Navigating the Transition:

A Cost and Skills Analysis for Net Zero Carbon by 2030 in London's Further Education Colleges

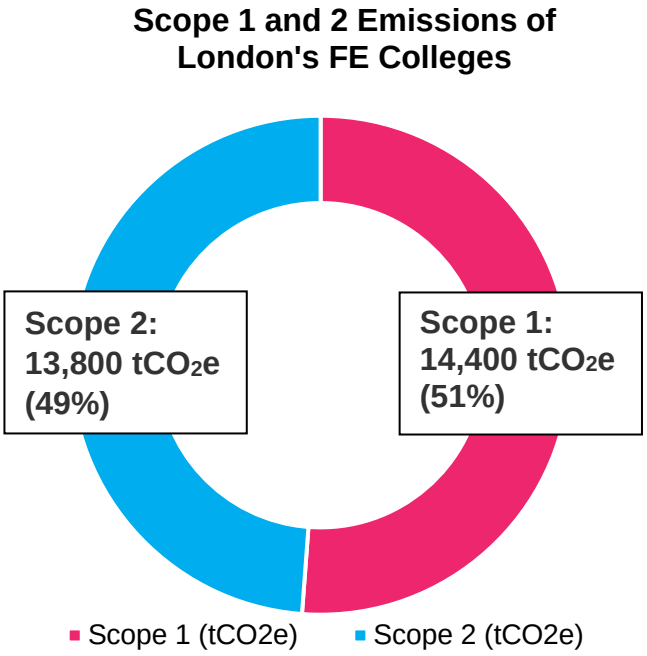
eauc
The Alliance for Sustainability Leadership in Education

CARBON TRUST

CONTENTS

Executive Summary

Further Education (FE) colleges are anchor institutions within London and have a key role to play in the Mayor's ambition for a Net Zero London by 2030. The expectations for FE colleges in reaching Net Zero were laid out in the 2022 Skills Roadmap for London. However, the costs involved in reaching Net Zero and the jobs and skills required have not been quantified so far. The Greater London Authority (GLA) commissioned the Carbon Trust and The Environmental Association for Universities and Colleges (EAUC) to estimate Net Zero costs for London-based FE colleges and assess skills requirements to reach Net Zero across their Scope 1 and 2 emissions by 2030.



Through phased engagement with 20 London-based FE colleges, their scope 1 and 2 carbon footprint has been estimated. This quantifies the scale of the challenge by providing a baseline of emissions, which stands at 28,200 tCO_2e for the Academic Year 2022/2023. Based on the data gathered and analysis of decarbonisation studies, it has been calculated that the average cost to reduce core carbon emissions for the built environment of FE colleges is **approximately £9,720 per metric ton of CO2 equivalent (tCO_2e).** Beyond the core emissions, costs to address remaining residual emissions have been estimated at £4,206 £/tCO_2e. This is in line with the previous sector research found in the Cost of Net Zero report and yields the total estimated costs of Net Zero. The data collection demonstrated that individual colleges are expected to decarbonise to different extents across their scope 1 and 2 emissions. This report has, therefore, forecasted a cost range based on averaged (low end) and upper (high end) estimates on the level of possible decarbonisation in their built environment. These estimates are presented below:

Cost of Net Zero – low end (£)	Cost of Net Zero – high end (£)
213m	**279m**

Due to the paucity of data held at the individual college level, the costs presented in this report are a high-level estimate only. The estimated figures therefore demonstrate the

general scale of the challenge rather than a fully costed assessment or investment-grade proposal. Furthermore, these costs represent an underestimate as additional costs not currently considered will need to be accounted for (e.g. development costs, DNO costs, enabling works, etc.). However, the impact of possible economic inflationary effects has been considered, which could further increase costs to **£297m-£301m by 2030**. This supports the need for urgent action.

While the financial challenge is significant, reaching Net Zero will also require strong mechanisms to transition jobs and skills within FE colleges, with suitable support from direct and indirect enablers. Managing this transition thoughtfully will likely influence overall costs, requiring strategic investment in staff development to avoid increased future expenses associated with rapid skills acquisition in response to urgent demand.

In preparing for a Net Zero future, FE colleges in London face critical decisions in skills planning and job management to meet 2030 targets. Previous research highlights an urgent need for coordinated action in developing skills for decarbonising the built environment and other Net Zero actions. Decision-makers within these colleges must proactively manage transitions, focusing on retaining, retraining, resourcing, and recruiting staff to fill existing and emerging skills gaps. External organisations are also likely to play a crucial role in supporting these efforts. The comprehensive approach to skills management will be pivotal, with a need to integrate skills across departments to foster sustainable practices and effectively address regional and local complexities.

The transition to Net Zero by 2030 for FE London colleges involves navigating significant technical, economic, and social challenges. However, these challenges also present broader opportunities that can pave the way for a sustainable transformation and align with the strategic vision of FE colleges.

Technical challenges relate to gaps in data-driven technologies and skills impediments, while economic barriers arise from funding inadequacies. Socially, the engagement and skills gap within college communities also poses a challenge. Yet, these areas also offer substantial opportunities. Technologically, enhancing systems can streamline operations and cut long-term costs. Economically, innovating business models around sustainability can attract new funding and partnerships. Socially, engaging the college community in sustainability efforts can enhance learning and foster a proactive environmental culture. We consider both the challenges and opportunities to better position FE colleges as leaders in educational and community sustainability.

The following tables provide a structured overview of targeted recommendations. Table 1 outlines the summary of recommendations aimed at ‘direct enablers’, such as the UK government, the GLA, and key organisations in the education sector. **We see direct enablers as the key audience of this report and who will have the largest potential to influence change.** Table 2 is aimed at London FE colleges (see appendix for list of

colleges) to outline what further actions they should take to achieve Net Zero by 2030. Table 3 is aimed at indirect enablers that will need to assist FE colleges. The definitions for the stakeholder groups are included in the introduction. More detail for these tables can be found in the recommendations section of this report.

Table 1 – Summary of recommendations for 'direct' enablers

Recommendation Area
Local empowerment Action: Allocate decision-making power on funding to London (GLA) through devolution.
Enable the sharing of resources Action: Develop platforms for colleges to share resources for Net Zero.
Allocate resources for London FE colleges Action: Commit dedicated resources, in discussion with FE colleges to understand their resource constraints, whether that is in the form of funds allocated directly to colleges or better engagement structures.
Centralise and make visible existing support Action: Publish a website where existing sources are centralised into a publicly accessible forum that clearly outlines what is expected from colleges and their role in meeting Net Zero.
VAT review Action: Review the VAT regulations for FE colleges investing in energy efficiency.
Recommend public Net Zero reporting Action: GLA to strongly recommend London FE colleges to implement best practices for collecting energy and emissions data and publish this information on their websites.
Access to external funding mechanisms Action: Direct stakeholders to review funding mechanisms and facilitate commercial style finance and loans for FE colleges.
Improved coordination nationally Action: Support regional and national coordination on decarbonisation for FE colleges.

Table 2 – Summary of recommendations for the 'implementers' (London FE colleges)

Recommendation Area
Sustainability in governance Action: Review current governance, identify gaps, and integrate sustainability criteria.

Sustainability skills in leadership Action: Review potential sustainability gaps, develop and integrate sustainability concepts, communicate this as a goal, and evaluate impact.
Dedicated sustainability lead Action: Allocate and empower a dedicated sustainability lead or adopt a shared-services model.
Sustainability-related strategy for the college Action: Colleges should develop and implement a comprehensive sustainability strategy to ensure consistent progress and resource allocation.
Energy Management Action: Colleges should adopt energy management practices that facilitate the regular and accurate monitoring and reporting of energy use and emissions.
Net Zero reporting Action: London FE colleges should make energy and emissions data publicly available on their websites.
Sustainability skills across the college Action: Conduct a training needs analysis and create a skills plan for meeting Net Zero, leveraging existing public tools and resources.
Innovative skills solutions Action: Promote innovative and collaborative learning between academic and operational staff using the Living Labs model as an example.
Regional coordination Action: Coordinate with local further education organisations and align sustainability strategies to avoid competition.
Carbon reduction opportunities Action: Undertake estate wide decarbonisation surveys to identify and cost carbon reduction opportunities.
Net Zero Working Group Action: Create a London-based FE college Net Zero working group for peer-to-peer support.
Joint accelerator procurement Actions: Collaboration between smaller FE colleges is needed to apply for joint carbon reduction opportunity projects.

Internal procurement structures to prioritise energy efficiency. Actions: College procurement teams to set procedures in place to prioritise energy efficiency upgrades.

Table 3 - Summary of recommendations for 'indirect' enablers

Recommendation Area
Engagement Action: Indirect enablers should ensure FE colleges are connected with them to offer support and advice, such as best practices in sustainability in an education context.
Technical expertise Action: Support the development of sustainable approaches in technical areas such as Sustainable Procurement Frameworks.
Advocacy Action: Align with FE colleges to advocate for policies that support FE colleges to deliver their Net Zero targets.

Introduction

Background

In 2018, the Mayor of London declared a climate emergency for London and set the ambitious target for London to become Net Zero carbon by 2030.[1] The landscape of actors responsible for delivering a Net Zero city by 2030 is complex. One key sector that can influence and accelerate Net Zero for London is Further Education (FE) colleges. FE colleges can leverage their capabilities as institutions shaping curriculums for London's workforce and play a role in facilitating research relating to decarbonisation. They can serve the wider community by fostering partnerships, supporting the sector's move to sustainable practices and shaping a Net Zero community. Furthermore, they act as role models within their local community by proactively taking accountability for their energy efficiency and decarbonisation activities.

The Greater London Authority (GLA) has overseen London's annual Adult Education Budget (AEB) since 2019. The annual AEB allocated to London since 2019 has amounted to approximately £320 million.[2] Further and Higher Education (HE) providers play a crucial role in innovation and inclusive, economic growth. These institutions will be at the forefront of delivering the new technologies and skills that will be integral to achieving the Mayor's ambition of Net Zero carbon by 2030. Expectations for FE and HE providers in achieving London's Net Zero target were set out in the Skills Roadmap for London. The first step asks FE providers to put plans in place by 2024 on how they will meet this target of making their estates Net Zero across scopes 1 and 2. These plans will help identify the need for investment and further quantify the level of financial support required.

FE colleges as anchor institutions

FE colleges have a fundamental role in providing access to education, skills and learning for their community. They are anchor institutions within London as well as drivers for innovation and research, providing a living laboratory for sustainable campuses and technologies. The role of anchor institutions aligns with the Mayor of London's expectations to support decarbonisation and achieving Net Zero carbon estates by 2030, alongside the Mayor of London's visions for a safer, fairer, and greener city.

Scope of this study

The GLA has commissioned the Carbon Trust and the EAUC to investigate '*the estimated cost of achieving Net Zero carbon by 2030 in London's Further Education colleges'* to help them further understand the potential level of financial support and skills/jobs planning that will be required in achieving Net Zero carbon by 2030. This report is in response to the

[1] Mayor of London (2022), Pathways to Net Zero Carbon by 2030 | London City Hall
[2] Mayor of London (2024), Adult Education Budget | London City Hall

Skills Roadmap for London (2022) and is part of a large range of support the GLA has produced to help achieve the Net Zero carbon 2030 goal, including the 'GLA Planning for Net Zero-Carbon – Toolkit for London's Adult Education providers.' Further literature on the subject includes EAUC's Cost of Net Zero report and Cost of Net Zero Calculator, Mott MacDonald's Technical Assistance to Deliver London's Climate Action Plan and Element Energy Analysis of a Net Zero 2030 Target for Greater London.

By analysing both the possibilities to reduce emissions within FE colleges' direct control, and leveraging their social role as education providers, the project seeks to make public the costs of decarbonising London's FE institutions by 2030, as well as provide an assessment of the jobs and skills implications. While FE colleges are the direct focus of this study, it should be understood that FE colleges sit within a broader community of stakeholders that each have a role to play in enabling, planning for, or implementing action on decarbonisation. Figure 1, below, summarises the nested relationship between FE colleges and the direct and indirect community of enablers. Specifically, we mean:

- **Direct enablers** – These stakeholders are the key target audience as they directly influence FE colleges and can support colleges with the costs that colleges face for meeting Net Zero. Direct enablers include the national government, government funding bodies such as the Department for Education, the GLA, the Education and Skills Funding Agency, and oversight bodies such as Ofsted. Local authorities, financial institutions, and environmental regulatory bodies can also directly influence FE colleges' cost outcomes in meeting Net Zero.

- **FE college level implementers** - The further education colleges within this study's scope are the implementers that will be influenced by the direct enablers and supported by indirect enablers. They'll need strong engagement from both the inner core and outer network circles.

- **Indirect enablers** – These stakeholders could indirectly improve and enable the environment colleges are operating in to reduce barriers and support their costs to meet Net Zero. Indirect enablers include support bodies in the education sector, consortiums, professional associations, and trade unions.

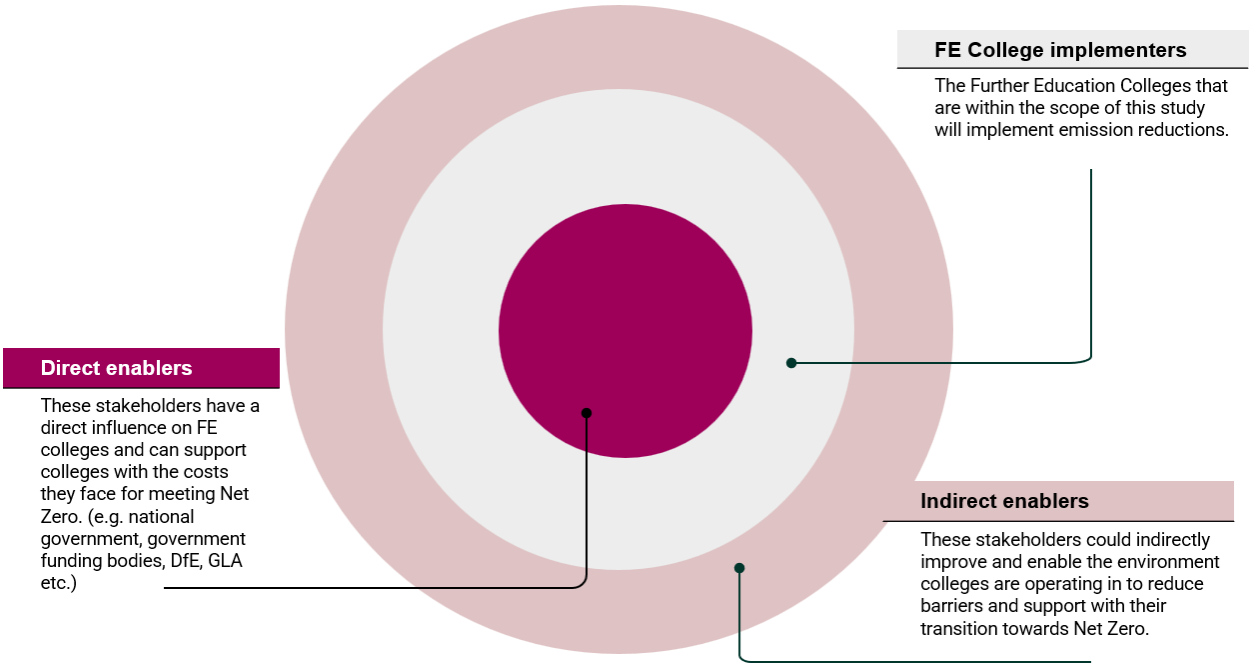


Figure 1 - Illustration of our multi-stakeholder framework, showing direct, FE college level implementers, and indirect enabler categories.

This report is the result of close collaboration with key enablers to conduct analysis and gather the necessary information to understand the cost to decarbonise London's FE institutions by 2030 and align with the Mayor of London's ambition. It draws on colleges' existing Net Zero plans and supporting information, engagement with a wide stakeholder base, and gathers input from an expert steering group to develop robust outputs.

The main objectives of this report are to:

- Assess the economic cost of reaching Net Zero carbon by 2030 across London's Further Education Colleges.
- Review current plans to identify gaps in jobs and skills, funding, and explore opportunities for collaboration.

Net Zero

The target for Net Zero carbon by 2030 in Greater London, set by the Mayor of London in 2018, refers to scope 1 and 2 emissions, where scope 1 and 2 definitions are outlined in the International Organization for Standardization (ISO) Net Zero Guidelines as follows:

> **Scope 1 emissions** – also called direct greenhouse gas (GHG) emissions, where GHG is from sources owned or directly controlled by the organisation.

Scope 2 emissions – also called indirect GHG emissions from purchased energy, where this scope covers emissions from the generation of purchased electricity, heat, cooling, or steam consumed by the organisation.

