

Implications of appointed actors’ academic-operational positioning on prioritised domains for sustainability work: Insights from three universities in Europe and North America

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ABSTRACT

Universities act through four domains of activity: education, research, community engagement, and campus operations. Drawing from mixed-method, qualitative case studies conducted in 2019 of the University of Edinburgh, Utrecht University, and the University of Toronto, we question how the position of mandated sustainability actors within the institutional hierarchy influences the prioritization of certain domains of activity in the university’s sustainability advancement. On this question, the case studies produce three substantive findings. First, when sustainability leadership is situated within operations but also engages academic actors, the university’s academic sustainability initiatives can have greater access to concrete platforms to scale-up its impact. Second, when separate sustainability leaderships exist in both the academic and operational sides, initiatives in each side will be well-developed but may lack integration. Third, when sustainability leadership is situated outside of both hierarchies, the university can better bridge the academic-operational divide and are more integrative in nature. Thus, the position of mandated actors affected the development of certain domains, specifically those of education, research, and campus operations. On the other hand, development of the community engagement domain had less of a correlation with this positioning, as it is typically an extension of the impact of initiatives in other domains. Finally, integrative projects are important as they have the potential to tie less-developed domains with more-developed ones, creating a synergy in the university’s whole-institution approach to sustainability advancement.

1. INTRODUCTION

Universities and their community of students, researchers, and graduates are key producers of sustainability knowledge in the global effort against the climate crisis and for the advancement of the United Nations’ Sustainable Development Goals (SDGs). As such, they are under growing pressure—from climate-concerned students and staff, and external actors who expect these institutions to be leaders in sustainability action—to demonstrate their commitment to the knowledge they produce (Gudz 2004; Sipos et al. 2008; McMillin & Dyball 2009; Hugé et al. 2016; Finnveden 2019; Talloires

Declaration 1990). This pressure has led universities to expand institutional commitments to sustainability over the past 30 years. This growing institutional interest has led to the emergence of scholarship on Sustainability in Higher Education (SHE) (Wright, 2010; Barlett & Chase 2013; Leal Filho 2019). Hundreds of scholarly works have been written on best practices in sustainability education (Salonen 2018; Franco et al. 2019), sustainability research (Fien 2002), greener campuses (Amaral et al. 2020), or the impacts that institutional culture, governance structure and particular policies have on the implementation of sustainability objectives (Menon & Shuresh 2020).

These sustainability commitments are categorized by Bauer et al. (2020) across four domains of activity: education, research, community engagement, and campus operations in the context of their “roles in society” (Trencher et al., 2014). Although important sustainability projects can exist at the intersections of these domains, the ways in which these projects occur and are combined in pursuit of sustainability goals depend on the hierarchical boundaries, regional and historical context, and most importantly, the governance structure of these institutions (Purcell et al., 2019). Drawing from 2019 case studies of the University of Edinburgh, Utrecht University, and the University of Toronto, we outline a framework to answer the question: how does the academic and/or operational positioning of sustainability actors within the institution influence the prioritization of certain domains over others in the advancement of sustainability at the university? The purpose of this white paper is twofold. We seek to help the upper management and staff at universities understand the benefits and challenges according to the positioning of sustainability actors or centres within their institution’s hierarchical structure. Additionally, we hope to provide “Sustainability in Higher Education” (SHE) academics with additional insight on recent developments of sustainability in universities.

2. THEORETICAL BACKGROUND

As Bauer et al. (2020) note, definitions of sustainability are multiple and ‘rhetorically malleable’ in the SHE context. In keeping with the United Nations’ Sustainable Development Goals, this paper adopts a vision that goes beyond environmental sustainability to include social and economic sustainability, in addition to a commitment to procedural sustainability, which recognises the need for redefinition, learning and adaptation of the concept of sustainability to changing conditions (Robinson 2004; Fisher & Rucki 2016, 269) and is therefore rooted in an “experience in collaborative planning for sustainable community development” (Robinson & Cole 2015, 135).

Since universities are understood to contribute to society via the four ‘fields of activity’ or four ‘domains’—education, research, community engagement and campus operations (Bauer et al. 2020; Menon and Shuresh 2020)—to make an institution sustainable has multiple meanings in practice, reaching far beyond the historically dominant environmental focus on greenhouse gas emission reduction. At universities, sustainability is found in the commitments, projects and initiatives operationalized by the institution within the four domains, and address a broad range of environmental and human dimensions.

