



Imperial College  
London

# Carbon Management and Sustainability Activities Report 2020–22

**IMPERIAL  
ZERO  
POLLUTION**

**OUR CAMPUSES**

# Foreword

**Welcome to our latest Carbon Management and Sustainability Activities Report. This is our tenth report and covers the time period from 1 August 2020 to 31 July 2022. We highlight our performance over the two years and detail the interventions and initiatives we have undertaken. We remain open and honest about areas where we believe there is room for improvement; these are the areas where we will be working hard to make progress over the years ahead.**

The year 2020/21 and the first half of 2021/22 continued to be affected by the COVID-19 pandemic, which has had a profound impact on the way in which we live, study and work. A consequence of this was that some of our anticipated interventions and initiatives were unable to come to fruition in this reporting period and further adjustments have been necessary. Nevertheless, we have made progress in several areas and are now redoubling our efforts to become more sustainable.

A key milestone achieved in December 2020 was the publication of Imperial College London's Sustainability Strategy 2021–2026, following a wide consultation. This set out our long-term goal of being a sustainable and net zero carbon institution by 2040. In addition, we anticipate that at the end of this current five-year strategy, we will be able to bring this date forward as we achieve efficiencies within the College and take advantage of the evolving energy landscape in the UK. Our overarching responsibility is to manage the impact of the decisions we make such that they are neither detrimental to the environment nor to society, and still enable the College to thrive in the future.

During the period of this report, Imperial expanded its student and staff numbers considerably and set up a new COVID-19 laboratory. This was done concurrently with reducing our energy intensity. From our baseline year of 2018–19 to 2021–22, we achieved a 5 per cent reduction in scope 1 and 2 emissions per m<sup>2</sup> of Gross Internal Area (GIA). Alongside this, during 2020–22, we have achieved a 20 per cent decrease in total water consumption and refurbished 1,400 water control devices in order to monitor and manage our consumption more accurately in the future.

In December 2022, we launched a new Sustainable Food and Drink Policy which will, amongst other initiatives, phase out the use of beef in campus outlets by 2025–26, and move to making more use of seasonal produce. We have also continued to expand implementation of the Laboratory Efficiency Assessment Framework (LEAF) to reduce the environmental footprint of our scientific work.

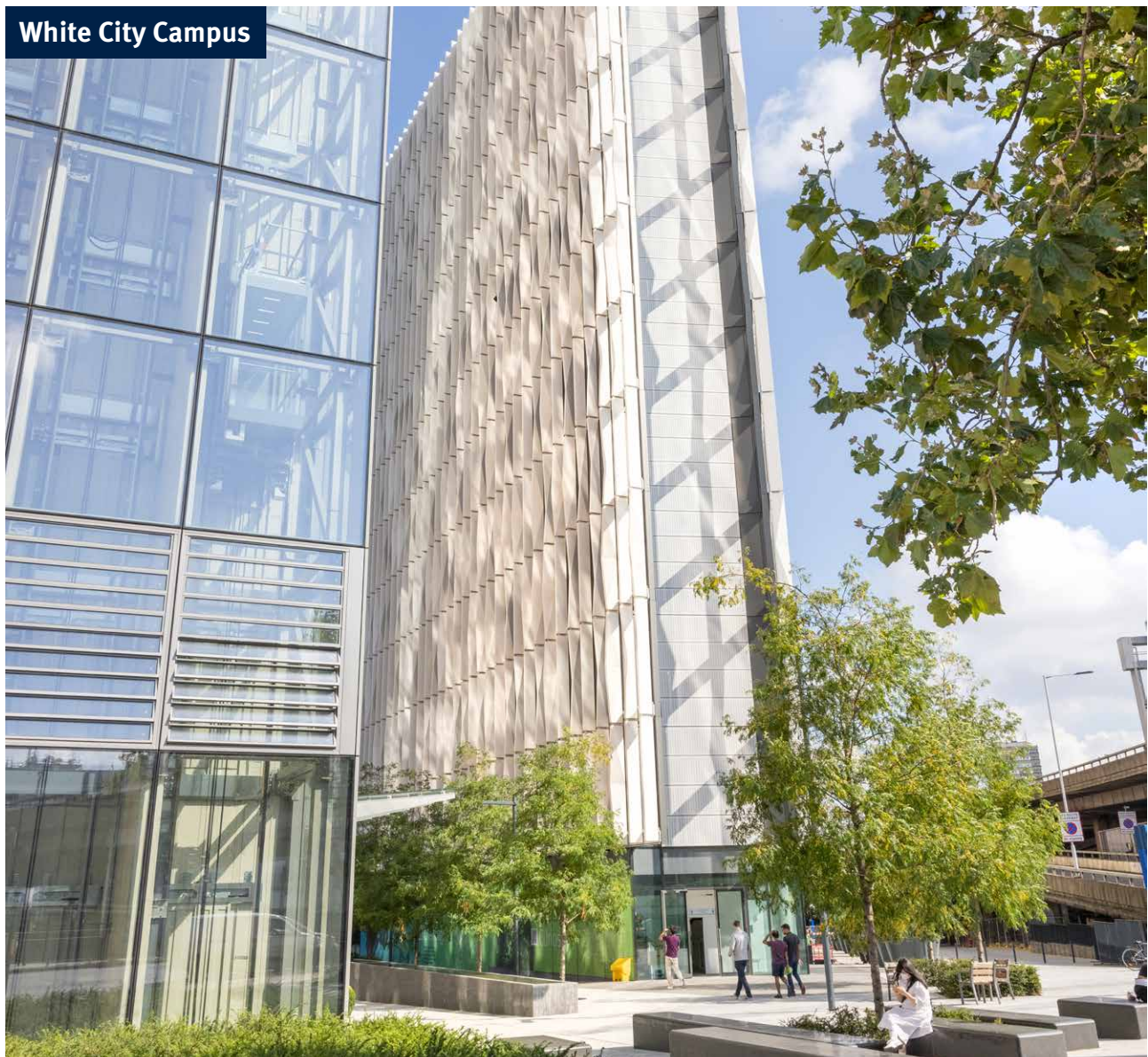
Another key focus of our attention and efforts during this period has been reviewing our reporting methodology and metrics, to ensure they are meaningful, clear and align with best practice where possible. This helps us to monitor progress effectively, quantify what impact our interventions have had, and benchmark ourselves against our peers.