Scope 3 emissions - all indirect emissions (not included in scope 2) that occur in the value chain of the reporting company, including both upstream and downstream emissions.

Following instruction from the GLA, this research focuses on scopes 1 and 2. Any reference to emissions and Net Zero within this report only refers to scopes 1 and 2 unless stated otherwise. This work centres on estate (built environment) decarbonisation only. See appendix for more detail. Scope 3 is a fundamental aspect of decarbonisation, nonetheless. However, as a significant proportion of these emissions are associated with third parties and the supply chain, different approaches to decarbonisation are needed (beyond the scope of this study). The main focus of this research is on decarbonising the built environment for FE colleges rather than the broader question of indirect scope 3 emissions, such as what the FE colleges procure, and the emissions associated with those products and services.

Methodology

Approach

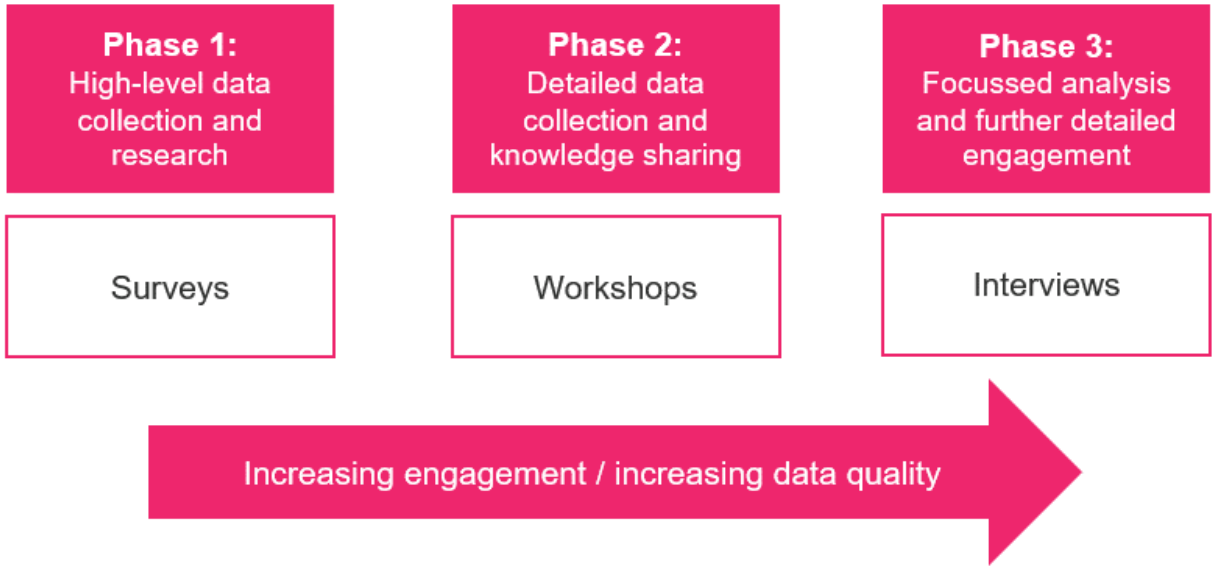
The methodology of this project was designed to answer the question, '**What is the potential cost of reaching Net Zero carbon by 2030 across London's Further Education colleges?'**

We interpret cost to refer to the capital investment needed. To answer the above key question, the project explored several important sub-questions, focussed on:

- Which FE institutions have plans but need support to align with Net Zero?
- Have any colleges costed their plans?
- What skills and training are required to support the journey?
- What are the anticipated challenges, and how can they be resolved?

Direct engagement with FE colleges was a critical element of this study. To investigate the various inputs that make up the overall cost estimation, the project operated across three phases, with each phase increasing in detail and increasing levels of engagement. This three-tiered approach prioritised and maximised engagement from motivated colleges and those with more data and resources to contribute to the study.

Figure 2 - Methodological three-tiered approach



Steering Group
An external steering advisory group provided support and steered the research direction with the aim of:

- utilising the cross-industry knowledge base across the organisations to feed into the understanding of the broader landscape of what is needed;
- integrating learnings from workshops to create a two-way understanding, to knowledge share, understand gaps; and
- discussing opportunities for cross-collaboration to support reaching Net Zero for colleges, e.g., joint procurement opportunities and investment needs.

The steering group met three times throughout the project to help direct the research, provide critical feedback on the methodologies used and key deliverables, and allow for their insights to be integrated across the three phases. The steering group consisted of members from:

- The GLA
- Department for Education
- The Carbon Trust
- The Environmental Association for Universities and Colleges (EAUC)
- London University Purchasing Consortium
- Association of Colleges
- Low Energy Transformation Initiative (LETI)
- Heat Pump Federation

Phase 1
The objective of Phase 1 was to collect data and conduct stakeholder engagement at a broad level from the London FE colleges, as well as conduct desk-based research into the

level of decarbonisation in FE colleges more broadly. See appendix for a complete list of FE colleges within the scope of this study. All in-scope colleges were approached to participate in the research, and a stakeholder list was developed once formal consent was received, indicating that each college was prepared to take part in the study.

Surveys

Colleges were invited to engage with an online 'Net Zero Survey' via a Microsoft Forms survey through email, which entailed a summary of the nature of the survey and the wider project. Based on the survey results, colleges were allocated a "maturity level" (high-low) that guided the selection and targeting of colleges for phases 2 and 3.

The survey consisted of 37 questions that covered the following topics:

- Organisational data, including:
  - Staff and student population, number of buildings
  - Energy data
  - Emissions data
- Net Zero/decarbonisation/zero carbon estates plans
- Qualitative information on skills and costs needed to fulfil Net Zero/decarbonisation/zero carbon estates plans.

Phase 2

The objective of Phase 2 was to gather deeper insight from additional data and engagement. This involved the delivery of a series of workshops aimed at those who provided complete/robust returns during Phase 1; however, the workshops were also open to all FE colleges, including those who did not engage in Phase 1. The workshops aimed to advance the understanding of the costs to decarbonise FE colleges in London and understand common challenges. To encourage participation and provide added value beyond the specification, the workshops were positioned as knowledge and capacity development sessions to upskill participants on the relevant decarbonisation topics of FE-specific heat decarbonisation, energy efficiency and renewable energy considerations, and the related skills and funding approaches for Net Zero implementation. The workshops also included case studies from individual colleges, which were linked to the theme of each workshop to share common challenges and solutions and encourage peer-to-peer learning. Case study colleges included those within the cohort of London-based FE colleges and colleges outside London with relevant insights.

Workshops

Each workshop included a project overview to ensure a complete understanding of the intended outcomes. They centred on a specific topic (see below) and presented a case study on the workshop theme. The use of Slido (live Q&A and polling function) allowed further qualitative data to be gathered and facilitated engagement with attendees.

Table 4 - List of workshops

Workshop 1	Overview of ‘Net Zero’ and how this project will help your college on its Net Zero journey
Workshop 2	FE College Leadership and Governance
Workshop 3	Skills planning for Net Zero FE colleges
Workshop 4	Get me to Net Zero

Phase 3

The objective of Phase 3 was to gather more detailed data/insight and extract robust quantitative data on FE estates' decarbonisation to support the project outcomes. We conducted 1-2-1 interviews with a select group of five colleges. The colleges selected demonstrated high levels of engagement and significant progress on their Net Zero transition, as well as those further behind, which ensured the study had access to robust data. The interviews gathered in-depth information that allowed the development of expected costs, insights into resources required, and additional carbon/energy data, as well as the potential cost savings for specific initiatives identified in phase 2. The decarbonisation plans provided by the colleges (where they had been undertaken) allowed for in-depth quantitative analysis to be undertaken on specific technologies and carbon reduction measures.

Interviews

The interviews aimed to further interrogate the data received, the topics discussed in the workshops, and to specifically investigate the key issues of energy reporting, funding, and skills. Interviews were also conducted with key stakeholders from outside of individual colleges. These included steering group members, different teams within the GLA, further education bodies, anchor institution working groups, and public sector decarbonisation support programmes (e.g. the Retrofit accelerator – workplaces).

Scope of colleges within the study

This research targeted further education colleges located within Greater London and receiving GLA funding (see appendix). Consent was required to access the appropriate contact details and invite colleges to participate. Overall, 16 colleges out of 20 eligible colleges participated in some form during the research. See the summary in Tables 2 and 3 below.

Table 5 – Breakdown of engagement and responses

Total number of colleges within the scope and approached to participate	20	100%
Number of colleges that provided consent to be contacted	14	70%
Number of colleges who responded to Phase 1 Net Zero Survey	11	55%
Number of colleges attended at least one workshop	16	80%
Number of colleges who took part in a detailed 1-2-1 interview	5	25%

It should be noted that both ‘FE Colleges’ and ‘College Groups’ are included in the research. Where a ‘College Group’ is referred to, they responded on behalf of all the FE colleges within their group located within Greater London. Where a college is stated, this refers to a single college, not the affiliation with a college group. Where a college group answered on behalf of multiple colleges, the total data for all the relevant colleges within the group was included.

The methodologies adopted for assessing the estimated costs and required skills to achieve Net Zero are addressed in more detail later in this report.

Contextualising the role of FE colleges

Policy and regulatory drivers

At a national level, the UK Government has a Net Zero strategy with a target of 2050. This target applies to all sectors of the UK economy, including colleges. The Department for Education (DfE) significantly promotes sustainability efforts within the education sector. The DfE Sustainability and Climate Change Strategy demonstrates the Government’s commitment to the sustainability agenda through five action areas: climate education, green skills and careers, education estates and digital infrastructure, operations, and supply chain, and leading on an international scale.

The key drivers at a London level are the Skills Roadmap for London and the Net Zero by 2030 strategy that applies to colleges. The Skills Roadmap for London recognises the importance of providing individuals with the skills and training relevant to local employers, boosting the journey to achieving a Net Zero carbon by 2030. The Education and Skills Funding Agency (ESFA) recommends that colleges report their carbon emissions using

the Streamlined Energy and Carbon Reporting (SECR). While this is not currently mandatory for colleges, it is expected to become so as the Government steps up public sector reporting.

Funding

FE colleges have access to various funding opportunities to support their decarbonisation projects. However, the Treasury's reclassification (see appendix) of colleges into the central government sector has brought challenges for colleges to obtain funding through commercial banks in the form of loans or debts as well as other funds such as the UK Infrastructure Bank, so they are increasingly dependent upon government funding. Such public sector funding sources enable colleges to make energy-efficient upgrades and implement sustainable practices in their estates. We present a summary of open and recently closed funding sources in the appendix.

While a number of funding mechanisms have been made available over recent years, many of these are now closed, and only a small number are aimed at FE colleges specifically, with demand outstripping the funds available. The knowledge base and skills at some colleges may mean that these funds are not necessarily known about or there are gaps in the skills, knowledge, and/or capacity to apply. Additionally, much of the funding is aimed at capital works rather than dedicated decarbonisation funding, so colleges have had to allocate capital funding based on competing priorities. As an example, one of the colleges interviewed during this study is currently executing a capital project worth approximately £2 million over several years. The project aims to upgrade the ageing lifts on campus, which are no longer suitable for their intended purpose. Consequently, this allocation of capital funds has implications for the overall decarbonisation efforts.

Dedicated decarbonisation funding has existed, however. For instance, the Department for Education offered the Energy Efficiency Grant, which provided a grant to colleges for energy-efficient building upgrades. This funding enabled colleges to conduct necessary maintenance and improve energy management. London-based FE colleges and groups received around £6.6m through the scheme[3]. The Mayor of London also supports decarbonisation through the Retrofit Accelerator – workplaces (soon to fall under the Zero Carbon Accelerator) and the Local Energy Accelerators, although these can be difficult for colleges with smaller project sizes to access. These programmes are aimed at helping public sector and education institutions implement retrofit projects and improve locally generated energy sources. By facilitating renewable energy, these grants reduce carbon emissions and create local job opportunities in the energy sector. They also provide expert advice and support to design a decarbonisation plan to successfully carry out energy efficiency projects, which is often lacking in colleges due to restricted capacity and resources. The Mayor's Green Finance Fund is also looking to lend over £500m for decarbonisation projects in the city to help London meet its Net Zero ambition and deliver

[3] UK government, (2024) Additional_FE_capital_funding_allocations_2022_to_2023.xlsx (live.com)

a city that is greener, cleaner, and ready for the future, as laid out in the London Environment Strategy.

Salix administers two centrally funded schemes: 1) The Public Sector Decarbonisation Scheme (PSDS) and 2) the Public Sector Low Carbon Skills Fund. These programmes provide grants to all public sector bodies, including colleges, to fund heat decarbonisation and energy efficiency projects. Phase 4 of the PSDS will be available in 2024 with £1.17bn available until 2028 and phase 5 of the Low Carbon Skills Fund has £16m available for applications to boost decarbonisation skills and unlock decarbonisation.

Although central funding has been made available in different forms, with significant contributions in some cases, the FE sector still faces a number of challenges. Such as securing external funding since the FE reclassification (funding was initially provided through the FE Reclassification Capital Allocation and College Capital Loans to address this but both of these have now closed), having the skills and capacity to find and apply for wider public sector funding schemes, project managing and implementing decarbonisation projects, assigning capital funding to carbon reduction opportunities amongst competing priorities, and financing the initial work to understand what measures can be implemented at what cost – assisting in determining which funding to apply for, amongst others. Overcoming these financial barriers is crucial in accelerating progress in effectively reducing emissions.

Other considerations
Given the breadth of organisations operating within the FE space, there can be complexity and disparity between both the guidance and requirements FE colleges need to follow. An example of this is the disparity between the DfE Net Zero target date of 2050, in line with UK government targets, and the Mayor of London target of 2030. This longer-term national target sometimes makes it more difficult to make the case for more urgent action in London, adding a barrier to Net Zero progress. However, initiatives from the DfE such as the digital support hub are looking to address this. Although nothing is mandated at this point, there is an expectation from the Mayor of London that FE colleges will set out plans by 2024 for achieving Net Zero in 2030. Whilst FE colleges are working on these plans it's clear that the supporting infrastructure needs to be in place to assist colleges in their, and the Mayor's, ambitions, and funding will play a significant role within this.

The role of FE colleges in meeting Net Zero

FE colleges have a fundamental role in providing access to education, skills and learning for their community. Colleges serve as anchor institutions, forming partnerships and collaboration with the community, industry, and other stakeholders to promote sustainability and improve the well-being of those who live there.

In their role as anchor institutions, colleges play a crucial part in advancing decarbonisation and achieving Net Zero goals as community members that can improve environmental outcomes, such as by improving their operations to reduce emissions

intensity, improve air quality, and promote sustainable behaviours on campus. They provide staff and learners with the knowledge and skills to tackle climate change and explore green technologies. Colleges provide the green skills required to train, upskill, and retain jobs to support the transition to Net Zero careers. Skills includes apprenticeships, T-Levels, and Skills Bootcamps. Following the Green Jobs Taskforce, colleges also have a vital role in collaborating with industry and the skills sector to develop the skills needed to deliver the Net Zero transition.

Colleges play a key role in research, innovation, education and community engagement. These institutions lead research and innovation efforts for sustainable energy and technologies to reduce carbon emissions. They are at the forefront of encouraging collaboration among key stakeholders to share best practices and sustainable solutions. In addition, colleges can set a good example for implementing sustainable practices on campus, with a focus on reducing scope 1 and 2 emissions through investment in renewable energy and energy efficient buildings. Colleges can encourage others to adopt similar approaches by showcasing successful case studies of sustainable strategies and demonstrating the potential of reducing emissions across multiple estates.

Furthermore, FE institutions have an essential duty to provide staff and learners with the knowledge and skills required to address climate change and biodiversity crises and support the transition to Net Zero. Colleges equip both students and educators to navigate the complexities of environmental challenges by offering specialised courses, programmes and training focused on sustainability. These institutions, act as hubs for education, training and research to ensure all individuals have access to education while also developing a skilled workforce that matches the community they serve.

Colleges promote partnership and collaboration with local communities, businesses and non-governmental organisations (NGOs) to raise awareness and promote sustainable practices. By collaborating and leveraging resources, expertise and initiatives, these collaborations make it easier to conduct research, launch community initiatives, and share knowledge.

By fulfilling these diverse roles, colleges significantly contribute to decarbonisation efforts to align with the Mayor of London's Net Zero goals, alongside the Mayor of London’s visions for a safer, fairer, and greener city. They do more than educate and empower learners to address climate change; they also promote innovation, are change agents for an inclusive community, and foster local skills to achieve a sustainable and resilient environment for London.

