everyday lives.

Embedding sustainable practices into the learning environment can provide opportunities for students to take an active role in combatting climate change and feel inspired to assess their own behaviours. This could include promoting walking and cycling, an energy awareness campaign, or encouraging switching off lights and heating when rooms aren't in use.

Some institutions involve students in estate-wide changes being made to the college and the associated benefits of this, for example highlighting the ongoing reduction of carbon over time via noticeboards or on-site televisions.

Educating students on both the outcomes of an inefficient climate change strategy and the numerous technologies which may be used to tackle this issue can help them to recognise that the climate crisis is a current and pressing issue. The Sustainable Development Goals are a great resource for learning and showcase the shared vision when looking to reach net zero.

Sixth form colleges pride themselves in encouraging 16-18 year-olds to take an interest in the big issues facing the world. There is no bigger issue than debating climate change and the road to net zero.

Recommendation 1

The Department for Business, Energy and Industrial Strategy, and the Department for Education should work with every sixth form college to decarbonise their estates.

Recommendation 2

Curriculum reform as part of Education for Sustainable Development should include GCSEs and A levels studied by 16-18 year-olds.

Recommendation 3

Society must empower 16-18 year-olds to understand, debate and campaign on climate change and the road to net-zero.

John Widdowson, Former College Principal

16-18 Level 3 T levels and Net Zero

Level 3 T Levels

T levels are new Level 3 qualifications, to be studied over two years after GCSE. They will form one of three pathways alongside GCE A levels for those wishing to continue an academic education and Apprenticeships for those who wish to acquire skills and knowledge on the job. T levels are explicitly designed with employer involvement “to give students the skills that industry needs”.

A key part of the qualification is an extensive period of work placement and an employer set project. T levels will cover a broad range of disciplines from health and education, through construction to engineering, legal services, catering and hair, beauty and aesthetics.

Successful students will form the core of the skilled workforce of the future. As such, they will need not only the skills needed for the jobs which currently exist but also the ability to adapt to the technologies and jobs which will be created in decades to come. To be credible, this new generation of highly valued technical qualifications will need to attract the highest calibre young people.

To achieve that, the pathway to employment and further study must be clear, and the curriculum on offer attractive to young people, engaging their interest and giving them confidence in their future. It must teach skills and knowledge of immediate use, to make the qualifications credible to them and to prospective employers as well as inspiring them to new roles and careers over their working life. And alongside those vital skills for jobs, young people studying T levels will expect their studies to prepare them for life in a fast changing society.

Preparation for Life, Net Zero and All T Levels

Fundamental to that will be the environmental concerns shared by many young people and in particular achieving Net Zero as a key challenge going forward. If T levels fail to reflect this, it will be more difficult to attract students and thus the potential of T levels will be unfulfilled. It is therefore imperative that the T level curriculum has the right balance between specifically focused skills, inevitably aimed at the jobs we have today, and the wider skills and awareness needed for the jobs which will be created over the coming decades, in jobs we can only imagine.

Against this background, examination of the T levels already approved from 2020 and those planned to be delivered up to 2023 reveals a mixed picture. It is unsurprising that qualifications designed in close collaboration with employers should contain a high proportion of very practical and immediately applicable skills and knowledge. For instance, T levels in business related occupations such as HR, Finance and Legal Services make reference to corporate social responsibility but without specific mention of environmental matters.

The pressure to include such a broad range of subject matter has resulted in many T level syllabuses being content rich, but potentially lacking in the overview and urgency, which is of such interest to our young people. As such they present challenges for teachers not only to ensure that all relevant topics are covered in appropriate depth but also that they can be delivered in a way which students with little experience as yet of the world of work will find interesting and inspiring.

Strict adherence to these detailed syllabuses risks making T levels unexciting and lacking in inspiration. This would be a mistake not only in terms of the success of the qualifications themselves but also in their ability to create a new generation of confident career technicians.

Specific Green Level 3 T Levels

In some cases, there is very explicit reference to Green issues. For example, and perhaps unsurprisingly, the T level Agriculture, Environmental and Animal Care; Agriculture Land Management and Production contains very explicit coverage of sustainability as separate areas of study.

There are also those issues such as the impact of climate change, sustainable solutions and recycling which will be of direct interest to all students aspiring to be skilled technicians whatever their discipline. However, other specifications are less explicit. The T level Construction: Design, Surveying and Planning covers the design process and buildability but makes brief mention of lean and alternative technologies and only then in the context of practical application rather than that of sustainable and green development.

Recommendation 1

Providers and teachers should be given a high level of flexibility and discretion to design teaching materials and approaches to learning to reflect "bigger picture" issues. Teachers need the freedom to develop the curriculum organically as technologies change thus ensuring that T levels respond to the interest and aspirations of students as well as meeting the immediate needs of employers.

Recommendation 2

Providers and teachers should take maximum opportunity to bring T level students from different disciplines together to consider cross-cutting issues such as Net Zero and other Green issues. This will encourage creative thinking across discipline boundaries and prepare students for future jobs which cut across those boundaries. It will draw on expertise found across the whole range of T levels.

Recommendation 3

T levels must be seen as part of a long term strategy for our future workforce rather than as a response to immediate needs.

Rebecca Conway, Federation of Awarding Bodies

Net Zero and the 'Level 3 and Below' Curriculum

A Green Industrial Revolution

In November 2020, the government published their Ten Point Plan for a Green Industrial Revolution. It provides a vision for green growth with £12 billion of government funding promised alongside an estimated £42 billion of private investment and the creation of 250,000 new green jobs.

The roadmap, which sets out how the government plans to achieve their target of net zero carbon emissions by 2050, illustrates the significant challenges we face in meeting our green ambitions while also highlighting the opportunities for economic recovery as we emerge from the pandemic.

Meeting Skills Needs

The Ten Point Plan illustrates the transformative changes required in industry - particularly in the construction, energy and transportation sectors. By 2030, it won't be possible to purchase a new petrol or diesel car, paving the way for electric vehicles and a stronger focus on public transport and infrastructure.

In energy, the government has committed to move away from fossil fuels and towards clean energies generated by offshore wind, nuclear and hydrogen. As a recent report from the Engineering and Construction Industry Training Board suggests, this will require work drawing upon a diversity of skills as we look to decommission coal and gas sites and develop new technologies like hydrogen production, storage and synthetic fuel production from CO₂ (see Towards Net Zero: The implications of the transition to net zero for the Engineering Construction Industry).

Collaboration will be key in meeting these skills needs. Awarding and assessment organisations already have an established track-record of working closely with employers, providers and professional bodies on the development of quality qualifications, curricula and apprenticeships. The government has a role to play here too in supporting agile development and encouraging innovation by streamlining funding and approval processes to remove complexity.

Level 3 Qualifications

Where qualifications have been developed in anticipation of future skills needs, an initial low uptake can be expected. Yet, funding is at risk for qualifications with low or no enrolments. The most recent list of qualifications slated for defunding by ESFA includes some related to electric vehicle maintenance. Where qualifications support the development of priority skills such as these, they should continue to be fundable while demand builds.

Low national uptake may also be a response to local variation in skills needs. For example, significant investment has gone into building offshore wind capacity on the Humber and the Tees. The recently announced Local Skills Improvement Plans provide an opportunity to focus on regional requirements as does the devolution of some of the adult education budget to Mayoral Combined Authorities and the GLA.

