BUILDING A GREEN CAMPUS:

What's stopping institutions?

Abstract

Like the janitor at NASA who famously told President Kennedy that he was 'helping put a man on the moon,' it's important to recognise that becoming a green campus is not just the responsibility of estates or sustainability managers; but instead should be a collaborative effort from every stakeholder and every team, at every level, across the institution.

To understand the current state of play, we wanted to explore what – if anything – was holding FE and HE institutions back in their bid to meet net zero, and to question how important sustainability is to prospective students as a driving factor for choosing their place of study.

Our research shows that 2 in 5 (42%) institutions are unconfident or don't know whether they will meet their decarbonisation targets.

We also found that 7 in 10 (69%) 16-19 year-olds are worried about climate change and that 79% want institutions to have clear strategies for tackling climate change.

In this paper we further explore attitudes of institutional stakeholders and demands from prospective students concerning sustainability – including the differences between those applying to FE vs HE, and those who are the first generation attending university compared to those whose parents attended.

We define what a green campus is, suggest the definition for an 'emerging green campus' and explore each of the challenges below, presenting examples of best practice and highlighting what needs to change to meet the needs of prospective students, communities and the planet.

The key aspects holding institutions back from becoming a green campus were:

- Funding/investment – **77%**

- The delivery of renewable energy campus wide – **42%**

- Resistance to change within the institution – **31%**

- Expertise/knowledge within the institution and its partners – **28%**

- Other – **28%**

- Lack of collaboration between parties across the institution– **25%**

Introduction

Environmental sustainability forms an explicit part of the United Nations' 2015 Sustainable Development Goals and, given the integrated nature of the goals, will be key to achieving many of the others.

Under the 2015 Paris Agreement[1], more than 190 countries agreed to limit the increase in global temperatures to well below 2 degrees above pre-industrial temperatures - ideally to 1.5 degrees. But independent analysis from the Climate Action Tracker indicated that none[2] of the major carbon producers are on track and that targets and initiatives have stalled since COP26 in Glasgow.

In July 2022, the High Court ruled that the government's Net Zero Strategy[3] was inadequate[4] and breached the Climate Change Act 2008[5]. The High Court has ordered that a revised report go before parliament before the end of March 2023.

With damning analysis like this it's not surprising our research shows nearly 7 in 10 (69%) 16 to 19-year-olds are worried about climate change, given it's the younger generations who will endure the greatest consequences of global warming.

The government's soon-to-be updated Net Zero Strategy[3] sets out plans to decarbonise all sectors of the UK economy, from transport to agriculture. And the Climate Change Act 2008[5] requires that medium to large energy users, like colleges and universities, should take action to reduce carbon emissions in order to contribute to the national targets for carbon reduction.

Higher and further education institutions are not only educating the leaders of the future, but are ideally placed to be at the forefront of innovation for net zero, including research and development of future climate protection technologies. Their significant links to government means they can exercise influence on policy to combat climate change.

However, our research shows that **2 in 5 (42%)** institutions are unconfident or don't know whether they will meet their decarbonisation targets.

In October 2021, Universities UK, the body that represents 140 institutions, announced[6] its members would be carbon-zero by 2050 - and would have reduced greenhouse gas emissions by 78%, when compared to 1990 levels by 2035. And at the Times Higher Education Climate Impact Forum in 2021, more than 1,000 universities and colleges from 68 countries made a range of new commitments to reach net zero emissions by 2050, including a new initiative on nature-positive universities[7].

When asked 'How confident are you, if at all, that your institution will meet its decarbonisation target, in line with the government's 78% reduction in emissions by 2035 compared to 1990 levels?', just 10% of respondents said 'very confident'.

Gloucestershire College

Out of the UK's 400+ universities[8] and colleges[9], there are very few easy-to-find examples of carbon neutral campuses. Education Training Collective (Etc.) is the first college group[10] to achieve carbon neutrality in Tees Valley, and the London School of Economics and Political Science (LSE) became the first Carbon Neutral-verified university[11] in the UK. However, in both instances the institutions relied on carbon offsetting to achieve their goals; there are no examples as yet of UK colleges or universities that are net zero. And while offsetting may seem a 'quick fix', it can risk redirecting resources away from meaningful mitigation[12].

Carbon neutral: making or resulting in no net release of carbon dioxide into the atmosphere, especially as a result of carbon offsetting.

Net zero: cutting greenhouse gas emissions to as close to zero as possible, achieving a balance between the greenhouse gases put into the atmosphere and those taken out.

Not only is achieving a net zero – or better, carbon negative – campus important for overall UK and world targets, it will also be a factor in decision-making by students.

To understand how important a green campus is for prospective students we conducted consumer research with more than 1,000 16-19 year-olds who were planning on applying to college or university (those already in the application process or already within further or higher education were excluded from the survey).

In our 'mirror survey' conducted with more than 100 representatives from further and higher education, our analysis showed a clear disconnect between what young people want and what institutions perceive to be important to prospective students. See table 3 in appendix for full responses.
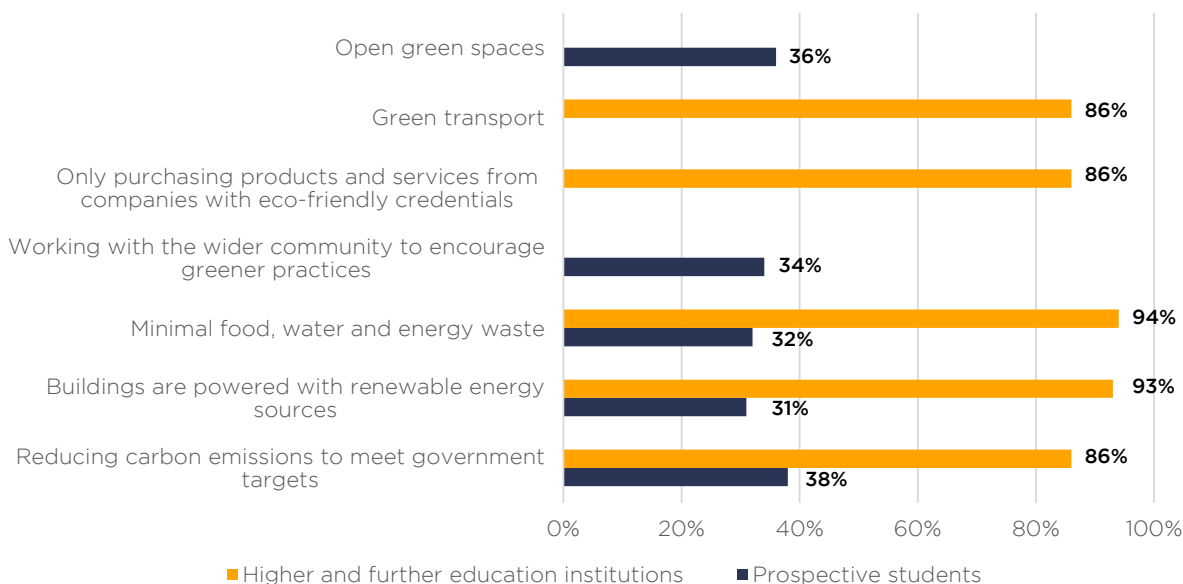

University of Lincoln: Ross Lucas Medical Sciences building at Brayford Campus

What is a green campus?