Research analysis

Overview

This section will analyse the data received through the phased engagement activities outlined in the methodology. The analysis of the quantitative and qualitative data has enabled a high-level estimate of the costs required for London-based FE college to reach Net Zero by 2030 to be outlined. The limitations of the research and of any costs presented are also explored. Alongside the financial requirements, this section will also analyse the people dimension and the skills necessary for the rapid transition toward Net Zero.

Baseline

It should be noted that the colleges are assessed as a group, but in practice, the colleges are at different stages of their Net Zero journey. We acknowledge these differences by referring to the Climate Action Roadmap for FE Colleges and structuring our analysis of the 20 London FE colleges according to the roadmap stages of **emerging, leading, and established** (assessed between November 2023-April 2024). For a full description of what an emerging, leading, or established college looks like on climate action, please refer to the Climate Action Roadmap for FE Colleges. The baseline (point at which we assessed the colleges) indicates that some colleges show a clear ambition, with work already undertaken to assess and cost the financial implications of transitioning to Net Zero. This includes some views on what skills and jobs will be required to achieve this. However, several colleges are further behind and have yet to develop a detailed understanding of what will be required.

College profile

FE colleges within London achieving Net Zero would be very impactful. Through the data collection and the extrapolation of data for some colleges, the scope 1 and 2 carbon footprint has been estimated for London-based FE colleges below:

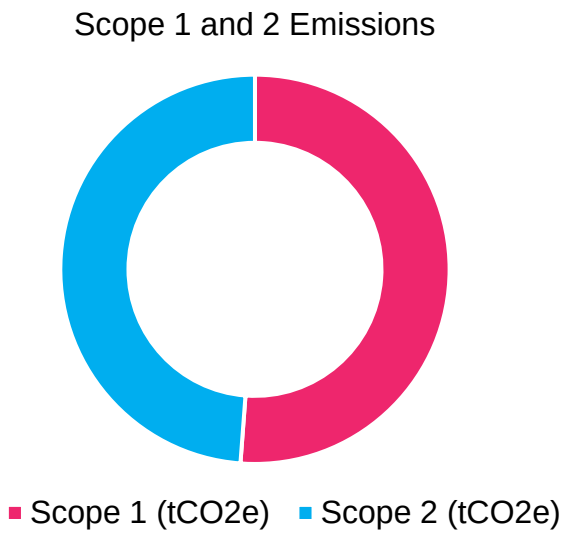


Figure 3 – Pie chart showing total emissions from scopes 1 and 2, respectively, from the FE colleges within the study

Scope 1: 14,400 tCO_2e (51%) *
Scope 2: 13,800 tCO_2e (49%)

* Excludes refrigerant use and fleet emissions

The estimated total scope of 1 and 2 emissions for London-based FE colleges for the reporting period AY22/23 is **28,200 tCO_2e**. This figure is based on incomplete survey responses; therefore, an extrapolation has been conducted to estimate emissions for the whole cohort. There is a relatively even split between scope 1 emissions (mainly from natural gas for heating and hot water) and scope 2 emissions (purchased electricity), this was also found to be broadly consistent when the data was viewed at the individual college level.

Whilst the relative proportions of scope 1 and 2 emissions may have been similar across many of the colleges, there was a significant variation in terms of total college level emissions. The highest total emissions from the survey was 3,800 tCO_2e and the lowest was 235 tCO_2e, highlighting the difference between individual FE colleges. Due to the availability of data, the costs and skills assessment of FE colleges in this report have been conducted at the collective level. However, this difference in emissions demonstrates that actual implementation will ultimately require different approaches on a case-by-case level for the transition to Net Zero.

Whilst this report can outline incredibly valuable high-level trends, the colleges will have several key differences that will ultimately shape their own Net Zero journeys.

Organisational structure
The colleges who responded to the phase 1 survey have a range of organisational structures. Overall, there is a direct correlation between the college size, the number of students the college hosts, and its annualised gas and electricity consumption.

- The size of colleges within the study ranged significantly. Some colleges operate from less than 5 buildings and others operate from more than 20 within their portfolio.

- The student and staff populations range significantly. The number of students at each college ranged from 2,500 to 38,000 according to survey responses. This represents over 95,000 students and 6,400 members of staff in total.

- Annualised total gas and electricity consumption tends to reflect building and population capacity. Larger colleges with more occupants have higher gas and electricity consumption.

Building constraints
Drawing on the Low Energy Transformation Initiative (LETI) Climate Emergency Retrofit Guide, the built environment generally has constrained or unconstrained features.

- Constrained building types entail heritage, form, or space constraints. Such constraints make retrofits and energy efficient measures more difficult to implement as extra considerations such as structural integrity, historical features, or stringent building regulations are needed. In an FE college context, a handful of colleges have heritage buildings or own extensive land holdings, which presents more challenges in how they will need to manage their energy use intensity or space heating demands.

- Unconstrained building types can usually achieve higher savings in terms of energy use intensity, space heating and hot water demand, as well as transition to renewable energy sources for electricity. These types of buildings are more reflective of college campuses with modern style buildings.

The make up of the built environment within an individual college's estates portfolio will impact the total costs required to reach Net Zero. However, due to the paucity of available data, this report is unable to examine in detail the impact that different building archetypes will have on the relative costs involved. This would require a bottom-up approach and extensive data collection which was not possible through this study but is encouraged for future work.

Energy trends
The Net Zero survey results demonstrated that 9 out of the 11 colleges record their scope 1 and 2 emissions, however, only 6 recorded their scope 3 emissions, and all of these 6

were only partial scope 3 rather than the full value chain. This is another example of the differences between individual colleges when looking at the depth of Net Zero progress and the lack of a standardised approach across the sector. This was also evident where one college reported emissions using a market-based method rather than the location-based approach used by all other colleges (more detail on these two approaches are provided in the appendix).

The survey results showed that the average energy intensity for the FE colleges was ~130kWh/m^2 across the estates. Natural gas and electricity use were the main fuel sources; however, other colleges may use other fuels such as oil, LPG or biomass but these have not been accounted for in this research as this data was not present.

Through the workshops and interviews with key FE college stakeholders it is evident that energy management practice varies from college to college. Some colleges have access to half hourly energy data, others monthly, whilst others rely on the annual procurement information from their utilities contracts. Some colleges do not record energy data at all. Additionally, some colleges have written procedures for energy management practices (although we did not uncover any evidence of formal practices being followed such as ISO 140001, ISO 50001) whereas others follow generally accepted approaches that have been adopted over time. A solid energy management practice with strong governance should be considered a keystone for the transition to Net Zero. The evidence uncovered in this research points to increased levels of training, support and guidance on energy management best practice being required for some colleges.

Decarbonisation Surveys

During the engagement in phases 1 and 2, colleges were requested to provide decarbonisation surveys or costed decarbonisation plans that had been produced. A total of five colleges returned decarbonisation surveys that had been carried out (with differing levels of opportunities analysed and costings). From the surveys provided, a total of 97 individual measures totalling over £20.6m in capital expenditure were identified across a range of carbon reduction measures including heat pump replacement of gas boilers, LED lighting, solar PV, BMS upgrades/optimisation, building fabric improvements amongst others. These costed measures have been used to inform the approach to determining the estimated cost of Net Zero across London-based FE colleges.

Engagement with Net Zero

Most colleges that engaged with this research are acting on the Mayor of London's Net Zero target, where 90% of responses stated that they have some form of decarbonisation plan in place. Over 50% of colleges also have a target date of Net Zero by 2030 with some form of high-level strategy or roadmap. However, the majority of colleges that responded to the survey are less confident in implementing the actions needed to meet their 2030 target. Only 3 of the 11 colleges are confident they have the skills to deliver their strategies. This view was also evident during the workshop engagement activities. These challenges are covered in more detail in the Challenges section.

Most colleges are familiar with the tools available for decarbonisation, such as the 'Cost of Net Zero calculator' or 'Climate Action Roadmap for FE Colleges'. However, the majority have not used the cost calculator. Our research on costs aims to address this issue by presenting a range of expected costs so the sector can better understand the scale of the challenge. Colleges are accessing the 'Skills Roadmap for net zero carbon – a tool kit for London's Adult Education providers' to support them in putting plans in place, but others have still not heard of this, highlighting the need for further support on raising awareness and enabling more engagement with existing resources. Most colleges are also not yet at the stage where they have detailed costed plans for their skills transition due to issues such as competing priorities and a lack of coordination across different departments.

Overall, colleges are referring to the Climate Roadmap for FE Colleges for their decarbonisation plans and provided positive feedback in workshops on how this resource has helped spur their climate action strategies.

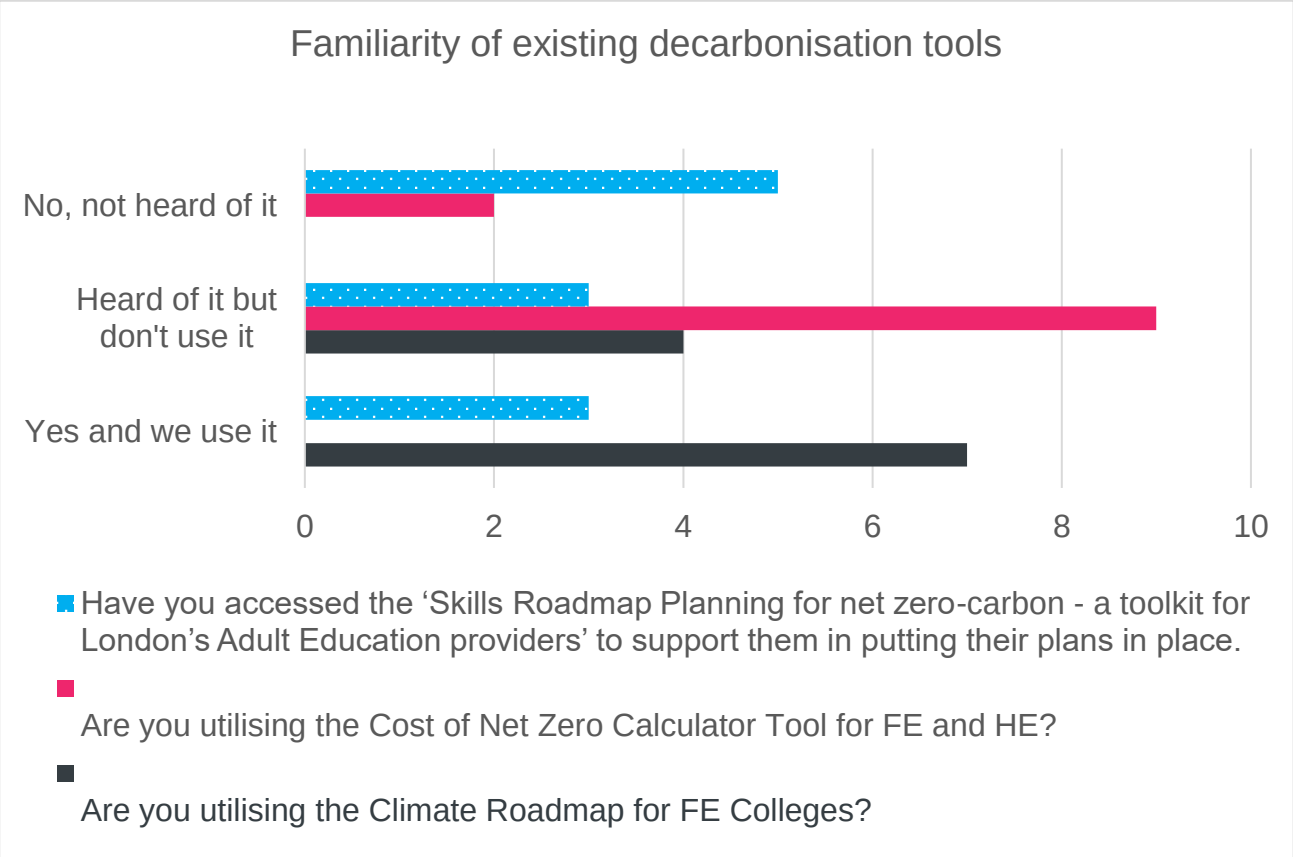


Figure 4 - Familiarity of existing decarbonisation tools

Net Zero maturity

There are differences in the level of engagement between colleges, where the sector faces numerous challenges to implementation. The next section focuses on presenting a high-level overview of the costs associated with the capital investments needed for colleges to reach Net Zero. Part of the phase 1 survey data analysis was to create a maturity matrix of the colleges with a view to focussing the engagement activities for phases 2 and 3. This

matrix assessed how each college responded to various key survey questions and assigned a maturity index rating between 1 and 5, which demonstrates their position on their journey towards Net Zero.

Table 6 - Maturity index scale

Maturity Level	Details
1	Measures energy but does not measure emissions or have a decarbonisation plan in place
2	Measures emissions or has a decarbonisation plan but not both
3	Measures emissions, has a decarbonisation plan but does not know what the next steps are, unsure about how to implement a strategy or to create initiatives
4	Has a decarbonisation plan in place but is lacking in either skills or capacity to ensure they are on track for Net Zero 2030
5	Has a decarbonisation plan in place and has a good understanding of what is required for Net Zero by 2030

Out of the 11 colleges in the survey, 2 colleges were scored a 5, 2 at level 4, 4 at level 3, 2 at level 2, and 1 college was scored a level 1. The results from the maturity index further emphasised the institutional variation across the cohort and helped inform the data collection and engagement activities in phases 2 and 3 of the research.

Current funding approaches

Currently, FE colleges have adopted a number of funding routes to implement decarbonisation related activities. Some colleges have used the Retrofit Accelerator – Workplaces scheme under the GLA to have external consultants produce decarbonisation surveys for their estate and adopt the guaranteed savings from the RE:FIT framework for implementation. This has the advantage of being free until the point of delivery for the colleges, reducing upfront expense and risk. Others have used funding (either separately or alongside the accelerator) through Salix as part of the Public Sector Decarbonisation Scheme (PSDS) to progress measures already identified. Alongside PSDS, the Low Carbon Skills Fund has also been used to provide support, although this appears to have had a fairly limited uptake amongst the colleges. The Further education capital transformation fund allocation has also been used effectively by almost all colleges. This granted funding for decarbonisation activities and was the main source of funding used for decarbonisation measures installed to date at some colleges. Outside of these external funding sources, each college's annual capital budget allocation is the primary source of money for implementing decarbonisation activities. However, the competing priorities and limited investment capabilities at colleges have secured only isolated and relatively small allocations.

Embodied carbon considerations

During the engagement activities, colleges made suggestions that for some buildings in their estate, it might be more cost effective to demolish and re-construct to achieve Net Zero status. There is a delicate interplay between embodied carbon, operational emissions and facilities that are fit for modern education, which FE colleges will need to consider. Embodied carbon are the carbon emissions emitted producing a building's materials, their transport and installation on site as well as their disposal at end of life[4]. This can account for around 20% of total lifetime emissions, with this rising to over 40% in modern low energy buildings (as the proportion of in use emissions is lower). The demolition and rebuild of a modern building, therefore, does not always represent net carbon emission savings and technical advice should be sought on the projected embodied carbon emissions of any proposed development by FE colleges, especially where an old building is being replaced. Whilst an analysis on the trade-off between embodied carbon against lower operational emissions is outside the scope of this study both LETI and UKGBC have available resources on this topic.

Route to Net Zero

Overview

This section will outline the estimated costs to achieve Net Zero across the London-based FE colleges and outline at a high-level the jobs and skills elements that will be required in order to support the transition. We focus on the costs directly applicable to colleges but as shown in Figure 1, it should be understood that there are direct and indirect enablers who will influence the delivery of these costs.

Estimated Cost of Net Zero

Determining the cost of Net Zero

A key objective of this research was to determine the estimated cost of Net Zero for London-based FE colleges. Due to the time and scope of the work, there was an appreciation at the start of the project that any costs would be high-level estimates governed by the data provided by colleges through the phased engagement approaches outlined in the methodology. This has required the use of assumptions and data extrapolation, as outlined in the appendix. The costs presented in this report, therefore, do not represent a detailed, fully costed assessment of reaching Net Zero. This would require extensive building level data analysis across all 20 colleges. Given some colleges do not hold this data currently, this was moved outside of scope. Rather, the costs presented are used to provide the GLA and DfE with a high-level estimation of the scale of the financial challenge that is required for London-based FE colleges to reach Net Zero.