The CBI rightly identify reskilling and upskilling the existing workforce as a key challenge in meeting our green goals (see Skills and Training for the Green Economy – CBI Submission to the Green Jobs Taskforce, April 2021). Curricula should be designed to meet the needs of those retraining, allowing flexible delivery for those studying on-the-job or alongside other responsibilities. Ensuring funding opportunities that incentivise people to retrain is also essential.

Funding Upskilling and Reskilling at Level 3

In the Ten Point Plan for a Green Industrial Revolution, the Rt Hon Alok Sharma heralds the role of free education that leads to a Level 3 qualification - which is part of the government's Lifetime Skills Guarantee - in supporting training for new green jobs. The problem is that this free education is only available to adults seeking to train and upskill to acquire a first Level 3. If adults with a Level 3 wish to train or reskill at Level 3 to enter green jobs, they will need to be prepared to take out income contingent fee-loans which are repayable on earnings above £27,295 per year.

The supply of Level 3 qualifications will be critical to kickstarting the Green Industrial Revolution. If the government views Level 3 qualifications as a key way to facilitate the reskilling required to achieve net zero goals, the Department for Education will need to review the attractiveness of fee-loans to adults and consider extending the principle of fully funded fee-grants to selected Level 3 qualifications.

Greening the Curriculum

It's tempting to think about the impact of net zero on the curriculum purely in terms of developing technical skills in core sectors. Yet, as the London Assembly's Economic Committee observes, moving towards net zero is a 'change management' exercise that will also require soft skills such as project management techniques to ensure a successful transition (see Future of skills in a low-carbon circular economy, Economy Committee – London Assembly, April 2021).

Net zero must be reflected across the breadth of curricula to adequately prepare individuals with the skills they need to work and live in a carbon neutral environment. Through the Teach the Future student-led campaign, learners have also called for a greening of the school and college curriculum. While this campaign suggests an eagerness on the part of learners to study climate change, 70 per cent of teachers surveyed felt that they had not been adequately trained to cover it (see Teach the Future). As the Aldersgate Group has observed, changes to teacher training programmes are required to support teachers in integrating net zero across the curriculum (see Upskilling the Workforce for the 21st Century).

Updating Standards and Qualifications

We don't yet know what skills will be in demand for the green jobs of tomorrow so flexibility in the system is essential to enable a rapid response from awarding organisations, providers and employers. Although as yet unconfirmed, the government has proposed that technical qualifications at level 3 will soon need to be mapped to employer-led standards before they can be submitted for funding approval. A critical challenge for the supply-side of the post-16 education and skills system will be to keep standards and qualifications up-to-date so they remain truly cutting edge.

Recommendation 1

The government must ensure that funding and approval mechanisms support and encourage agile development of curricula, apprenticeships and qualifications that meet emerging skills needs.

Recommendation 2

The government must provide appropriate funding incentives to encourage training and re-skilling at Level 3 and below to support the drive to net zero.

Recommendation 3

Net zero must be reflected holistically across the breadth of the post-16 curriculum.

Charlotte Bonner, Education and Training Foundation

Education for Sustainable Development and the FE Workforce

Transformed Jobs, Transformed Skills

If we're to meet the UK's ambitious decarbonisation plans, achieve the 10 point plan for a green industrial revolution and do our bit to contribute to the UN sustainability development goals, both the employment and the education landscape is going to have to change considerably.

We need specialist sustainability expertise but also people from across all industries to be knowledgeable and ready to make sustainability the norm. All roles and all employers can both contribute to and help solve sustainability challenges. In short, all jobs can and should be green jobs.

All Learners as Green Learners

To fully equip people for their future jobs and careers, all learners can and should be green learners. Education is an enabler – a lever to help achieve sustainability goals. Learners need to be developing knowledge, skills, values and agency as core competencies so they can create positive change in their lives and their work whether they go on to be sustainability specialists or not.

Decent and Inclusive Green Jobs

A focus on the current workforce, as well as young learners, will also be vital if the transition to a net zero economy is a just one. We need to ensure workers in polluting industries and those hit by the economic disruption of the Coronavirus pandemic aren't left behind and have an opportunity to 'build back fairer'. All new green jobs created should be good quality, decent jobs.

Education for Sustainable Development

For sustainability to be seen in this way, as a central pillar of our education system, a lot needs to change. Curriculum, regulation, funding, policy, professional standards: all can adapt so education for sustainable development (ESD) is prioritised by providers and professionals.

The Further Education and Training Sector

There are strong parallels between the level of systemic change required to achieve our sustainability goals and to achieve equality, diversity and inclusion goals. The environment and sustainability sector has been identified as the [second least diverse](#) among over 200 professions in the UK. The FE and training sector has a critical role to play in improving the appeal, accessibility and relevance of careers in climate change, and sustainability, within the communities it serves.

Investment in the FE workforce

Significant investment is required to achieve this but what needs to be prioritised is investment in the FE workforce.

As the recent Skills for Jobs white paper recognised, a strong focus on staff recruitment, retention, training and development is the key that unlocks excellence in the system. Soon to be published research undertaken by the Education and Training Foundation (ETF) with nearly 850 members of the FE workforce shows that 63% feel they haven't had adequate training to embed sustainability in their work and this figure increases to 74% with teaching staff and educators.

The FE Workforce and 'Education for Sustainable Development'

We need our educators across all subject specialisms and occupational pipelines to have the confidence, capability and capacity to develop their own ESD skillsets and this needs to be a priority. This isn't just so they're able to train those moving into jobs that support green growth but also to ensure there isn't a bottleneck creating skills gaps and a lag between what's being taught and societal and industry need.

Continued professional development in ESD outcomes and how to achieve them is needed for all staff working in the FE sector. This also needs to be included in initial teacher education and occupational standards.

The ETF 'Education for Sustainable Development' Strategy

As the expert body for professional development and standards in FE across England, ETF is working with other sector bodies to develop our [ESD strategy](#) so we can design, develop and deliver Continuous Professional Development for staff in different roles from across the sector to support ESD uptake. We're also anticipating the inclusion of ESD competencies in future revisions of the professional frameworks we oversee.

The FE sector has a vital role to play in contributing towards our current sustainability challenges but also the opportunity to be recognised as a sector that takes the lead across national and global challenges.

Recommendation 1

FE sector bodies should embed Education for Sustainable Development in curriculum, regulation, funding, policy, professional standards and frameworks.

Recommendation 2

FE providers should adopt whole-organisation approaches to Education for Sustainable Development, including investment the CPD of their staff.

Recommendation 3

FE practitioners should work collaboratively to explore and embed Education and Sustainable Development in their work and teaching.

Adrian Anderson, UVAC

Green Jobs, Apprenticeships and Higher Technical Education

From Sentiment to Action

No one would publicly disagree with the sentiment that the Government should forge a Green Recovery post-Covid and that apprenticeships and higher technical education should make a major contribution to the green jobs agenda. The trouble is that sentiment is one thing, but agreeing action and priorities and ensuring the system delivers is something else.

The “Greenist” of Apprenticeships

There is no better example of a green job, perhaps, than the Ecologist Level 7 Degree Apprenticeship. IfATE defines the Apprenticeship as “studying the relationship between living things and their environment to help resolve potentially conflicting demands between economic development and the environment”.