2.1 Integration of the University’s Four Domains in Sustainability Initiatives

Although universities act via the four domains, not all activities occur within siloes. Therefore, four domains are insufficient for encompassing the full range of sustainability activities at universities. Sustainability projects that work at the intersection of more than one field of activity (for instance, Education x Research, or Research x Campus Operations) have been analysed in several sub-sections of the SHE literature. Throughout this paper, we refer to these initiatives as “integrative projects.”

There exists extensive literature on integrative projects. For instance, initiatives involving both Education and Research are frequently studied as research-oriented learning and inquiry-based learning, in a stream of literature of their own (Ruuskanen et al. 2018; Levy & Petrulis 2012; Hu et al. 2008; Spronken-Smith & Walker 2010). Initiatives integrating education and community engagement are most often investigated in a stream of scholarship that focuses on community-engaged learning, work-integrated learning, experiential learning, service learning, or real-world learning (Boyd et al. 2017; Brugmann et al. 2019; U of T White Paper 2017; Wright, Cain & Monsour 2015; Hardin et al. 2016; Sterling 2010; Blake et al. 2013; Brundiens et al. 2010; Earl et al. 2018; Pretorius et al. 2019). Projects tying research with community engagement objectives are commonly studied in literature on co-production of knowledge, co-creation with community, community-engaged research, applied research and innovation, urban transition labs and real world laboratories (Mauser et al. 2017; Clifford & Petrescu 2012; Singer-Brodowski et al. 2017; Schapke et al. 2018; Nevens et al. 2013; Voytenko et al. 2016; Von Wirth et al. 2019; McCrory et al. 2020). Overall, these integrative projects are described as providing reciprocal benefits to both domains, often with an overall gain that is greater than the sum of its parts (Singer-Brodowski et al. 2017; Waheed 2017).

There is limited research on sustainability projects integrating more than two domains. Living Laboratories are by far the most prominent example in the SHE literature (Robinson et al. 2013; Cayuela et al. 2013; Evans et al. 2015; Verhoef & Bossert 2019; Waheed 2017). Campus as Living Laboratory (CLL) projects combine operational management with education, research, or both to create hands-on learning experiences for students (SEED guide; Waheed, 2017). Through the mobilization of some of its unique research and teaching resources towards campus sustainability operations goals, the CLL model enables universities to experiment with new sustainability projects that most other organisations cannot commit to.

2.2 Governance Structure Literature Review

A prominent subject within academic scholarship on the development of sustainability in universities is the structure of institutional governance. Studies have identified the visionary leadership of higher management (Ferrer-Balas et al. 2008; Purcell et al. 2019), the support of sustainability champions throughout the institution (Lozano 2006; Mader et al. 2013), and the use of business management frameworks (Dunphy et al. 2007; Davis & Goedegebuure 2017) as key internal drivers of the sustainability transformation in universities. Some others have analysed the interactions between an institution’s sustainability culture and its governing structure to develop sustainability on campus (Spira et al. 2013; Bauer et al. 2018; Adams et al. 2018). In particular, Bauer et al. (2020) highlighted that an institution’s culture on sustainability not only shapes but is shaped by the parts of the institutional structure involved in its development.

Our approach to the impact of governance structure on sustainability activities is informed by the organizational learning orientation and holistic orientation framework proposed by Bauer et al. (2020). While both orientations are directed towards the widespread embedding of sustainability in the HEI, their most significant difference lies in the location—within the institutional structure—of the source of the sustainability transformation. We did not find existing literature which studied the influence of the institutional location of the main actors of sustainability on the advancement of sustainability. As such, this paper pays particular attention to the position of the central actors of sustainability within the institution. The institutional hierarchy can be broadly divided into two sides: an academic hierarchy, a sector of the institution working on education or research; and operational hierarchy, a sector of the institution working on maintenance and development of the institution as a whole. These two core communities— operational staff and academic faculty—have become more deeply divided on practices of institutional governance since the 1980s, as part-time faculty and operational staff have earned an increasingly larger role in university leadership (Dad 2011; Ginsberg 2011; Gerber 2014; Salomon-Fernandez 2015). At the same time there is recognition that this binary view can be divisive and there are also those who move between roles and occupy a ‘third space’ (Whitchurch 2013). The issue of connecting the academic and operational sides is thus core to developing sustainability in the four domains of activity, at the whole-institution level (Robinson 2018).

