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Commentary

Preaching water while drinking wine: Why universities must boost climate action now

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Although universities have been leading climate science for decades, most have not taken drastic climate action in their own operations. Sustainable transformation of the university sector requires accounting for all scopes 1–3 emissions and setting science-based reduction targets. It is high time for universities to practice what they preach and move back to the frontline of climate action.

INTRODUCTION

Climate change is the defining issue of our time. Even before COVID-19 and the devastating 6th assessment report of the Intergovernmental Panel on Climate Change, public awareness and action had reached a critical mass, with young people turning out in thousands to demand a sustainable future.

We have universities and scientists to thank in particular for the wide and deep evidence on climate change that exists today, evidence that leaves little room for credible climate change denial. Universities have committed considerable resources to researching every aspect of climate change, and new detailed evidence continues to emerge, all of which points in one direction: drastic climate action is needed, now.

It is therefore curious, if not shocking, that despite engaging in climate change science for more than half a century, many universities are still continuing business as usual and failing to make any fundamental shifts to the way in which they operate. They preach water, but by continuing to run unsustainable operations and failing to take full responsibility for their carbon emissions, they are drinking wine.

Carbon footprints and greenwash temptations

Europe's education sector as a whole is responsible for an average of 9.1% of countries' carbon footprint.[1] This can be contrasted with aviation, which as a sector is responsible for "only" 3.8% of total carbon emissions in Europe.[2] Researchers tend to be frequent fliers by the way. Assuming that each of the world's 7.8 million researchers traveled to just one conference per year, the travel footprint of scientific conferencing would equal or surpass that of entire countries, such as Uganda.[3]

To date, over 1,400 universities have signed a total of at least 31 environmental sustainability declarations specific to higher education.[4] Efforts to track environmental sustainability at universities include Carbon Targets UK (https://www.carbontargets.uk) and the World Wide Fund for Nature rating of Swiss Higher Education institutions.[5] The coverage by such initiatives is not all encompassing, leaving many universities without independent tracking.

In terms of target setting, the university sector has arguably been overtaken by businesses who recognize that a "race to the top," i.e., competing for climate leadership by continuing to reduce their carbon footprint, is necessary: under the Science Based Targets initiative (SBTi, https://sciencebasedtargets.org/), over 1,000 large and small businesses have set science-based targets and made commitments to reduce emissions to a level in line with the 1.5°C threshold of the Paris Agreement.

The declarations universities have signed, on the other hand, do not contain collectively binding quantitative targets, a key reason why they don't often translate into realization of commitments in practice. The gap between what universities have committed to and what would be appropriate given their advanced and unique insight into the need for climate action is significant. Here we refer to universities' carbon footprint, though we have observed a similar gap between policy and practice in other aspects of environmental sustainability, including solid waste as well as water and air pollution.

Some universities appear to have recognized the reputational benefit a "green" positioning can bring and thus widely communicate their ambitions to go carbon neutral. However, such communication is often misleading. For example, among a group of ten US universities that claim to be "carbon neutral" (comprising Allegheny College, American University, Bates College, Bowdoin College, Colby College, Colgate University, Colorado College, Dickinson College, Middlebury College, and University of San Francisco), none includes all scope 3 activities, i.e., the full value chain, instead focusing mostly on on-campus emissions. Accounting for all scope 3 activities would, for example, involve calculating the carbon footprint of all products and services used by the university.

In Europe, some universities, such as Wageningen[6] and Lüneburg[7,8] that prioritize climate action in their teaching, have reduced their on-campus emissions significantly in the past decade; however, they do not yet include procurement (scope 3) in their calculations. This is important as scope 3 is responsible for the bulk of a university's carbon emissions. Some universities, such as the University of Copenhagen (UCPH), the Norwegian University of Science and Technology (NTNU), and University College London (UCL), have indeed assessed the carbon footprint along their entire value chain. This shows that being