We are delighted to say we were successful in a bid through the Government's landmark Public Sector Decarbonisation Scheme (PSDS) to move from steam to hot water for district

heating on the South Kensington Campus. This will reduce our energy usage and help make it possible in time to move to lower-carbon options, such as heat pumps rather than gas. You can read more about this hugely impactful project and the more than £12 million of funding secured in our carbon and energy management section.

Founded in 1907, Imperial College London has established itself as a global top ten university with a world class reputation in science, engineering, business and medicine. With a vibrant and environmentally conscious staff and student community, Imperial has an opportunity to be a leader in reducing emissions from its activities, laying the path for a transition to a truly sustainable world, inspiring others to follow our actions and not just our words. This is the opportunity we are working to seize over the years ahead as we implement our sustainability strategy across the organisation.

**Andy Hammond – Head of Engineering, Energy and Environment**



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## Carbon emissions

We have calculated our carbon footprint using the standard and widely accepted methodology of scopes 1, 2 and 3.

### Scopes 1, 2 and 3 explained

#### Scope 1 – Direct emissions

Directly controlled emissions: combustion of fuel, use of company vehicles and fugitive emissions.

#### Scope 2 – Indirect emissions

Generation and transmission of purchased electricity, steam, heating or cooling.

#### Scope 3 – All other indirect emissions

All other emissions attributable to goods and services, water, supply chain, waste disposal, assets, employee commuting and business travel.

# Summary of Progress to Date

Appendix 1 gives a summary of energy-, carbon-, and water-specific focus points from Imperial College London's Sustainability Strategy 2021–2026. Highlights from this include:

- Combined scope 1 and 2 emissions have remained the same, however they have dropped when considered against m<sup>2</sup> space and full-time equivalent (FTE).
- As of July 2022, our overall water consumption has reduced by nearly 36 per cent.
- We have refurbished 1,400 water control devices and installed over 100 automatic meter reading (AMR) meters.

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## Estates Operations “built environment” sustainability strategy for existing estates

Like many universities, we have a number of challenges to overcome on our existing estate if we are to meet our goal of being a sustainable and net zero carbon institution by 2040. Our baseload energy demand is relatively high and we need to reduce this significantly. As a science, technology, engineering and mathematics (STEM) focused university with high energy usage from laboratory equipment, we need to make concerted efforts to move to more energy efficient equipment and practices.

Our older buildings need significant improvements to their insulation and ventilation, heating and cooling systems, and building management systems. We need to transform our energy infrastructure over time to allow a move from using our current gas-fired combined heat and power (CHP) and boiler plant to renewable energy sources. This requires a multi-year programme of investment and retrofit, and plans are being developed as to how to do this. Alongside this, we are engaging in discussions with government and funders about the role we can all play in enabling the sector more widely to transform and move toward net zero, given the data, reporting, changes of policy and practice, and substantial investment this will take.

In 2021, Estates Operations appointed consulting engineers ARUP to compile a net zero carbon strategy that aligns with the College's Sustainability Strategy. This was to include the following:

1. Net zero in practice
2. Transformation roadmap
3. Carbon trajectory
4. Commercial trajectory
5. Areas of uncertainty
6. Next steps

The main report was signed off in September 2021, with an abridged report created for wider circulation. Over the coming period we will develop these plans further as part of our wider strategy.



## South Kensington Zero Emissions Neighbourhood (SK ZEN)

Early in 2022, the members of the Exhibition Road Cultural Group agreed to collaborate to accelerate South Kensington as an exemplar zero-emission, nature-positive urban neighbourhood.

This event started with an in-depth discussion between colleagues from across our partnership. This working session identified areas in which collaboration is most likely to add value, framed questions for the initial research, and agreed a timeframe and next steps.

We are now working with partners to develop our plans to deliver the vision.



# Sustainable Imperial

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## Sustainability Strategy

February 2021 saw the advent of Sustainability Week, a five-day schedule packed with talks, seminars, discussion and Q&A sessions.

The first event of the week saw the formal public launch of Imperial's Sustainability Strategy 2021–2026. The event was hosted by Provost Ian Walmsley FRS, together with Professor Paul Lickiss, Academic Leader for Sustainability, and a panel of Imperial staff.

Our Sustainability Strategy was a landmark moment for Imperial, setting out how we plan to understand, monitor and improve our environmental sustainability.

One of the headline targets laid out in the strategy is our commitment to achieve carbon neutrality for scope 1 and 2 emissions by 2040. An interim target was also set: to reduce total scope 1 and 2 emissions by 15 per cent (against 2018–19) by the end of the strategies window in 2025–26. This is a challenging target against the backdrop of our ever-expanding footprint and regarding FTE, although scope 1 and 2 emissions have remained the same, they have dropped when considered against m<sup>2</sup> space and FTE.

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## Sustainability Strategy Advisory Group and Sustainability Strategy Committee

In 2020, Imperial's Sustainability Strategy Advisory Group (SSAG) met to discuss focal points for our strategy; considering the work undertaken to date, Imperial-specific challenges, and opportunities and examples of best practice across the wider sector.

A key role for the SSAG was to consider how best to implement Imperial's commitments to improving as outlined in the Sustainability Strategy and to provide oversight of the content within the strategy for publication.