There are a handful of varying definitions for a green campus – one such example is the Green Office Movement's[13]:

A green university is an educational institution that meets its need for natural resources, such as energy, water, and materials, without compromising the ability of people in other countries as well as future generations to meet their own needs.

When we asked prospective students and higher and further education institutions what aspects they associated with a green campus, the highest ranking factors were:

Factor	Higher and further education institutions	Prospective students
Open green spaces		36%
Green transport	86%	
Only purchasing products and services from companies with eco-friendly credentials	86%	
Working with the wider community to encourage greener practices		34%
Minimal food, water and energy waste	94%	32%
Buildings are powered with renewable energy sources	93%	31%
Reducing carbon emissions to meet government targets	86%	38%

■ Higher and further education institutions   ■ Prospective students

We also gave institutions the option to provide additional aspects via a free text box – and there were a number of themes from the responses, including:

• Biodiversity initiatives
• Student and staff engagement
• Community engagement

In light of these responses we believe that the definition of a green campus should go further and factor natural, built, human and social aspects of a campus:

A **green campus** collects and reports on its energy consumption, is carbon neutral, and limits or eliminates food, water and energy waste and only works with like-minded suppliers and partners. The institution works closely with the community, colleagues and students to educate, innovate and drive sustainable improvements, making a positive contribution to local biodiversity and the environment through research, course curriculum and proactive projects.

Achieving green campus status is a huge undertaking for institutions, with some aspects more challenging than others and credit should be given to those en route to achieving the many aspects required. In light of this we would propose the concept of an 'emerging green campus':

An **emerging green campus** is working towards becoming carbon neutral, reporting and measuring its energy consumption, and limiting food, water and energy waste. The institution mostly works with like-minded suppliers and partners and works closely with the community, colleagues and students to educate, innovate and drive sustainable improvements, making a positive contribution to local biodiversity and the environment through research, course curriculum and proactive projects.
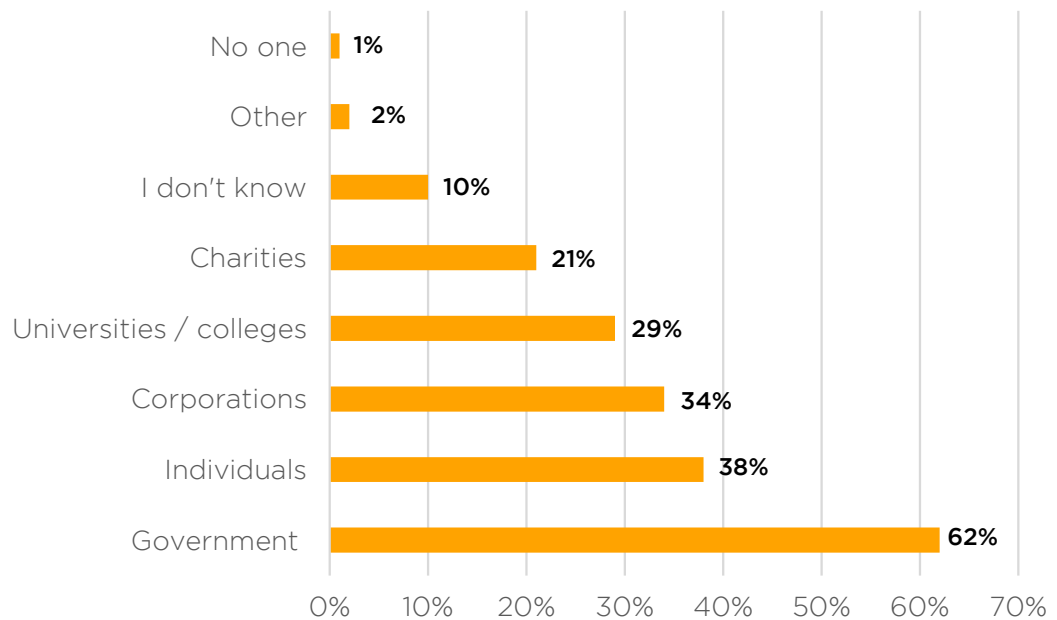
What students want

Of the 7 in 10 (69%) 16-19 year-olds worried about climate change, those planning on attending university are statistically more concerned (70%) than those planning on attending FE (65%).

While 62% of young people surveyed believe it is the government's responsibility to address climate change, 37% believe responsibility lies with individuals and almost 3 in 10 think educational institutions are responsible, sitting not far behind big corporations at 34%.

7 in 10 (69%)
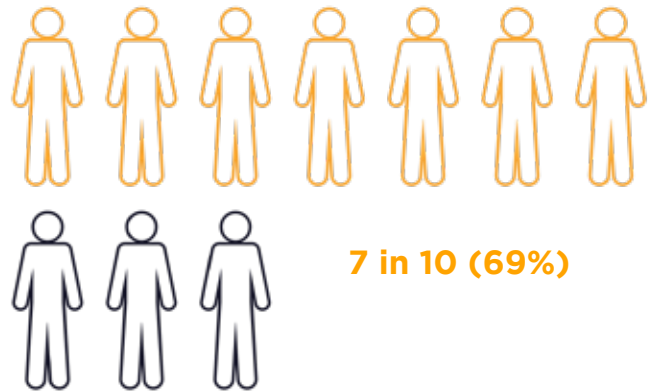
Who do you think is responsible for addressing climate change?

Figure shows responses from prospective students answering the question:

Who do you think is responsible for addressing climate change?

No one	1%
Other	2%
I don't know	10%
Charities	21%
Universities / colleges	29%
Corporations	34%
Individuals	38%
Government	62%

0% 10% 20% 30% 40% 50% 60% 70%

As well as making environmental sense, our research shows that green campuses are what prospective students want, and that institutions are underestimating the importance of sustainability for those applying for college or university.

When choosing their place of study, around three quarters of prospective students would be influenced by: the use of green energy to power campus buildings (73%), sustainability being an important part of learning, teaching and research (78%), and decision makers at that institution factoring in climate change in all decisions (75%).

This is mirrored in the latest Students Organising for Sustainability 'sustainability skills survey'[14], which shows that 79% of students would like to see sustainable development actively incorporated and promoted through all courses. A further 88% agree their place of study should actively incorporate and promote sustainable development and 66% say sustainable development is something they would like to learn more about.

However, institutions themselves undervalued these factors, with less than half (48%) agreeing they believe that factoring climate change into decision-making would be important to prospective students. And just half of educational institutions consider sustainability an 'important' factor of their student recruitment strategy – despite 79% of prospective students saying that 'clear strategies to reduce environmental impact, promote sustainable development and reduce waste' is an influencing factor in the college or university they apply for.

Based upon the latest HESA data, first year undergraduates totalled 695,000 in 2020/21[15], meaning that a university's policies and values relating to environmental impact, biodiversity and availability of green space is a factor in decision-making process of more than half a million new students each year for universities alone.