3. METHODS

This research was conducted using a mixed-method, qualitative case-study approach. First, a literature review in the field of sustainability in higher education was used to determine key research questions and develop our evaluative framework for the cases. Three research intensive higher education institutions in continental Europe, the UK and Canada were selected for the study. Their sustainability activities were recorded and analysed using publicly available grey literature and internal documents generously shared by our partners at the three institutions. This grey literature review formed the basis of in-person interviews—held in summer 2019—which were conducted with key sustainability staff and faculty at all three institutions by two University of Toronto interns and authors. The data collection was led by the U of T authors, while the research itself was a collaborative effort among the three universities. As Corcoran et al. (2004) note, sustainability is a complex idea and no two higher education institutions are alike. Thus, case studies are ideal for research on sustainability in higher education so long as the study methods account for certain considerations (Corcoran et al. 2004). Case studies are also appropriate when the investigator cannot control variables and would instead like to study a particular practice without dismissing the complex interplay of variables (Patton and Appelbaum 2003).

The universities we are studying are all large, research-intensive, and internationally recognised universities situated in North America and Europe (Table 1).

Table 1: Overview of the three universities

	Campus Location	Year Founded	Number of Students + Staff/Faculty	Operating Budget (2019/20)
University of Edinburgh	Scotland, Europe	1582 ⁶	44,510 ⁷ + 13,000 ⁸	GBP 1.1 billion ⁹
Utrecht University ¹⁰	Netherlands, Europe	1636	31,801 + 7,191	EUR 810 million
University of Toronto	Canada, North America	1827 ¹¹	93,081 ¹² + 22,211 ¹³	CAD 2.77 billion ¹⁴

4. EVALUATIVE FRAMEWORK FOR CASE STUDIES

Our research seeks to understand how different governance structures affect the operationalization of sustainability at universities. However, to understand and demonstrate the differences between sustainability governance at each institution, we needed a comprehensive framework to summarize the variety of activities put in motion by universities. We use the domains identified from the literature to organize our framework, and investigate the existence of any possible integration across those roles at the institution. To understand the governance structure, we map the position of the main sustainability actors within the institution. Together, this Evaluative Framework helps create a comprehensive summary of sustainability activities at each institution and the governance context within which they exist.

Table 2: Evaluative Framework for the Case Studies

1. Classify the university's sustainability projects within the four domains of activity of universities in society

⁶ https://www.ed.ac.uk/files/atoms/files/201908_uoe_annual_accounts_2019_29_online.pdf

⁷ http://www.docs.sasg.ed.ac.uk/gasp/factsheet/Student_Factsheet_31072020.pdf

⁸ <http://www.docs.csg.ed.ac.uk/HumanResources/StaffNumbers.htm>

⁹ https://www.ed.ac.uk/files/atoms/files/202007_uoe_annual_accounts_2020_27_online.pdf

¹⁰ <https://www.uu.nl/sites/default/files/UU%20Annual%20Report%202019%20web%20ENG.pdf>

¹¹ <https://www.utoronto.ca/about-u-of-t>

¹² <https://data.utoronto.ca/wp-content/uploads/2020/06/Finalized-Factbook-2019.pdf>

¹³ <https://data.utoronto.ca/wp-content/uploads/2020/06/Finalized-Factbook-2019.pdf>

¹⁴ <https://www.utoronto.ca/news/u-t-s-governing-council-passes-budget-2019-2020#:~:text=The%20balanced%20budget%20for%202019,cent%20over%20the%20previous%20year.>

<i>Education</i>	<i>Research</i>
<i>Community Engagement</i>	<i>Campus Operations</i>
2. What integrated activities are there in the three universities?	
3. In what ways are campus Operations and Academics (which includes both teaching and research) integrated for sustainability?	
4. Sustainability Governance structure: Where are the main actors of the sustainability transformation situated within the university structure? Which is the centre 'appointed' to lead institution-wide sustainability?	
5. What is the approach to sustainability adopted by the University?	