Following publication of the strategy, a Sustainability Strategy Committee was convened in June 2021; its remit was to oversee the goals, priorities and implementation of the Sustainability Strategy at Imperial. As of 2023, this committee has been formalised as a Sub-Committee of the University Management Board and will oversee implementation and updating of the strategy over time.

Our overarching aim is to become an exemplar organisation, putting into practice in our own operations some of the fantastic research our colleagues so passionately undertake.

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## Student projects

The summer of 2021 saw three student-led research projects explore an array of topics: the carbon footprint of our catering outlets, a biodiversity audit, and an estimate of the impact of business travel arising from Imperial College London's activities.

Findings from each project were used to inform further investigation and shape the direction of future activity, including the Sustainable Food and Drink Policy, published last year, and the Sustainable Travel Policy, which is currently in development. It is hoped that the biodiversity audit will become an annual activity, tying in with the Royal Borough of Kensington and Chelsea's borough-wide sustainability audit.

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## WARP It: 2021–22 in numbers

WARP (Waste Action Reuse Portal) It is an online resource sharing and reuse platform; users post items that they no longer have need of, but which are in a good condition and from which others may benefit. WARP It often has a befuddling array of items; from the mundane – desks, cupboards and pedestals – to laboratory equipment. WARP It is a fantastic option to save serviceable items from landfill.

At the time of writing, Imperial College London has the fourth highest number of members signed up; just over 1,900 people.

### WARP It provides some impressive figures:

- 139 tCO<sub>2</sub>e saved
- 33 tonnes of waste diverted from landfill
- £292,000 of savings to Imperial



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## Turning over a new LEAF

As each year ticked over, the dawn of a new LEAF (Laboratory Efficiency Assessment Framework) year began. Despite the ample challenges presented by COVID-19 lockdowns, the team continued to run LEAF across the College.

During 2021, LEAF took to the cloud, becoming an online portal that made access and participation easier, and providing the added benefit of a streamlined process for the team. During the year, 12 separate labs signed up to the portal and participated. Bronze and silver awards were presented to two labs who engaged brilliantly, making changes to their lab space and habits to improve their sustainability.



**The Anthony Kucernak Laboratory,  
South Kensington Campus**

The award of Imperial's first gold certificate for sustainable lab practices through LEAF occurred in 2022. A fantastic outcome and one not easily achieved. The team made great use of the guidance within the LEAF workbook to address items such as energy efficiency, waste management, resource sharing, and improvements to induction and leaving procedures.

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## Student switch-off

SOS-UK (Students Organising for Sustainability) works to engage students in sustainability practices within their accommodation. SOS-UK communicates practical advice to students to produce tangible reductions in energy, waste and water consumption. The campaign builds on the students' foundation of knowledge and carbon literacy, providing them a platform and empowering them to initiate change.

### **SOS-UK went from strength to strength during 2020–22, as shown by their impressive statistics:**

- 2,201 students took part in the campaign.
- 1,402 entries were received in their climate quiz – this was won by Pembridge Hall in 2020–21, with Xenia and Beit Hall bringing home a 1–2 finish for Imperial in the national standings for 2021–22.
- 19 students were trained as ambassadors.
- 144 students participated in online activities and webinars.
- During 2020–21, the national campaign achieved a 1.1 GWh reduction in electricity use, around 335 tCO<sub>2</sub>e.

# Carbon and Energy Management

In October 2021, the College made an application to the Department for Business, Energy and Industrial Strategy (BEIS) via the Salix Public Sector Decarbonisation Scheme (PSDS) Phase 3b, for a £12.3 million grant. Funding was sought for a large, aspirational infrastructure project to remove the steam heat network and central steam generating systems located in the Energy Centre at Imperial's South Kensington Campus. In March 2022, the College was notified that it had been successful in its application and funding was awarded.

For legacy reasons the South Kensington Campus has two heat networks, with two different mediums: one water and one steam. Neither had the capacity to replace the other, and with the need for a water heat network being greater than for a steam network, our planned project is to remove steam services, migrating the heat load to the centralised water heat network.

## There are three elements to the project:

- i. **Energy Centre** – Replace the three large 12MW steam boilers with Low Temperature Heating Water (LTHW) boilers. Two units will incorporate waste heat recovery from exhaust gasses, helping to gain the most from our two 4.5MWe (megawatts of electrical output) CHP engines.
- ii. **Heat networks** – The LTHW network on the South Kensington Campus requires upgrading in several places; heat loads currently on the steam heat network will migrate across to the LTHW network. Steam and condensate services will be removed.
- iii. **Buildings and plant rooms** – Plant that relies on a steam connection within buildings and plant rooms will be replaced or converted to utilise LTHW.

The project has significant environmental, safety and financial benefits to Imperial, not least a projected 2,449 tCO<sub>2</sub>e emissions reduction. The project will help to improve local air quality by reducing our NOx emissions and lay the groundwork for further NOx reduction in future.

Moreover, it will make it possible, in time, to move to using heat pumps to heat some or all of our buildings.

