

Unpacking the Research - Climate Nexus

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Leading academic or research organizations seeking to build state-of-the-art research facilities *and* address climate change face a vexing problem. We call this the **Research-Climate Nexus**. New research facilities offer universities a competitive edge when competition for top faculty, students and research grants. Unfortunately, these facilities also are among the most energy and carbon intensive building types, a reality that works against aggressive goals for carbon reduction. With nearly a quarter of US universities making public commitments to becoming climate neutral—and more institutions preparing to follow suit—resolving the conflict between research and carbon reduction is becoming a top priority.

Over more than a decade of engaging with higher education institutions around sustainability and climate action, BuroHappold has seen this challenge grow in relevance at research-driven institutions. While some universities are responding to this issue; most are waiting for others to take the lead.

To understand the relevance of the Research-Climate Nexus to universities and how these institutions are responding, we undertook a three-part study. Findings from the first two steps—comprising a focus group and peer engagement exercise—are summarized below. This post kicks off the third component, a wider survey of higher education institutions.

Focus Group

Building upon BuroHappold's ongoing engagement with several progressive research-driven universities public-facing climate neutrality commitments, we created a small focus group to dig deeper into this conflict. The group includes:

- Sarah Brylinsky, Sustainability Project Manager at Cornell University (and recently MIT)
- Stephanie Corbett, Director of Sustainability at Case Western Reserve University
- Shana Weber, Director in the Office of Sustainability at Princeton University.

The dialogue with this focus group confirmed that these institutions were facing and approaching the Research-Climate Nexus in various interesting ways. While the thinking and approaches overlap, three major themes emerged.

1. Understanding the high intensity of new construction
At Case Western Reserve University, internal trends and benchmarking demonstrate that research buildings most closely aligned with the universities larger mission also are the most intensive energy consumers on campus with the highest carbon footprint. Case has asked researchers to consider the intersection of research outputs and environmental impacts. How is research value normalized by academia? Can this assessment include sustainability, community/social impact or climate specific metrics?
2. Creating "Living labs" to break down silos
Princeton University's recently completed Andlinger Center for Energy and the Environment is LEED Silver, yet still one of the most energy-intensive buildings on campus. The irony is not lost on Princeton's researchers; and the university now has a "campus as lab" director charged with building the dialogue between its facilities and research arms.

3. Linking resources to the mission

Cornell's Senior Leaders Climate Action Group recently *published Options for Achieving a Carbon Neutral Campus (2016)* which links resources and climate risk to the university's large mission. They argue integrating a 'fourth P'— purpose, along with people, planet and prosperity—into its decision making processes.

<http://www.sustainablecampus.cornell.edu/initiatives/options-for-achieving-a-carbon-neutral-campus-by-2035>

<http://www.sustainablecampus.cornell.edu/initiatives/triple-bottom-line-decision-making-training>

Engagement Exercise

Next BuroHappold and focus group members presented these findings at two conferences, using these three themes as a foundation to broaden the discussion among university representatives.

- World Symposium on Sustainable Development at Universities - Sept, 14 -16, 2016 at MIT. <https://sustainability.mit.edu/wssd2016>
- AASHE Conference & Expo—Oct 9-12, 2016 in Baltimore. <http://conference.aashe.org/>

Engagement exercise at both sessions provided greater insight into the level of recognition of this issue, its perceived impacts and additional approaches to address it. Similar to the focus group participants, the majority of universities have high levels of campus climate commitment and research (and therefore carbon) intensity, with most planning to increase their research intensity in the near- and mid-term. (None planned to decrease research intensity.) *Figure 1*

