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# THE CARBON LEAGUE

The universities of the UK & their carbon usage

Version 1.0

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# The road to Net Zero: practical steps for universities to reduce carbon emissions and waste generation



## UK Universities Pledge to Achieve Net Zero

Climate change is a critical challenge affecting the world. Its effects include rising temperatures, natural disasters, and biodiversity loss. Organisations and universities are taking action to reduce their carbon footprint and promote sustainability. Universities have a crucial role due to their impact on society and ability to inspire future generations.

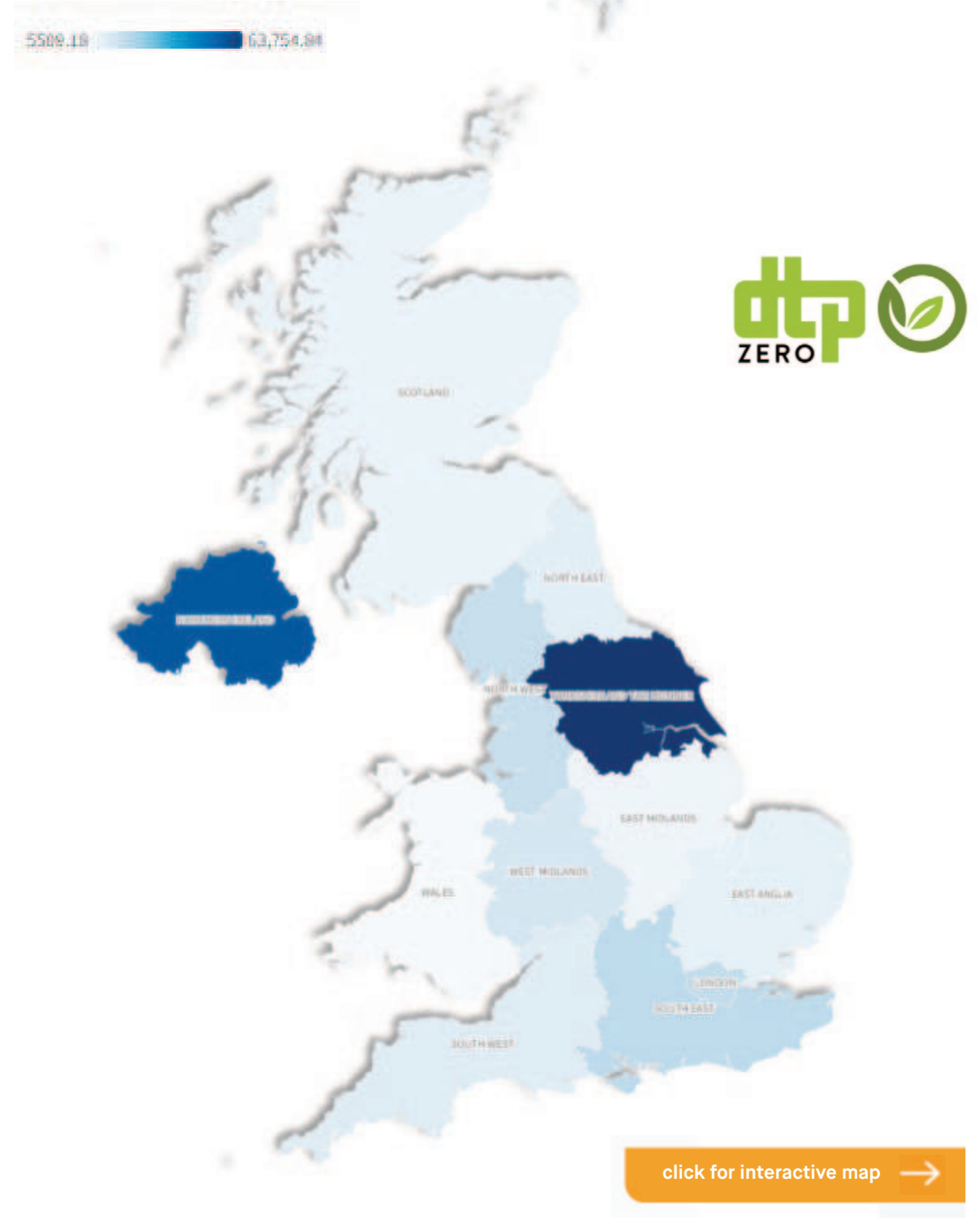
To this end, the new report by DTP is an important resource for universities, providing critical data on the carbon footprint of universities and identifying the universities that generate the largest carbon footprint, and impact on the environment. This report offers practical solutions for reducing carbon emissions, including reducing waste and investing in renewable energy. This data emphasises the urgent need for action to reduce carbon emissions and promote a more sustainable future.