[4] Low Energy Transformation Initiative (LETI), (2020), Embodied Carbon Primer (leti.uk)

Cost Methodology
A five-step methodology was followed to determine the estimated cost. This is presented below:

Table 7 - Outline of costing methodology

Step 1: Collect	Collect Phase 1 survey results on college energy use, emissions, and collect associated decarbonisation surveys and plans.
Step 2: Extrapolate	Extrapolate emission figures from phase 1 colleges to remaining colleges that did not provide any data. Correlation between student numbers and emissions used for extrapolation.
Step 3: Analyse	Determine the average CAPEX price for each individual carbon reduction measure from all the decarbonisation surveys provided. Calculate the average £/tCO_2e for each type of measure. Apply a weighting to calculate the average decarbonisation cost (£/tCO_2e) for the built environment.
Step 4: Cost	Using the weighted average, apply the £/tCO_2e (CAPEX) for decarbonisation measures against emissions. Account for tax costs.
Step 5: Report	Aggregate the costs across the dataset to determine the estimated costs of implementation across all colleges.

11 colleges responded to the phase 1 survey and 10 provided energy data. From reviewing the data, several options were then considered for extrapolation across the remaining colleges. These included floor area, annual turnover, student numbers, staff numbers and energy benchmarks. While all these options had pros and cons, the number of students was the only proxy where information existed for all 20 colleges with confidence in the figures. Analysis of the data showed that there was a good correlation between student numbers and emissions (0.8), so student numbers were used as a proxy to extrapolate the emission figures for colleges that did not participate in the survey.

Alongside the survey responses, the colleges were also asked to provide any building decarbonisation surveys that had been conducted. Five colleges provided surveys and the individual measures in each survey were then collated to provide average costs against emission savings for each type of measure (£/tCO_2e). The costs presented in the surveys were capital costs (CAPEX) and were exclusive of additional costs, which will increase the total cost of implementation. The average emission saving and number of occurrences for each measure in the dataset were then multiplied to provide a weighted average cost for the decarbonisation of college built environment, which equalled **£9,721 £/tCO_2e**. This weighted average cost was then applied to the aggregated emissions of the London-based FE colleges. This provided a low end decarbonisation of a 38% reduction against the baseline emissions (average saving from decarbonisation surveys) and a high end of a

73% reduction against the baseline emissions (highest saving from surveys) to determine the total estimated costs.

The residual emissions (62% for low end and 27% for high end) were then assigned the cost of £4,206 £/tCO2e from the built environment section of the Cost of Net Zero report. This better reflected the composition of the remaining built environment emissions after most decarbonisation measures would have been installed and accounts for measures outside the scope of this study (e.g. land use, refrigerants, and behaviour change). The estimated total costs were then aggregated to estimate the total cost of net zero for the London-based FE colleges. This process is outlined in Figure 5, below.

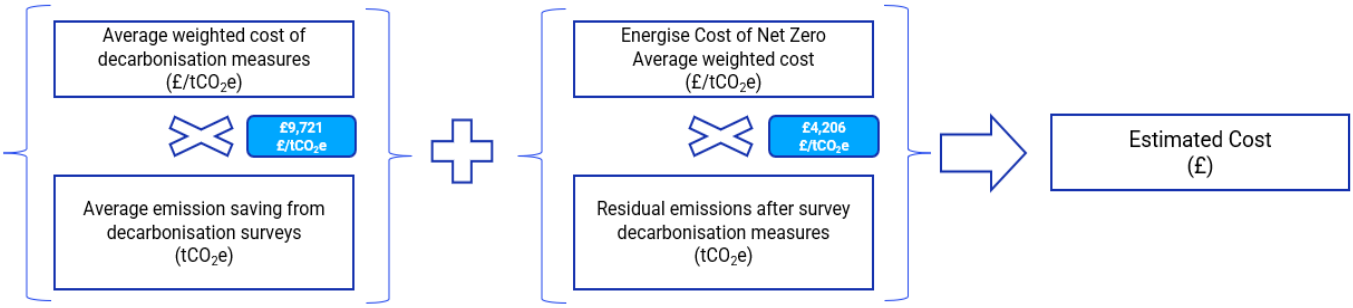


Figure 5 - Estimated cost methodology

Estimated Costs

Following the methodology presented above the high-level costs for London-based FE colleges have been outlined. It is estimated to cost **£213m to £279m** depending on the depth of decarbonisation possible within each individual college. This cost is estimated at £178m - £232m in capital expenditure plus £36m - £46m in VAT costs.

Table 8 - Estimated cost of Net Zero

Aggregated Scope 1 and 2 Emissions (tCO2e)	Cost of Net Zero – low end (£)	Cost of Net Zero – high end (£)
28,200	213m	279m

The low-end cost refers to carbon reduction measures (at 9,721 £/tCO2e) contributing to a 38% reduction in emissions and then the Cost of Net Zero figure (at 4,206 £/tCO2e) being applied to the residual 62% of emissions. Whilst the high-end accounts for 9,721 £/tCO2e being applied to 73% of emissions and 4,206 £/tCO2e applied to the residual emissions. Due to the paucity of input data, it is important that the cost of Net Zero is considered as a range. Each individual college will be able to decarbonise to a different extent using carbon reduction measures in their built estate and so it's not possible to give an absolute figure. The cost range also highlights the level of extrapolation used to generate these figures.

Although the estimated costs are significant, it is likely that these are a substantial underestimation of the total cost required. The data provided by colleges through decarbonisation surveys related to estimated capital expenditure and did not represent detailed, investment grade financial analyses. It is expected that considerable additional costs will be required for consultant and management fees, enabling works, contingency costs, ancillary costs, and VAT uplift. While there was no data available to analyse these additional costs in more detail, supporting information is provided in the additional costs section below. All stakeholders should be mindful that **the costs presented in this report are conservative figures and the real cost to Net Zero will be much higher** as these costs become factored in. It is recommended that further work is carried out at the individual college level to firm up costs and provide additional certainty to any figures presented in this report.

Value Added Tax (VAT)

Under current regulations, FE colleges are not eligible to reclaim the VAT incurred as part of the costs of implementing carbon reduction measures. This current legislation results in FE Colleges being required to pay an additional 20% to any proposed project. Through engagement with colleges as part of this research, it has been found that issues around VAT are one of the most significant barriers to the implementation of decarbonisation measures at an individual college level. One college provided an example of an air source heat pump project that had the potential to save over 700 tCO_2e, however, the VAT on the project was over £1.4m. Given that the main source of funding will need to come from the central government, the payment of VAT in this instance does not appear to represent best value for either the government or FE colleges. It is recommended that the GLA engage the Department for Education and HM Treasury to review the current regulations around energy efficiency projects and VAT for FE colleges and consider changes to facilitate the rapid deployment of carbon reduction measures by introducing tax relief.

Additional Costs

Whilst the costs presented in this report relate to the capital costs of installing decarbonisation measures in FE colleges, it is important to note that additional costs will be incurred by colleges as part of the installation process. These costs will normally be determined at the business case/investment-grade proposition level rather than the initial survey level where many colleges are currently. Due to the level of data available in this study it has not been possible to quantify, however, the table below outlines some examples of potential additional costs. These additional costs have the potential to significantly raise the cost of implementation for FE colleges and should be accounted for as much as possible in the planning process.

Table 9 - Summary of additional installation costs

Additional Cost		Potential Impact	Comments
Annual operation and		£	The annual maintenance of many decarbonisation measures may not be

maintenance costs (OPEX)			significantly different from the business-as-usual approach and may even decrease (eg. upgraded glazing or LED lighting), but additional costs might need to be factored into the annual revenue spend (eg. solar PV annual maintenance at ~£8.25/kWp).
DNO Costs		££	The electrical capacity of a site may require upgrading and thus a payment to the Distribution Network Operator (DNO) would be required. These costs can be significant and add up to £50,000+ to project costs.
Initial decarbonisation surveys		£	Depending on the position of the college, initial decarbonisation surveys may be required to identify possible carbon reduction measures. These surveys can be in the region of £10,000.
Management and consultant fees		£- ££	The costs presented in this report include estimated costs for management and consultant fees, however, depending on the measure being adopted additional costs may be required.
Enabling work		£ - £££	Some carbon reduction measures may require enabling work prior to installation. These can be rewiring for new LED upgrades, fabric improvements ahead of low carbon heating, adjustments to plant rooms etc. These costs will vary on a case-by-case basis but can be significant.
Contingency costs		£ - £££	Depending on the measures being installed, contingency costs may add markedly to the overall costs. E.g. A 3% contingency for a large heat pump installation could add in the region of £200,000 to the total cost.

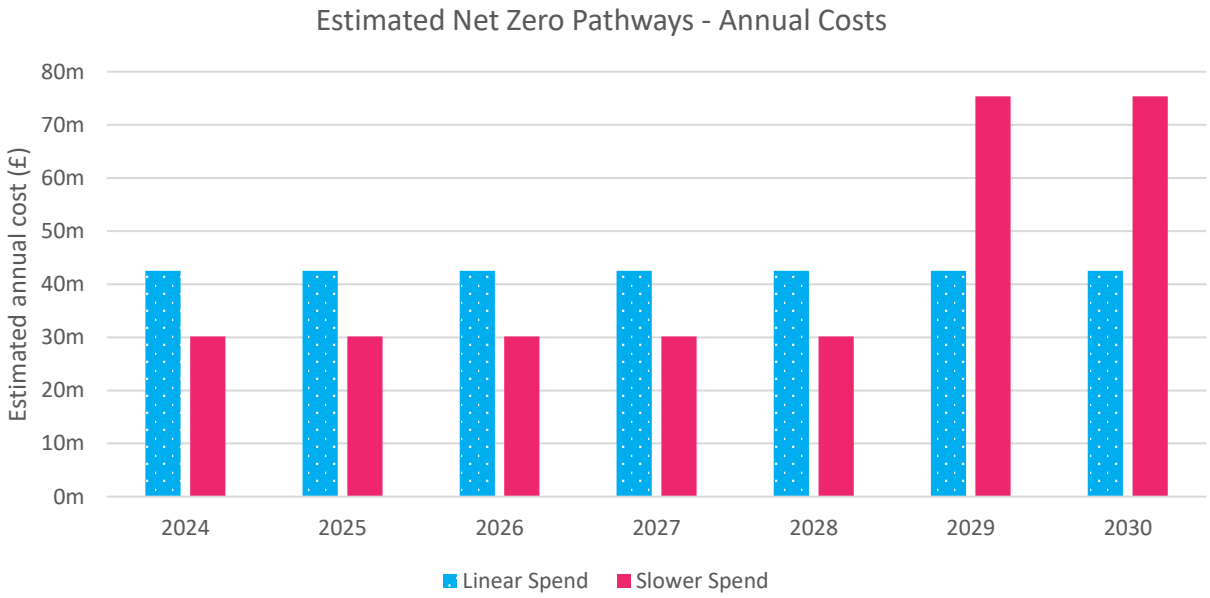
Future Costs

To achieve the level of emissions reductions required by 2030, the adoption of carbon reduction measures will need to happen at a pace and scale that is a significant step change to the business-as-usual. Whilst the carbon incentive for rapid deployment is clear, there is also a financial incentive. The data available limits the possible forecasting of the future cost of implementation, however, the cost presented in the previous section can be projected against forecast inflation. The OBR GDP Deflator forecast[5] has been used to consider the impact of inflation on projected costs from 2024 to 2028, with the Bank of England target inflation rate of 2% used between 2028 and 2030. It is important to note that estimated future costs presented in this report are undiscounted.

[5] Office for Budget Responsibility (2024), GDP_Deflators_Budget_March_2024

The high-cost scenario of **£279m** in 2023 would result in a cost of **£316m** if the total cost was deployed in 2030. Considering the need to take immediate action a more realistic scenario would be if the total cost in 2023 was spent in a linear fashion out to 2030, in this scenario the total cost to Net Zero would then be **£297m**, requiring an annual spend of just over **£42m**.

Figure 6 - Estimated cost to Net Zero pathways



Reflecting that some colleges are not well progressed on their Net Zero journey, an alternative scenario is that slower spend occurs between 2024 and 2028 (as planning and identification takes place), with a concentration of spend between 2028 and 2030 as the target date approaches. If 50% of the estimated cost was spent between 2024 and 2028 with the remaining 50% spent between 2028 and 2030, the total cost required would rise to **£301m,** with an annual spend of **£30m in 2024-2028** rising to **£75m between 2028-2030.** This highlights the financial benefit to taking action faster rather than delaying. These hypothetical pathways are presented in Figure 6. The results are naturally sensitive to the assumptions related to inflation, see appendix for more details.

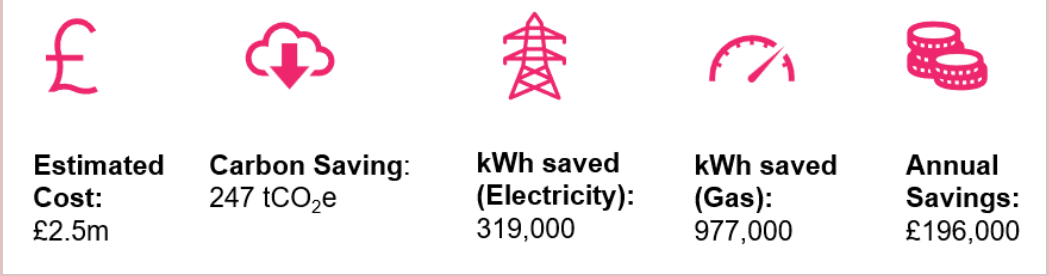
Net Costs

Whilst the costs presented in this report relate to the estimated costs required to reach Net Zero, it should also be noted that these costs do not account for incurred costs that are unrelated to decarbonisation. For instance, as fossil fuel boilers reach end of life there is a cost incurred for the business-as-usual, like-for-like, replacement. When presenting a business case for a low carbon alternative, this replacement cost should be accounted for through the net cost of a carbon reduction measure. This has the ability to reduce the additional (new) capital funding required to meet Net Zero. Although these savings may not be transformative to the total required and will require additional detailed data not currently available at a college level, it should be noted for future work.

Case Study

In order to provide further evidence on the costs of net zero for colleges, we provide results from a detailed decarbonisation survey conducted by external consultants on a single campus. The measures proposed included solar PV, air source heat pumps, building management system (BMS) training, LED lighting upgrades, variable speed drives on pumps, and free cooling in a server room. The solar PV had a significant install cost, at £1,200/kWp, but the projected payback was only 3.8yrs, providing the college an excellent investment with a lifespan of 25+ years. In contrast, the heat pumps would not represent such a positive financial payback and were the most expensive technology (at >£1m) but would contribute the most carbon saving at over 95 tCO_2e.

When considering the jobs and skills of staff it was found that training staff to optimise the BMS could achieve savings of over 460,000kWh per year, equal to over £115,000 in savings. The training was estimated to cost around £10,000, resulting in a payback of only a couple of months, representing an incredibly strong financial business case for the college and supports the training of existing staff to accelerate decarbonisation.



Skills planning for Net Zero FE colleges

Previous research has been conducted on what is needed to prepare the UK workforce more broadly for transitioning to a net-zero economy.[6] The GLA has also published outputs related to this in the 'Skills Roadmap for London'. There are also industry-focussed guides that discuss the direct skills behind actioning Net Zero, such as decarbonising the built environment[7], and Net Zero skills challenges and recommendations for the FE sector specifically.[8] Combining this contextual information with close engagement from a selection of FE colleges, this section seeks to highlight an urgent need for action and support on skills planning for FE colleges. Without sufficient skills planning, preparing the staff and human resources that will be critical for implementing Net Zero-related measures in these institutions can be challenging. In the Recommendations Section, we will also

[6] NESTA (2020), 'Going Green: Preparing the UK workforce for the transition to a net-zero economy'

[7] CITB (2021), 'Building Skills for Net Zero'

[8] Campaign for Learning (2021), 'Racing to Net Zero – The Role of post-16 education and skills'

propose what support should look like for colleges to meet skills and job planning requirements for their 2030 Net Zero goal.

Decision-makers in FE colleges can use their authority and responsibility to craft plans and processes concerning Net Zero skills within their institutions. Numerous external organisations also have a role to play in supporting FE colleges with their skills plans to ensure job retention in the sector and attract the future workforce with the necessary skills. Yet, in a situation marked by numerous changes, there exists a risk of inadequate coordination and prioritisation. The landscape of skills and jobs for the 20 colleges within this study to meet Net Zero by 2030 within London is complex, spanning local skills plans to country-wide considerations. This regional complexity is also coupled with each college's specific circumstances and needs. This report simplifies the overview of skills and jobs that FE colleges should consider for Net Zero, as shown in Table 10.