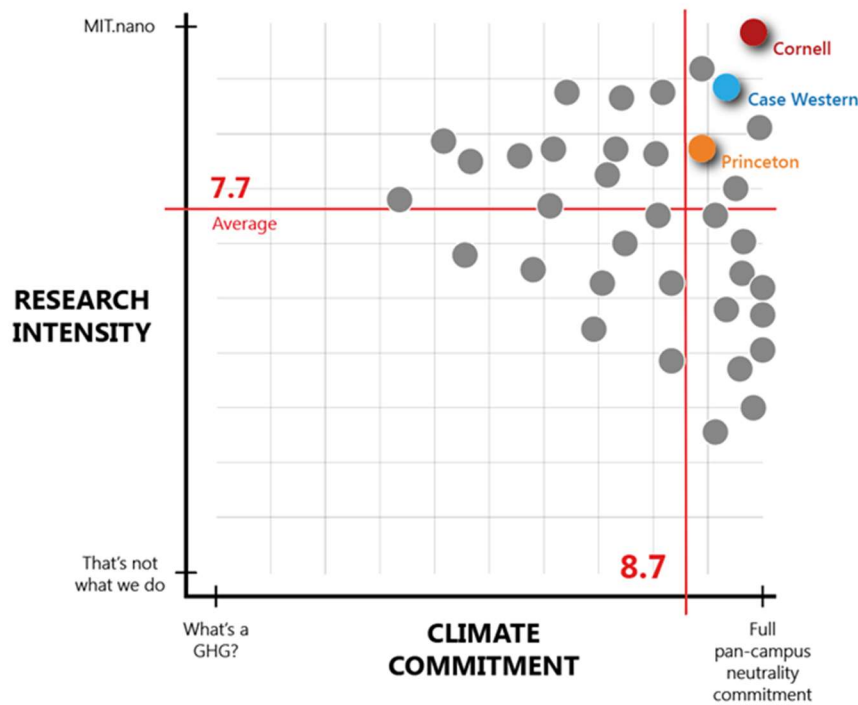


Figure 1: Mapping of attendees' climate commitments and research intensity

The results also show that the Research – Climate Nexus is an important issue for many universities and that most currently are having some levels of discussion on the subject. *Figure 2* However, there was general consensus that universities should be doing much more to address this issue.

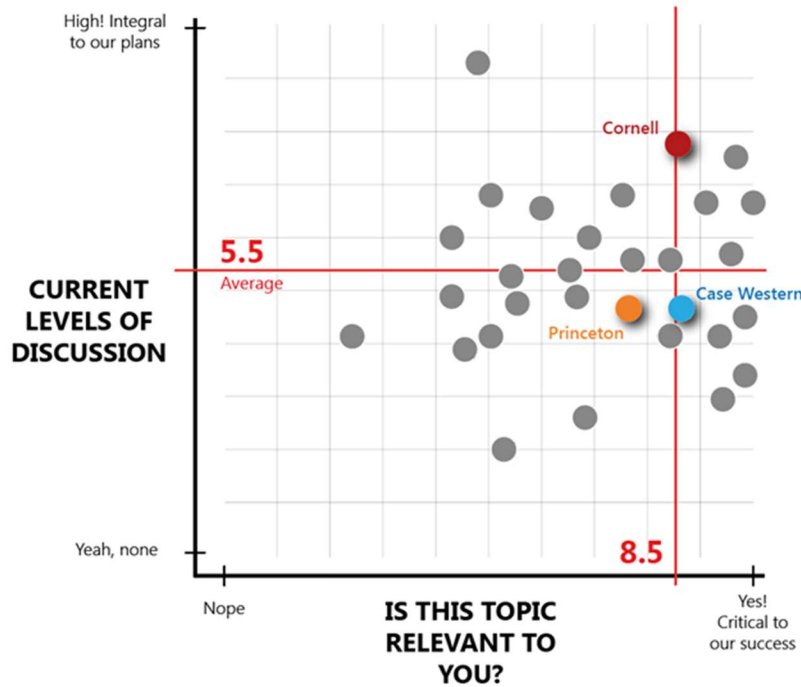


Figure 2: Mapping of this topic to relevance to attendees and current levels of discussion on campus.

Finally, these exercises surfaced the various approaches these universities are using in response to the Research-Climate Nexus. *Table 1*

Silo-Busting	Living Lab	Incentives	New Organizational Structures
<ul style="list-style-type: none"> - Interdisciplinary research growth - Stakeholder pressure for more vibrant collaborative space - Behavioral science partnerships 	<ul style="list-style-type: none"> - Dedicated coordination staff for living lab - Process for aligning living lab coursework - Better sustainability course Integration - Institutionalization of living lab ideas across campus 	<ul style="list-style-type: none"> - Resources to cover professors' time to develop sustainability content - Carbon tax within schools 	<ul style="list-style-type: none"> - New student groups focused on laboratory energy use. Green lab projects - Sustainable operations council, a multidiscipline group to evaluate operational issues - Reorganization of sustainability teams with more emphasis on academia

Table1: Mapping of approaches to discussion of the Research/Climate nexus

Step 3: Survey of Higher Education Institutions

As we move into our next stage of inquiry, please help us understand the impact the Research-Climate Nexus has on your organization by answering the following questions.

- Does your university have a climate commitment?
- Is it a research intensive institution?
- Is it helpful to speak to others who are addressing the conflict between research investments and climate action commitments?
- Is your institution already addressing this issue? If so, how?

Conclusion:

Through our focus group and expanded engagement we have found that the Research-Climate Nexus will continue to grow in relevance as universities expand their research commitments and climate commitment deadlines approach. As campuses try to more clearly understand this challenge, they are trying a number of approaches. Further research and knowledge sharing is needed to advance new approaches and to broaden institutional adoption of practices for addressing this critical issue.

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