This report provides data on the progress made by UK universities towards reducing their carbon footprint. **The majority of UK Universities have pledged to achieve Net Zero between 2027 at the earliest and 2050 at the very latest.** At least half of these Universities are aiming to achieve Net Zero by 2030 and the University of London has already managed to completely transfer to clean energy sources. This is an encouraging sign, as it demonstrates the commitment of UK universities to take action towards reducing their carbon footprint and contributing to the fight against climate change. However, this data also identifies the universities that generate the most waste and carbon emissions, highlighting the urgent need for action to address the issue.

Some examples of good practice include the **London Metropolitan University, Cardiff Metropolitan University and York St. John University who all scored 100% for carbon Reduction in the People & Planet Carbon University League for Carbon Reduction.** University College London scored 100% and Nottingham Trent University scored 98% for Carbon Management. Bournemouth University, The University of Sterling, and the University of Arts London also scored 100% for Energy Sources in the People & Planet League.

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University carbon league region map



# Reducing carbon emissions and promoting sustainability is achievable

**London Met University has reduced carbon emissions by 80% since 2005-06, meeting their target four years early.** Up until now, the University has implemented a range of measures such as placing two beehives on the rooftop of its Holloway Road campus, initiating the Green Impact program to educate London Met employees, creating roof gardens, and fitting 3,170 LED lights all over the campus. Additionally, the university has also installed 221 solar panels on the roof.

Cardiff Met has made significant progress in reducing its building carbon emissions over the last 12 years, with **a decrease of 53% in Scopes 1 and 2 emissions by the end of 2019/20.** This reduction equates to a saving of 3,699 tonnes of CO<sub>2</sub>e and means that they now emit over 3,699 fewer tonnes of carbon annually, which is equivalent to the emissions of 450 typical UK homes. The university has achieved this by decreasing electricity use by 33% and gas use by 39%, while purchasing 100% fully renewable electricity since 2017. **They have also not sent any waste to landfill since 2013/14, with all general waste now processed in a local energy from waste plant.** Moreover, Cardiff Met has converted its fossil fuel pool car fleet to electric, demonstrating its commitment to sustainability.

Durham University, acting on its commitment to environmental sustainability, launched its comprehensive Sustainability Action Plan in July 2021. Drawing from the promising Strategic Decarbonisation Review, **the University aims to**

**significantly reduce its direct and indirect emissions (Scopes 1 & 2) from 24,011 tCO<sub>2</sub>e in 2018/19, targeting a reduction of 46% by 2030 and a further 67% by 2035.** Furthermore, in line with student sentiment from the Sustainable Skills Survey 2020-21, Durham is prioritising green initiatives and sustainability education, demonstrating leadership in tackling climate change and striving for a carbon-neutral future.