5. CASE STUDIES

5.1 University of Edinburgh

Classify your university's sustainability projects within the four domains
<p>Education</p> <p>As a large, multidisciplinary institution, the University of Edinburgh offers courses that engage with the broad idea of sustainability in close to all of its departments (U of E Course Inventory). The "Sustainability and Social Responsibility" course, developed jointly by the School of Education and Geosciences, provides an accessible online learning opportunity for students from any discipline. In addition, "Our Changing World" is an interdisciplinary course available to all students with facilitated group discussions and project work. Currently, The Edinburgh Futures Institute is developing new multidisciplinary elective courses, including one on "Addressing Global Challenges."</p> <p>Furthermore, specific Schools offer a range of program opportunities centred around sustainability. For example, Geosciences hosts a variety of independent and collaborative undergraduate and postgraduate programs, including a MSc in Carbon Management in partnership with the Business School. The latter notably developed a 'Global Challenges for Business' course, required for all 350 first year students in the School's undergraduate programs, which focuses on social and environmental sustainability issues (Yang 2019).</p> <p>In 2018/2019, the Department for Social Responsibility and Sustainability (DSRS) developed a SDG course inventory and started hosting a Social Responsibility and Sustainability Pathways program, which provides 60 students each year with opportunities to learn more about interdisciplinary SRS</p>

issues and methods in experiential, student-led and community-engaged contexts on and off campus, independently of their degree program.

Research

The University of Edinburgh is home to prominent climate research centres, including the Edinburgh Centre for Carbon Innovation (ECCI). As with teaching, research on social and environmental sustainability issues happens throughout the University.

In 2018/2019, the DSRS developed a Scopus-based research inventory that maps all of the academic publications by University of Edinburgh researchers over the last 5 years to the SDGs. This inventory confirms the range of research programmes across the university that relate to different aspects of sustainability. They include: The Global Academies, which provides a nexus for bringing together research expertise on key aspects of sustainability, and the newly-launched Edinburgh Futures Institute (EFI), which aims to combine multi-disciplinary research with co-production of knowledge. This latter Institute was launched as part of the University's Strategy 2030 (2019), which sets out a vision to make the world a better place and to make its research even more interdisciplinary and international, to address global challenges including the Sustainable Development Goals.

Operations

The Department for Social Responsibility and Sustainability (DSRS) was established in 2014 to support the University to achieve its sustainability ambitions by identifying risks and opportunities and catalysing action and collaboration. A SRS Committee, chaired by a senior academic leader in the University and composed of members from academic and professional services, provides oversight and governance for issues led by different parts of the organisation. In 2016, a university-wide Climate Strategy set out a goal to achieve net-zero carbon by 2040. This strategy encompasses an energy reduction campaign, flight cuts, adoption of electric fleet vehicles, policy and behavioural change, and land-based carbon offsetting.

Since 2016, the Estates Department and DSRS have jointly managed a "Sustainable Campus Fund" (SCF), which is dedicated to implementing energy efficiency, reducing carbon emission, supporting renewable energy and other sustainability projects that also have financial returns. By the end of the 2018/19 financial year, a total of £2.3 million had been invested. The £520,000 saved in energy expenditure was fully reinvested in the fund (SRS 2018-2019 Annual Report).

In 2018, the DSRS, in collaboration with the Finance Department, created a reporting system to support action for carbon from business travel. These calculations are used to provide sustainable travel advice and encourage alternative travel options for students and staff (Zero by 2040). To reach its net-zero target, the University of Edinburgh recognises the need for investing in off-campus carbon sequestration for carbon from travel that cannot be eliminated.

The University Operations perspective also includes investments and supply chains. The DRPS works closely with the Finance Directorate and Procurement Office, as it recognises opportunities for impact through business relationships regarding purchasing and investment. In 2018, the University signed the Sustainable Development Goals (SDG) Accord and commitments to the Climate Emergency and the SDGs were integrated in the new University Strategy 2030.

Community Engagement

The University of Edinburgh also attempts to be an actor for social sustainability through its relations with surrounding communities. The University has a long commitment to widening participation in education. The Community Engagement Strategy outlines an approach to support local communities in and around Edinburgh, including support for the inclusion of students from the most marginalised socio-economic groups in Scotland. In 2018, Edinburgh launched its Modern Apprenticeship Program, which enrolls young people from the wider community to work on a range of paid roles across campus while receiving on-the-job training. It also launched the Centre for Homeless and Inclusion Health, which provides both teaching and legal services to improve the health and wellbeing of people experiencing homelessness. The DSRS itself manages a £50,000 Community Grants Fund to support local community organisations. Overall, the University, working in partnership with a range of organizations, has committed to invest up to £8m in social investments to support social enterprise in Scotland and beyond, with thematic priorities around poverty, homelessness, access to education and youth. All of those initiatives support the University's Sustainability and Social Responsibility Strategy and are reported on in the annual SRS report.

What cross-cutting sustainability activities are there in this university?