The focus of this report is on skills and jobs that are within the direct control of Net Zero FE colleges. We do not cover green skills and jobs that can be indirectly enabled within Greater London through the learning and community services colleges often provide. Indirect jobs are outside this project's scope and should be a separate research question explored in the future. For our analysis we draw on the Climate Action Roadmap for FE Colleges, which categorises five climate action areas within FE colleges. The Roadmap has been adapted to account for 'external Net Zero activities', referring to activities that colleges are unlikely to hire permanently and are specialised skills for decarbonisation projects. The six areas encompass, at a high level, the scope of skills and jobs that directly concern an FE college relating to Net Zero:

These six categories are intended to support decision-makers within FE colleges who have a role to play in planning for skills and jobs for Net Zero. The categories demonstrate the importance of a holistic strategy for Net Zero that connects as many people across the college environment as possible, whether a college governor or a visiting contractor.

Table 10 – Overview of current jobs and skills against future Net Zero-related activities to highlight potential gaps

Skill and job areas	Target personnel	Current skills	Net Zero-related activities
Leadership and Governance	Board of Governors/Trustees, Principal/Chief Executive Officer, Deputy Staff/Vice Principal, Finance Directors/Manager or Chief Financial Officer, Human Resources Director	Educational leadership, financial management, strategic planning and governance	• There will be increasing demand to work with staff to develop and implement sustainable policies and strategies. • Decision-making that requires a deeper understanding of sustainability principles, and an analysis of sustainability-related investments. • Increased engagement with enablers to coordinate action on sustainability.
Teaching, Learning, Research	Academic teaching staff whose curriculum covers sustainability related topics, support staff, Programme Managers, Librarians, substitute teaching staff, Lab Technician, Head of Department	Subject matter expertise, pedagogical skills, research skills, communication and interpersonal skills	• Collaborate with various departments to integrate sustainability into the curriculum and operations. • Support the implementation of energy efficiency measures and behaviour changes. • Staff development programmes may be necessary to integrate Net Zero-related activities into teaching, learning and research work.
Estates and operations	Estates Manager, Facility Manager, Technician, Groundskeeper, Waste and Environment Management staff,	Facility management, maintenance and repairs, health and	• Measuring and monitoring energy consumption. • Analysing energy usage patterns and identifying areas for improvement.

	Electrician, Plumber, Procurement staff	safety compliance, financial management	• Implementing energy-saving initiatives. • Overseeing waste management and recycling programs. • Support ongoing monitoring and reporting processes for energy efficiency planning and strategies. • Understand and potentially contribute to environmental audits and assessments. • Understand sustainable building design, construction and retrofitting. • Integrate sustainable procurement practices and supplier engagement strategies. • Utilise expertise from academic staff in implementing best practice
Partnership and engagement	Partnership and engagement staff, outreach, student support, teachers, admin, liaison staff	Stakeholder engagement, relationship management, coordination, strategic skills	• Increased sustainability literacy to understand energy efficiency, carbon reduction strategies, and circular economy principles to effectively engage partners to support the college's journey. • Develop green partnerships that support the college's move to more sustainability practices. • Provide capacity building activities and drive community engagement to make sustainability best practice business-as-usual.

Data collection	BMS Manager (on-site in the college), Sustainability Coordinators/Managers, Energy Managers, Environment Officers/Managers, Contracts Manager (on-site in the college)	Database management, data governance and compliance, IT, data analysis	• Integrate sustainability data metrics by collecting and monitoring data on energy consumption and emissions. • Understand data needed for environmental audits and assessments. • Drive reporting and documentation processes for college management, stakeholders and regulatory agencies on carbon reporting.
External Net Zero activities	Technical contractors such as Architects, Building Controllers, Energy Assessors, Structural Engineers, Quantity Surveyors, Project Managers, Construction Workers, BMS Manager, Environmental/Sustainability Manager, F-Gas and Gas Safe Engineers, Solar PV Designer and installer, Low Carbon Heating Engineer, Lighting Designer, Insulation Fitter, Glazing Fitter, HVAC Engineer, Contracts Manager	N/A – It is assumed that personnel contracted externally will provide specific skills required by the college.	N/A – This category of personnel is expected to bring in skills that are external to the college. It may be the case that existing or future college staff will need to engage more with specialised personnel for their decarbonisation plans or consider recruiting/retraining such expertise permanently.

Table 10 demonstrates that skills and job planning will need to be addressed from the perspective of the whole college. There is an increasing amount of collaboration that will be needed across departments to deliver more sustainable practices, which presents new ways of working, and reporting, and requires a notable expansion of skill sets among the listed personnel to effectively implement Net Zero initiatives.

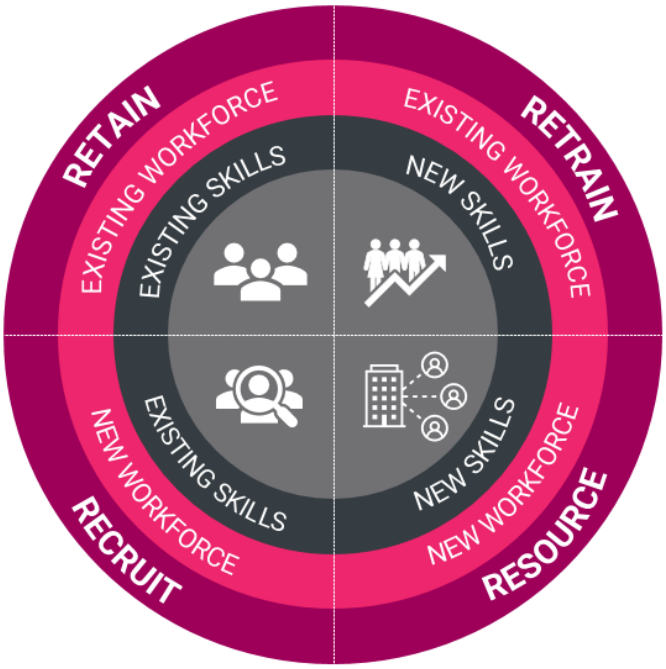
A key question this research seeks to answer is the estimated costs to achieve Net Zero. There was insufficient data available to provide costs for skills planning and it should be noted that costs are an outcome of the skills planning approach, which can be addressed in several ways. We discuss the approach to managing skills and possible cost implications next.

Approach to managing skills and jobs

There is no one-size-fits-all approach that the colleges within this study are progressing with. Together with a review of existing literature and qualitative feedback provided by the colleges directly, it is evident that greater support, collaboration and coordination are required between organisations within the FE sector to support college staff to deliver Net Zero. Colleges strongly emphasised a desire to coordinate with relevant actors from the public and private sectors and other relevant stakeholders to facilitate a comprehensive approach to managing skills and jobs for Net Zero FE colleges by 2030.

It is essential to recognise the need for staff to transition from their current skill sets to those considering Net Zero principles. To help decision-makers recognise the various approaches to managing a skills transition effectively, we draw on ‘The Skills Landscape 2019-2025 Route Map’ published by OPITO for the UK skills workforce. This framework was adapted, as shown in Figure 7, which **presents four strategic components.**

Figure 7 - Adapted framework from OPITO UKCS 'The Skills Landscape 2019-2025'



- **Retain:** How can decision-makers in FE colleges support their existing staff? This component focuses on maintaining the current skills and capabilities of the existing workforce.

- **Retrain:** How can decision-makers in FE colleges address retraining requirements needed by existing staff where they face an increased demand for new knowledge on Net Zero? Retraining may also require transitioning away from roles and tasks that do not include green considerations. This component speaks to the need to identify skills gaps and upskill the existing workforce to address these gaps strategically.

- **Resource:** How can decision-makers inject new skills through new workforce members? In an FE college context, this refers to drawing on resources outside of the college's day-to-day activities. This may be because there are complex skills or novel trends behind Net Zero that an FE college may need to tap into on a short-term or one-off basis.

- **Recruit:** How can decision-makers increase their pool of existing skills by bringing in new staff into the college? Recruitment focuses on replacing or growing the existing workforce.

Figure 8 - Overview of the climate action areas interacting with the 4Rs that will underpin FE college Net Zero skills environments

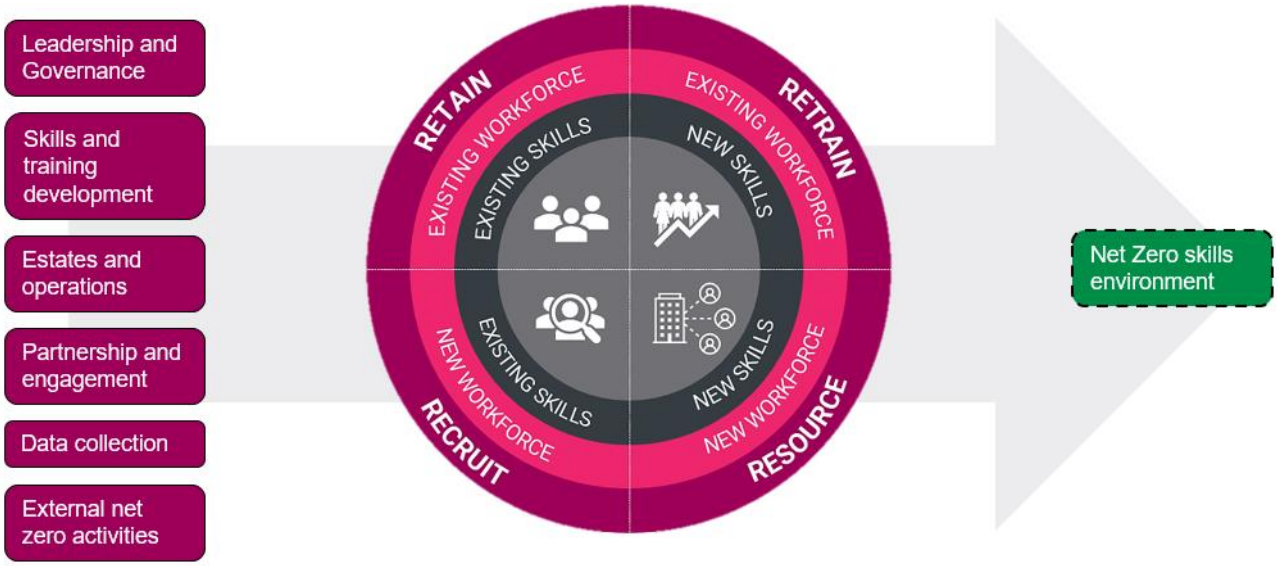


Figure 8 demonstrates the interactions between the climate action areas (left side) and a skills transition framework (the 4R image in the middle), contributing to a college's Net Zero skills environment. Colleges and the wider FE sector must consider how to manage retaining, retraining, recruiting or resourcing the necessary skills related to Net Zero under each climate action area.

Feedback from colleges

From the 11 FE colleges that responded to the Phase 1 Net Zero survey, listed from A - K to anonymise the feedback, a majority of nine colleges responded that they plan to retrain existing staff. Seven of those colleges also plan to gain resources from external specialists; five are also looking to recruit. This is demonstrated in Figure 9, showing that a range of skills planning options are being considered together, though a lot more detail will be required to understand which roles will be retrained, recruited or resourced. The survey also showed that a small number of respondents were not sure yet (2), denoted in the graph in dark grey.

These findings were similar to those discussed during Phase 2 workshops. Further details were gained regarding the challenge of retraining staff, particularly demonstrating the gap between plans and reality. For example, all attendees in Workshop 2, which had 23 attendees with representatives from 12 of the 20 in-scope colleges, provided feedback that more work is required to build up sustainability capacity within the senior leadership and governance teams within colleges. All attendees responding to the workshop poll said that sustainability was not included in their induction plans for staff and governors or that they did not know if it was. When asked about the challenges to acting on sustainability, the

main challenges highlighted were capacity, priorities, investment, resources/time, funding, upskilling, and training & development.

Figure 9 – Chart showing Phase 1 responses to how colleges will address the skills needed to meet Net Zero

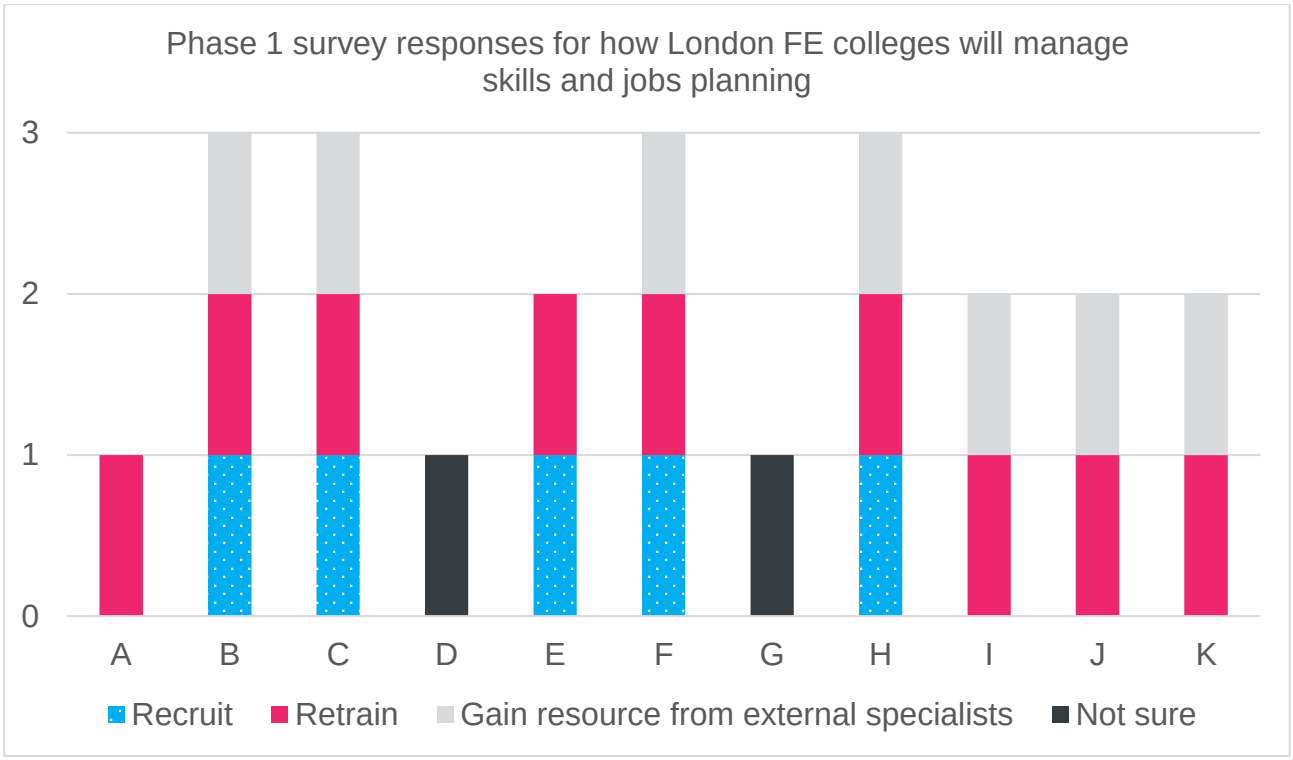


Table 11 – Cost profiles of retaining, retraining, recruiting, or resourcing jobs that will help deliver Net Zero for FE colleges

Skill and job areas	Cost (£ - £££)	Examples
Leadership and Governance	Retain: (£) Retaining existing leadership and governance personnel involves salary, benefits, and professional development costs to align with Net Zero objectives. Retrain: (£ - ££) Providing training and development programs for existing staff to acquire new skills and knowledge related to sustainability and Net Zero practices can be affordably implemented internally by making use of academic staff with expertise. Training can also be delivered externally, which would be more expensive. Recruit: (£££) Recruiting new leadership and governance personnel with expertise in sustainability and environmental management may incur significant recruitment and onboarding expenses.	Retain and retrain actions entail implementing internal carbon literacy programmes. External leadership development programs tailored to sustainability leadership could be more expensive. A minimum requirement would be to achieve basic carbon literacy knowledge and awareness of the Sustainable Development Goals (SDGs). Another resource is the free FE Governance Toolkit. Executive search fees for recruiting a sustainability director.
Teaching, Learning, Research	Retain: (£-££) Retaining existing teaching and research staff may involve moderate costs for professional development and training programmes to incorporate sustainability into curriculum and research activities.	Workshops on integrating sustainability into course content. 'Embedding Education for Sustainable Development (ESD)' course, delivered by the EAUC on behalf of and in partnership with the Society for Education and Training (SET). EAUC ESD tools and resources.

		Potential funding from Skills Bootcamps for Londoners, Public Sector Low Carbon Skills Fund and Local Skills Improvement Fund (LSIF).
	Retrain: (££) The costs for providing comprehensive retraining programs for teaching and research staff to enhance their expertise in sustainability and Net Zero practices can vary depending on the expertise and topic area. Certain teaching staff may need qualifications, while other support staff may need to keep abreast of key developments or changes in operations.	Internal training for teaching and research staff such as basic carbon literacy training, to facilitate connections between sustainability and the curriculum.
	Recruit: £££ - Recruiting new teaching and research staff with specialised knowledge and experience in sustainability may involve recruitment costs and salary demands. There is also a skills shortage for sustainability-related teaching staff so colleges may struggle to find suitable staff to recruit.	Certification programmes in sustainability education for faculty members. Accreditation for Responsible Futures which is a whole-institution supported change programme and accreditation mark to embed sustainability across all aspects of student learning.