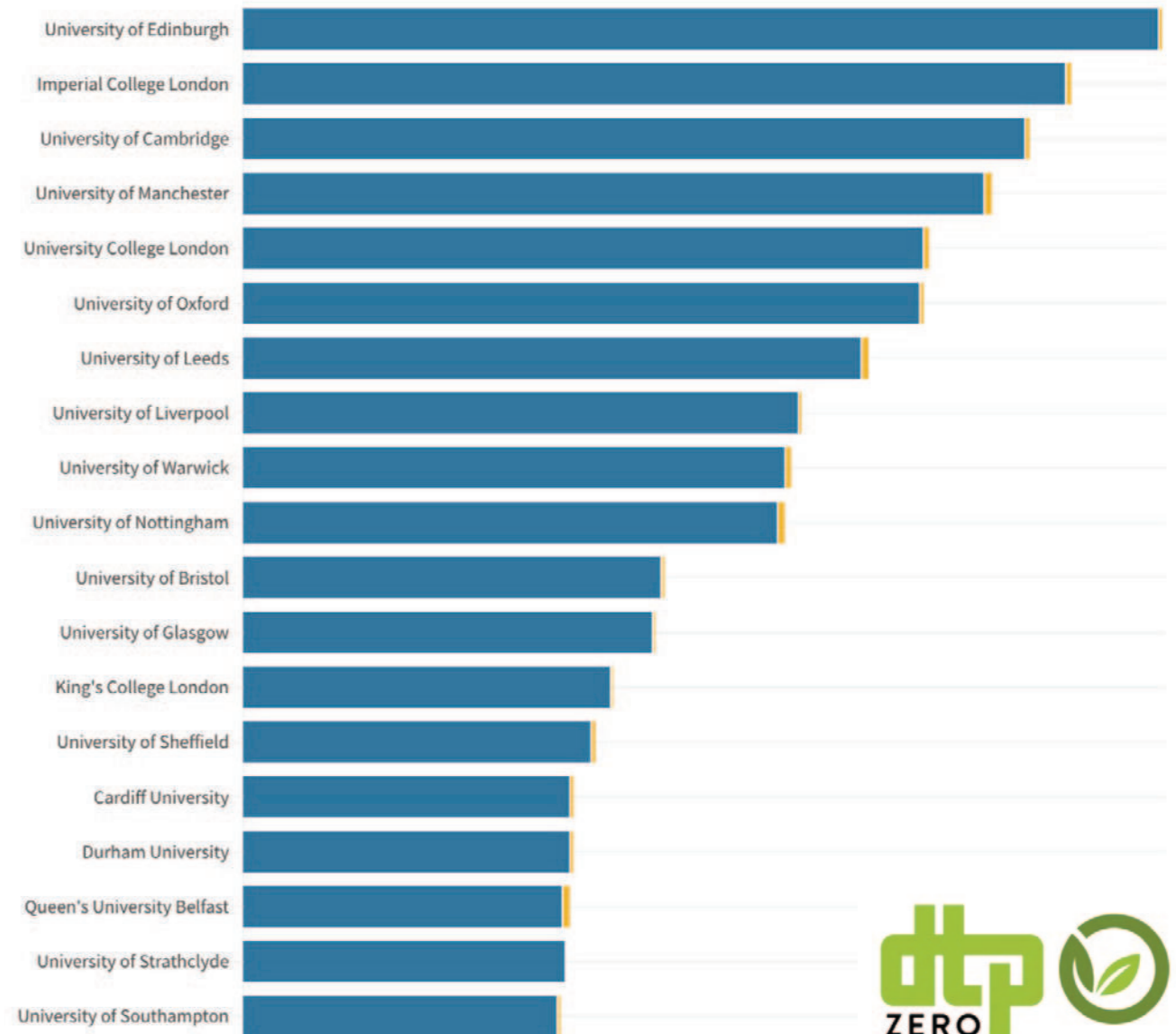
Other leading Universities have taken similar steps to not only demonstrate their commitment to climate preservation, but also shape the landscape of how Universities handle their carbon footprint. These examples demonstrate that reducing carbon emissions and promoting sustainability is achievable, and can lead to significant reductions in greenhouse gas emissions.

### The Carbon Footprint of UK Universities: An In-Depth Analysis

However, on average, our data suggests that a single University generates 10,778,986kg of Scope 1 and 2 emissions alone, wastes 127,644m<sup>3</sup> of water, as well as amassing 1914 tonnes of waste. **The 133 UK Universities analysed collectively generate 665 Landfills worth of carbon per year. This is the equivalent of leaving the engine running of 813,774 cars for a whole year.** Of course there is more to offsetting carbon than planting trees, but theoretically, to offset the entirety of this waste, Universities would collectively have to plant millions of trees. Specifically, 57,344,207 of them. Each University would have to plant 36 trees per student, every year, to become carbon neutral. Naturally, planting trees is not the only solution to becoming carbon neutral, but it does demonstrate the breadth of the issue.

## Complete Emissions Chart

■ Total scope 1 and 2 carbon emissions (Kg CO<sub>2</sub>e) ■ Total volume of wastewater (m<sup>3</sup>) ■ Total scope 3 carbon emissions from waste (tonnes CO<sub>2</sub>e) ■ Total scope 3 carbon emissions from water supply (tonnes CO<sub>2</sub>e) ■ Total scope 3 carbon emissions from wastewater treatment (tonnes CO<sub>2</sub>e)



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# Universities generate 665 landfills of carbon each year