Research x Operations

The Edinburgh Centre for Carbon Innovation (ECCI) harnesses academic staff expertise from across the University of Edinburgh and beyond and brings together leaders and practitioners from business, finance and the public sector to accelerate change. Examples of key projects are: the 'Place-Based Climate Action Network (PCAN), the Edinburgh Earth and Environment Doctoral Training Partnership, SAGES (the Scottish Alliance for Geoscience, Environment, and Society), and The Edinburgh Futures Initiative. DRPS and ECCI have worked closely together on projects to use the campus and the operations as a 'Living Lab'. For example, a "Climate Kic" project brought together operational colleagues from Estates and Procurement together with researchers and industry partners to develop innovations for addressing carbon and waste.

The Global Academy of Agriculture and Food Security is an interdisciplinary hub of research, teaching and consulting expertise, to support decision making to transform agri-food systems and food security

The College of Arts, Humanities and Social Sciences in collaboration with the DSRS have launched the Make ICT Fair project. U of E researchers work with the Project to develop protocols and gather data to make the Information and Communications Technologies supply chain more sustainable and fair.

Teaching x Community Engagement

There are a range of opportunities which connect teaching and learning with community engagement. For example, the University's "Students as Change Agents" programme, established in 2018 through Career Services, brings together students from different disciplines to tackle real-world problems with wide social, environmental, or economic impact. Furthermore, The Students Association hosts over 250 societies and helps facilitate student volunteering with community groups.

Furthermore, the Edinburgh Futures Initiative is currently developing undergraduate and postgraduate courses and programmes which aim to take interdisciplinary approaches to pressing contemporary challenges. Students enrolled in these courses and/or programmes will receive the

opportunity to work with EFI external partners as they conduct projects concerning pressing, current challenges.

In what ways are campus Operations and Academics (Teaching + Research) integrated for Sustainability?

The SRS Committee provides oversight and governance on SRS issues and action by bringing together a range of academic and professional services staff.

The DSRS hosts approximately twenty living laboratory projects that link students to operational sustainability initiatives within the framework of a course or a student dissertation. All of these projects are managed by DSRS staff, who are specifically tasked to support the link between students' courses and operational objectives.

Sustainability Governance structure

The SRS Committee was established to advise the Central Management Group (now University Executive) and its remit includes providing the drive, leadership and focus to promote SRS at the University. Its members include the Estates Department—which works conjointly with the DSRS on several key initiatives—, the various academic schools that lead research and teaching projects in sustainability, Widening Participation, and other senior leaders who are strongly supportive of advancing sustainability at the university.

The Department for Social Responsibility and Sustainability (DSRS) is the designated centre tasked by senior management to lead the advancement of sustainability across the University of Edinburgh, to strategize for the institution's sustainable future, and to support the various other actors doing sustainability on campus. It works with "almost every part of the University" with the aim of coordinating the development of sustainability programs across campus and in the wider community (Zero by 2040 - Climate Strategy 2016-2026). The DSRS, created in 2013, has its roots in the student-led "Transition Edinburgh University" project, as well as in action enacted by staff in a Sustainability Office previously based within the Estates Department. Now, it is a full department within the University's operational hierarchy. It receives a yearly £1.2 million in funding from and employs approximately 20 people who are all university operational staff.

In 2019, an Academic Lead on Climate Change and Sustainability was appointed by the Principal to support the University's strategic response and connections between research, teaching and operations by providing the University Executive a holistic view on what these domains are doing in climate change and sustainability. The Academic Lead helps ensure that senior University staff make informed decisions regarding these issues.

What is the approach to sustainability adopted by the University?

The University of Edinburgh's Strategy 2030 made a commitment to integrate the Sustainable Development Goals in decision making. The University holds a vision of sustainability that cannot be separated from social responsibility. This definition renders hyper-visible the intertwining between

social and environmental aspects of a sustainability transition. The DSRS supports university reporting on both social and environmental sustainability activities.

5.2 Utrecht University

Classify your university's sustainability initiatives within the four domains

Education

Utrecht University's sustainability education is a distinguishing feature of many of its many academic programs. The University is home to the world-renowned Copernicus Institute of Sustainable Development, which offers distinct Bachelor's and Master's programs along with various sustainability minors for students of other disciplines. Among others, the Bachelor's program in Global Sustainability Science emphasizes the interdisciplinary, complex nature of sustainability challenges. Other branches of Utrecht University such as University College Roosevelt and University College Utrecht offer sustainability education at a Bachelor's level in liberal arts and sciences. The seven disciplinary faculties at the University also offer components of sustainability topics in their coursework.