Estates and operations	Retain: (££) Retaining existing estates and operations staff may require moderate investments in training and upskilling to incorporate sustainability principles into facilities management practices. The career path into estates and operations may also shift, with demand for people who have experience in sustainable building practices. This could increase salary demands if the role is becoming more complex. Retrain: (£-££) Providing training and certification programmes for estates and operations staff to implement energy-efficient technologies and sustainable practices can be an effective way to upskill existing staff. Recruit: (££- £££) Recruiting new estates and operations personnel with expertise in green building design, energy management, and environmental compliance may involve higher recruitment and salary expenses.	Energy management training such as chartered energy managers or ESOS Lead Assessor for estates staff and green building certification for facilities managers such as BREEAM, Passiv Haus, and SKA. As well as ISO standard training such as 14001 and IEMA. Apprenticeship training courses could also be a cost-effective pathway, potentially even provided by the college. Compared to non-accredited staff, a market review of roles that hire estate staff with environmental/ sustainability accreditation shows higher salary bands. Consultancy support is common for specific expertise as part of contractual labour.
Partnership and engagement	Retain: (£) Retaining existing partnership and engagement staff may involve moderate costs for training and capacity-building to facilitate collaboration on Net Zero initiatives with external stakeholders.	A minimum requirement would be to achieve basic carbon literacy knowledge and awareness of the Sustainable Development Goals (SDGs).

	Retrain: (£-££) Providing training programmes for partnership and engagement staff to enhance their skills in sustainability communication and stakeholder engagement can be moderately costly. Recruit: (££) Recruiting new partnership and engagement personnel with experience in sustainability advocacy and community outreach may incur more expenses than retraining existing staff.	Examples include Sustainability Communications Diploma and Collaboration and Partnering for Sustainability by CISL.
Data collection	Retain: (£) Retaining existing data collection staff may involve ensuring staff remain proficient in their current skill set, while giving support, resource and capacity to learn the new skills required of them. Retrain: (££) Providing training for data collection staff to develop expertise in environmental data management and reporting can incur some costs. Recruit: (££-£££) Recruiting new data collection personnel with skills in data analytics and environmental science may involve moderate costs with potentially higher salary demands.	Examples include IEMA Carbon Reporting or ISO 14064 Carbon Footprinting Accreditation. Hiring a sustainability data analyst with experience in carbon accounting is more costly.

External Net Zero activities	Resource: (££-£££) Engaging external consultants or specialists to deliver one-off Net Zero activities such as energy audits, sustainability assessments, renewable energy installations, and decarbonisation projects can be expensive due to consultancy fees and project costs but can be useful for specific specialist knowledge. Projects also need to make economic sense for the external consultants to take on suitably sized projects which could favour larger colleges or more significantly sized Net Zero-related projects (e.g. over £1 million).	These could be sourced through the colleges' own existing procurement processes or through the retrofit accelerators offered by the GLA.

Cost considerations for skills planning

Table 11 presents findings using a mixed-methods approach, drawing on publicly available literature, expert interviews, and stakeholder engagement, to determine a qualitative cost range between £ (lower cost) to £££ (higher cost). The cost assessment shows that the approach to managing skills and jobs will also influence the total costs. We understand that:

- Decision-makers in colleges would benefit from strategically mapping out how they plan to manage the skills and job changes associated with moving to Net Zero colleges by 2030. There are variations in the costs depending on how the roles and activities will be delivered, as well as increased complexity for specialised roles. From the Phase 1 survey results and stakeholder inputs, only four colleges had considered the costs of their skills plans.

- Even if colleges continue with the status quo and do not rapidly transition their staff through retraining or hiring skills into the college through recruitment, some less considered costs are involved in retaining staff and ensuring they can continue to fulfil fundamental sustainability-related tasks. In addition, colleges are expected to struggle to attract the necessary staff if they do not have an updated understanding of market recruitment trends in sustainability (e.g., shift in desire for better pay in estates and operation staff who otherwise will not be technical if not paid appropriately).

- Net Zero will require alternative business models, and job role design will be critical. Sustainability is a complex field, and we are moving towards dynamic resourcing rather than static roles with similar skills throughout the career. Some skills require significant upfront investment and training with specialised tasks, so retraining or recruiting people within fixed timelines is challenging. Opportunities to be innovative and creative with skills and job planning are also discussed in more detail in the Recommendations.

As shown in Table 10, a skills gap is expected between the current skills and ongoing/future Net Zero-related activities. Decision-makers within colleges and the relevant stakeholders must recognise the importance of investing in staff training and skill development now, even if it entails higher initial costs. By making these investments early on, colleges can reap long-term benefits from having a more skilled and capable workforce. Delaying investment in skills training and job planning may seem like a cost-saving measure in the short term, but it can lead to greater expenses down the line. Inaction risks widening the gap between existing skills and the requirements of ongoing and future Net Zero-related activities. Consequently, colleges may scramble to fill these skill gaps at shorter notice, which often incurs higher costs.

Spotlight

How are FE colleges managing sustainability on-site?

Based on the information received, diverse structures were noted, demonstrating different approaches to who is responsible for sustainability efforts within colleges. Sustainability is generally led by the following role(s), depending on college structures or resource availability. We prioritise them based on the prevalence of someone holding the role across colleges, from highest to lowest occurrence.

- **Estates and Facilities** – Most colleges (7/11) indicated that they have senior staff in their estates and facilities department covering sustainability. They will generally work with a sustainability lead and/or senior management.

- **CEO/CFO or Director role of key department** – Where there is no dedicated staff, it seems to be the case that sustainability will sit at the most senior level. Colleges further along their sustainability journey show evidence of sustainability being addressed by more than one department. That is to say, a more prepared college tends to have an estates manager or sustainability lead working closely with C-level staff. Colleges that are moving slower will notably have only one member of staff, or a C-level staff covering the topic in the interim.

- **Dedicated Sustainability Lead** – this role generally reports to senior management, such as the college CEO or CFO. Other staff generally support them, but we have noted that many colleges face resource constraints.

Key challenges

This research has uncovered a number of underlying challenges in relation to the reality of funding the Net Zero transition. The colleges highlighted challenges which can be categorised broadly as **technical**, **economic,** and **social** in nature**.** Each one can limit both the scale and pace of the transition intrinsically, but they also interact and should not be considered in isolation. In Figure 10 we visualise the interaction of these challenges, linked to their root causes. The recommendations section addresses these challenges in more detail.

The pink lines/arrows on the left-hand side of Figure 10 represent balancing loops where improvements in one core challenge area will bring balance to another area, and the system as a whole to its desired state. In contrast, the associated black lines/arrows indicate reinforcing loops that will create negative feedback in an undesired direction. For example, improving the social challenge will alleviate issues in the technical area, where upskilling staff will enable more improvements in technical skills and knowledge. However, investing in social and technical challenges will reinforce the cost challenge.

This section summarises these challenges so stakeholders can understand their complexity and how they interconnect. We must ultimately prioritise and focus on the root causes that underpin the branching challenges.

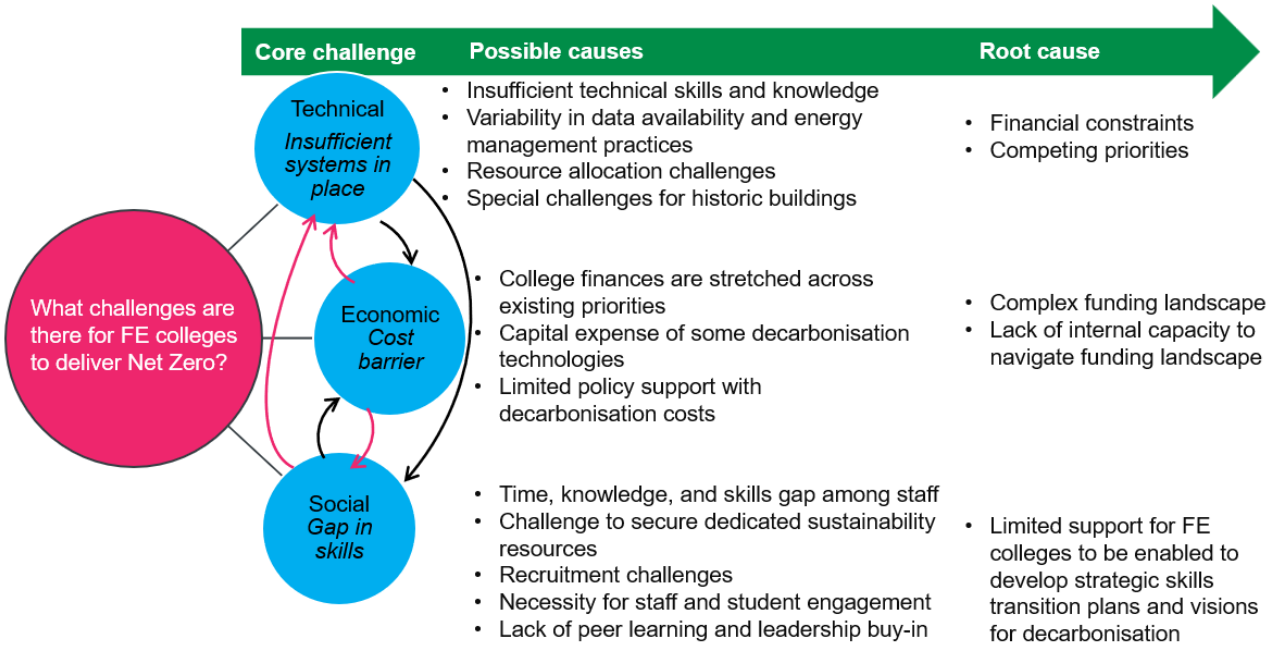


Figure 10 – Summary of the core challenges, their possible causes, and root cause that the recommendations intend to address

Technical challenges

Colleges are mainly hindered by the lack of technology and systems supporting data-driven decision-making and operations essential for transitioning to Net Zero. For example,

the amount of data that colleges hold on their built assets, energy-using equipment, and energy consumption varies significantly. Some colleges monitor their half-hourly energy use, while others rely on annual/monthly utility procurement data for their energy consumption. Without **defined energy management processes** and adequate data on all these different aspects, colleges cannot fully understand where the most energy intensive areas of the colleges are and what actions to take to reduce their associated emissions in a prioritised way.

The **technical skills and knowledge** required to identify, implement, and maintain possible carbon reduction opportunities also varies from college to college. Colleges that have **historic buildings** (or listed buildings) have an additional decarbonisation challenge. These buildings can require higher costs due to additional enabling works, more extensive decarbonisation required, limitations on methods or areas of work, and legislative restrictions. All these can represent a barrier to decarbonisation as costs and disruption increase and result in colleges seeing **building retrofit and energy efficiency upgrades** as the **most significant cost contributor** to reaching Net Zero.

The root cause of technical challenges faced by colleges in establishing sufficient data processes stems from a combination of **a lack of resource allocation**, **lack of technical skills**, and **lack of planning and strategy**. Direct enablers have significant control in these areas and can effect positive change. Colleges often cannot allocate the budget for technology investments and skilled personnel essential for robust data processes. These challenges are frequently due to **financial constraints** and **competing priorities**. Moreover, the lack of trained staff in data management and analytics leads to a gap in knowledge and implementation capability. If Net Zero is not coherently integrated throughout college strategic plans, data processes may not be suitably emphasised. To overcome these challenges, colleges, direct, and indirect enablers must ensure proper skill, time, and financial investment in technology and expertise and integrate data process development into the college's strategic objectives, fostering a culture that values data-driven decision-making for Net Zero.

Economic challenges
The colleges perceived the economic challenges to decarbonisation as the most significant barrier. The lack of required funding, VAT costs, lack of access to wider funding mechanisms (outside of the public sector), priorities on maintenance and repair for existing revenue spend, competing priorities of providing education facilities fit for purpose and support to students, lack of resource and skill base required for funding applications, and the sheer capital expenses of some technologies were all identified as significant challenges. Some colleges were concerned that they would need to “sell off the family silver” through the sale of land or parts of their estate to generate the levels of funding required to implement the decarbonisation activities necessary to reach Net Zero.

When undertaking a root cause analysis to investigate why funding is perceived to be a significant challenge, it is due to the **funding landscape** being considered **overly**

complex to navigate and the **lack of capacity** within colleges to navigate and **apply for funding**. The mechanisms to enable and access funding are deemed to be so challenging that some colleges feel forced to sell assets, a representation of the college seeking **more control of its economic uncertainty** than relying on external funding mechanisms. For meaningful progress, FE colleges must prioritise decarbonisation within financial management resources and aim to automate this process as much as possible. Colleges will also need to develop skills for practical fund application and explore funding solutions that do not compromise the institutions' assets. Colleges, direct and indirect enablers need to address these economic root causes together, which is necessary to empower colleges to meet their Net Zero targets without undermining their financial stability or core educational mission.

Social challenges
Alongside the technical and economic considerations of reaching Net Zero, the people who run and use FE colleges will ultimately deliver the changes needed. Colleges have reported several social challenges. Many of the estates and facilities staff, who are often given sustainability-related tasks in addition to their full-time job, do not have the time, knowledge, or skills to drive the pace and scale of decarbonisation required. Colleges that have been able to provide a dedicated resource for sustainability or energy management have seen considerable benefits and have been found to be the colleges that have made the furthest progress with decarbonisation. However, this is not possible for all colleges, particularly smaller ones, which will lead to a disparity in Net Zero progress based on available revenue resources. Alongside direct team resource availability, additional social challenges noted are:

- the ability to recruit staff with the desired knowledge and skill sets,
- the education and engagement needed with staff and students implementing emission reduction activities,
- lack of college peer-to-peer learning on decarbonisation, and
- lack of governance and leadership buy-in.

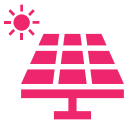
Some of the challenges colleges express lie within their sphere of influence, whilst others will require more input from direct and indirect enablers to overcome these barriers (see Figure 1 for definitions). The root cause highlighted for the social challenges is the **limited support available for FE colleges to enable them to implement a strategic plan** or plans that acknowledge a skills transition and formulate a vision to deliver that.

Key opportunities

Using the supporting evidence and information from stakeholder engagement, we have identified several trends that could form opportunities to support the transition to Net Zero. We highlight these opportunities, which may reduce the overall costs and work alongside the strategic vision of FE colleges as educational institutions within communities.

Technical Opportunities

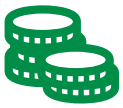
While the lack of technology and systems supporting data-driven decision-making is a challenge, introducing such systems also represents a significant opportunity to accelerate progress and reduce costs.



- Through detailed energy management processes, colleges can increase the information they hold on their built estate and energy consumption. This can facilitate the identification of carbon reduction measures, help with accurate system design and costing, and increase the speed of deployment.
- The technical complexity of decarbonisation also presents opportunities for new types of partnerships and engagements between colleges. Where colleges might lack technical knowledge or skills, they could learn from each other through peer-to-peer learning.

Economic Opportunities

Current business models for education often focus on efficiency and cost optimisation. Integrating the concept of sustainability into the economic framework of educational institutions requires a shift towards more innovative and environmentally conscious business models. Such business models are an opportunity to:



- Invest in renewable energy sources and green technologies for the campus.
- Embrace more nature-positive operations that contribute positively to the environment, such as on-campus biodiversity projects.
- Critically review resource consumption patterns and redesign the FE college experience to include more circular economy principles.

Social Opportunities

Social opportunities cut across both technical and economic opportunities. FE colleges are uniquely placed to create a more collaborative environment that spans operational and academic activities and can support decarbonisation and facilitate educational learning and growth through:

More collaborative internal staff engagement models - Operational and academic staff have been seen to be very siloed within FE colleges (this is not unique to the FE sector). Operational staff will increasingly require specific technical skills or social engagement for decarbonisation opportunities, and these skills could be present within the existing academic staff or even the students. With an overarching challenge such as Net Zero, which affects everyone who occupies, uses, or works in the college, there is an opportunity to leverage internal resources to transform the approach to sustainability, making it a shared mission rather than a segmented effort.

Carbon Literacy as a drive for change - All staff and students must know about the need to reduce emissions, so carbon literacy is a critical step to ensure buy-in. Ensuring that this education starts with the governors and senior leadership will help with buy-in and support the overarching mission of the colleges. Carbon literacy training must also be transferred to operational and academic staff as well as college students.