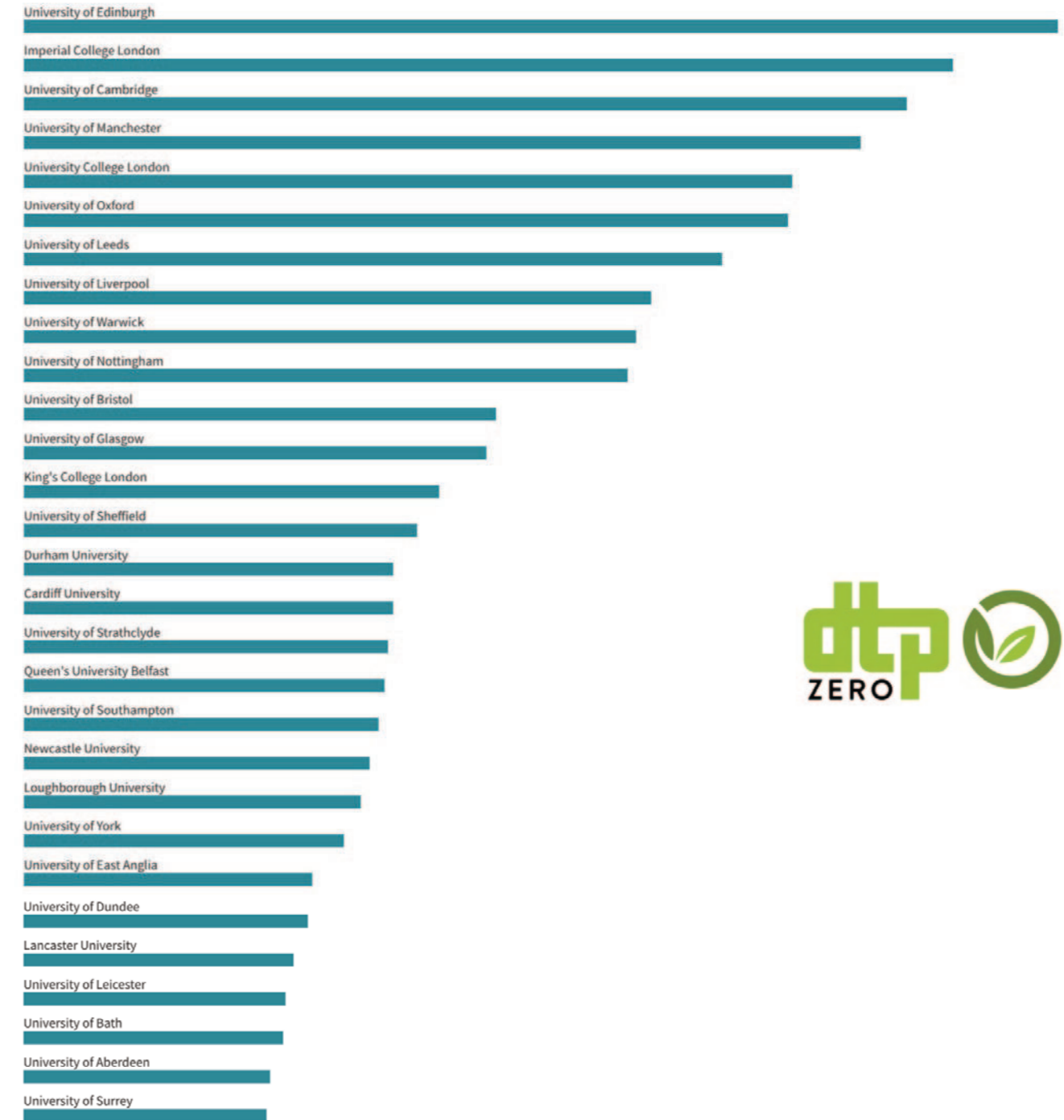
The data provided shows the total scope 1 and 2 carbon emissions (in Kg CO<sub>2</sub>e) and the total number of students for different regions in the United Kingdom. It also provides the carbon footprint per student for each region. **The total carbon footprint of all regions is 1,433,605,175 Kg CO<sub>2</sub>e, and the total number of students is 2,315,055, resulting in an average carbon footprint per student of 619 Kg CO<sub>2</sub>e.** The highest carbon footprint per student is in Scotland, with 853 Kg CO<sub>2</sub>e, followed by the North West with 705 Kg CO<sub>2</sub>e per student. The data also highlights the significant regional differences in carbon emissions, with London having the highest total carbon emissions of 238,096,312 Kg CO<sub>2</sub>e, while Northern Ireland has the lowest emissions of 30,818,831 Kg CO<sub>2</sub>e. **The regions with the highest number of trees required to offset the carbon they produce are London, Scotland, and the North West, with 9.5m, 8.2m, and 6.1m trees respectively.** On the other hand, the regions with the lowest number of trees required are Northern Ireland and Wales with 1.2m and 2.6m trees respectively.