Prior to the pandemic, with a forecast overspend of the Apprenticeship Programme Budget, key advocacy organisations in the further education sector were arguing for restricting the ability of employers to use the Apprenticeship levy on level 6 and 7 programmes and to prioritise Apprenticeships for young people. If Government had accepted such arguments then it would have stopped or severely restricted funding for the Ecologist Degree Apprenticeship.

Bizarrely, when searching on Gov.UK ‘Find Apprenticeship Training ’ despite the Ecologist Apprenticeship being approved in June 2019, no training provider was listed as delivering the standard: in contrast 507 were listed as delivering customer service practitioner (level 2) apprenticeships. Why? Is the Ecologist standard right, is its funding band appropriate, has there been insufficient funding to support SMEs to use the standard?

The ecologist example may be considered by some to be a niche Apprenticeship, but the same argument can be applied more broadly. Have we the right Apprenticeships, higher technical education and level 6 and 7 programmes to deliver the Green Jobs agenda, is funding appropriate, do we have a training provider base able to respond and who is accountable for ensuring the system delivers this agenda?

Funding Priorities

We also have an issue of prioritisation. Many have argued for apprenticeships to prioritise young people, but if Government is to deliver on the Net Zero carbon economy, re-skilling the existing workforce for Net Zero roles is where the focus is needed. Apprenticeships at a range of levels and higher technical and higher and professional education provision will also be needed to deliver the skills needed for a Net Zero economy.

Government will also need to balance other competing priorities. The Green Jobs agenda is important, but so too is ensuring that employers can use apprenticeships to train the nurses, police officers and social workers society needs. With a substantial fall in apprenticeship numbers funding is not currently an issue, but hopefully with a rapid economic recovery in 12 to 18 months it will be.

During this period, the Government, working through IfATE, needs to determine which Apprenticeships make the greatest impact on productivity, the delivery of public sector services, social mobility and the Net Zero agenda. It must also work out which Apprenticeships should be incentivised through the funding system and by definition, which should be disincentivised.

Such an approach would not represent central planning or a 'Whitehall knows best' philosophy. Employers would still develop standards and decide which Apprenticeships and training programmes to use. However, the Government, representing society would have a more active role in ensuring the Apprenticeships delivered reflected societal and economic priorities.

Standards Fit for Purpose

Apart from funding we must also ensure that existing Apprenticeship standards are fit for purpose i.e., could they be made greener for the Net Zero agenda? Are all key Net Zero occupations covered by Apprenticeship standards? This again calls for intervention from IfATE. Rather than having a passive or agnostic role in determining which occupations need standards developing (and delivering) IfATE needs to, and I believe is, fostering a hands-on proactive approach. It also calls for a partnership approach working with employers, experts, professional bodies, regulators and training providers.

Recommendation 1

The Government, through DBEIS and DfE/IfATE, should clearly identify and financially prioritise Apprenticeship Standards that £ for £ make the largest contribution to the Net Zero, productivity, public services and social mobility agendas.

Recommendation 2

IfATE should undertake a review of existing Occupational Standards, identify where Standards need to be revised to contribute to the Net Zero economy and where new Standards need to be developed to support employers, PSRBs and training providers to develop them.

Recommendation 3

We need an independent and objective annual review of how Apprenticeship and Technical Education at all levels are delivering and can contribute to the productivity, public sector services, social mobility and green economy agendas.

Victoria Hands and Stephen Peake, The Open University

Education for Sustainable Development in Higher Education

Impact on Teaching and Learning

Many higher education and further education institutions have declared net zero pledges – such as the [Race to Zero](#) - and signed up to the UN Sustainable Development Goals. They are busy greening their campuses, pondering the impacts of their investments and nudging their pension funds to signal their earnest engagement in a fossil free future. Yet, we are in a climate and ecological emergency and the core business of teaching and learning remains largely unchanged.

Student Pressure on University Teachers

Not unconnected, a burgeoning global youth climate justice movement is demanding that educators take meaningful action and young people report they are suffering from the mental and physical effects of eco-anxiety. Our own experience at The Open University shows that eco-anxiety can affect most age groups – mature and young learners alike - albeit in different ways. Teachers at all levels are also not immune and carry a special burden. We recognise something must change and quickly.

Sustainability in all University Teaching

Young people understandably want climate change to be 'embedded' across the whole curriculum because it affects our whole society. As core business, the curriculum is indeed one of the most powerful tools that the education sector holds for global collective good. Action on the core business of teaching and learning is included in the EAUC Climate Commission's [HE Toolkit](#) and in QAA [ESD guidance](#).

Semantics of Climate Change and Urgent Whole Systems Transformation

A big problem is the semantics of the phrase 'climate change'. Students write it on placards, and Vice Chancellors pop it into press statements as if we all have a shared, workable, precise understanding of what it is and how to respond to it. We don't. The term 'climate change' is a bundled, multi-faceted concept. It simultaneously means: global heating; increased frequency and intensity of climate extremes; water and food stress; migration; and regional and global conflict. It means history, culture and identity impacts. What we can agree on is that it is an emergency. Our responses must relate to both the urgency and the complexity of all these aspects.

University Teaching for Rapid Decarbonisation

The greening and embedding response doesn't equate to an emergency mode response. Yes, sustainable development requires global scale transformations of our take-make-and-waste economies under an agenda of delicately balanced globalisation and localisation forces. This is an ongoing important project. It is the project - humankind can only flourish on a healthy planet. The education sectors' slow response to the scientific facts it has itself produced must be addressed.

The first step is simple. It is a no regrets response and one that sits logically with the idea of a climate emergency. Teaching the skills needed to accelerate the radical and rapid decarbonisation of the global economy also places the higher education sector at the heart of this transition.

The next step is a new approach to teaching climate change in higher education, with a focus on the physical requirement for rapid decarbonisation and a temporary reorientation of the whole of the university curriculum to focus on technical measures called 'Emergency Technocentrism' (Harper and Peake, 2021, forthcoming). In other words, the shift from fossil fuels to renewables through careful, proactive, strategic planning based on macro-scale infrastructure transformation, not individual lifestyles.

Recommendation 1

Universities must align existing curriculum and teaching and learning strategy to focus on climate emergency skills for a climate-safe future. The incorporation of QAA ESD guidance in validation processes, the creation of new courses to respond to Government Skills Reviews, the use of the excellent multi-disciplinary resources available at [Responsible Futures](#) or in the rapidly evolving sustainability requirements of professional body accreditation will all help with this.

Recommendation 2

Universities must ensure all teaching staff receive climate literacy training so they can actively engage in whole systems solutions and transformation. The rapid roll-out of GDPR training sets a precedence in both resourcing and logistics for all-staff upskilling upon which the sector can draw.

Recommendation 3

In each HEI, the University Council, Vice-Chancellor, PVC Education, Senate, Students' Association or Union and Chief Financial Officer must collaborate to include macro-scale infrastructure transformation within the core business of teaching and learning.

Appendix

Net Zero Policy Statements

UN Sustainability Goals

SUSTAINABLE DEVELOPMENT GOALS



Source: <https://sdgs.un.org/goals>

The Paris Agreement: December 2015

What is the Paris Agreement?