More resilient and innovative job design – As outlined in the section titled 'Skills planning for Net Zero FE colleges', FE colleges will face a skills transition. There is an opportunity to consider how jobs could be designed in more resilient and innovative ways that consider shared staffing models or leverage digital technologies to facilitate remote collaboration across the UK.

Recommendations

This section addresses how FE colleges can meet the costs of Net Zero. We frame the recommendations using a multi-stakeholder approach based on our direct, FE college level implementers and indirect enabler categories. It is evident that reaching Net Zero requires a whole systems approach that propels colleges by recognising the context in which they operate. Within the move to Net Zero, there are actions that colleges will need to take as the implementers, and there are actions where they will rely on direct and indirect enablers for support.

We present collated and anonymised feedback from the colleges themselves and from experts in the Steering Group, which has been considered together with the relevant literature to inform the recommendations. As 2030 is just 5.5 years away, no timeframes are presented as all recommendations should be implemented immediately. In addition, we highlight the root challenge that the recommendation will address and who the target stakeholder is ('Responsibility' column) that we would expect to implement the actions.

Building on Advice: What Has Been Recommended to FE Colleges on Climate Action

The FE colleges within this study are generally starting to progress on climate action, with some colleges making more progress than others. Considering the outlined costs, our recommendations seek to build on existing advice and focus on how colleges could be best positioned to meet Net Zero costs. Colleges and wider stakeholders should continue to review the landscape of recommendations as presented in the following:

> **Analysis of a Net Zero 2030 Target for Greater London –** Prepared by Element Energy for the GLA, this roadmap outlines an ambitious plan for London to achieve Net Zero emissions by 2030. Within it are recommendations relevant for FE colleges, such as the focus on local decarbonisation projects, putting plans in place to support the workforce transition and the role of FE colleges in facilitating community engagement on climate action. The technical recommendations for decarbonisation across the built environment, transport, and infrastructure should continue to be worked on where FE colleges contribute to these emission areas.
>
> **A Climate Action Roadmap for FE Colleges -** As a foundational guide, the Roadmap outlines clear objectives, priorities, and key performance indicators (KPIs) and provides a series of tailored measures, actions, and goals for colleges. It serves as a strategic framework and a benchmarking tool to assist institutions in initiating and progressing towards Net Zero. With the inclusion of various tools and resources, the Roadmap is adaptable to colleges at different stages of their sustainability journey, considering the constraints of limited resources.

Planning for Net Zero-Carbon – A toolkit fit London's Adult Education providers – This toolkit was designed by Turner and Townsend for the GLA and serves as a comprehensive guide for London's Adult Education providers, including FE colleges, to achieve Net Zero carbon by 2030. This toolkit aligns with the Mayor of London's broader climate emergency declaration and Net Zero targets, presenting a phased approach towards decarbonisation (enabling, planning, and delivery actions). The toolkit is highly relevant as it was published towards the end of 2023, and we strongly encourage implementing the outlined actions.

Skills and training for the green economy - The Confederation of British Industry (CBI) provides a comprehensive analysis of the skills and training needs for the UK's transition to a green economy, with recommendations related to FE colleges. Existing recommendations should continue to be addressed, such as FE colleges aligning their curriculum and training programs with the emerging needs of the green economy, responding to current skills gaps, and anticipating future demands. Also, there is an ongoing need to collaborate with industry and government initiatives to ensure the relevance and effectiveness of any training programs in the context of Net Zero goals.

We present three tables of recommendations using our multi-stakeholder framework (Figure 1), which are intended for:

1. Government authorities (direct enablers)
2. London-based FE colleges (implementers)
3. Support bodies and organisations that assist the education sector (indirect enablers).

The recommendations build on the listed public resources and focus on critical actions for the following years until 2030.

Recommendations for direct enablers (government and local authorities)

Recommendation Area	Detail	Challenge tackled	Responsibility
Local empowerment Action: Allocate decision-making power on funding to London (GLA) through devolution.	**We propose that the power to make funding decisions for London-based FE colleges aimed at achieving Net Zero be devolved to the GLA.** Devolved powers will assist the GLA and local stakeholders in London to direct their strategic plans, budget allocations and policy levers to drive Net Zero actions. The Mayor of London is also calling for greater funding for adult skills as a single pot of funding to be devolved to London, in multi-year settlements. In addition, he is seeking greater control over apprenticeships which are an area of challenge for London, and if properly harnessed could better support green careers including electricians, heating engineers, carpenters and joiners and other roles important for retrofit and energy efficiency.	Complex funding landscape	DfE
Enable the sharing of resources within colleges Action: Develop platforms for colleges to share resources for Net Zero.	**Colleges must be supported in sharing resources needed for Net Zero to avoid incurring additional costs. Sharing resources is considered a substantial area with the potential for high impact.** As part of regional coordination, the recommendation to share resources was emphasised. All colleges face constraints, and smaller colleges even more so. Developing separate mechanisms for smaller colleges that are not part of a college group may be relevant to enable them to address common challenges together. In managing sustainability, designing a job role that supports 2-3 smaller colleges as a sustainability lead could be one way to	Financial constraints, competing priorities	GLA

	overcome individual college recruitment constraints. The example of a shared 'Sustainability Lead' is already working in Scotland. The Scotland EAUC is promoting and supporting the delivery of a 'sustainability shared-services staffing' model to support smaller colleges with their sustainability impact. The result is the 'Central and South Scotland College Partnership'. 71% of project workshop attendees thought a shared resource would be helpful, suggesting that there are potential opportunities for collaboration or resource sharing to address shared needs more efficiently.		
Allocate financial resources for London FE colleges Action: Commit dedicated resources, in discussion with FE colleges to understand their resource constraints, whether that be funds direct to colleges or better engagement structures.	**Direct enablers must provide funding and resources to help colleges execute sustainability strategies.** Colleges will need more support in developing and implementing sustainability strategies, whether through funding to support hiring in extra capacity or ring-fenced funds and time within supporting organisations dedicated to helping colleges, which often work in an under-resourced environment. Examples of resources could include providing a clear Net Zero contact point at the GLA for London FE colleges working towards Net Zero, or ad-hoc workshop sessions on certain aspects of Net Zero such as scope 3 emission mitigation.	Financial constraints, competing priorities, complex funding landscape	DfE, GLA
Centralise and make visible existing support Action: Publish (or signpost to an existing) website where current sources of support are	**Direct enablers need to work together to make access to current support as visible and transparent as possible (such as funding or support schemes). This platform should also clearly outline what is expected from colleges and their role in meeting Net Zero.**	Financial constraints, competing priorities, complex funding landscape	DfE, GLA

centralised into a publicly accessible forum.	Engagement has shown that not all colleges knew their role in meeting Net Zero. They are often also unfamiliar with the tools available to help. Considerable sums of money have already been invested in supporting the education sector in decarbonising. We recommend a stocktake exercise of existing resources (including the recently published toolkit), detailing who owns them and how colleges can reach out for support. Resources should be organised in a way that college staff clearly know the steps they need to take and how to use the available help to achieve their goals. This website or forum should be a publicly accessible resource with centralised information on key topic areas relevant to colleges. It should also indicate whether the resources require payment to access/membership or are freely available. It is understood that the DfE are currently creating a "resources hub" for schools, which could be a helpful model.		
VAT review Action: Review the VAT regulations for FE colleges investing in energy efficiency.	**Government bodies must ensure policy coherence so that policies in one area, such as tax requirements, do not undermine policies in other areas, such as the desire for more energy efficient technologies in FE colleges.** Current VAT requirements for energy efficiency projects result in significant cost uplifts for FE colleges that cannot be claimed back, representing a barrier to implementation. The GLA should lobby the Department for Education and HM Treasury to review the current regulations around energy efficiency projects and VAT for FE colleges and consider changes to facilitate the rapid deployment of carbon reduction measures and reduce the funding burden required.	Financial constraints, complex funding landscape	HM Treasury, DfE, GLA

Recommend public Net Zero reporting Action: GLA to strongly recommend London FE colleges to implement best practices for collecting energy and emissions data and publish this information on their websites.	**The GLA strongly recommends that FE colleges monitor and track emissions, and makes this information publicly accessible.** In line with the recommendation from the Education & Skills Funding Agency (ESFA), colleges in England should submit their carbon reports using the Streamlined Energy and Carbon Reporting (SECR) method. Recommending disclosures will enable the GLA to see any public updates by colleges on their carbon emissions, which will enable benchmarking and more transparency on decarbonisation progress. The GLA encourages London FE colleges to use the Standardised Carbon Emissions Framework for Further and Higher Education (SCEF) to calculate carbon emissions. This recommendation is in line with the expectation from the Department for Education, which has confirmed that universities and colleges will be reporting their carbon emissions by 2024 as per their Sustainability & Climate Change Strategy.	Lack of planning and strategy, technical knowledge, and defined energy management processes	GLA
Access to external funding mechanisms Action: Direct enablers to review funding mechanisms and facilitate commercial style finance and loans to FE colleges.	**Provide funding mechanisms to FE colleges equivalent to those available before the FE reclassification via external funders.** Since the FE reclassification, FE colleges can no longer access funding mechanisms, such as commercial loans, with private funders (e.g., high street banks) without the permission of the DfE. There were mechanisms set up after the reclassification, but these have now closed and no mechanisms currently replicate this, limiting access to finance for FE colleges. Commercial funding arrangements can reduce the capital grant burden for funding bodies while supporting FE colleges through favourable lending rates.	Financial constraints, complex funding landscape	DfE, GLA

Improved coordination nationally Action: Support regional and national coordination on decarbonisation for FE colleges.	**Establish a robust national coordination framework supporting regional initiatives to reduce carbon emissions within FE colleges.** To improve decarbonisation efforts in London's FE colleges, fostering effective national coordination is crucial. This strategy should align regional action plans with the UK's broader Net Zero targets, considering specific local environmental challenges, such as London's air pollution issues. Clear communication from government bodies, including the Department for Education, is crucial to harmonise the various objectives and ensure that regional efforts support national goals and reflect local needs. Enhanced collaboration with clear reporting mechanisms is also vital to provide feedback that informs ongoing policy adjustments and decision-making processes at the national level.	Financial constraints, complex funding landscape	DfE, local authorities across the UK, London government

Recommendations for the implementers (London FE colleges)

Recommendation Area	Detail	Challenge tackled	Responsibility
Sustainability in governance Action: Review current governance, identify gaps, and integrate sustainability criteria.	**Sustainability must be integrated into college governance structures.** Having a robust governance structure in place at each college that sets the ambition for Net Zero is essential. This promotes buy-in from staff and students and can unlock the necessary resources for implementation. We highlight the FE Governance Toolkit from the EAUC, which has already gained good traction amongst decision-makers within colleges. The 'Planning for Net Zero Carbon – A toolkit for London's Adult Education providers' also provides valuable	Competing priorities	Senior leadership within FE colleges

	resources on governance and senior buy in, with further actions and guidance. At the time of writing, not all colleges within the study have integrated sustainability into governance structures. This is included as a recommendation to act on as soon as possible.		
Sustainability skills in leadership Action: Review potential sustainability gaps, develop and integrate sustainability concepts, communicate this as a goal, and evaluate impact.	**Senior leadership must be upskilled in sustainability considerations within FE colleges.** More work is required to build up sustainability capacity within the senior leadership and governance teams within colleges. Our engagement with colleges showed that sustainability was not yet included in induction plans for staff and governors or that it was not known if sustainability was part of the onboarding training process. The importance of colleges moving towards low carbon and sustainable practices must be front and centre in any communication and college strategy.	Competing priorities, lack of a strategic skills plan	Senior leadership (including principals and governors) and HR
Dedicated sustainability lead Action: Allocate and empower a dedicated sustainability lead or adopt a shared-services model.	**Dedicated staff must be allocated to managing sustainability.** All FE colleges should allocate a dedicated lead for sustainability. This person or team should be empowered with the necessary resources to oversee and implement sustainability initiatives. It is acknowledged that colleges do not necessarily have the funds or staff at hand to curate such a role. We highlight the possibility for smaller colleges to consider a shared-services and staffing model in 'shared resources' under Recommendations for direct enablers. We also highlight that further support will be needed for colleges, whether in the form of funding or providing resource to ensure colleges have access to site level staff time to manage sustainability.	Competing priorities, lack of a strategic skills plan	Cross-college activity, driven by senior HR staff and senior leadership

Sustainability-related strategy for the college Action: Colleges should develop and implement a comprehensive sustainability strategy to ensure consistent progress and resource allocation.	**Sustainability must be a strategic and coordinated vision for any FE college if it is serious about meeting the 2030 target.** The role of a sustainability strategy was emphasised by colleges that were more advanced in their Net Zero planning. The lack of strategy behind Net Zero planning can undermine investments or one-off actions as they often do not add up to a cumulative change. Colleges are having to contend with and keep on top of a range of priorities. A strategy document that considers alternative pathways and priorities and locks in resources for sustainability is going to reduce the risk of sustainability being deprioritised in light of constraints and unforeseen circumstances.	Competing priorities	Cross-college activity, driven by senior leadership together with a sustainability lead
Energy Management Action: Colleges should adopt energy management practices that facilitate the regular and accurate monitoring and reporting of energy use and emissions.	**Implement energy management processes to facilitate the collection and monitoring of detailed energy consumption data.** Collecting, monitoring, and analysing detailed energy consumption data is critical to creating an emissions baseline, monitoring progress against a target, driving momentum, and implementing meaningful change. This is proposed in the Planning for Net Zero Carbon – A toolkit for London's Adult Education providers. However, our engagement found this is not happening in practice across all colleges. All colleges should ensure that energy management practices are in place to support the Net Zero transition.	Lack of a defined energy management processes	Estates and facilities senior staff with support from relevant departments
Net Zero reporting Action: London FE colleges should make	**FE colleges should monitor emissions and make this information publicly available on their websites.**	Lack of planning and strategy, technical knowledge, and	Cross-college activity, driven by senior leadership

energy and emissions data publicly available on their websites.	Following the recommendation from the ESFA, colleges in England should submit their carbon reports using the SECR method. London's FE colleges disclosing their carbon reports will enable benchmarking and more transparency across the sector. The GLA encourages London FE colleges to use the SCEF to calculate carbon emissions. This is in line with the expectation from the Department for Education, which has confirmed that universities and colleges will be reporting their carbon emissions by 2024 as per their Sustainability & Climate Change Strategy.	defined energy management processes	together with a sustainability lead
Sustainability skills across the college Action: Conduct a training needs analysis and create a skills plan for meeting Net Zero, leveraging existing public tools and resources.	**Colleges must each undertake a training needs analysis (TNA) to understand current staff capabilities and consider mechanisms to develop future skills needed for Net Zero within the college**. All 20 London FE colleges in this study should act on mapping their current staff capabilities and create a skills plan that considers how the college will support retaining, retraining, recruiting, or resourcing for the activities that are needed to deliver Net Zero within the institution. Resources are available to help colleges with skills planning, namely the Local Skills Improvement Fund (LSIF), managed by all four sub-regions in London. While the LSIF considers how colleges can deliver on the skills gap to provide technical skills for employers in central London, there could be an opportunity to focus on how skills can be delivered within colleges. Colleges are also employers that require more green skills. In addition to planning how colleges can meet the skills needed across London, colleges themselves need to understand how they can deliver the skills to meet their own needs within their built environment to deliver Net Zero.	Lack of a strategic skills plan	Cross-college activity, driven by senior leadership together with a sustainability lead

	Apprenticeships have also been highlighted as an important pathway for colleges to address their skills gaps as part of a retraining or recruitment option. There is an opportunity for colleges to make the most of government funding typically available to employers and training providers, including FE colleges, to support the hiring and training of apprentices.		
Innovative skills solutions Action: Promote innovative and collaborative learning between academic and operational staff using the Living Labs model as an example.	**Use the skills of teachers and students to develop new ways to adapt to the changing skills needed for Net Zero.** Innovative skills delivery models can bridge the skills gap within colleges in cost-effective ways. For example, the Living Labs model seeks to promote synergies between the existing academic staff, who often have an understanding of the engineering or technical processes used by low carbon technologies, and the operational staff, who may not have previously gained academic knowledge of the equipment they will be increasingly requirement to handle and manage.	Financial constraints, lack of a strategic skills plan	Sustainability lead together with teaching and estates staff
Regional coordination Action: Coordinate with local further education organisations and align sustainability strategies to avoid competition.	**College leadership must consider working with other key organisations, including local authorities in the borough/ region.** Colleges emphasised that only so much can be achieved alone. To meet the Mayor of London's goal, specific environmental challenges, such as air pollution, the management of shared land, or social opportunities, such as developing future green skills, will require more coordination among colleges and direct enablers. Coordination must be underpinned by sustainability strategies, aligning with the internal vision and considering actions as part of a wider community.	Financial constraints, complex funding landscape, and competing priorities	Senior leadership with sustainability lead