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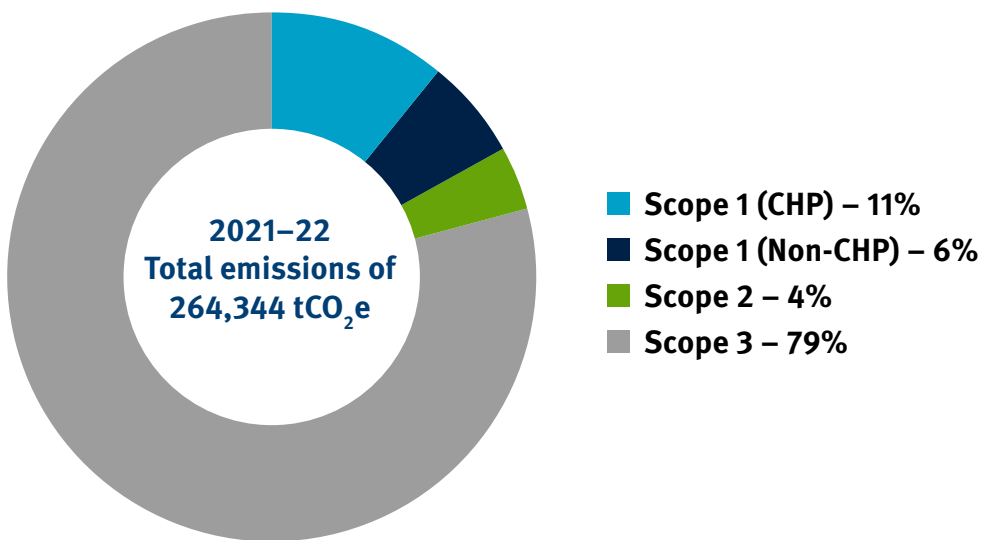
## Carbon emissions breakdown

Combined scope 1 and 2 emissions increased in 2020–21 compared with the previous year but have dropped by nearly 5 per cent in 2021–22.

Total emissions across the three scopes increased by roughly 30,000 tCO<sub>2</sub>e compared to 2019–20, driven largely by scope 3 increases.

As mentioned previously, we have seen an increase in scope 3 emissions, in part due to the improved reporting methodology and an increased presence on Campus and its associated impacts.

A breakdown of 2021–22 is shown in Figure 1.



**Figure 1. 2021–22 Carbon emissions by scope**

A key target from our Sustainability Strategy is to reduce total scope 1 and 2 carbon emissions arising from energy consumption by 15 per cent by 2025–26, against the baseline year 2018–19. These emissions have remained the same, though they have dropped when considered against m<sup>2</sup> space and FTE.

Like others in the sector, we have more to do to improve our data, including working with the Alliance for Sustainability Leadership in Education (EUAC) on ensuring the data better reflects the actual carbon footprint of our suppliers rather than multiplying spend by the standard Defra emissions factors for each kind of purchase. We are currently working on a sustainable business travel policy, and we will do more in the coming years to better understand our scope 3 emissions and take the next steps in reducing them.

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## White City Campus – South site

The sustainability strategy that has been developed for the south site of Imperial’s White City Campus, and is being implemented in the upcoming Infrastructure Development Plan (IDP), is aligned with the targets and aspirations of Imperial’s overarching Sustainability Strategy. It specifically responds to the objective in that strategy to “develop a roadmap towards a carbon neutral south site of our White City Campus”.

The strategy addresses both the carbon and sustainability impacts of the IDP works themselves, and the longer-term impacts of the buildings that will be constructed on the site. The six key sustainability themes for the project are summarised below.

### Operational carbon impact

The energy strategy for the site is to achieve zero fossil fuels following a final decision in 2022 to remove the gas main from the design proposals. An earlier decision to incorporate diverse high-voltage (HV) electrical supplies on to the site provides sufficient supply resilience to ensure that standby generators are not required. The electrical distribution capacity for the site has been tested to ensure that this infrastructure strategy does not reduce flexibility in terms of building uses, including high-energy intensity research labs.

### Sustainable materials

The environmental impact, and in particular the carbon footprint of the construction of the IDP works, has been a major focus during the design process. The construction of a new retaining wall bordering the Central Line, and the “Basement Box” which provides a below ground vehicle route from east to west, are particularly material-intensive. Through works to optimise both the design and the material specifications, the carbon impact overall of the IDP works has been reduced by 28 per cent from concept through to detailed design.

### Active travel

The White City south masterplan is focused on active travel (walking and cycling) – this is reflected in both the revised junction with Wood Lane and throughout the public realm. An aim regarding the creation of the “Basement Box” is to deliver a pedestrian-prioritised public realm. Cycle routes run around the perimeter of the site and extensive cycle storage is also provided. There is no car parking delivered as part of the IDP works, and an electric charging point is provided for a future electric bus linking other College campuses with White City.

### Green infrastructure

Extensive green spaces are provided throughout the IDP works, and these will help to define the masterplan and set its environmental credentials. In addition to setting the visual tone, the green features provide a significant biodiversity benefit, delivered through careful selection of plants and features, particularly in the wetland areas to the north of the IDP. The green features are also intended to contribute positively to the external environment, providing shading and mitigating an urban heat island.

## Sustainable water management

The site manages its stormwater run-off to the mains sewer network by holding back water at peak times. This is to reduce the risk of flash flooding and/or sewer surcharging in the local area. The green infrastructure provides approximately 50 per cent of the stormwater attenuation required on-site, mainly in the wetland area to the north of the IDP, therefore reducing the need for underground tanks.

## Social value

The IDP project is targeting delivery of significant socio-economic benefit to the local community through apprenticeships, traineeships, local employment and educational engagement. This is coordinated with the London Borough of Hammersmith and Fulham to ensure that the initiatives are appropriately targeted in the local area.