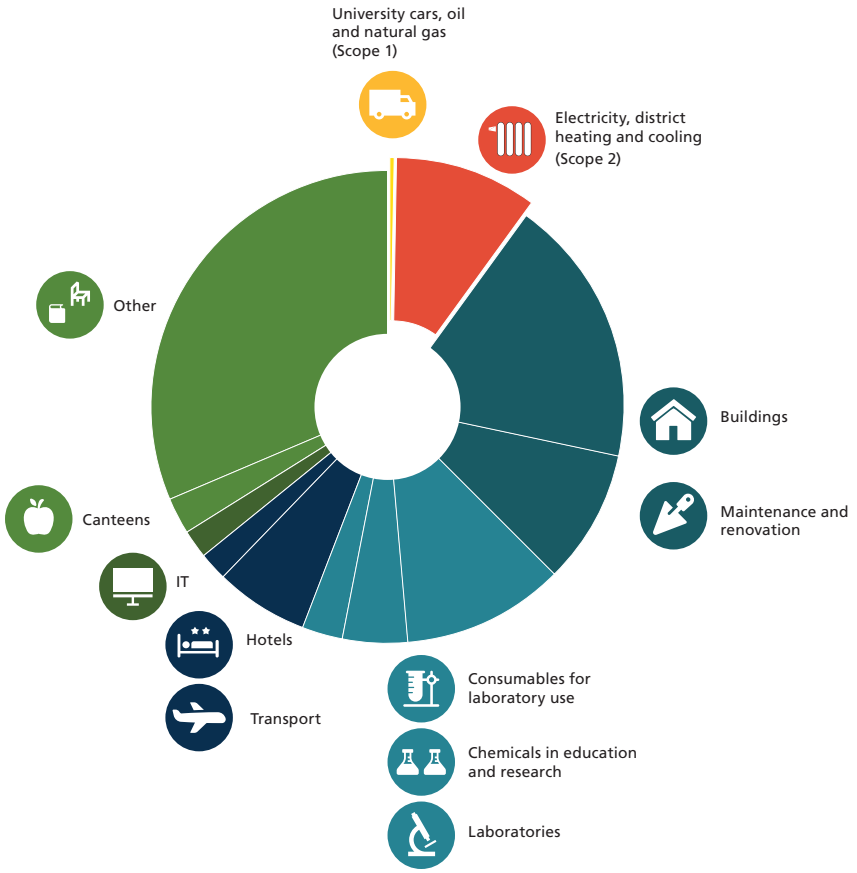

Figure 1. Breakdown of UCPH's total carbon emissions (scopes 1–3)
The total carbon footprint of UCPH was estimated based on the total procurement for 2018 using a life cycle input-output approach (Exiobase), which is internationally recognized and described in the Greenhouse Gas Protocol. The calculation contains uncertainties but shows that scopes 1 and 2 (yellow and red), which cover direct and local emissions, make up roughly 10% of the total carbon footprint of UCPH. Scope 3 (green and blue) covering all products and services used by UCPH accounts for roughly 90%, demonstrating the importance of tracking and addressing scope 3 emissions.[9]

rigorous is both possible and necessary: scope 3 accounts for up to 90% of UCPH's emissions (see Figure 1), 75% of NTNU's, and 85% of the emissions of UCL.[9–11]

Carbon offsetting—the purchasing of emissions that other institutions reduce or remove, either through natural or technology-based solutions—is often seen as a cheap and easy way out for organizations who find it more challenging to reduce their own emissions than paying relatively modest amounts of money to "compensate" their emissions. All 10 of the "carbon neutral" US universities cited above are using offsetting as a means to achieve carbon neutrality. Offsetting projects range from capturing methane as it escapes from US landfills (Bates College, Colgate University, University of San Francisco, American University, Colorado College) to protecting a peat swamp forest in Indonesian Borneo from deforestation (Colgate University), funding efficient cookstoves in Africa (American University, University of San Francisco), and planting trees in Washington DC (American University). Although offsetting schemes can be a part of the solution, particularly in the short term while data are being collected and technologies and management practices are developed, relying mainly on compensation and failing to actually reduce emissions in line with global targets is not an effective strategy to reach net zero and can be considered a form of greenwashing.