Several Russell Group Universities significantly contribute to the carbon emissions in the higher education sector. Collectively, the five largest contributors generate an average of just over 55.5 million kilograms of scope 1 and 2 carbon emissions, which is well above the national average of just under 11 million kilograms. Despite their pledges to reduce their carbon footprints, these findings should serve as a wake-up call for these institutions to amplify their efforts in reducing their carbon emissions. The report also highlights the amount of waste produced per student, with an average of 893 kg per student across these Russell Group Universities, based on an average student body of 17,406. This data underscores the imperative for universities to not only shrink their overall carbon footprint, but also tackle the specific areas where they are producing the most waste.

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## Trees required to offset carbon

Trees Required To Offset Carbon



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# Universities have pledged to reduce their carbon footprint

## Technology and The Road to Net Zero

The steps that Universities can take to reduce carbon emissions and waste generation are practical and achievable. Renewable energy is one of the most effective ways for universities to reduce their carbon emissions and create a more sustainable future. Universities continue to invest in renewable energy, improve energy efficiency in buildings, and promote sustainable transport. This can be achieved by installing energy-efficient lighting, improving insulation, and using smart building technology to monitor and control energy usage.

Promoting sustainable transport and investing in renewable energy, like solar panels or wind turbines, can help universities reduce carbon emissions. Waste reduction and recycling programs, such as reducing single-use plastics and composting food waste, are also essential. Technology plays a critical role in cutting carbon emissions. Renewable energy sources, smart building technology, and real-time monitoring of energy consumption enable universities to optimise their use of resources, reducing reliance on fossil fuels and minimising their carbon footprint.

Another technology that can help reduce carbon emissions is electric transportation. By investing in electric vehicles, universities can reduce their carbon footprint from transportation. They can also install electric vehicle charging stations on campus to encourage the adoption of electric vehicles by students, staff, and visitors.

## Digital-Environmental Consciousness: Mitigating Technology's Footprint

Universities can leverage technology to reduce paper waste and their carbon footprint. By promoting digital documents and online resources, universities embrace sustainable information management, significantly reducing paper consumption and its associated environmental impacts. This shift conserves natural resources, mitigates deforestation, lowers energy consumption, and minimises water usage. Adopting paperless practices showcases universities' commitment to environmental stewardship and sets a precedent for sustainability in academia.

**A United Nations report estimates that only 17.4% of global e-waste was properly collected and recycled in 2019,** underscoring the need for a more circular approach. The circular economy, an innovative approach to sustainability, emphasises waste reduction, resource optimization, and regenerative systems. Applying these principles to printer components and end-user devices within Carbon Neutral MPS and Compute programs offers substantial environmental benefits. The Ellen MacArthur Foundation reports that **embracing circular economy strategies in the electronics sector could halve greenhouse gas emissions by 2030, generate \$62 billion in new markets, and reduce annual costs by \$1 trillion.**

Printing activities have long been a significant source of carbon emissions, with energy consumption, ink cartridge production, and paper waste all contributing to the environmental impact. The technology industry, which printing is a part of, emits 2-3% of global carbon emissions. Carbon Neutral Managed Print Services (MPS) offers an innovative solution to address these concerns. As the only certified carbon offsetting MPS programme available, HP partners with DTP Zero Print to cover all printing devices for a remarkable 5 years, or 43,800 hours, ensuring a more eco-friendly printing process. This approach by HP, a sustainability leader since 1957, offsets 100% of the carbon emissions generated by printer fleets' activities, including electricity used, ink cartridges delivered, and every page printed. **HP's managed print services can even reduce GHG emissions by 12% while increasing resource efficiency by 13%.**

## Student data



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# Smart technology can control carbon emissions



disposal and recycling of consumables, promotes eco-friendly alternatives, and fosters innovative business models. Furthermore, it encourages collaboration, all of which contribute to the potential for a sustainable future in the technology sector.

In this same year, **6.29 million units of hardware were repaired and 2.15 million units were repurposed or reused.** Institutions that embrace the principles of the circular economy have seen the benefit in terms of extending the life of printer components and end-user devices, minimising resource extraction, and reducing electronic waste destined for landfills. The progress made in 2021 underscores the potential for universities and other institutions to significantly reduce their carbon emissions through adopting such responsible strategies.