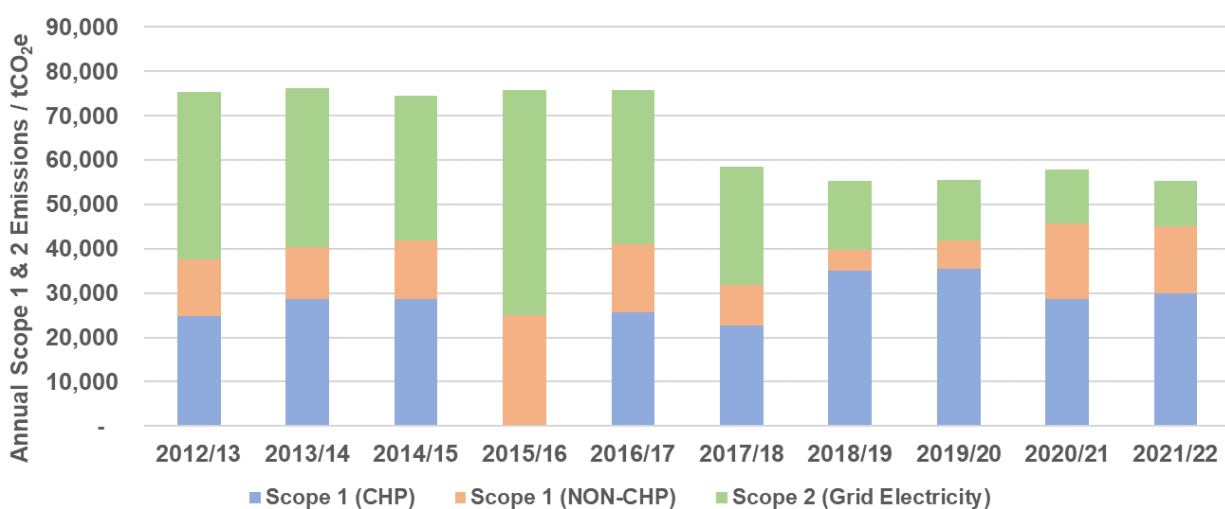
# Emissions and Key Performance Indicators

To improve our performance, we must understand where we have come from and how we have arrived where we are. This section shows scope 1 and 2 emissions from 2012–13 to the present. This allows for inter-year comparisons, shows any overall trends and provides an update on the key performance indicators (KPI) used in previous years. Unless stated otherwise, each KPI and graph in this section uses the total emissions from our scope 1 and 2 activities, shown as tCO<sub>2</sub>e by each intensity metric.

## Annual emissions (tCO<sub>2</sub>e per annum)

We’ve continued to capture information on our emissions, categorising them by scope 1, 2 and 3. Figure 2 shows the growing significance of scope 3 emissions; we have plans to begin tackling these in the coming year. Whilst we have been placing much of our effort and resource on scope 1 and 2, Figure 1 shows the importance of us also making progress on scope 3.

We continue to self-generate the majority of heat and electricity consumed at our South Kensington Campus, with our two 4.5MWe CHP engines, the emissions directly attributed to these engines in Figure 2, as scope 1 (CHP) emissions. Although these are the largest single source of scope 1 and 2 emissions, it’s key to note that CHP engines are a relatively low-carbon technology, and we would have been responsible for greater overall carbon emissions had we raised heat in local gas boilers in each building and imported our electricity from the grid. The CHP engines will need to continue to provide much of our electricity, heating and hot water over the coming years, alongside our work to move to lower-carbon options through our estate transformation programme.



**Figure 2. Total scope 1 and 2 emissions by source**

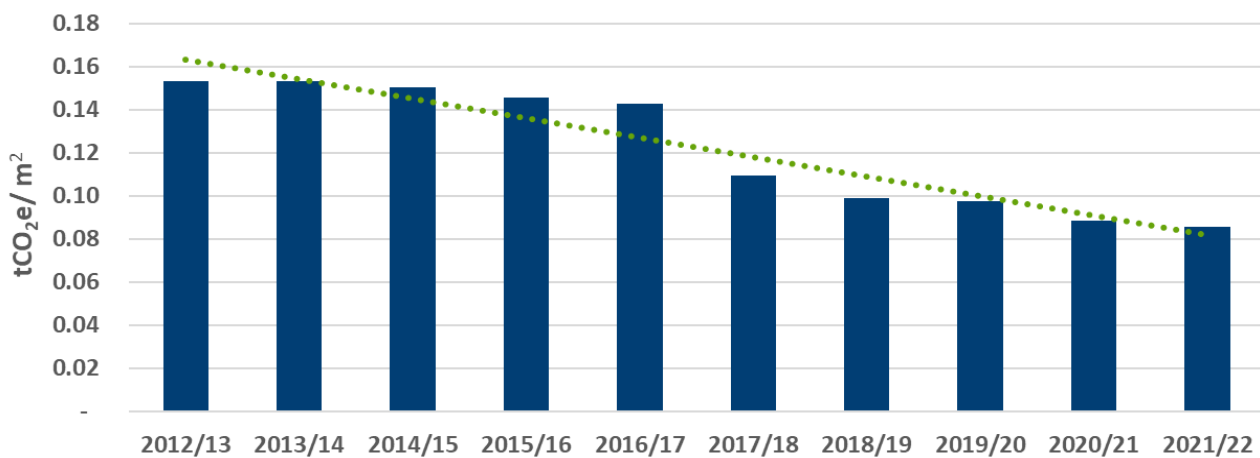
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## Emissions by GIA (tCO<sub>2</sub>e/m<sup>2</sup>)

Our first emission intensity KPI (tCO<sub>2</sub>e/m<sup>2</sup>) is outlined in Figure 3; and these are figures we are delighted to be able to share. We are able to report a reduction in scope 1 and 2 emissions per m<sup>2</sup> of GIA. In 2021–22, we achieved a 5 per cent reduction in this KPI.

Our estate grew in terms of energy intensive buildings, with several large, specialised buildings coming online at our White City Campus. As our estate continues to grow, Imperial must also continue its improvements in space and resource efficiency.

Buildings built today need to be capable of achieving our carbon neutrality target and possibly go even further in future. The ever-decreasing carbon intensity of grid-delivered electricity continues to play a role in reducing our scope 2 emissions.