A golden opportunity for university decision-makers

There is clear evidence that people are concerned about climate change. This is particularly true for younger generations, who represent current and future students and university employees. Surveys have confirmed this wider trend to be true for academia too. 90% of higher education students around the world are concerned about the effects of climate change, and 92% feel that sustainable development is something that all universities and colleges should not only promote but also incorporate into their operations. Two thirds of students in the same survey said they would accept a salary sacrifice of 15% to work in an institution with a good environmental and social record.[12]

While acknowledging sustainability efforts made to date, students feel that universities could be doing more. 88% of 3,700 prospective international students who were looking to study in the UK, Australia, Canada, or the United States said that the university taking action to reduce its environmental impact was essential or very important in their decision-making.[13]

This shows that the majority of students and university employees are not only aware of the importance of climate action in academia but that they also demand it. It also demonstrates that there is a business case for investing in sustainability, which is getting stronger as more universities start greening their operations and compete for students and researchers with green credentials.

Lack of pressure, incentives, and leadership

Historically, universities have not faced much external pressure to render their operations sustainable. For many decades, no regulation or government commitment forced, or even expected, universities to measure and reduce their carbon emissions. Moreover, in contrast to businesses, universities, no matter whether public or private, are typically seen as "good" and thus are rarely targeted by green activists. Peer pressure and green competition could also work in keeping universities on their toes. However, these pressures are only beginning to be felt now.

Without external pressure, internal leadership becomes essential. Decision-making power is usually in the hands of a small group of senior faculty members, and long-term planning by these, in our experience, often end-of-career largely male management representatives is rarely representative of broader opinion, nor is it compatible with bold visions and long-term sustainability goals for

Box 1. The University of Copenhagen (UCPH): Learning to walk the talk

UCPH in numbers

- 9,500 employees (full-time equivalents, FTEs)
- 37,500 students across 100 programs
- 5 campuses, 6 faculties, 36 departments, 200+ research centers, 10 museums
- 940,464 m2 (rented)

Prioritizing sustainable development internally and externally

UCPH has been working on climate and sustainability since 2008, when its green office called "Green Campus" was established to accelerate decarbonization and sustainable development. Today, in addition to prioritizing climate action and sustainable development in its teaching and research activities, UCPH sets an example for ambitiously working to reduce the carbon footprint of its operations.

Carbon footprint measured globally and for all scopes

In 2013 UCPH set out to achieve a 65% reduction of its carbon emissions per FTE relative to 2006 by 2020 (excluding scope 3 but including transport); this target was achieved in 2019. Since then, UCPH has taken a step further and estimated its total climate footprint, following the internationally recognized life cycle-based approach described in the Greenhouse Gas Protocol. Using the lifecycle input-output approach provided by Exiobase, UCPH has estimated its scope 3 carbon footprint based on total procurement for 2018. According to this estimate, roughly 90% of its total climate footprint stems from scope 3 emissions, including buildings, laboratories, IT equipment, transport, and manufacturing of other products and services. Energy consumption (scopes 1 and 2) accounts for only 10%–15%. This clearly illustrates the importance of taking all scopes into account when estimating carbon emissions, setting targets, and prioritizing actions.

Ambitious 2030 climate and sustainability targets

UCPH's climate target for 2030 is to reduce its overall climate footprint per FTE by 50% relative to 2018. This target covers all carbon emissions regardless of where they arise globally, and it includes all scope 3 emissions. By using 2018 as a baseline and including all scopes regardless of geography, UCPH's 2030 climate target is more ambitious than the national target for its host country Denmark, which is to reduce carbon emissions within the country's borders by 70% relative to 1990. Importantly, UCPH aims to reach its targets without any carbon offsetting, relying exclusively on emission reductions.

In addition to the climate targets, UCPH has set targets for environmental sustainability within five other key areas: chemistry; involvement, participation, and behavior; resources and recycling; biodiversity; and collaboration and global knowledge sharing. As a means to keep track on progress towards to the 2030 sustainability targets, UCPH conducts annual follow-ups, and a sustainability report will be prepared on a biannual basis.

research, faculty hiring, teaching, and infrastructure.

Top researchers who bring in essential non-core funding wield a lot of indirect power and thus need to be kept happy by university administrators and decision-making bodies (which they are often part of). Taking bold decisions on climate action may be perceived as limiting researchers' academic freedoms. Those who have not yet bought into the climate action agenda may see emission reduction as low-priority or even counter-productive, essentially restricting their resources, power, and chances of academic success.