Students are also more than three times more likely to say that green spaces and promoting biodiversity was an influential factor in the educational institutions they apply for than not (78% vs 22%) and that clear strategies to reduce environmental impact, promote sustainable development and reduce waste was an influencing factor in the educational institutions they apply for than not (79% vs 21%). So institutions can attract students and save the planet by promoting on-campus biodiversity and getting students involved in the process.

Priorities of prospective students:

79% want institutions to have clear strategies for climate change

79%

75% want climate change factored into all decisions

75%

In order to benchmark the influence of sustainability factors we also asked young people about non-environmental factors. While we found that '[the institution] provides support for my personal well-being and mental health' to be the highest ranking factor at 87%, we also found that 'clear strategies to reduce environmental impact' was slightly more important than a 'free laptop' (79% vs 75%).

90%

of prospective students said they would be **proud to study at a green campus** - a promising statistic for institutions working towards becoming a green campus.

Barriers to becoming a green campus

In our research we asked institutions what was holding them back from becoming a green campus. The answers were:

💰	Funding / investment	77%
🌐	The delivery of renewable energy campus wide	42%
🚫	Resistance to change within the institution	31%
👥	Expertise / knowledge within the institution and its partners	28%
❓	Other	28%
🗣	Lack of collaboration between parties across the institution	25%
🎓	Nothing, we are a green campus	2%

Open responses from those choosing 'other' followed themes of:

🏠	Building age and location
🧍	Leadership
⚙	Technology
👥	Internal capacity
🔤	Education

Breaking down barriers: Starting with the data

Currently, the majority of further and higher education providers in England are not subject to mandatory carbon emissions reporting[16]. As part of the Queen's Platinum Jubilee Challenge, the DfE commissioned the Alliance for Sustainability Leadership in Education (EAUC) to develop a Standardised Carbon Emissions Reporting Framework for further and higher education institutions, but there are no plans to make the reporting mandatory 'while the sector is in the period of recovery from the pandemic'[17].

However, in our view, this should be changed to place greater accountability on institutions and increase focus on collecting data, making improvements to their stats and also being able to share this information with the wider campus stakeholders – in turn, this will place greater pressure on supporting bodies to provide adequate guidance on reporting.

Expert opinion

Matthew Burgess, principal and chief executive at Gloucestershire College, said:

 "What gets measured, gets done. And if we're going to make serious changes then there needs to be some pressure from government that identifies current emissions from an estate and what plans there are to address it."

The Department for Education's (DfE) 2022 sustainability and climate change strategy[18] for the education and children's services systems acknowledges the need for government to facilitate and support reporting.

Universities UK, however, argues that a 'one size fits all' approach to targets and reporting 'would not work'[19], with fundamental changes to the Estates Management Record needed urgently.

However, for campuses looking to make a significant dent in their effects on the climate, efficient systems and knowledge of a building's energy use is the first logical step in reducing wastage and cost.

The Office for Students[20] has recommended that directors of estates and facilities managers should be looking for a means to capture information about energy use campus-wide and at individual building level.

Harnessing gas, electricity and water usage for each building will provide benchmarks and clues for where energy can be saved.

Teamed with occupancy data, this means institutions also have the opportunity to implement dynamic space allocation and prevent the heating and lighting of large lecture theatres with few students in them, as well as utilising the data to tell stories of how and when staff and students can help optimise building efficiencies.

In addition, Centrica's 2019 report Powering Britain's Public Sector showed that just half of universities have updated their energy systems - making them miss out on around £146 million[21] in energy savings per year, which is more than a third of their overall bills. Given the sharp increase in energy costs since then, the cost of these missed savings will now be even higher.

London South Bank University[22]

London South Bank University's estates and academic environment team has deployed energy-efficient technologies to reduce overall electric, gas and water consumption. These measures include phasing out inefficient luminaires across campus and replacing four ageing ground source heat pumps with two reversible heat pumps - providing low carbon heating and cooling. The project won the CIBSE Building Performance Award for efficient facilities management in 2021.

Utilising technology can support savings, for example:

- Smart thermostats and lighting
- Sensors that enable institutions to monitor and adjust energy consumption, as well as spot leaks in the energy system

University of Birmingham[23]

In a bid to become the world's 'smartest' university campus, the University of Birmingham will become the first university to roll out Internet of Things technology at scale at its Edgbaston and Dubai campuses.

The project, in partnership with Siemens, includes digital sensor and analytics technologies, artificial intelligence, decentralised energy generation, and storage, renewable energy and concepts that help change users' behaviour. A 'Living Lab' will capture data from the university's building technologies, estates infrastructure and energy plants and use it for innovation, R&D activities and teaching - scrutinising energy demand and production with live data.

A team of sponsored PhD students will conduct research projects that address the net zero goal.

There are also several example of gamification technology, such as 'green apps' where staff and student collect points for being green – and in some instances win prizes for collecting the most points.

Durham University[24]

> Working in partnership with Team Jump, the university has launched its 'My Greenspace' app, where students and staff log their sustainable behaviours, such as shopping local, measuring their carbon footprint, litter picking and taking a 'four-minute shower challenge, to redeem green points.
>
> With more than 20,000 students, 4,000 staff and even more alumni the university hopes that the culmination of small acts will make a big difference to carbon savings.

University of Nottingham[25]

> The Green Rewards platform encourages staff and students to improve individual and university-wide behaviours including sustainable travel, waste reduction and health and wellbeing. Those at the top of the leader board each month receive vouchers as a prize.

To get started with data collection, institutions can make use of external tools such as the Green Buildings Tool[26] from Lloyds Bank, which takes high level data around campus at individual building level and identifies efficiencies, how to improve EPC ratings, and cost and return.

Mitigating risks

As technology and artificial intelligence continue to evolve it is becoming cheaper, and connectivity for remote control of this technology has also improved drastically with 5G, meaning we'll see more 'smart' technology across campuses.

Technology not only helps make improvements in real time, it enables institutions to forecast for the future. However, it does open campuses to risk, and institutions should increase security measures to suit.

Any network connection presents a vector for cyber attacks and the associated risk to security, privacy and safety. Not all smart devices are created equally or hardened against cyber exploitation by criminals. FE and HE procurement teams should consider careful purchase selection and have the correct expertise in place to ensure the management of smart devices through continual updates and patching.

Strategy

When asked 'what, if anything, are the issues preventing your institution from being a fully green campus?', 31% of education respondents stated resistance to change within the institution, while 25% said lack of collaboration between parties across the institution.

The EAUC CEO Iain Patton said: "Climate action has moved from the boiler-room to the board room. Every university needs a governor to be at the heart of a whole-institution zero carbon strategy. The future of every student depends on it."[27] This approach is reinforced by the principal codes of governance for both colleges[28] and universities[29], which each identify environmental sustainability as a part of good governance.

Leadership was a key theme in the open responses from colleges and universities. One respondent stated there had been a 'delay in signing off the environmental strategy', while others complained of 'lack of engagement', 'limited interest' and a 'lack of imagination' from senior leaders when it came to achieving a green campus. Too often the responsibility of sustainability has been delegated to the estate teams and isn't joined up with sustainability in course curriculum or economic sustainability.

From the education respondents we see that finance is a challenge – but this could be internal capital and a reluctance to expand limited resources on projects where sustainability is the only outcome, as opposed to those which link to more obviously 'core' parts of the strategy such as teaching and research. One sustainability manager explained that "universities are often hesitant to part with money where sustainability is the core objective – they often want to see additional benefits, but actually sustainability should be at the top of the agenda."