The Paris Agreement is a legally binding international treaty on climate change. It was adopted by 196 Parties at COP 21 in Paris, on 12 December 2015 and entered into force on 4 November 2016.

Its goal is to limit global warming to well below 2, preferably to 1.5 degrees Celsius, compared to pre-industrial levels.

To achieve this long-term temperature goal, countries aim to reach global peaking of greenhouse gas emissions as soon as possible to achieve a climate neutral world by mid-century.

The Paris Agreement is a landmark in the multilateral climate change process because, for the first time, a binding agreement brings all nations into a common cause to undertake ambitious efforts to combat climate change and adapt to its effects.

How does the Paris Agreement Work?

Implementation of the Paris Agreement requires economic and social transformation, based on the best available science. The Paris Agreement works on a 5-year cycle of increasingly ambitious climate action carried out by countries. By 2020, countries submit their plans for climate action known as nationally determined contributions (NDCs).

NDCs

In their NDCs, countries communicate actions they will take to reduce their Greenhouse Gas emissions in order to reach the goals of the Paris Agreement. Countries also communicate in the NDCs actions they will take to build resilience to adapt to the impacts of rising temperatures.

Long-Term Strategies

To better frame the efforts towards the long-term goal, the Paris Agreement invites countries to formulate and submit by 2020 long-term low greenhouse gas emission development strategies (LT-LEDS).

LT-LEDS provide the long-term horizon to the NDCs. Unlike NDCs, they are not mandatory. Nevertheless, they place the NDCs into the context of countries' long-term planning and development priorities, providing a vision and direction for future development.

How are Countries Supporting Each Other?

The Paris Agreement provides a framework for financial, technical and capacity building support to those countries who need it.

Finance

The Paris Agreement reaffirms that developed countries should take the lead in providing financial assistance to countries that are less endowed and more vulnerable, while for the first time also encouraging voluntary contributions by other Parties. Climate finance is needed for mitigation, because large-scale investments are required to significantly reduce emissions. Climate finance is equally important for adaptation, as significant financial resources are needed to adapt to the adverse effects and reduce the impacts of a changing climate.

Technology

The Paris Agreement speaks of the vision of fully realizing technology development and transfer for both improving resilience to climate change and reducing GHG emissions. It establishes a technology framework to provide overarching guidance to the well-functioning Technology Mechanism. The mechanism is accelerating technology development and transfer through its policy and implementation arms.

Capacity-Building

Not all developing countries have sufficient capacities to deal with many of the challenges brought by climate change. As a result, the Paris Agreement places great emphasis on climate-related capacity-building for developing countries and requests all

COP 26: November 2021 developed countries to enhance support for capacity-building actions in developing countries.

How are we Tracking Progress?

With the Paris Agreement, countries established an enhanced transparency framework (ETF). Under ETF, starting in 2024, countries will report transparently on actions taken and progress in climate change mitigation, adaptation measures and support provided or received. It also provides for international procedures for the review of the submitted reports.

The information gathered through the ETF will feed into the Global stocktake which will assess the collective progress towards the long-term climate goals.

This will lead to recommendations for countries to set more ambitious plans in the next round.

What have we Achieved So Far?

Although climate change action needs to be massively increased to achieve the goals of the Paris Agreement, the years since its entry into force have already sparked low-carbon solutions and new markets. More and more countries, regions, cities and companies are establishing carbon neutrality targets. Zero-carbon solutions are becoming competitive across economic sectors representing 25% of emissions. This trend is most noticeable in the power and transport sectors and has created many new business opportunities for early movers.

By 2030, zero-carbon solutions could be competitive in sectors representing over 70% of global emissions.

Source: <https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement>

COP 26: November 2021

Aims

At COP26, we will demonstrate the urgency and the opportunities of the journey towards a zero carbon economy and the power of international cooperation to address the gravest challenges the world faces.

We must agree a balanced negotiated package that delivers the Paris Agreement and moves the UN Climate Change process forward.

To ensure success, we need all countries to commit to reaching net zero emissions as soon as possible, and to significant further cuts by 2030.

And we must step up and help societies and economies adapt to climate change – particularly the most vulnerable.

We must finally turn the corner on polluting energy systems and seize the opportunity of rapidly falling costs of renewables and energy storage.

We must accelerate the transition to zero carbon transport, phasing out petrol and diesel engines.

To make all this possible, we must accelerate the green transformation of the financial system so all countries can drive clean and resilient investment.

We must harness the innovation and commitment of all – citizens, investors, business, countries, cities and regions – to move the global economy to net zero.

Source: <https://ukcop26.org/uk-presidency/the-road-to-cop26/>

G7 Climate and Environment Ministers' Meeting

We will help set the world on a nature positive and climate-resilient pathway to bend the curve of biodiversity loss by 2030 and to keep a limit of 1.5°C temperature rise within reach by making our 2030 ambitions consistent with the aim of achieving net zero emissions as soon as possible and by 2050 at the latest.

G7 Climate and Environment Ministers' Meeting Communiqué, 20th-21st May 2021

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/988551/g7-climate-environment-communication.pdf

UK Presidency

For countries to set net zero emissions targets, which governments responsible for two-thirds of global emissions have already done, and set targets for emissions cuts by 2030.

To formulate plans for countries to adapt to the impacts of the climate crisis.
To encourage rich countries to provide finance to the poor world for emissions cuts and adaptation.

For civil society to take a strong role in the talks.

Alok Sharma, President Designate – COP 26, MP for Reading West, 18th March 2021

Source:<https://www.theguardian.com/commentisfree/2021/mar/18/climate-crisis-cop26-president-global-targets>

UK Greenhouse Gas Emissions: 2019

For the purposes of reporting, greenhouse gas emissions are allocated into sectors as follows:

Energy Supply	Emissions from electricity generation and other energy production activities such as mining, refining and manufacturing fuels.
Business	Emissions from fuel combustion and product use in industrial and commercial sectors, and F gas emissions from refrigeration and air conditioning in all sectors. Includes industrial off-road machinery but not business-related transport emissions, which are included in the <i>Transport</i> sector.
Transport	Emissions from road transport, domestic aviation, railways and domestic shipping. Only includes emissions from vehicles and not from transport related infrastructure or from air conditioning. International aviation and shipping emissions are not included in national totals.
Public	Emissions from the combustion of fuel in public sector buildings, e.g. hospitals and schools. Emissions from public transport are included in the <i>Transport</i> sector.
Residential	Emissions from residential properties, including from consumer product use. Primarily consists of fuel combustion for heating/cooking, garden machinery, and fluorinated gases released from aerosols and metered dose inhalers.
Agriculture	Emissions of greenhouse gases from livestock, agricultural soils (excluding carbon stock changes which are included in the <i>LULUCF</i> sector) and agricultural machinery.
Industrial processes	Emissions resulting from industrial processes, except for those associated with fuel combustion which are included in the <i>Business</i> sector.
Land use, land use change and forestry (LULUCF)	Emissions/removals of CO ₂ from changes in the carbon stock in forestland, cropland, grassland, wetlands, settlements and harvested wood products, and of other greenhouse gases from drainage (excl. croplands and intensive grasslands) and rewetting of soils, nitrogen mineralisation associated with loss and gain of soil organic matter, and fires. Because the impact of biomass harvest on carbon stocks in ecosystems is included in this sector, any emissions of CO ₂ from burning biomass (regardless of the country of origin) are excluded from other sectors to avoid double counting them.
Waste management	Emissions resulting from the treatment and disposal of solid and liquid waste, for example from landfill, incineration and composting. Emissions from incineration with energy recovery are instead reported in the <i>Energy Supply</i> sector and emissions from residential composting are included in the <i>Residential</i> sector.