The rapid advancement of technology has brought countless benefits to modern society, but it has also led to a significant increase in carbon emissions. Data centres, electronic devices, and other technology-related activities consume vast amounts of energy, often generated from fossil fuels, contributing to greenhouse gas emissions and exacerbating climate change. As global reliance on technology continues to grow, it becomes increasingly important to explore innovative solutions that mitigate the environmental impact of these activities and pave the way for a more sustainable future.

The increasing carbon emissions caused by technology and their impact on climate change have become pressing concerns in recent years. **DTP Zero Compute addresses these issues with its pioneering carbon offsetting programme, designed to compensate for end-user compute carbon emissions for a choice of 3, 4, or 5 years.** As a Yorkshire-based business, DTP demonstrates its commitment to supporting local communities by planting trees in a New Native Woodland, Tom's Wood, located in York. This initiative not only offsets carbon emissions but also aims to enhance biodiversity, improve woodland connectivity, and create a thriving ecosystem that will sequester over 14,000 tCO2e during its growing lifetime.

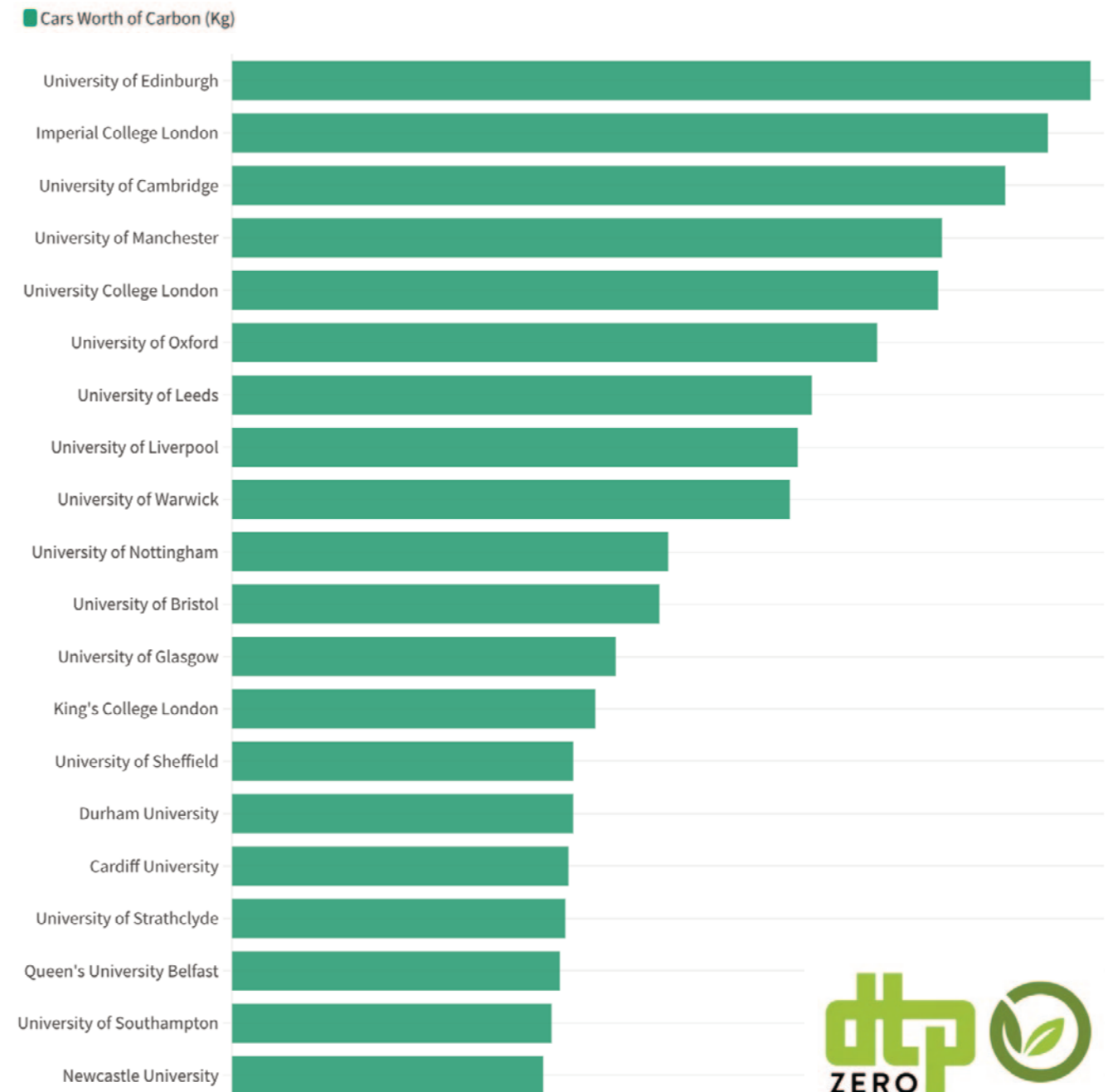
By participating in the Carbon Neutral Compute programme, organisations can directly tackle the environmental challenges posed by technology, contributing to the fight against climate change, investing