When asked how important or unimportant sustainability is as a factor in strategy areas, it ranked highest in the estates strategy. Surprisingly sustainability was only considered 'important' for less than half of institutions' research and international student engagement strategies.

Strategy

Higher and further education representative responses to 'how important or unimportant is sustainability as a factor in the following at your institution?'

		Important	Neither	Unimportant
	Estates strategy	88%	7%	5%
	Purchasing and procurement	76%	12%	12%
	Course and curriculum design	68%	16%	16%
	Digital strategy	67%	18%	15%
	Research areas your institution focusses on	66%	22%	12%
	Course delivery	62%	22%	16%
	Establishing new partnerships	59%	26%	15%
	Human resource strategy	50%	25%	25%
	Student recruitment strategy	50%	22%	28%
	Research you choose to fund	49%	34%	17%
	Engaging with international students	47%	31%	22%

To see real, drastic change, every department should report on sustainability, across all relevant areas of their operations, making it part of business as usual. Similar to health and safety, sustainability should be embedded in governance and accountability held by every team, and considered with every request, such as a new building, or new course development.

Expert opinion

Kim Ansell, senior consultant, governance and leadership at Advance HE, said: "Sustainability should be a golden thread through purpose and strategy, with decisions and opportunities seen through a lens of sustainability.

"The universities doing well in the THE Impact Rankings are those who have reported on the sustainable development goals most relevant to their strategy, their research strengths and their curriculum portfolio. This focus requires clear strategic alignment and a holistic approach to provide direction for staff and engagement for all stakeholders."

Andrew Connors, head of public and third sector corporate and institutional coverage at Lloyds Bank, said: "Leadership around both ESG and financial sustainability should come from the top – we find that the VCs who join the dots between ESG and finance have the best outcomes."

As part of the DfE's sustainability and climate change strategy, the government is tasking the sector with reducing emissions by 50% in 2023, compared to 2017 levels, and a total 75% reduction by end of 2037[18].

Taking into consideration scope three (indirect emissions, such as those emitted by the institution's supply chain or emissions created by staff commuting) is much more complex – with the UK only committing to produce 'a programme of work to set targets as soon as possible'.

Results from our research, however, show **only 1 in 10 institutions are 'very confident' they will meet this target**, and this is with the pledge only relating to scope one and two emissions: those directly produced onsite or purchased by the institution.

Expert opinion

Kim added: "Embedding and joining up sustainability across complex organisations like universities is multidimensional. However, there are simple changes we could start to make to bring sustainability to the forefront, such as, include ESG aspects to the strategic summary on cover sheets for governing body papers and executive agendas.

"Offer a sustainability overview when the VC or Executive Team does strategy updates to staff and at governors meetings, and make it really obvious to people that this is not just about environmentalism, so that all stakeholders, including governors, can see and feel the possibilities."

University of Salford[30]

Recognising that indirect scope 3 emissions account for 80% of the institution's total emissions, the university has produced a scope 3 emissions report, measuring the sources of indirect carbon production, the reduction targets and planned management activities to achieve these targets.

Accountability

In addition to government targets and legal obligations, there are a number of independent sources keeping institutions accountable.

The People and Planet's University League[31] is one source holding universities accountable for making improvements to sustainability and ethics, while also encouraging transparency; 54.65% of the information it uses to score institutions is taken from universities' public websites, with the rest coming from information published by the Higher Education Statistics Agency (HESA) Estates Management Record (EMR). Those institutions that don't publish green credentials on their websites score poorly in the league tables.

Times Higher Education Impact Rankings[32] take ethics and environmental responsibilities for universities to a global scale, scoring universities against the United Nations' Sustainable Development Goals, which include gender equality, responsible consumption and production, and sustainable cities and communities. In the overall rankings just two UK universities make the top 10 world-wide: Newcastle University and the University of Manchester.

Other organisations scrutinising university green credentials include:

• UI GreenMetric World University Rankings[33]
• Students Organising for Sustainability[34]

Combatting a lack of collaboration

1 in 4 institutions identified a lack of collaboration between parties across the institution as a barrier to becoming a green campus.

Institutions could be doing more to improve collaboration, which starts with education and engagement with people institution-wide, as well as external partners. See Education section.

1 in 4

institutions identified a lack of collaboration between parties across the institution as a barrier to becoming a green campus
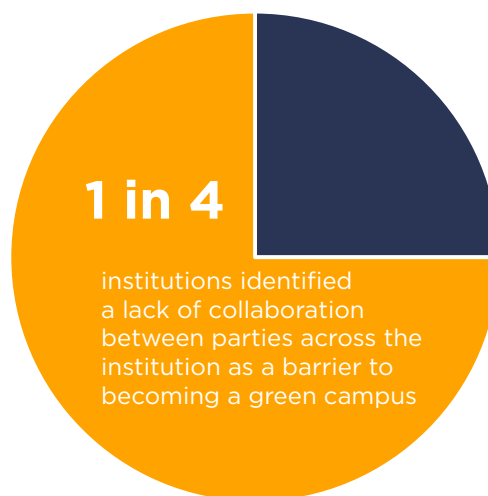
Funding

When asked 'what, if anything, are the issues preventing your institution from being a fully green campus?', 77% of education respondents stated funding or investment.

The government's announcement of cuts to Official Development Assistance funding[35] will lead to a £120 million shortfall for R&D collaborations with overseas partners, stalling or stopping cutting-edge research in support of pressing global challenges. And a freeze in university tuition fees until 2024–25[36] not only means that income per student will continue to fall, but also that universities will face restrictions on how much they can invest in achieving net zero and how quickly they can achieve goals.

College funding has also been notoriously constrained over the past decade[37].

With significant capital required upfront, most public sector government incentives are focused on social housing and local authorities.

However, there is some government support and opportunities to take advantage of changing pressures put on lenders.

77%

of education respondents stated "funding or investment" as an issue preventing their institution from becoming a fully green campus

Pressure on banks

WWF's Big Smoke Report[38] shows that just a subsection of the UK finance sector funded 805 million tonnes of CO2 in 2019.

There are calls for the government to place greater sanctions on UK investment to reduce the impact on climate change. The UN-convened group Net-Zero Banking Alliance has pledged to reach net zero carbon emissions across its lending portfolios by 2050[39] – the group of 53 banks from 27 countries holds more than $37 trillion in assets and includes Barclays, HSBC, Lloyds Bank and NatWest.

With pressures on banks to meet their own carbon targets, there are opportunities for education institutions to take advantage of green-focused lending and additional strategic support.

At present there are some industry guidelines for green debt. The International Capital Market Association (ICMA)[40] defines a green loan as funding a 'green project' including 'green buildings that meet regional, national and internationally-recognised standards of certification'.

The Loan Market Association (LMA)[41], however, defines 'green projects' as 'those that rely on renewable energy, energy efficiency, pollution prevention and control, as well as clean transportation and the environmentally-sustainable management of living natural resources and land use'.