Research

As a multidisciplinary institution, Utrecht University hosts the seven faculties of Humanities, Law, Economics and Governance, Science, Geosciences, Social & Behavioural Sciences, Veterinary Medicine, and Medicine. These faculties host Bachelor's and Master's programs along with respective disciplinary research that supports the various sustainability projects housed in these faculties. An example is the Copernicus Institute of Sustainable Development, which features four dedicated research groups: Energy, Environmental Sciences, Environmental Governance and Innovation. Notably, the Institute is committed to advancing the SDGs through their research, with particularly strong knowledge production on 8 of the 17 goals.

Operations

Operations departments at Utrecht University are committed to the institutional goal of CO₂ neutrality by 2030. Established in 2015, the Sustainability Program Team within Operations is tasked with making the university "a role model in sustainability performance and conduct, by integrating sustainability into all its activities" (Rademakers, 2018). The Program Team focuses on improving the impact of the University's education and research on operational problem-solving, achieving the carbon neutrality goal by 2030, increasing the visibility of the institution's sustainability efforts and reporting progress transparently.

To create multi-constituent engagement, the Green Office Utrecht (GOU) is commissioned under the Sustainability Program Team as a sustainability hub which supports students and staff through

initiatives which engage the University community for sustainability. The GOU engages students to advance the work on several sustainability themes and also administers the Living Lab program where students research campus sustainability issues flagged by staff.

In addition, the Corporate Real Estate and Campus Department finalised their sustainability ambitions in the 2019 Vision Document for Sustainable Buildings. The Department commits to actualising sustainability ambitions stated in the University's strategic plan, and outlines its objective to shifting the business focus from profit to creating value for 'planet' and 'people.' They have accepted four ambitions for all campus building projects, which are to make the estate functional, healthy, energy-positive and circular.

Community Engagement

Community Engagement activities at the University occur through various streams, given the broad definition of the mission itself. As such, many community engagement activities happen within disciplinary faculties in the form of placements, internships, community projects, and relationships with local organizations. Utrecht Sustainability Institute (USI), a knowledge and innovation-broker institute, facilitates community engagement specifically for sustainability by working with external partners, government bodies and companies to drive urban sustainable innovation. USI occasionally creates opportunities for campus actors to interact and benefit from its external partner networks; however, vast portfolios of USI's activities remain separated from the University's functions.

What cross-cutting activities are there at Utrecht University?

Research x Community Engagement

The Pathways to Sustainability (PtoS) program was created in 2017 to act on sustainability as a strategic research theme of the University. The program conducts transdisciplinary research with public and private partners on societal transitions toward sustainability. The transdisciplinary 'hubs' focus research efforts on specific topics related to the SDGs, with emphasis placed on 'cross-fertilizing' knowledge from various disciplines and co-creating relevant research with societal partners.

Research/Education x Operations

The Living Labs program run by the Green Office integrates research and education initiatives with the campus' operational needs. Among others, students can submit research projects and work toward recommendations on campus sustainability issues as part of their course work. Enlisting students and researchers into problem-solving for campus is one of the ways to promote circularity.

In what ways are campus Operations and Academics (education and research) integrated for sustainability?

Operations and academics are integrated to a limited level. There are few formal settings where the work of operational staff and academics are integrated for sustainability. At present, the Green Office's Living Labs program is a limited example of this integration. However, the University's 2018 Sustainability Report has explicitly communicated ambition to transform the campus into a living lab for sustainability.

The Operations teams have expressed interest in interacting and collaborating with academics, with an example being the Corporate Real Estate Department's work with academics on future projects to create living laboratories within new-building and retrofitting projects. Additionally, the Sustainability Program team consults with researchers on occasion.

Sustainability Governance structure

At Utrecht University, sustainability transformation is led by various actors in the operations and research domains, and also increasingly by those in the education domain. In the Operations department, the Sustainability Program Team and Corporate Real Estate work on campus sustainability, while the Green Office enables staff and student engagement for campus sustainability. On the academic side, efforts are led by the Pathways to Sustainability program and the Copernicus Institute for Sustainable Development. Altogether, sustainability actors are dispersed between the academic and operational arms of the university. It is important to note that the Sustainability Programme Team (operations) and the Pathways to Sustainability program (academic) were both created by higher management to lead the whole-institution sustainability approach at Utrecht University.

What is the approach to sustainability adopted by the University?