'When emissions are measured on this basis, UK emissions account for around 1% of the global total, based on a range of estimates produced by the UN, the International Energy Agency and the World Resources Institute amongst others.'

Source: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/875485/2019_UK_greenhouse_gas_emissions_provisional_figures_statistical_release.pdf

UK Climate Change Ambitions

We want to continue to raise the bar on tackling climate change, and that's why we're setting the most ambitious target to cut emissions in the world.

The UK will be home to pioneering businesses, new technologies and green innovation as we make progress to net zero emissions, laying the foundations for decades of economic growth in a way that creates thousands of jobs.

We want to see world leaders follow our lead and match our ambition in the run up to the crucial climate summit COP26, as we will only build back greener and protect our planet if we come together to take action.

Boris Johnson, Prime Minister, 20th April 2021

The UK is leading the world in tackling climate change and today's announcement means our low carbon future is now in sight. The targets we've set ourselves in the sixth Carbon Budget will see us go further and faster than any other major economy to achieve a completely carbon neutral future.

This latest target shows the world that the UK is serious about protecting the health of our planet, while also seizing the new economic opportunities it will bring and capitalising on green technologies – yet another step as we build back greener from the pandemic and we lead the world towards a cleaner, more prosperous future for this generation and those to come.

Kwasi Kwarteng, Business Secretary, 20th April 2021

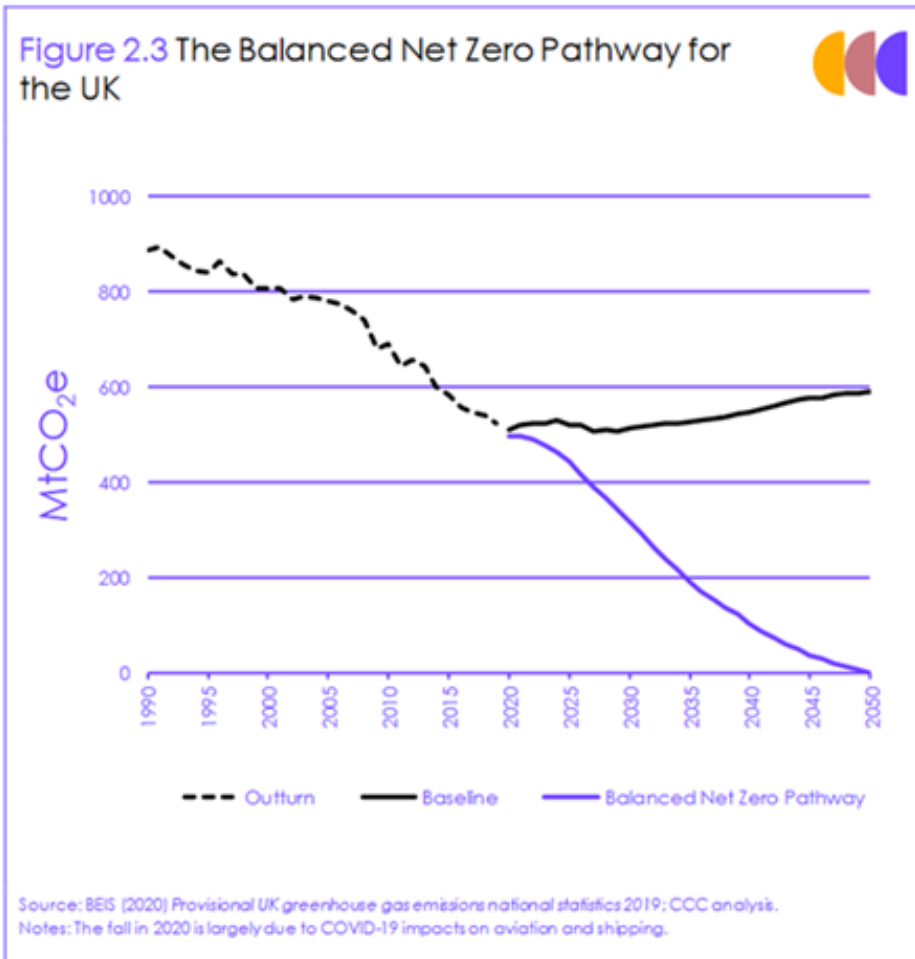
The UK government will set the world's most ambitious climate change target into law to reduce emissions by 78% by 2035 compared to 1990 levels, it was announced today (Tuesday 20 April).

In line with the recommendation from the independent Climate Change Committee, this sixth Carbon Budget limits the volume of greenhouse gases emitted over a 5-year period from 2033 to 2037, taking the UK more than three-quarters of the way to reaching net zero by 2050. The Carbon Budget will ensure Britain remains on track to end its contribution to climate change while remaining consistent with the Paris Agreement temperature goal to limit global warming to well below 2°C and pursue efforts towards 1.5°C.

For the first time, this Carbon Budget will incorporate the UK's share of international aviation and shipping emissions – an important part of the government's decarbonisation efforts that will allow for these emissions to be accounted for consistently.