Environmental, social and governance (ESG) criteria is filtering into more 'standard' debt products, as mainstream borrowers issue leveraged loans and revolving credit facilities that include ESG-linked margin ratchets. What this means is that if an organisation achieves a certain number of ESG-based key performance indicators (KPIs), the margin on the loan decreases accordingly, but if criteria is not met, margins tick up and loans become pricier.

Green loan examples

• **Private Placement Funding**

Private placement (or non-public offering) is a funding round of securities that are sold not through a public offering, but rather through a private offering, mostly to a small number of chosen investors. The following examples have utilised Private Placement Funding:

University of Hull[42]

With ambitions of becoming a carbon neutral campus by 2027, in May 2022 it was announced that the university secured £86 million in 'green funding' via private placement from three UK and US institutional investors, arranged by Lloyds Bank.

The investment will be used to create world-class laboratories and teaching spaces, including new carbon efficient and carbon neutral buildings, as well as additional renewable energy and digital infrastructure.

London School of Economics (LSE)[11]

> Looking to build its first net zero carbon building, LSE secured £175 million through its first Sustainable Private Placement, working with NatWest on the transaction.
>
> As part of the project, LSE developed a Sustainable Finance Framework[43], which looks to align the institution's social purpose and Sustainability Strategic Plan with its funding and financial strategy. The framework has been developed to increase flexibility to issue financial instruments to support its commitment to achieve a broad range of sustainability outcomes.

Expert opinion

Kate Manku, higher education relationship director at Lloyds Bank, said: "Typically the universities that have the most success are those that bring finance partners into the conversation earlier. Linking finance to your sustainability strategy or green investment plans requires a significant investment of time and resource from multiple internal and external stakeholders. Finance partners, if engaged early, can help guide management through the process to ensure funding isn't delayed as a result."

Jennifer Burrett, sustainability and ESG finance team associate director at Lloyds Bank, added: "My advice would be to not delay. While the task at hand may seem overwhelming and often hard to know where to start, there are plenty of financial tools available to enable you to develop an achievable and effective sustainability strategy. Reach out to your banking partners - we are here to support you."

- **Energy Performance Contracts**

Energy Performance Contracts typically see a service provider design a system that will produce energy – and therefore cost – savings. They guarantee and implement the new product or service and are remunerated via the cost savings made over time.

Once the costs have been repaid, the institution retains the savings generated by the new product or system.

University of the Arts London[44]

> Working with Bouygues Energies & Services, the university looked to increase carbon savings by 15%. Upgrading heating, ventilation, lighting and water systems among other works led to a £320,000 cost saving per year, with a supplier payback period of seven years.

Working with private companies, universities can upgrade technology and facilities through sponsorship, tapping into their CSR budgets and partnerships, as well as fund PhD studentships for R&D, supporting curriculum and additional potential revenue streams.

University of West London[45]

Tapping into CSR funds from its facilities management supplier, Bouygues Energies & Services, the university collaborated with the Royal Botanic Gardens, Kew, Cultivate London, and Nicola the Gardener in order to create a space for native plants, insects and fungi, including a 'bug hotel', custom made flower beds, edible food garden, bird and bat houses and a seed bank. The private facilities management company also provided volunteers for the project.

Also see University of Birmingham case study in Starting with Data section.

• **Public Sector Decarbonisation Scheme**

The Public Sector Decarbonisation Scheme[46] provides grants for public sector bodies to fund heat decarbonisation (e.g. installation of heat pumps, solar panels etc.), and energy efficiency measures (e.g. LED lighting and building management system upgrades) for both modern and heritage buildings.

£1 billion was allocated for Phase 1 of the scheme, followed by £75 million in Phase 2 and £1.425 billion in Phase 3 to cover the period 2022 to 2025. So far, grants have been awarded to 461 projects in Phase 1[47] and 54 in Phase 2[47]; applications for Phase 3a closed in November 2021 and will see £1.45 billion of funding granted up to 2025. The next application window, Phase 3b[48], opened in October 2022.

Aston University[49]

In Phase 2 of the scheme the university secured £2.2 million in funding to invest in low carbon alternative technologies including gas boiler replacements, LED lighting and solar PV systems, as well as smart ventilation controls and cooling systems. The investments are estimated to save around 430 tonnes of carbon dioxide equivalent.

• **Green Heat Network Fund**

Worth £288 million in capital grant funding over a three-year period (2022 – 2025), The Green Heat Network Fund[50] is open to public and private sector organisations in England and will support:

The commercialisation and construction of new low and zero carbon (LZC) heat networks (including the supply of cooling)

The retrofitting and expansion of existing heat networks.

University of Reading[51]

In January 2022, it was announced that the university had been awarded £100,000. Also being matched by the university, the grant will be used to install a large heat pump into the energy centre, looking to provide up to 40% of the energy centre's yearly heat output across the Whiteknights campus' 16 buildings, saving 12,000 tonnes of CO2 by 2030.

- **Heat Networks Investment Project**

Launched in 2018 by the Department for Business, Energy, and Industrial Strategy, the £320 million project is being delivered through the Heat Networks Investment Project[52], providing gap funding for heat network schemes.

Newcastle University[53]

Awarded £2.9 million to support the extension and upgrade of its city centre district heat network, the institution was the first university campus to be awarded funds from the Heat Networks Investment Project.

While many of these green loans and green funds are supporting universities to make much-needed improvements to their campuses, there is criticism that some of these schemes provide unrealistic timescales. For example, the Public Sector Decarbonisation Scheme[46] stipulates that applicants awarded funding for single year projects must complete the project within the year – placing challenging deadlines on institutions that are restricted by academic timetables. An 'easy win' to support more campuses to apply and take advantage of schemes such as this one would be to ease the deadlines – instead applying more achievable targets such as agreeing a contractor by a certain date, rather than full project completion. This is particularly the case as we see materials shortages and skills gaps in contractors with the knowledge necessary to achieve projects within the timeframe.

Procurement

In addition to more realistic funding timescales there are also calls to see changes made to the procurement process. Restrictive tendering requirements for even innovative and cutting edge technology makes a 'mockery' of the practice.

As so much of the technology and ideas for sustainability is so new, there is often only one provider or consultant in that field, making it almost impossible to find comparable quotes, slowing down the procurement process and preventing institutions – which should be at the forefront of innovation – from being agile.

Bigger picture

In order to keep education institutions focussed on the bigger picture, the DfE has stated as part of its sustainability and climate change strategy[18] that all bids for capital funding for further education and higher education will need to consider environmental impact, carbon reduction and adaptation measures, and align with the government's targets and objectives.

Institutions should also consider reviewing financial arrangements, ensuring investments are ethical and not contributing further to fossil fuels and climate change.

Rolling out renewable energy campus-wide

Those providing open responses stated technology was also holding them back in terms of supply chain delays needing the right technology at the right price, as well as 'the availability of credible offsets to purchase'.

When asked 'what, if anything, are the issues preventing your institution from being a fully green campus?', 42% of education respondents stated delivery of renewable energy campus-wide.