The definition of sustainability at Utrecht University is understood to broadly encompass environmental and social aspects, as sustainability is most-commonly described as the sustainable transformation of society. The SDGs are acknowledged and accepted as a sustainability framework at the institution. There is an emphasis on identifying ways of ‘doing’ and ‘being’ in a sustainable future, which has spurred a focus on the ‘inquiry for sustainability’ at the University and effectively asserting the importance of research as a primary driver of sustainability efforts.

5.3 University of Toronto

Classify your university’s sustainability initiatives within the four domains

Education

The University of Toronto is a multidisciplinary institution with a wide range of undergraduate and graduate faculties and professional training schools. Sustainability education is distributed throughout the entire institution and featured prominently within a few key hubs like the School of the Environment, which offers collaborative, sustainability-focused degrees at both the Bachelor’s and Master’s level. The Master of Science in Sustainability Management (MScSM) program offered at U of T Mississauga is a highlight of sustainability education at U of T, amongst other disciplinary graduate studies rooted in sustainability.

Since 2018, the CECCS manages an SDG-based inventory of all sustainability-related undergraduate courses at U of T, which average 28% of the university’s total undergraduate course offering as of 2019-2020. Since 2019, the CECCS has coordinated with several academic faculties to implement “Sustainability Pathways” certificate programs, which aim to make sustainability education accessible to all students independently of their degree programs. U of T commits to engaging its entire undergraduate student body in sustainability education.

Research

Sustainability research is conducted within various disciplines at the University and within key research hubs such as the Institute for Sustainable Energy, Institute for Water Innovation, Global Cities Institute, Centre for Sustainable Health Systems, and many more. In collaboration with the CECCS, the Office of the Vice-President Research and Innovation created an SDG-based Sustainability Research Inventory in 2019-2020, which included sustainability publications by U of T researchers over the past 10 years. The inventory found that of the nearly 300,000 publications since the year 2000, 22.8% implicated at least one SDG.

Operations

The University Operations group oversees all Estates activities and strategies at U of T. The group is tasked with maintaining and managing an expanding campus while reducing the GHG emissions of the University, as per the institutional reduction goal. In addition, the University of Toronto hosts a Sustainability Office in each campus' Facilities and Services group. These offices are primarily tasked to promote a culture of sustainability with students, academic, and operational staff. The Sustainability Offices do not lead emission reduction projects themselves.

In September 2019, led by the Facilities and Services members in the CECCS, the University launched its Low-Carbon Action Plan (LCAP), which laid out its strategy to cut GHG emissions by 37 per cent from 1990 levels by the year 2030, and put itself on a path to becoming a "net-zero" institution (LCAP). An Energy Master Plan laying out the path to a net-zero future for 2050 is under development and will be released by late 2021.

The LCAP and the Energy Masterplan emission reduction goals only target Scope 1 and 2 missions, since currently, the University of Toronto does not report on its scope 3 emissions. In 2019-2020 however, the CECCS developed a blueprint to assess and reduce business air travel, tackling a sizable source of scope 3 emissions. In its Presidential Recommendations Report (2020), the Committee highlighted a three-pronged strategy to address this issue.

Community Engagement

The Centre for Community Partnerships is a key community engagement actor at the University. While its focus is not solely on sustainability, the Centre supports the sustainability community-engaged learning courses (CEL), which were identified in an SDG-based courses inventory created by the CECCS. It provides this support by facilitating the interactions of students and researchers with community partners and providing guidance and resources on strengthening community relationships. Many other forms of community engagement activities happen within the various faculties and departments at U of T, and which are not fully described in this paper.

What cross-cutting sustainability activities are there in this university?

Education x Community Engagement

The Agent of Change (AOC) is a subcommittee of the CECCS dedicated to further bridge education and community engagement at the University, and has focused its efforts on increasing community-engaged learning (CEL) at the University. This subcommittee works on the goal of enlisting at least 5000 students in community-engaged projects.

Education/Research x Community Engagement

Campus as a Living Laboratory (CLL) is a subcommittee of the CECCS that seeks to create more CLL projects which engage students, faculty instructors and operational staff. It works to realize the goal of engaging 1000 students in Campus Living Laboratories every year. In 2019-2020, 6 major campus projects were identified to host CLL projects.

The "Campus as a Living Laboratory for Sustainability" course is offered each year, and allows 6-7

groups of students to each work on a campus sustainability research project for credit. The course is open to students of all disciplines and faculties. Additionally, the Engineering Department offers campus capstone projects to their students, and which are also for credit.