UK Government, 20th April 2021

Path to Net Zero by the UK



Source: <https://www.theccc.org.uk/publication/sixth-carbon-budget/>

UK Ten Point Plan for a Green Industrial Revolution



Point 1
Advancing Offshore Wind



Point 2
Driving the Growth of Low Carbon Hydrogen



Point 3
Delivering New and Advanced Nuclear Power



Point 4
Accelerating the Shift to Zero Emission Vehicles



Point 5
Green Public Transport, Cycling and Walking



Point 6
Jet Zero and Green Ships



Point 7
Greener Buildings



Point 8
Investing in Carbon Capture, Usage and Storage



Point 9
Protecting Our Natural Environment



Point 10
Green Finance and Innovation

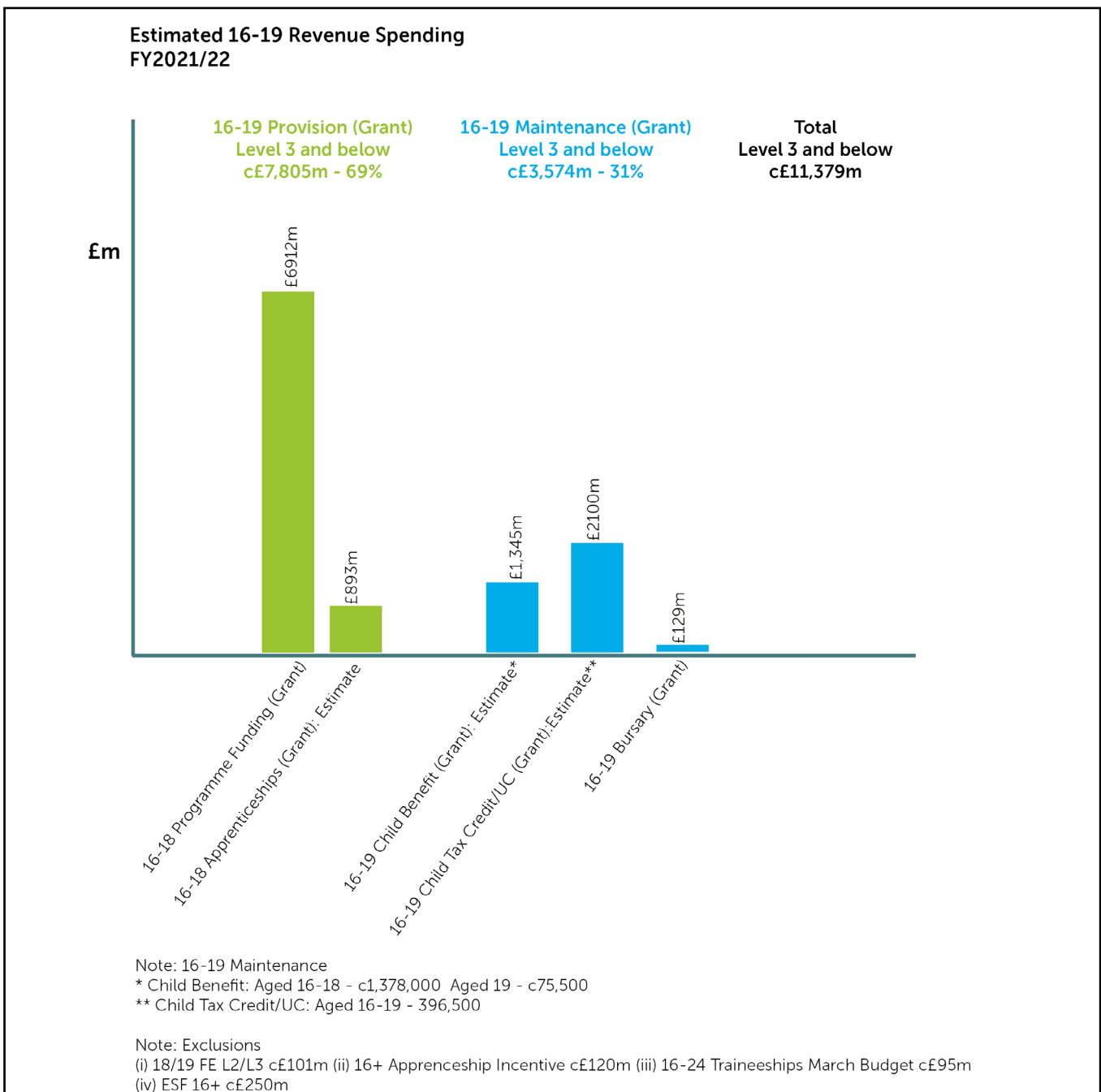
Source: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/936567/10_POINT_PLAN_BOOKLET.pdf

Joining Up Net Zero and Post-16 Education and Skills Policy

Post-16 Funding Baseline

Total public spending on post-16 education and skills in England excluding capital is estimated to be c£36.5bn in 2021/22. Public spending on 16-19 year olds will be approximately £11.4bn (see Box 1), with £7.1bn spent on provision (further education and apprenticeships) and £3.6bn on living costs support (child benefit and child tax credits paid to parents for full-time students and bursary grants paid directly to students). All 16-19 funding supports education and training at Level 3 and below. Public spending on post-18 education and skills in England will be approximately £25.1bn (see Box 2), with £24bn allocated to mainstream budgets and £1.1bn to other budgets. In terms of mainstream budgets for post-18 education and skills, **£21bn (87.8%)** is allocated to Level 4+ (provision and living costs) and **£3bn (12.2%)** is allocated to Level 3 and below (overwhelmingly for provision funding).

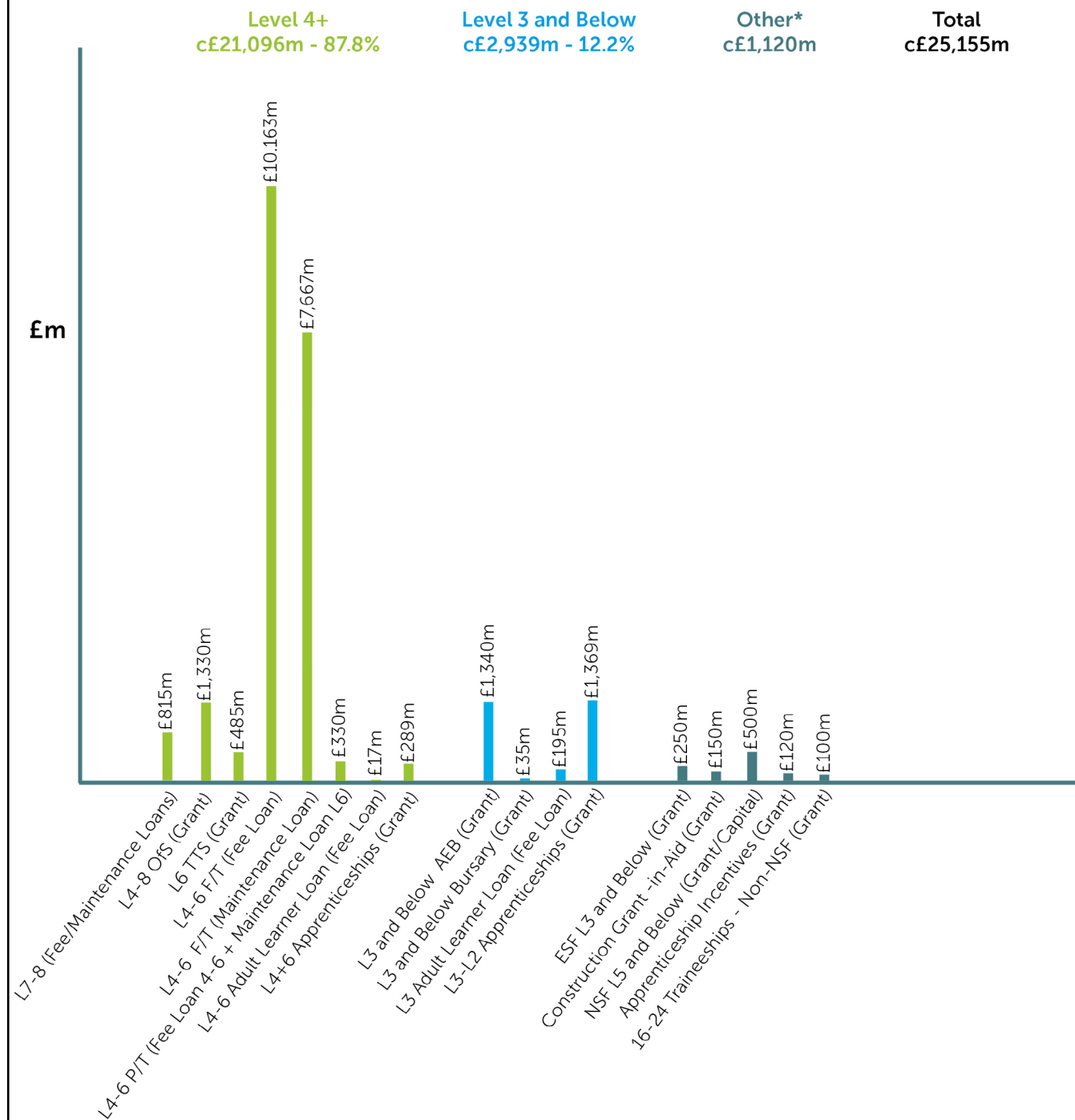
Box 1



Source: author

Box 2

**Estimated Post-18 Forecast Revenue Allocations (Cash Terms - Excludes Underspends)
FY 2021/22**



*Some budgets are temporary, or being restructured. Others difficult to spilt between Level, and revenue and capital.