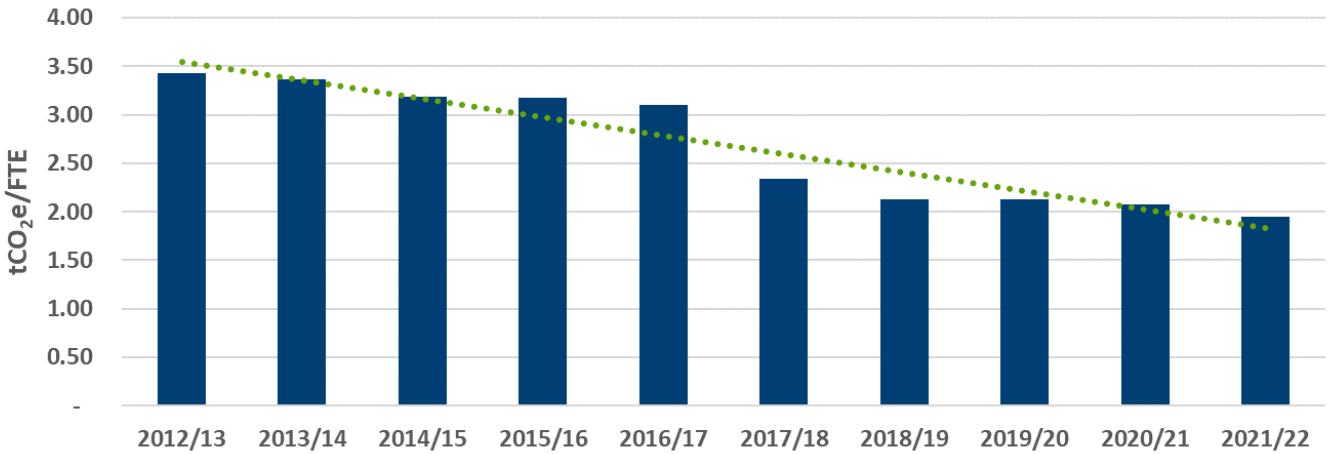
**Figure 3. Annual scope 1 and 2 emissions per m<sup>2</sup> of GIA**

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## Emissions by FTE (tCO<sub>2</sub>e/FTE)

Our second emissions intensity KPI (tCO<sub>2</sub>e/FTE), shown in Figure 4, is similar in pattern to Figure 3. Our tCO<sub>2</sub>e/FTE figure has decreased 10 per cent since 2018–19, in line with a total FTE increase of 12 per cent over the same period.

We continue to maintain our lowest levels for this metric and are working hard to reduce this further over the coming years.



**Figure 4.** Annual scope 1 and 2 emissions per FTE



## Purchased gas and electricity by FTE (kWh/FTE)

This KPI allows us to make a distinction between energy consumed and energy purchased, which is a particularly important distinction due to the CHP engines at the South Kensington Campus. Assessing the total gas and electricity purchased provides insight into the effectiveness of our CHP engines and an understanding of our total energy consumption.

Whilst overall consumption looks to have been fairly consistent over the past three to four years (Figure 5), these consumption totals should not be looked at in isolation. A key consideration is an understanding of the growth that has taken place in that period, both in student FTE and occupied space. We have increased occupied floor space by nearly 5 per cent and student FTE by almost 13 per cent compared to 2018–19.

A key aspect of our relative plateau in this KPI has been continual improvement of how we run our CHP engines at South Kensington. We have added additional heat load to the system, reducing gas burnt solely for heat locally in buildings – this allows us to benefit from more efficient utilisation of the gas, generating electricity and utilising the heat energy.

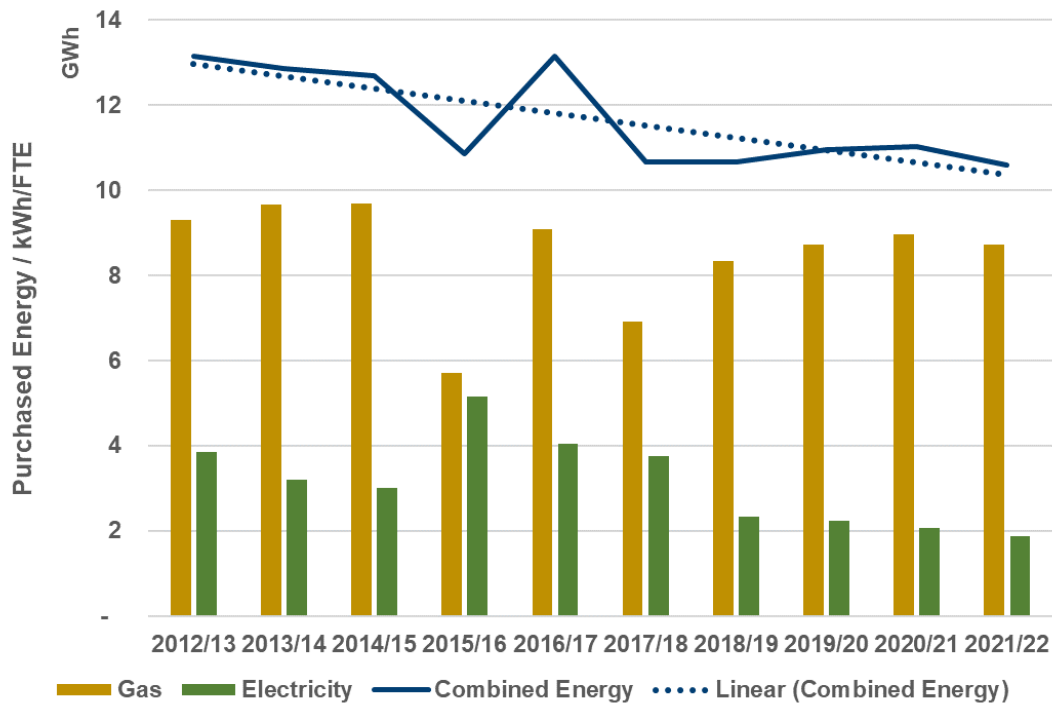


Figure 5. Purchased gas and electricity (kWh) by FTE

# Water Management

Advanced Demand Side Management (ADSM) won a tender to become our water retailer; this allows them more license to make changes and undertake supply side investigations in a more timely manner.