42%

of education respondents stated "delivery of renewable energy campus-wide" as an issue preventing the institution from becoming a green campus

Gloucestershire College[54]

On a journey to becoming a net zero campus, in 2022 Gloucestershire College completed installation of technologies to convert both its Gloucester and Cheltenham campuses to fully renewable energy. The campus hosts 4,500 solar panels from which it plans to sell excess energy back to the grid. With battery storage also on campus the college is able to purchase cheap power to hold in reserve when daylight hours are shorter or during peak times. Pay back for the project is expected to be around six years.

The age of buildings was also a consistent theme in a number of open responses from university and college representatives, due to limitations in adapting listed buildings across campuses. One respondent stated that 'poorly maintained infrastructure and a lack of interest in investing in older buildings in order to chase big new builds' was holding their campus back.

As well setting targets on emissions, the DfE strategy also highlights the need to prepare buildings and campuses for inevitable extreme weather and temperatures[18].

Considering that 80%[55] of buildings expected to be present in 2050 have already been built, and that the UK has the oldest stock in Europe (37% was built pre-1946), there is significant pressure for colleges and universities to consider improving existing facilities.

But retrofitting isn't easy, nor is it cheap.

Expert opinion

Matthew Burgess, principal and chief executive at Gloucestershire College, said:

"We were met with multiple challenges and hurdles at each stage of the project; but we don't work in our sector for an 'easy' life – we are here to prepare future generations and set a positive example.

"The key learnings and advice I would give to other campuses is project planning and management and getting governors engaged is crucial – co-ordination across teams and bringing in the right experts is also key. And be realistic with timescales – these projects always take longer than you think."

Design strategy and master planning

These issues need to be addressed as part of the institution's master planning strategy. Looking at the campus as a whole and drilling into the detail of individual buildings - such as location, footfall and use, orientation and interaction with the wider community - can enable estates directors to consider optimum technology application, which buildings should be prioritised first and compensate for buildings that cannot be carbon neutral by design.

Taking a bigger picture view of the campus, the strategy should analyse existing building stock from a sustainability perspective and identify:

Which buildings are already fit for purpose

Which buildings can be retrofitted and by what degree

- Achieve low carbon / zero carbon

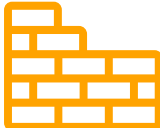- Utilise renewable energy

Which buildings need to be demolished and rebuilt

- Take into consideration the carbon footprint of demolition

- Demolition could be due to other factors like poor design, decaying building quality or no longer fit for purpose

The above analysis should take into account other factors that may affect the long-term building use:

PURPOSE	BUILD QUALITY	COST	HERITAGE	THE FUTURE
Is it fit for its intended purpose?	Is it structurally sound? What's its expected life-span?	Would the continued upkeep and/or retro-fit cost more than a rebuild?	Does it have historical or architectural merit that needs preserving?	Is it future-proofed for the growing needs of the institution? Is it capable of expansion, future retro-fit or change of use?

For many institutions the age of buildings is problematic, as any green initiatives chosen will need to aid the long-term preservation of historic buildings – they cannot cause harm or negatively impact the building's character. All listed buildings are different and should be treated uniquely, and where the heritage aspect conflicts with the desire to adopt green credentials, other campus buildings and spaces can be utilised to offset the shortfall, where possible.

Biodiversity

Biodiversity is a common theme running through the responses from both students and institutions. Not only should this be acknowledged within the definition of a green campus, but it is also a factor desired by students, with **78% of prospective students stating that '[the college or university] has open green spaces and promotes biodiversity' would be an influencing factor on their application.**

Promoting green spaces and biodiversity, therefore, should be at the forefront of an urban design strategy, not an afterthought or add-on.

Regardless of the university or college location there are options to be considered within a master planning strategy.

City campuses could include:

- Quality spaces in focal areas within a master plan
- Trees, native species planting
- Green walls
- Pocket parks

Traditional campuses could include:

- Woodland walks
- Spaces for outdoor learning
- Wildlife focus - such as hedgehog surveys

Both types of campus could include:

- Renewable energy generation incorporated within the landscape
- High-quality green architecture, sustainable building design
- Renewable energy sources, community energy initiatives
- Nature-based gardens

University of Edinburgh[56]

The university's Green Communities programme encourages and facilitates opportunities for staff and students to work on local green projects within the community including a greening project along the Union Canal, hedgehog night surveys and pond studies.

Green transport

Student commuting, staff commuting and business travel is estimated to make up 11%[12] of UK universities' emissions. Student flights make up 18%[12]. Promoting green transport is another way of reducing scope 1 and 2 emissions and scope 3 indirect emissions from staff and student commuting.

This can be encouraged by making walking and cycling routes the primary access through campus, cycle hire schemes, tapping into public transport infrastructure, and providing electric car charging points.

University of Derby[57]

Relating to its Derby and Buxton campuses, St Helena site at Chesterfield, owned residence buildings, and new property developments, the university's Sustainable Integrated Travel Plan 2021-2025 is designed to improve the institution's travel behaviours, reduce the need for travel, and encourage staff, students and visitors to choose more sustainable travel modes.

The plan includes liftshare schemes, increasing changing facilities to encourage cyclists, increased covered cycle storage, unibus service, EV charging points, and communication travel data to show the scale of the issue and promote efficient modes of travel.

Green materials and modern methods of construction

Estimates from 2018/2019 placed construction as a greater contributor to emissions than scope 1 and 2 put together (17% vs 16%)[12]. The construction process is a significant generator of carbon, waste and other adverse impacts, which can be minimised through appropriate actions. Considering green credentials of potential building materials used in design is important and suppliers should be pushed to source:

• Recycled materials

• Low carbon production and transport of materials

• Natural and responsibly-sourced materials

Modern methods of construction (MMC) is a process of innovation, focusing on developing new ways of building, MMC is a collective term for alternative construction practices, often involving off-site factory production of components of a building. Bringing MMC to education projects would have benefits including:

• Bringing forward controlled manufacturing processes which ensure shorter and more reliable build programmes, providing new facilities sooner and with a reduced carbon footprint in construction

• Off-site construction meaning less disruption to students

• Design flexibility and construction certainty.

When considering sustainable solutions to building projects, timber frame construction is a sustainable construction method which uses renewable materials and offers design flexibility for the building's layout and appearance.

Green aspirations can be identified in terms of what is achievable in the short, mid and long-term. This will guide the delivery of the strategy. Not only do community and campus initiatives put universities and colleges at the heart of local economic strategies, but they provide students with the comfort and reassurance that they are seeking to address sustainability issues locally. For steps for practical rollout – see our community energy checklist in the addendum.

Education

When asked 'what, if anything, are the issues preventing your institution from being a fully green campus?', 28% of education respondents stated expertise/knowledge within the institution and its partners.

The Climate Change Committee has indicated that the majority (62%)[58] of emission reductions will require some form of societal and behaviour change including the adoption of low-carbon technologies and changes to the way we live our lives.

28%

of education respondents stated "expertise/knowledge within the institution and its partners" as an issue preventing their institution from becoming a green campus

Staff

When implementing major change, communication is crucial and experts pushing for step-change in sustainability buy-in should take learnings from the pandemic. Phil Collins, vice-dean (education) at Brunel University London, suggests senior leaders should follow these four key steps[59]:

Be clear why staff engagement is vital for sustainability

Staff who are engaged are more likely to support and implement change. Broadening the pool of minds tackling the issue will also improve quality and innovation of ideas.