What we can learn from climate leaders

Many universities do have their finger on the pulse when it comes to researching complex global issues, from climate change and biodiversity loss to social injustice. While many are not walking their talk, some are showing the way. These leaders move steadily toward carbon neutrality, have ambitious goals, and are particularly transparent about their sustainability challenges. They can serve as guiding lights and inspiration.

For example, the University of Sheffield aims to be carbon neutral across all activities (scopes 1–3) in 2038.[14] The University of Exeter has set quantitative reduction targets for all scopes: 30% by 2025, 60% by 2030, and 100% by 2050.[15] NTNU Norway has included scope 3 emissions in their carbon footprint calculations since 2017 and set quantitative reduction targets for transport, energy, and waste. Cambridge University aims to reduce scope 1 and 2 emissions to absolute zero by 2038, without relying on offsetting at all. The University of Copenhagen is another inspiring example—details on its decarbonization and sustainability journey are outlined in Box 1. These and other examples lead us to the following recommendations:

1. **Make operations sustainable by setting the right priorities.** Universities must prioritize climate action in operations, not just in science. This includes analyzing the environmental impact of the university—including their entire value chain and covering the full range of scope 1 to scope 3 emissions—and developing a sound strategy including quantitative targets for reaching carbon neutrality, without relying mainly on carbon offsetting. This requires allocating the necessary amount of human, financial, and other resources. Costing the environmental impact of unsustainability arising from wasted resources, reputation loss or ill health, and productivity losses, i.e. assigning these a monetary value, may help convince skeptics about the value of sustainability investments.
2. **Be transparent about sustainability goals and challenges.** Greenwashing does not benefit anyone. Rather than trumpeting mini-moves on sustainability or setting lofty ambitions about carbon neutrality

without being clear about the unit of analysis (i.e., scope 1, 2, or 3), universities must apply good research practices also when it comes to tracking their environmental impact. This involves being honest about challenges and mistakes and inviting staff and students as well as external stakeholders to suggest concrete ways for improving the sustainability of operations. While focusing on low-hanging fruits and quick wins may be an effective strategy to engage people in the short-term, climate action must focus on the big levers, i.e., on high-impact areas identified in the scopes 1–3 emission analysis.

3. **Share insights and baseline collectively.** Research institutions all over the world are facing similar challenges in terms of reaching carbon neutrality, such as establishing a starting point and identifying high-impact actions. The clock is ticking and there simply isn't time for all universities to re-invent the wheel. Therefore, rather than each university spending extensive resources on establishing individual, inaccurate starting points and roadmaps, universities would benefit from working together by baselining collectively and by sharing insights on high-leverage ways of reducing their carbon footprint. Interested universities may learn from or tap into existing sustainability networks such as the International Sustainable Campus Network (ISCN),[16,17] get climate action into the agenda of other university networks (as was done in the International Alliance of Research Universities, IARU),[18] or start their own.
4. **Combine bottom-up and top-down decision-making.** To reach carbon neutrality, and with time, carbon negativity, universities need ambitious leaders with power that is commensurate to what's at stake. They must systematically include green concerns in decision-making, including by giving green offices a firm place at the decision table. In other words, universities must combine top-down and bottom-up approaches. Committed leaders are needed to take ambitious and bold decisions and drive them forward. This requires that climate considerations are taken into account in all hiring and personnel management decisions. Universities must also provide a safe space for students and staff to develop ideas and projects for sustainability. Without bottom-up engagement, ownership of sustainable transformation processes will be limited. This is essential given that addressing scope 3 emissions is particularly dependent on behavior change by individuals. For example, ETH's "Stay grounded, keep connected" project, which involves employee participation, has helped departments set voluntary goals for reducing air travel, achieving over 15% reduction in two years.[19]

Start practicing what you preach

The role of universities is not only to produce insights and transfer knowledge to students but also to show the way into a better future. Universities' current claims of carbon neutrality need to be treated with care, not only because of the different degree to which scope 3 is included in emission reduction targets but also because carbon offsetting rather than actual reductions is still the preferred climate strategy for many higher education institutes. Foresighted universities transparently set targets for reduction of their entire carbon footprint while only relying on offsets where no further emission reductions are possible. Some of our recommendations can be applied right away, even in the face of larger institutional constraints. The case of UCPH is illustrative and inspiring (Box 1).

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