We have been busy installing automatic meter reading (AMR) to our water network. This allows both Imperial and ADSM to more accurately monitor and target water savings. We now have around 100 water meters fitted with AMR, providing 30-minute resolution data.

In this reporting period we also refurbished over 1,400 water control devices across the College's estate, saving an estimated 100,000m<sup>3</sup> per year in improved efficiency and prevention of leaks.

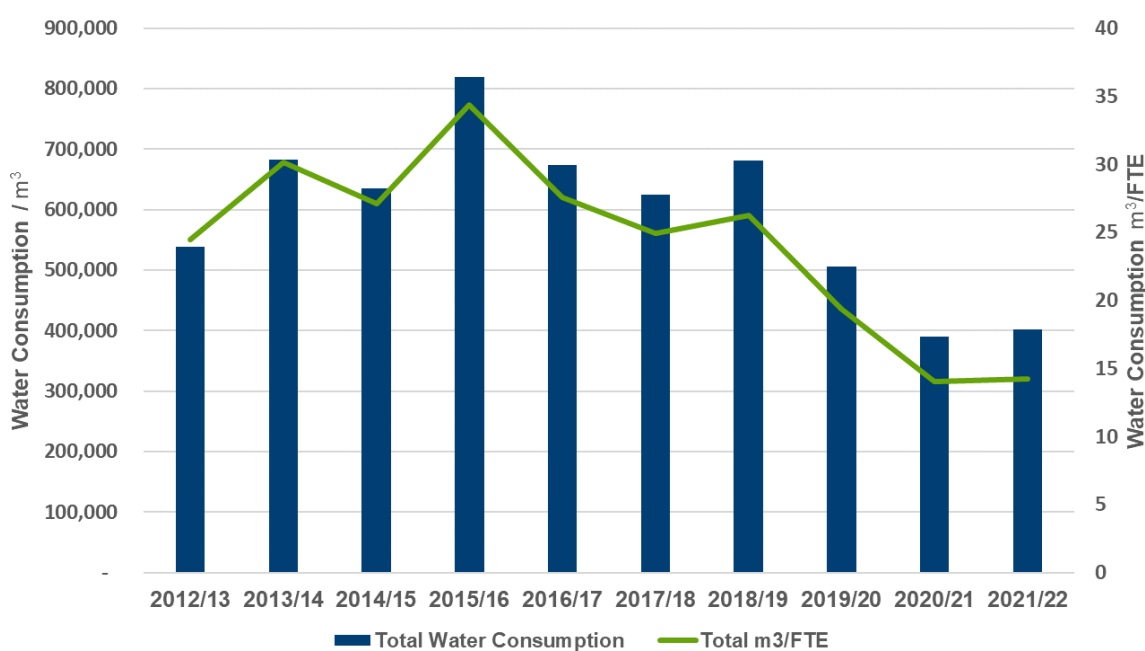
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## Water consumption

During 2020–22, we have continued to see reductions in total water consumption, around a 20 per cent decrease in 2021–22 against 2019–20. Initially we believed these drops to be attributable, at least in part, to reduced on-site activity, a result of the COVID-19 pandemic; however, part of our response to lockdowns and the reduced occupancy of buildings was to undertake regular flushing of systems to mitigate Legionella growth.

We anticipated a slight rise in consumption against 2019–20, owing to a return to in-person teaching and higher numbers of students in halls. Though this has occurred, it has been less impactful than expected.

Whilst we are cautiously optimistic about these figures, we are seeking to understand changes in usage and the relative impact of COVID-19. Our work with ADSM, LEAF and other work will support this.



**Figure 6. Annual water consumption (primary) and consumption by FTE (secondary)**

# Sustainable Food and Drink

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## Plantworks

Launched in April 2019 on the South Kensington Campus, Plantworks is Imperial's first entirely plant-based and vegan catering outlet. Plantworks features a bespoke and fresh menu of plant-based foods and drinks, encouraging staff and students to choose a healthier option at lunchtime and make their diet more sustainable for the planet.



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## Drink, Refill, Repeat

The Drink, Refill, Repeat campaign, a collaboration between Campus Services and Greening Imperial, encourages students and staff to transition from disposable containers and toward reusable options.

To support this, we have introduced new water fountains across our campuses and removed plastic cups from water stations, saving approximately 850,000 plastic cups per year.

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## Sustainable Food and Drink Policy

The Sustainable Food and Drink Policy was published in October 2022.

This policy guides the menus we develop, how we procure our food and equipment, and how we increase awareness of how what we eat impacts the environment.

# Summary of What's to Come

Further detail on our plans to decarbonise our estate are explored here.

## We plan to identify the following:

- How the College will achieve its ambition of net zero carbon for scope 1 and 2 emissions using science-based targets across its estate by 2040.
- How our sustainability efforts can be segmented into management projects and work packages, and identify the optimum sequence of these projects.
- How much it will cost.

## The plan:

- needs to be in more detail for the next few years, and can be less detailed for later years – but the 2040 target must be achieved,
- will identify early projects which can be implemented within a short space of time,
- must stand up to scrutiny by both the Property Committee, which includes sustainability experts, and the Sustainability Strategy Committee.