Identify how to create an engaging and enabling environment

Provide direct connections and two-way conversations with senior team members to demonstrate transparency and integration – a digital-first approach to meetings can support this.

Understand how engagement can be lost

Remind teams and be clear on the bigger picture and shared ultimate goal – don't let that be lost within the day-to-day detail, which may be mundane.

Maintain engagement through trusting relationships

Be mindful of setting realistic goals that can be met and help maintain enthusiasm and momentum.

University of Gloucestershire[60]

Highly commended at the Green Gown Awards 2021, the university used its annual sustainability report to engage with internal and external stakeholders, including students, staff, partners and industry. Simplifying technical aspects of 'going green' communicates the importance of sustainability and the impact its graduates have on the world.

The university's top 3 learnings include:

- Involve those who deliver on sustainability to gain ownership, input, and fresh ideas

- Clear infographics and simple stories make all the difference in communicating sustainability

- Its report is the centrepiece of its communication strategy to engage and educate people

Taking end users on a 'journey' with sustainability projects can increase engagement – this is often easier with the 'big ticket' projects, such as new buildings – whereby there are visible differences in technology and communicated behavioural expectations.

University of Lincoln[61]

The Ross Lucas Medical Sciences Building is a thermally-efficient building designed to minimise energy consumption. It is designed to produce 15% of its electricity use and is heated and cooled by a hybrid variable refrigerant flow (VRF) Heat Pump system.

Natural daylight and ventilation have been maximised. The building achieved BREEAM 'Excellent' and an Energy Performance Certificate 'A'.

A culture of sustainability was created from the design stage of the project by engaging with building users and working with them on the university's ambition to create a low carbon building in operation. Building users are now managing energy and are informed about how to best use the heating and cooling systems to make them more efficient.

With the task of achieving net zero so large, it's crucial that projects are collaborative internally and with external partners; flexible to encourage wider participation; creative, including testing and learning; and long-term – one-off projects often face the challenge of losing momentum, particularly when driven by individual energetic employees who then inevitably move on. The key is to build robust infrastructure to support initiatives so if and when employees leave, the forums and networks ensure institutional learning is in place to successfully continue initiatives.

Students

Taking it one step further would be to have an element of sustainability across all college and university courses: the QAA released guidance[62] for curriculum design and course management leaders to incorporate sustainable development within the curriculum.

University of West London

Placing sustainability at the heart of governance, the university has a sustainability lead responsible for ensuring that for academic year 22/23 and beyond, evidence of sustainability education is embedded in the course curriculum for course validation.

Percentage of prospective students stating they are concerned about climate change
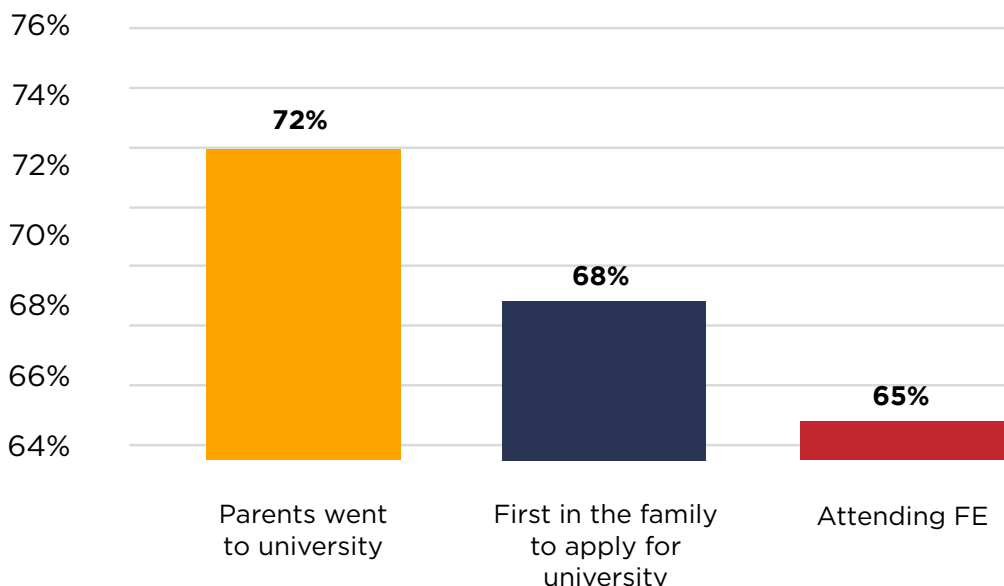
The accumulation of many small behavioural changes can make a big difference to campuses. However, the type of students institutions recruit may also dictate the amount of support needed to make change.

This is reflected in our data, given that **those planning on attending university whose parents also went to HE are more worried about climate change (72%) compared to those planning on attending FE (65%), or those whose parents did not attend university (68%).** One suggestion would be to have additional sustainability engagement funding for institutions with a greater proportion of students who are first in their family to go to university or are attending FE.

Expert opinion

Nasrin Khanom, environment and sustainability manager at University of West London, said: "Changing behaviours is not an easy task. Student pressure certainly helps our cause when applying for funding for sustainability projects, so we have to think more creatively about how to engage students with climate action if the student body and student unions are not driving it themselves.

"From September [2022] sustainability modules will be included in all student inductions and we're investing in video content to explain what students can do and how they can be involved. We've also started engaging more students with the ongoing projects across campus – for example inviting engineering students to view our heat pump systems as part of teaching material."

Greenwashing

As part of strategy and education all communications should be honest and transparent. Staff and students will be acutely aware of greenwashing, which is a growing issue across multiple sectors. This brings us back to the need to measure and improve; using facts and figures that clearly show where you are now, where you want to be and any improvements made will resonate with stakeholders.

Conclusion and summary

With **only 1 in 10** institutions feeling 'very confident' that they will achieve their net zero goals – becoming a green campus may seem out of reach for some. But, despite the challenges, there are solutions and great opportunities for collaboration within institutions, between institutions and with external experts.

Becoming a green campus and hitting sustainability targets is not something that can be achieved overnight. However, every institution, regardless of size, has measures within their remit that can help improve green credentials. Below is a summary of the main points and calls to action of our research:

Measure and improve

- Collect data that tells the story of an institution's green status and provides a baseline for improvement

- The EAUC's Standardised Carbon Emissions Reporting Framework should become mandatory to drive accountability.

Strategy and governance

- Institutions looking to achieve the best green outcomes must have leadership that values the importance of economic, environmental and educational sustainability, joined together through strategy and purpose

- More must be done to place sustainability at the forefront of governance and high in the pecking order of VC priorities

- Like a stick of rock – every way you cut it, sustainability should be at the core of an institution's purpose and strategy, regardless of department, and not simply delegated to estates or sustainability teams.

Rolling out technology

- While early adoption can be a risk, steps should be taken now to benefit institutions in the long run, seeing returns sooner

- Take into consideration each building and the campus as a whole and look to create balance through master planning.

Finance and procurement

- Institutions should take advantage of the grants, partnerships and private lending options available

- Engage with lenders early to improve outcomes

- Government should provide more realistic deadlines in grant funding and offer more streamlined procurement options.