Source: author

A Net Zero Skills Plan for Upskilling and Reskilling by Level for Green Jobs and Green Skills within Existing Jobs

The Green Jobs Taskforce sponsored by the DBEIS and DfE should devise a Net Zero Skills Plan based on: (i) Level 4+ upskilling and reskilling for green jobs and green skills for existing jobs, and (ii) Level 3 and below upskilling and reskilling for green jobs and green skills for existing jobs (see Box 3).

Box 3

	Green Jobs	Green Skills for Existing Jobs
Level 4+ Upskilling		
Level 4+ Reskilling		
Level 3 and Below Upskilling		
Level 3 and Below Reskilling		

A Net Zero Strategy for Upskilling and Reskilling at 'Level 3 and Below'

Many green jobs and green skills for existing jobs will require upskilling and reskilling at Level 3 and Level 2 rather than Level 4-8. The post-18 funding system must accommodate Net Zero upskilling and reskilling at Level 3 and Level 2.

Promoting Level 3 Upskilling through the Adult First Full Level 3 Offer for Green Jobs and Green Skills

The government has introduced an all-age entitlement to fee-grants worth 100% of course costs through the AEB for adults seeking a first full Level 3 via whole or part qualifications (see Box 4). This is known as the Adult First Full Level 3 offer. The DfE should promote the all-age first full Level 3 entitlement to adults seeking to upskill in Level 3 green qualifications for green jobs and green skills for existing jobs.

Promoting Level 3 Reskilling Fee-Loans for Green Jobs and Green Skills

By contrast, adults who need to reskill at Level 3 for green jobs and green skills within existing jobs will be required to take-out fee-loans (if they do not have access to apprenticeships). The DfE needs to promote the existence of fee-loans to adults wishing to reskill at Level 3 to acquire green jobs or green skills within existing jobs. Alternatively, DfE should provide fully-funded fee-grants for adults in specific Level 3 green qualifications.

Box 4

Provision	19 to 23-year-olds	Notes
English and maths, up to and including level 2 (paras 148 to 154)	Fully funded	Must be delivered as part of the legal entitlement qualifications
Essential Digital Skills Qualifications up to and including level 1 (paras 155 to 158)	Fully funded	Must be delivered as part of the Digital legal entitlement qualifications list
First full Level 2 (excluding English & maths and Digital) (paras 131 to 132)	Fully funded	First full level 2 must be delivered as part of the legal entitlement qualifications
Learning aims to progress to a full level 2 – up to and including level 1 (para 116)	Fully funded	Must be delivered as entry or level one provision from local flexibility
Level 3 legal entitlement (learners first full L3 (paras 133 to 136)	Fully funded	First full level 3 must be delivered as part of the legal entitlement qualifications
Level 3 adult offer (paras 128 to 130)	Fully funded	Learners without a full level 3 or above can access a qualification on the level 3 adult offer qualification list
Level 3 Advanced Learner Loan	Loan funded	A learner has already achieved a full level 3 (Advanced learner loans funding rules)
Traineeship (16 to 24-year olds) (section 3)	Fully funded	<ul style="list-style-type: none"> - 16- to 18-year-old learners must be eligible under the ESFA's young people's residency requirements. - Excludes flexible element where funding depends on age and level. - Note this offer goes up to 24 years olds
English for speakers of other languages (ESOL) learning up to and including level 2 (paras 163 to 166)	Fully funded	For those eligible through unemployed (paras 120 to 121) or on a low wage (paras 122 to 124)
	Co-funded	For those who do not meet the definition of unemployed (paras 120 to 121) or do not meet the eligibility criteria for low wage (paras 122 to 124)
Learning aims up to and including level 2, where the learner has already achieved a first full level 2, or above (para 118)	Fully funded	For those eligible through unemployed (paras 120 to 121) or on a low wage (paras 122 to 124)
	Co-funded	For those who do not meet the definition of unemployed (paras 120 to 121) or do not meet the eligibility criteria for low wage (paras 122 to 124)

Box 4 continued

Provision	24+	Notes
English and maths, up to and including level 2 (paras 148 to 154)	Fully funded	Must be delivered as part of the legal entitlement qualifications list
Essential Digital Skills Qualifications up to and including level 1 (paras 155 to 158)	Fully funded	Must be delivered as part of the legal entitlement qualifications list
Level 2 (excluding English and maths) (paras 131 to 132)	Fully funded	For those eligible through unemployed (paras 120 to 121) or on a low wage (paras 122 to 124)
	Co-funded	For those who do not meet the definition of unemployed (paras 120 to 121) or do not meet the eligibility criteria for low wage (paras 122 to 124)
Learning to progress to level 2 (para 119)	Fully funded	For those eligible for their first full level 2 through unemployed (paras 120 to 121) or low wage (paras 122 to 124)
	Co-funded	For those who do not meet the definition of unemployed (paras 120 to 121) or do not meet the eligibility criteria for low wage (paras 122 to 124)
Level 3 adult offer (paras 128 to 130)	Fully funded	Learners without a full level 3 or above accessing a qualification on the level 3 adult offer qualifications list
Level 3 (paras 133 to 136)	Loan funded	A learner has achieved a full level 3 (Advanced learner loans funding rules)
English for speakers of other languages (ESOL) learning up to and including level 2 (paras 163 to 166)	Fully funded	For those eligible through unemployed (paras 120 to 121) or on a low wage (paras 122 to 124)
	Co-funded	For those who do not meet the definition of unemployed (paras 120 to 121) or do not meet the eligibility criteria for low wage (paras 122 to 124)
Learning aims up to and including level 2, where the learner has already achieved a first full level 2, or above (para 118)	Fully funded	For those eligible through unemployed (paras 120 to 121) or on a low wage (paras 122 to 124)
	Co-funded	For those who do not meet the definition of unemployed (paras 120 to 121) or do not meet the eligibility criteria for low wage (paras 122 to 124)
Learning aims up to and including level 2, where the learner has not achieved a first full level 2, or above (para 119)	Fully funded	For those eligible through unemployed (paras 120 to 121) or on a low wage (paras 122 to 124)
	Co-funded	For those who do not meet the definition of unemployed (paras 120 to 121) or do not meet the eligibility criteria for low wage (paras 122 to 124)

Source: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/985579/AEB_2021_to_2022_funding_rules_v1_FINAL.pdf

An All-Age Level 2 Upskilling Entitlement for Green Jobs and Green Skills

At present, only adults aged 19 and over seeking a first full Level 2 who are also unemployed or earn less than £17,374.50, are entitled to fee-grants worth 100% of course costs through the AEB. The case for introducing an all-age entitlement to fee-grants worth 100% of course costs to fund upskilling at Level 2 in general is strong, as it would cover critical sectors such as social care. Alternatively, the Treasury and DfE could consider introducing free education for all adults without a Level 2 seeking to upskill in green qualifications at Level 2.