## Factors to be considered include:

- Funding plans will be developed in detail and considerable investment needs are expected – a challenge that many universities face. We are exploring options on how to do this, including whether grants could be available to the College to support some of the work.
- The College has one of the largest university estates footprints in the UK.
- Several buildings appear to have a high electrical baseload.
- Direct as well as embodied carbon should be minimised.
- Site phasing and operational logistics.

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## Other sustainability initiatives

The following will all be considered in more detail as we move forward with our Sustainability Strategy.

- More detail is required on the Public Sector Decarbonisation Scheme (PSDS) project to remove the steam heat network and central steam generating systems located in the South Kensington Campus Energy Centre.
- Imperial needs to gain a greater understanding of our energy demand baseloads and consider what initiatives we should use to reduce them.
- We need to better understand what energy-intensive equipment is being used within our laboratories.
- Continue to explore options around sustainable food and drink.

We will also continue to explore other sustainable projects, such as:

- The use of sustainable cleaning products.
- Our implementation of the South Kensington Zero Emissions Neighbourhood (SK ZEN).



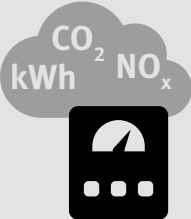

## KPI Summary

An overview of key figures, metrics and KPIs are shown in Appendix 2. This table is used to summarise and measure energy and emissions KPIs over the years, from 2012–13 when information started to be available and also our baseline year of 2018–19. We can use this data to monitor our progress against the Sustainability Strategy demands.

For each year of data presented, the year begins 1 August and ends 31 July.

# Appendix 1

## Summary of energy-, carbon- and water-specific focus points from Imperial College London's Sustainability Strategy 2021–2026

Area	Target	Current position	Progress within report period
<b>Energy and carbon</b> 	Reduce combined scope 1 and 2 carbon emissions by 15% by 2025–26 against the baseline year 2018–19	We are making good progress	Combined scope 1 and 2 emissions have remained the same, however they have dropped when considered against m <sup>2</sup> space and FTE.
	Assess options to increase on-campus renewable energy generation	We can do better and have a plan	We assessed Southside Hall for solar PV, and will be looking at two further options.
	Develop a roadmap towards a carbon neutral White City Campus south site	We have achieved this target	We have created and approved a strategy for achieving net zero at this campus.
	Continue to procure 100% of our bought-in electricity through a Renewable Energy Guarantees Origin (REGO) tariff	We have achieved this target	Our electricity supply contract was re-tendered in this period, we continue to purchase 100% REGO-backed electricity.
	Establish science-based targets across all campuses	We can do better and have a plan	No progress toward target
	Improve control of building infrastructure through our Building Management System (BMS)	We are making good progress	We are undertaking upgrades and transitioning to a new version of our BMS software that provides improved functionality and accessibility. Our engineers are working on improving control strategies and optimising the system.
	Upgrade and enhance building services infrastructure to improve sustainability and energy performance	We are making good progress?	We have added additional heat load to our engines, improving their overall efficiency and have ambitious plans to remove steam from our South Kensington Campus, resulting in a substantial consumption reduction and associated emissions.
<b>Water</b> 	Reduce overall and per-FTE water consumption	We are making good progress	As of July 2022, overall water consumption has reduced by nearly 36%, with consumption per FTE down 43% compared to 2017–18.
	Install water control devices and more automated meters	We are making good progress	Refurbished 1,400 water control devices and more than 100 AMR meters providing us with consumption data.
	Work with laboratory managers to promote the use of the Laboratory Efficiency Assessment Framework (LEAF) to reduce water consumption	We can do better and have a plan	LEAF has been a success where applied, our challenge is to roll LEAF out to as much of Imperial as we can, and we plan to do so.

# Appendix 2

Estate size and FTE has been updated for the 2021/22 report to align with EMR data. \* Scope 1 and 2 for vehicle fuel has not been included.

Key indicator	2012/13	2018/19 (strategy baseline)	2019/20	2020/21	2021/22	% change (+/-) from 2012/13 vs latest		% change (+/-) from 2018/19 vs latest	
Combined scope 1 and 2 emissions (tCO <sub>2</sub> e)*	75,445	55,247	55,569	57,962	55,245	26.77%	↓	0.00%	–
Combined scope 1 and 2 emissions (tCO <sub>2</sub> e) per m <sup>2</sup> GIA	0.15	0.1	0.1	0.1	0.09	40.00%	↓	5.05%	↓
Combined scope 1 and 2 emissions (tCO <sub>2</sub> e) per FTE	3.55	2.2	2.14	2.09	1.96	44.78%	↓	10.90%	↓
Scope 1 emissions (tCO <sub>2</sub> e)	37,627	39,794	41,900	45,768	44,995	19.58%	↑	13.06%	↑
Scope 1 emissions (tCO <sub>2</sub> e) per m <sup>2</sup> GIA	0.08	0.07	0.07	0.08	0.08	1.30%	↑	8.45%	↑
Scope 1 emissions (tCO <sub>2</sub> e) per FTE	1.77	1.59	1.61	1.65	1.6	9.60%	↓	0.62%	↑
Scope 2 emissions (tCO <sub>2</sub> e)	37,818	15,453	13,669	12,194	10,250	72.90%	↓	33.66%	↓
Scope 2 emissions (tCO <sub>2</sub> e) per m <sup>2</sup> GIA	0.08	0.03	0.02	0.02	0.02	75.00%	↓	33.33%	↓
Scope 2 emissions (tCO <sub>2</sub> e) per FTE	1.78	0.62	0.53	0.44	0.36	79.77%	↓	41.93%	↓
Staff and student FTE [1]	21,232	25,085	26,026	27,753	28,147	32.56%		12.20%	
Estate size (GIA m <sup>2</sup> )	493,196	558,847	570,967	592,605	588,084	19.23%		5.23%	

[1] EMR 2021/22 Return data (short code *SFFTET* & *STFTET*)



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