Meet student demands

- The sustainability status of a campus is a priority for students of the future and will influence their choices

- 79% want institutions to have clear strategies for climate change

- 75% want climate change factored into all decisions.

Behaviour change

- Combat resistance to change from staff and students with clear communication

- Senior leaders must engage and recognise that influence starts at the top

- Introduce gamification elements to sustainability to encourage small, incremental behaviour change

- Share learnings, both successes and failures, across all sectors, not just education. To reach worldwide climate goals, it's essential that support, rather than competition, is the focus.

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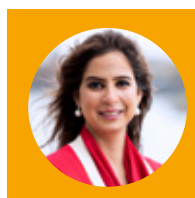
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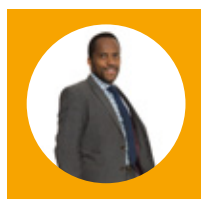
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About Shakespeare Martineau

Shakespeare Martineau is recognised for its expertise in real estate, energy, and the higher and further education sectors. The firm acts for more than 100 higher education institutions and further education colleges, ranging from large research intensive universities such as Cambridge and Nottingham, metropolitan universities and colleges such as UCLAN and Dudley College and specialist institutions such as the Royal College of Art and the University College of Osteopathy.

About Marrons

Marrons is a leading consultancy that helps clients realise their project's potential through planning applications, appeals, urban and architectural design, socio-economic evidence and heritage expertise.

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Addendum

Table 1 shows checklist for green campus projects

No.	Step	Considerations	New build	Retro-fit	Useful links
1.	Establish strategy priorities (in line with institution's sustainable strategy)	• Energy efficient building • Save money on energy bills • Reduce carbon footprint • Earn money from renewable generation • Meet prescribed community goals • Encourage behavioural change • Consider ethical carbon offsetting	✓	✓ Calculate current carbon footprint	Energy Saving Trust Tools and Calculators
2.	Confirm ownership of project	• University/ college • Service providers	✓	✓	
3.	Identify the best low carbon system to meet project priorities	• Energy efficiency waste management • Changes in government policy • Technology, e.g. to improve waste management and energy efficiency • Fabric first • Onshore wind • Heat pumps • Solar PV	✓ Consider appointing energy consultants to assess viability and costs	✓	RPEC Energy UK AEEC

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3.		• District heating scheme (aligned with heat network zone mapping) • Hydrogen (aligned with any hydrogen hub) • Influencing factors: location, planned use, neighbouring communities, profit targets			
4.	Identify sources of funding	• Is the project eligible for government funding? • Other financial incentives • Produce a financial model	✓	✓	Heat Networks Investment Project Green Heat Network Fund BHIVE Public Sector Decarbonisation Scheme REGO Woodland Carbon Code Smart Export Guarantee
5.	Acquisition of land	• Negotiation of option and lease agreements with land owners to acquire necessary land rights • Consider any potential easements required	✓	~	
6.	Environmental consents	• Environmental restrictions • Environmental Impact Assessment required • Decommissioning obligations	✓	✓	Environment Impact Assessment Regulations

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7.	Planning	• Local authority restrictions • Planning law restrictions • Health and safety regulations • Planning permission	✓	✓	National Planning Policy Framework Renewable and low carbon energy Lawful Development Certificate
8.	Procurement	• Procurement regulations • Tender process	✓	✓	Public sector procurement policy
9.	Planning permission	• Landlord and Tenant Act • Electricity Licences	✓	✓	Electricity License Exemptions
10.	Construction	• Appoint a competent contractor • Check required contractor standards	✓	✓	CIBSE CP1 Heat networks: Code of Practice for the UK (2020) Regulations: heat networks (metering and billing) MCS heat pump standards Heat Pump Association Heat Trust Scheme Heath Network Efficiency Scheme
11.	Contracts with service providers	• Equipment supply • Metering arrangements • Connection to local electricity grid • Concession agreements with ESCO	✓	✓	Utilities contracts regulations Public sector contracting authorities (Note: link correct at time of writing and may not include the most recent revisions)

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11.		• Operation and maintenance agreements • Asset optimisation agreements • Managed serviced agreements with electricity supplier			
12.	Revenue streams / energy supply contracts	• Sale of excess energy to DNO • Sale to local consumers/ businesses • Sale to neighbouring sites via private wires	✓	✓	Introduction to power purchase agreements
13.	Consumer protection and engagement	• Data protection policies and statements • Heightened security to prevent cyber attacks through data sensors and tech	✓	✓	ICO guidance for businesses Guide to UK GDPR A new Consumer Duty Heat Trust Scheme Heat networks: building a market framework Energy Ombudsman Ofgem css assure

Addendum

Table 2 shows the aspects that young people and representatives from education institutions associate most with green campuses. The stats show clear differences between first generation university applicants, second generation and those planning on attending FE colleges. A significant difference is >5% between the comparable stats.

	I am planning on applying to university - one or both of my parents went to university	I am planning on applying to university - I will be the first person in my family to do so	I am planning on going to a further education college	FE/HE respondents
The university / college aims to reduce carbon emissions (greenhouse gases) to meet government targets	45%	38%	28%	86%
Open green spaces	38%	46%	20%	82%
The university / college works with the wider community to encourage greener practices	36%	36%	28%	78%
Minimal food, water, energy waste	35%	36%	24%	94%
Buildings are powered by renewable energy sources	32%	40%	20%	93%
Green transport (e.g. use of electric buses)	30%	34%	26%	86%
Buildings are constructed with sustainable materials	26%	29%	21%	81%
Sustainability is an important part of teaching, learning and research	24%	31%	21%	75%

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They only purchase products and services from companies with eco-friendly credentials	26%	27%	19%	86%
Ethical investment (e.g. the university does not invest in organisations that are not eco-friendly)	27%	32%	11%	74%
They conduct research into climate change	24%	22%	18%	68%
Not sure	6%	7%	23%	1%
No aspects would make a 'green campus'	0%	0%	2%	0%
Other, please specify	0%	0%	2%	N/A

Addendum

Table 3 shows responses to 'When choosing a university or further education college, how influential, if at all, would the following factors be to you when applying?'. Highlighted statistics show that education institutions are underestimating the influence green features have on students when applying to universities and colleges.

Would find this influential	Students	HE/FE
The university/college in question completely fulfils my academic needs in terms of subject, teaching	85%	98%
Sits high on the league table for your specific subject	82%	91%
Location	83%	95%
It ethically invests (e.g. the university/college does not invest in organisations that are not eco-friendly)	72%	45%
All teaching is in person	80%	81%
It offers hybrid teaching	75%	82%
All teaching is online	53%	40%
It has open green spaces and promotes biodiversity	78%	62%
It has clear strategies to reduce environmental impact, promote sustainable development and reduce waste	79%	65%
It offers a free laptop to every student	75%	52%
It provides support for my personal well-being and mental health	87%	86%
It has a good social scene / nightlife	76%	92%
Sustainability is an important part of learning, teaching and research	78%	58%
Campus buildings are built sustainably and powered with green energy	73%	54%
All decision making by university/college leaders has climate change in mind	75%	48%
Good provision of societies / groups	80%	88%
Ethnic, gender, disability and sexuality diverse student and faculty population	83%	83%
High employability record	85%	96%