An All-Age Level 2 Reskilling Entitlement for Green Jobs and Green Skills

The entitlement for fully funded fee-grants is the same whether adults are seeking to reskill or upskill at Level 2. Once again, the case for an all-age entitlement to free education for reskilling at Level 2 irrespective of economic status (employed, unemployed or inactive) is strong. But again, the Treasury and DfE could extend the entitlement to all adults seeking to reskill at Level 2 in green qualifications.

DfE should not rely on Adult Apprenticeships for Upskilling and Reskilling at Level 3 and Level 2 for Green Jobs

Pressure will grow to increase funding for adult further education at 'Level 3 and below' to support upskilling and reskilling for green jobs and green skills in existing jobs, through the grant-based AEB but also fee-based Adult Learner Loans. However, the Treasury and DfE should not reject these demands by suggesting that all Level 3 and below upskilling and reskilling for green jobs can be met through adult apprenticeships.

Levy and non-levy paying employers choose the level of apprenticeship and the type of apprenticeship to be funded. The English Apprenticeship Programme Budget is employer-led. Critically, the collective demands of levy and non-levy employers will only partially overlap with the skills demands resulting from Net Zero policies.

Levy and non-levy payers might increasingly use apprenticeship funding to support upskilling and reskilling at Level 4-8 rather than Level 3 and Level 2. Apprenticeships might be used to fill green jobs requiring Level 3 and Level 2 upskilling and reskilling but apprenticeships do not fit easily with demand for units and modules for green skills within existing jobs. And some adults will want to change employer or change career to enter Level 3 and Level 2 green jobs.

A Combined Adult FE and Adult Apprenticeship Strategy for Level 3 and Level 2 Upskilling and Reskilling for Green Jobs and Green Skills

DfE should devise a Level 3 and Level 2 upskilling and reskilling strategy for green jobs and green skills within existing jobs encompassing adult further education and adult apprenticeships.

Widening the Green Jobs Taskforce to include DWP

The Green Jobs Taskforce is composed of the Department for Business, Energy and Industrial Strategy and the Department for Education. The taskforce should be widened to include the Department for Work and Pensions. In the short-term, unemployed adults claiming Universal Credit will need to be directed into green jobs and acquire green skills for existing job vacancies. In the medium-term, economically inactive adults will also need to be encouraged to re-enter the labour market post-pandemic to take green jobs bearing in mind the more restrictive skills-based immigration policy now in operation.

Estimating Green Gig Jobs as a Share of Green Jobs

There is too much loose talk about green jobs and the transition to Net Zero. Providing an estimate of the number of green jobs is only part of the challenge for the Green Jobs Taskforce. Equally important is the type of green jobs created. We need to know how many young people and adults will be employees with secure employment contracts and earnings relative to those expected to take green gig jobs including zero-hour contracts, agency and temporary work, or self-employment. The irony could be that the general benefits of Net Zero to the economy and society is built on the backs of young people and adults accepting green gig jobs with insecure contracts and uncertain earnings.

Encouraging Movement into Green Gig Jobs

The Green Jobs Taskforce should analyse whether young people and adults are prepared to move into green gig jobs if they are currently leaving full-time education, employed outside the green economy, or working in gig jobs outside the green economy. Post-pandemic young people and adults might prefer the security of employee-status whether it's in green jobs or not.

Supporting Upskilling and Reskilling for Self-Employed Green Jobs

DfE should commission a policy review of how existing self-employed workers in green jobs and self-employed workers requiring green skills can be supported to gain relevant green qualifications. The department must explain to self-employed workers their entitlement to fee support for upskilling from adult basic skills to Level 6 and reskilling at Level 6 and below. Additionally, DfE needs to recognise loss of earnings whilst training and retraining is a major financial barrier for self-employed workers even where fees are fully funded through grants or loans.

Two-Year Full-Time Level 4-5 'Green' Higher Technical Qualifications for 18-24 Year-Olds

Level 4-6 higher education is dominated by full-time Level 6 first degrees studied by 18-24 year-olds. Although more than 50% of 18-24 year-olds on full-time Level 6 first degrees are enrolled on STEM subjects, the government is committed to expanding enrolments on full-time two-year Level 4-5 vocational sub-degrees and the new Higher Technical Qualifications. DfE should consider supporting the design of Level 4-5 Higher Technical Qualifications in Green subjects which are targeted on 18-24 year-olds wishing to study full-time in higher education from September 2023.

Relaxing the ELQ Rule for Reskilling at Level 4-6 in Green Subjects

DfE should relax the ELQ rule for Level 4-6 study in green subjects in line with STEM subjects. This will support reskilling in green degrees at Level 4-6 and green subjects in Higher Technical Qualifications.

Level 3 T Levels in Green Subjects for 19-24 Year-Olds without a Level 3

DfE should extend eligibility for full-time Level 3 T levels in green subjects to 19-24 year-olds without a first full Level 3 from September 2023. Young adults should be entitled to full-time Level 3 maintenance loans to enable them to study full-time and gain qualifications required by climate change and Net Zero policy.

Embedding 'Education for Sustainable Development' in Post-16 Academic and Vocational Provision

Education for Sustainable Development in the post-16 system must not be defined as preoccupation for vocational education and apprenticeships. ESD needs to be embedded within academic provision, including GCSEs, A levels and non-STEM degrees.

Efficient and Continuous Post-16 Curriculum Reform

The supply-side of the post-16 system must deliver efficient and continuous post-16 curriculum reform which keeps up-to-date with the demands of green jobs and green skills within existing jobs. From apprenticeships to T levels, and GCSEs to Level 6 first degrees, providers and regulators will need to reflect climate change and the impact of Net Zero on our economy and society in the content of qualifications, Standards and programmes.

Identifying the Value Added of the LSG to the Net Zero Skills Agenda

The Lifetime Skills Guarantee (LSG) comprises the Lifelong Loan Entitlement (Level 4-6), the Adult First Full Level 3 Grant Entitlement and Skills Bootcamp Grant funding (see Box 5). Reforms to post-18 education and training in England can take place without recourse to a three-part LSG. Similarly, post-18 education and training can be redirected to support green jobs and green skills for existing jobs without the need for the LSG. The challenge for the government is to explain the value-added of the LSG to delivering the Net Zero skills agenda.

Box 5

<p>Level 4-6 Lifelong Loan Entitlement</p> <p>A Lifetime Skills Guarantee = Adult First Full Level 3 Grant Entitlement</p> <p>Skills Bootcamp Grant Funding</p>
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A Policy Review of Employer Funded Training for Green Skills

The funding of post-16 green skills required to achieve the transition to Net Zero cannot be left in the hands of the taxpayer and adults alone. Employers must play their part too. Debate on the contribution of employer funding of green skills must not be blocked by the fact we have a UK-wide apprenticeship levy. DfE and DBEIS should commission a policy review of employer funded training and business standards to increase on-the-job and off-the-job training for green skills.

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Campaign for Learning

The Campaign for Learning works for social and economic inclusion through learning. It is an independently managed organisation in the NCFE charity group.

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