DTP and HP are committed to socially responsible projects, vetted thoroughly and developed in collaboration with Natural Capital Partners. Their Carbon Neutral Managed Print Services (MPS) is a significant innovation for firms aiming to minimise their environmental footprint. It's noteworthy that **DTP has sent 0% of waste to landfill since 2019 and aims to be carbon neutral by 2025, a commitment that earned them a 4-star award from HP as part of the Amplify program.** This demonstrates that efficient, accessible sustainable printing solutions are indeed possible.

By reusing, refurbishing, and recycling components, institutions can minimise environmental impact and carbon footprints. In 2021, a significant contribution was made to the reduction of e-waste, with **764,800 tonnes of hardware and supplies recycled** by HP alone. An impressive 92% of these products and materials were able to be reused or recycled, demonstrating the effectiveness of the circular economy model. This system emphasises responsible

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## Cars worth of carbon



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# A holistic approach can mitigate climate change



in local ecosystems, and promoting environmental stewardship. The programme showcases the power of technology and community collaboration in creating a sustainable future, proving that a greener tomorrow is within reach through innovative solutions like DTP Zero Compute.

Technology plays a crucial role in the reduction of carbon emissions in universities, with a key takeaway being that making more sustainably conscious decisions in terms of technology and printing can have a significant impact. While investments in renewable energy technologies, smart building technology, and electric transportation contribute to greener campuses, it is essential for universities to prioritise sustainable practices in daily operations. Encouraging responsible use of technology, such as transitioning to digital solutions to reduce paper waste, and promoting eco-friendly printing habits can greatly reduce a university's carbon footprint, and offset emissions produced from technology. As technology continues to evolve, universities must embrace these sustainable practices and emphasise their importance in order to create a more environmentally responsible future.

## A Holistic Approach Towards Sustainability

Some universities have already demonstrated good practice in this area, but there is still work to be done. The data highlights universities that generate the most waste and provides data on the amount of waste produced per student. To offset carbon emissions, the report recommends planting trees as they absorb carbon dioxide from the atmosphere. Universities could invest in community-based renewable energy projects or promote sustainable transportation options such as cycling or public transport. These actions not only contribute to reducing the carbon footprint of universities but also have a positive impact on local communities and promote a culture of sustainability.

Another recommendation is to plant trees to offset carbon emissions. This is something many Universities do or have pledged to do in their carbon sustainability plans. Trees absorb carbon dioxide from the atmosphere, helping to reduce the amount of carbon in the air. This data demonstrates the number of trees required to offset waste from each university, which can be a useful tool for universities to use when implementing sustainability initiatives.

Additionally, universities could prioritise the reduction of waste through practices such as recycling and composting, as well as implementing more sustainable practices in their campus operations such as energy-efficient lighting and reducing water consumption. By taking a holistic approach to sustainability, universities can play a significant role in mitigating climate change and promoting a sustainable future for all. Universities are engaged in these practices to different extents on a case-by-case basis, and by taking action in these areas, Universities can contribute to a more sustainable future.

In conclusion, the data provided by DTP demonstrates critical points of vulnerability for universities to reduce their carbon footprint and promote a more sustainable future. Whilst there is significant progress made by UK universities towards reducing their carbon footprint, the data also identifies the urgent need for action to address the universities that produce the most waste and carbon emissions. Ultimately, it is up to universities to take action towards reducing their carbon footprint and promoting a more sustainable future for all.

## Parks

■ How many Sherwood Forests? ■ How many Alton Towers? ■ How Many Hyde Parks?



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