	For example, colleges may be eligible for funding that strengthens their resources in particular capabilities, such as digital skills or specific apprenticeships. Better coordination between colleges and funding structures could ensure that colleges close to each other should not need to compete for limited resources and funding. Instead, if one college secured extra resources in digital skills, another college could specialise in another critical skill area.		
Carbon reduction opportunities Action: Undertake estate wide decarbonisation surveys to identify and cost carbon reduction opportunities.	**Where this has not been done already, colleges should undertake decarbonisation surveys to identify and cost carbon reduction opportunities for their estate.** While some colleges have completed detailed and costed decarbonisation surveys, others are still unaware of the possible carbon reduction opportunities across their estates and associated costs. This is repeated here as it has not yet been implemented across all colleges and remains a critical component in determining more accurate costs for Net Zero.	Lack of planning and strategy, technical knowledge, historic buildings	Sustainability lead with estates staff
Net Zero Working Group Action: Create a London-based FE college Net Zero working group for peer-to-peer support.	**Colleges must work together to share learnings.** Based on workshop engagement, there was a 100% positive response from all attendees to the suggestion that a London-based FE college peer-to-peer Net Zero working group would be a very helpful platform. The objective would help share experiences and learnings between colleges, provide case studies, and to gain more confidence since colleges need to overcome similar challenges. Peer-to-peer engagement can also foster innovation and more	Financial constraints, complex funding landscape	Sustainability lead with cross-college input

	collaborative approaches, where there are currently only a small number of support bodies and organisations assisting FE colleges.		
Joint accelerator procurement Action: Collaboration between smaller FE colleges is needed to apply for joint carbon reduction opportunity projects.	**Joint applications through the Retrofit Accelerator – Workplaces (Zero Carbon Accelerator) to maximise the benefit of RE:FIT procurement framework for smaller colleges.** Smaller colleges can be disincentivised to apply through accelerator programmes as contract values can be small and of less significant to contractors. Joint applications can increase contract values, ideally over £1m, and help increase uptake for the skilled and pre-qualified RE:FIT contractors. This can also allow colleges access to funded support through the accelerator programmes, reducing the need for sourcing finance and reducing risk to the colleges.	Financial constraints, complex funding requirements	Procurement lead with sustainability lead
Internal procurement structures to prioritise energy efficiency. Action: College procurement teams to set procedures in place to prioritise energy efficiency.	**Prioritise energy efficiency improvements during routine estate maintenance and repair.** Through establishing energy efficient upgrades to buildings during routine maintenance, marginal energy efficiency improvements can be realised that will maximise revenue spend and lower the overall capital spend required for each college. This requires procurement teams to set in place procedures that move away from like-for-like replacements towards cost-effective energy efficiency improvements.	Financial constraints, competing priorities, lack of planning and strategy	Procurement lead with input from estates staff

Recommendations for indirect enablers (supporting organisations in the education sector)

Recommendation Area	Detail	Challenge tackled	Responsibility
Engagement Action: Indirect enablers should ensure FE colleges are connected with them to offer support and advice, such as best practices in sustainability in an education context.	**Indirect enablers, such as support bodies, non-profits, charities, and groups that represent those in the education sector must also drive proactive engagement with colleges on sustainability.** Indirect enablers have a wealth of resources and could support FE colleges and direct enablers with more strategic engagement. Engagement should facilitate the aforementioned recommendations that discuss sharing of resources, sharing of best practice, and promoting transparency on existing support.	Complex funding landscape; lack of support on skills planning	Indirect enablers involved in Further Education (e.g. Association of Colleges, EAUC)
Technical expertise Action: Support the development of sustainable approaches in technical areas such as Sustainable Procurement Frameworks.	**Indirect enablers like the London University Purchasing Consortium (LUPC) should continue contributing their technical expertise to drive sustainability.** Stakeholders with technical expertise can drive collaborative projects, knowledge-sharing sessions, and be part of the supportive network for FE colleges. For example, the LUPC assists FE colleges in developing and implementing procurement strategies that align with sustainability goals, ensuring purchasing decisions support environmental conservation and resource efficiency.	Lack of internal capacity to navigate the complex funding landscape	Indirect enablers involved in Further Education (e.g. LUPC)
Advocacy Action: Align with FE colleges to advocate for policies that	**Indirect enablers can contribute to advocacy campaigns that target specific policy changes to facilitate the easier adoption of sustainability practices within FE colleges.**	Cross-cutting	Indirect enablers involved in supporting the Further

support FE colleges to deliver their Net Zero targets.	Organisations that contribute technical expertise or have strong engagement with FE colleges will understand the challenges and barriers in place for the sector to meet Net Zero. There is a strong opportunity to align and exert influence together with colleges and direct enablers to shape legislation, funding allocations, and policy frameworks.		Education sector

Appendix

Assumptions:

Cost assumptions:

Due to limitations in the data, all costs are estimates and based on capital expenditure only. They do not include operational costs, feasibility studies, enabling works, DNO costs, consultant fees, additional maintenance costs/savings, or auxiliary costs. The final cost will, therefore, be higher than that presented in this report but due to lack of data we have been unable to quantify these additional costs. Costs presented are based on extrapolations from a small data set and should not be used outside this study to determine business case propositions. Any decarbonisation measures should have a detailed feasibility, and detailed design carried out on a case-by-case basis to generate accurate final costings before any investment decisions are made at a college level. This detailed cost appraisal can also review any potential energy savings, return on investment and potential reduced operating costs as a result of the decarbonisation measure which, due to lack of available data, have not been considered as part of this report.

Building assumptions:

Due to limitations in the data, it has not been possible to investigate a variation in costs depending on different building archetypes. The costs presented in this report are a high level estimate and do not account for estate portfolios with more modern or older historic buildings, which will significantly impact the costs and emission savings that are possible through the measures used in this study on a case-by-case basis. Individual colleges will see a deviation from the estimates used in this report due to the variability in their built environment portfolio. This study is, therefore, designed to provide a high-level estimate for the London-based FE colleges rather than a detailed analysis for individual colleges.

£/tCO_2e assumptions:

It is important to note the difference between the £/tCO_2e presented in this report (£9,721) and the cost calculated in the Cost of Net Zero report (£4,206). These two numbers are not directly comparable. The £/tCO_2e cost from this report is calculated through decarbonisation surveys and relates to the costs for decarbonising direct energy use from the built environment. The Cost of Net Zero report figure refers to the cost for wider, more holistic, reductions that are possible from the built estate and includes aspects such as refrigerant use, catering, behaviour change and land use which are not considered as part of this study. The cost of Net Zero report figure has, therefore, been used to estimate the cost of residual emissions whilst the figure calculated as part of this report is used for direct built environment emission reductions.

£/tCO_2e vs £/m^2:

From the decarbonisation surveys the metric of £/m^2 was also investigated, however, on many of the surveys it was not clear if the m^2 presented was for the building that the individual measure was going to be installed in or if that was the m^2 for the total building or site. Without the granularity of data for all surveys there was not the level of confidence required to progress with this metric. There is also not the m^2 data available for extrapolation to the colleges that did not return responses for the phase 1 survey.

Cost of individual decarbonisation measures:

The decarbonisation surveys outlined the capital expenditure (CAPEX) for each individual measure (n=97). The individual measures (n=26) were then consolidated into a list of 26 individual carbon reduction measures. The average cost (£) of each of these 26 measures was then assigned to that measure/technology to provide the average £/tCO_2e for decarbonisation with the use of a weighting.

Weighting:

To reduce the influence of low cost, low impact and low occurrence measures on the average £/tCO_2e figure a weighting score was assigned. This score gave greater relevance to high impact, high occurrence measures so a more realistic weighted average could be used for the extrapolation. The average tCO_2e saving for each measure was multiplied by its count in the data set. This then allowed a weighted average in £/tCO_2e for each measure to be obtained. A similar approach was also used in the Cost of Net Zero report.

Inflation assumptions:

The figures outlined in the '*Future costs'* section and presented in Figure 6 are based on the calendar year OBR GDP Deflator forecast. The OBR sets out projected inflation costs from 2024 to 2028. Between 2028 and 2030, the Bank of England target inflation rate of 2% has been used. It is assumed that as the costs in the decarbonisation studies used to inform overall costs are high level there will be no material change in costs from these to 2023, so no deflator has been applied. Additionally, whilst the costs of some technologies are likely to change in the future, due to the paucity of data it is not possible to carry out the granularity of forecasting on price changes for individual technologies. Therefore, all prices are assumed to remain constant out to 2030. All projected figures are undiscounted.

Location based v market based accounting

A location-based method reflects the average emissions intensity of grids on which energy consumption occurs (using mostly grid-average emission factor data). A market-based method reflects emissions from electricity that companies have purposefully chosen (or their lack of choice). It derives emission factors from contractual instruments, which include any type of contract between two parties for the sale and purchase of energy bundled with attributes about the energy generation, or for unbundled attribute claims. Ref: Scope2_ExecSum_Final.pdf (ghgprotocol.org)

Reclassification

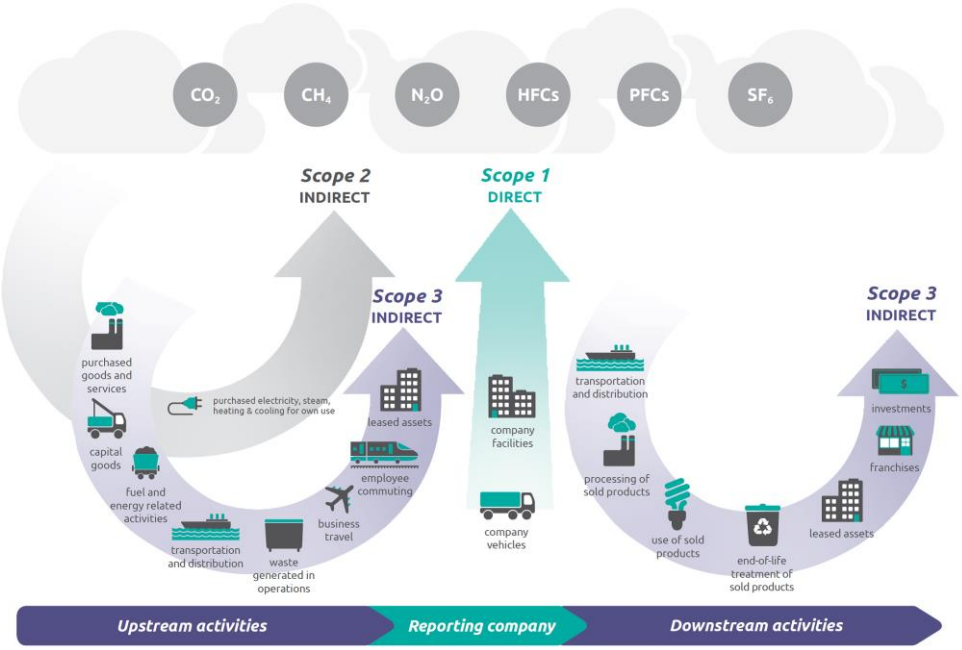
The FE sector consists of institutions or organisations that receives government funding to provide education and training to people over the age of 16. FE providers are classified to six types: colleges, Independent Training Providers (ITPs), Local Authority providers, Employer providers, Third Sector providers, and Adult Community Education (ACE) providers. Colleges include national specialist colleges, specialised designated colleges, land-based colleges, sixth form colleges, art, design, and performing arts colleges, and general further education colleges.

In November 2022, the Office for National Statistics (ONS) reclassified FE colleges, sixth form colleges and designated institutions in England to the central government sector. Following this reclassification, colleges (and their subsidiaries) are now part of central government. They continue to be self-governing charities regulated by the Secretary of State for Education but are now subject to the framework for financial management set out in Managing Public Money (MPM).

Carbon Accounting

This report has calculated the carbon footprint for FE colleges in accordance with the Greenhouse Gas (GHG) Protocol – the most widely used and accepted methodology for GHG accounting. The GHG Protocol categorises emissions into three scopes:
Scope 1: All direct GHG emissions from consumption of fossil fuels (i.e. ‘on-site’ emissions, such as from burning gas in a gas boiler, or tailpipe emissions from a vehicle).
Scope 2: Indirect GHG emissions from consumption of purchased electricity, heat or steam.
Scope 3: All other indirect emissions, such as emissions associated with the extraction and production of purchased materials and fuels, transport-related activities in vehicles not owned or controlled by the reporting entity, outsourced activities, waste disposal, etc.
Direct and indirect emissions are defined according to operational control, such that: Direct GHG emissions are emissions from sources/assets that are operated by FE colleges. Indirect GHG emissions are emissions that are a consequence of the activities of the reporting entity but occur at sources/assets owned or controlled by another entity (for example, a power plant that generates the electricity consumed by a college).

Figure 11 - Overview of GHG Protocol scopes and emissions across the value chain



What is a carbon dioxide equivalent (CO2e)?

Carbon dioxide (CO2) is one of 7 GHGs covered by the Kyoto Protocol. Each gas has a global warming potential (GWP). By comparing each gas's GWP to that of carbon dioxide we can derive a carbon dioxide equivalent (CO2e) value - which is the commonly used unit to report GHG emissions. Although CO2 has the lowest GWP, it is also by far the most abundant GHG emission. Hence the focus on CO2 when discussing emissions reduction and climate change.

Colleges within scope

Table 12 - List of all colleges within scope

List of colleges
ADA College Of Digital Skills
Barking and Dagenham College
Barnet & Southgate College
Capel Manor College
Capital City Colleges Group
Croydon College
Ealing, Hammersmith & West London College
Harrow, Richmond & Uxbridge Colleges

Lambeth College (South Bank Colleges)
Lewisham College (Part of Newcastle Colleges Group)
London South East Colleges
New City College
Newham College Of Further Education
Orchard Hill College
South Thames Colleges Group
Southwark College (Part of Newcastle Colleges Group)
Stanmore College
United Colleges Group
Waltham Forest College
West Thames College

Recent funding mechanisms for FE Colleges

Table 13 - Summary of recent funding opportunities

Funding mechanism	Details	Status
Public Sector Decarbonisation Scheme (PSDS)	Provides grants for public sector bodies to fund heat decarbonisation and energy efficiency measures. Phase 4 will have £1.17bn available from 2025 to 2028.	**OPEN**
Low Carbon Skills Fund	Provides grants to boost decarbonisation skills and unlock decarbonisation in the public sector. Phase 5 (2024/2025) will have £16m available.	**OPEN**
DfE Energy Efficiency Grant (Additional FE capital funding for 2022-2023)	£500m was shared between schools and colleges for energy efficiency upgrades. FE colleges received a share of £53m with individual colleges receiving around £290,000 in January 2023.	**CLOSED (2023)**

FE Reclassification Capital Allocation	Eligible FE colleges, designated institutions and sixth-form colleges received a share of an additional £150 million in capital funding. This followed the reclassification of the FE sector.	**CLOSED (2023)**
FE Capital Transformation Programme	The FE capital transformation fund is investing £1.5 billion over 6 years, ending in March 2026, to upgrade FE college estates.	**OPEN**
College Capital Loans	Provided funding to eligible capital projects in the 2023 to 2024 and 2024 to 2025 financial years. These loans covered funding gaps resulting from commercial borrowing restrictions following the reclassification of the FE sector.	**CLOSED (2023)**
Skills for Londoners Capital Fund - Round 3	A pot of £10m is available to skills providers and their partners to apply for capital funding for projects which meet the current and future skills needs of London's key sectors.	**CLOSED (2023)**
Mayor of London's Energy Efficiency Fund (MEEF)	£500m investment fund to deliver the low carbon, sustainable projects and infrastructure London needs to tackle the climate emergency.	**OPEN**
Retrofit Accelerator - Workplaces	Mayor's programme providing support to public sector organisations with planning and procuring decarbonisation measures, including support to access funding and finance. Will become part of the Zero Carbon Accelerator in 2024.	**OPEN**
Local Energy Accelerator	£2m in grant funding to help public sector organisations develop large and complex decarbonisation projects. grants between £25,000 and £250,000, for use in 2024-25.	**CLOSED (2024)**
Skills Bootcamp for Londoners	£21.6 million grant funding from the Department for Education (DfE) to deliver Skills Bootcamps in London in 2024-2025. open to training providers and employers looking to upskill their current workforce.	**CLOSED (2024)**
Green Finance Fund	The Fund offers loans with flexible terms at interest rates and will lend up to £500m to projects that help London meet its Net Zero ambitions.	**OPEN**


eauc
The Alliance for Sustainability
Leadership in Education


CARBON
TRUST