Research x Community Engagement

The Centre for Urban and Community Studies manages Community/University Research Partnerships (CURP), which pair U of T researchers with external associations to develop “applied scholarship on the practical problems and policy issues associated with urban living, particularly poverty, housing, homelessness, social welfare, and social justice issues” (Urban Centre U of T 2020).

In what ways are campus Operations and Academics (teaching and research) integrated for sustainability?

One of the principal mandates of the CECCS is the coordination of operational staff, academic staff, and students to further sustainability at the University. This mandate is enacted in the makeup of the Committee itself: it is composed of all the three constituencies.

As mentioned previously, the Committee, through Campus as a Living Lab (CLL) subcommittee, actively seeks to establish connections between academics and operations by providing an opportunity for students and course instructors to collaborate with operational staff on campus sustainability projects.

Through the leadership of the CECCS, connecting academic and operational staff through integrative projects has become a central aspect of the sustainability transition at U of T. However, although this integration is gaining support within the institution, it is not yet common practice.

Sustainability Governance structure

The University’s Operations and Real Estate Department works to improve campus sustainability. The Department is embedded within the higher administration of U of T and works directly with construction, renovations, retrofits and system upgrades.

In 2017, The Committee on the Environment, Climate Change and Sustainability (CECCS) was created by the President’s Office as part of its *Beyond Divestment* strategy, with a goal to support multiple existing efforts on campus and strategize for the advancement of sustainability across the whole institution. The CECCS stands outside the formal academic and administrative hierarchies of the institution and operates as an advisory group for the President to drive forward projects for sustainability in the four domains of activity.

What is the approach to sustainability adopted by the University?

The University of Toronto follows a broad definition of sustainability that is rooted in the concept of regenerative sustainability and net-positive frameworks that include both social and environmental

issues (Robinson & Cole 2015). By participating in the Times Higher Education Impact rankings in 2019 and 2020, the University has increased its involvement with the UN Sustainable Development Goals (SDGs).

6. DISCUSSION

In analysing the influence of an institution’s sustainability actors relative to its position on either the academic or operational side, we recognise the separation between these two structures as a significant consideration in evaluating sustainability governance. Like many universities, the University of Edinburgh, Utrecht University and the University of Toronto host a large variety of actors working towards the advancement of sustainability within both the academic and operational hierarchies. Table 3 classifies the principal sustainability actors identified at the three institutions within their respective hierarchy structure.

Table 3: Mapping Sustainability Actors by Operational or Academic Side

	U of Edinburgh	Utrecht U	U of Toronto
Operational Side	<ul style="list-style-type: none"> - <u>Department of Sustainability and Social Responsibility (DSRS)</u> - Finance Directorate - Edinburgh Innovations - Estates Department - Information Services - Student Services - Strategic Planning - Communications and Marketing (stakeholder relations) 	<ul style="list-style-type: none"> - <u>Sustainability Programme Team</u> - ‘Corporate Real Estate & Campus’ - Green Office - Utrecht Sustainability Institute (community engagement) 	<ul style="list-style-type: none"> - Tri-campus Planning - Facilities & Services - Sustainability Offices - Centre for Community Partnerships (community engagement)
Academic Side	<ul style="list-style-type: none"> - 3 Colleges (Science and Engineering; Humanities and Social Sciences; Medicine and Veterinary Medicine) and 21 schools - Institutes such as the Edinburgh Futures Institute and Edinburgh Centre for Carbon Innovation 	<ul style="list-style-type: none"> - <u>Pathways to Sustainability</u> - Various academic divisions and research centres, including Copernicus Institute of Sustainable Development - Central administration in charge of academic 	<ul style="list-style-type: none"> - Various academic units, departments, centres, and schools, including the School of the Environment - Various research centres and institutes

	- Institute for Academic Development (IAD)	affairs	- Central administration in charge of academic affairs (VPRI, VPP, VPI)
Across Operations and Academic Sides	Social Responsibility and Sustainability Committee (reports into University Executive)		<u>Committee on the Environment, Climate Change and Sustainability (CECCS)</u>
Outside Operations and Academic Sides			

Most of the key sustainability actors in Table 3 occupy highly comparable positions within each university. All three institutions host the equivalent of a Real Estate department, a centre for community engagement, various academic faculties and research centres, and a central administrative body in charge of academic affairs, all of which share analogous roles in advancing sustainability at the universities. These operational and academic groups are essential actors of any large research-intensive university who have committed to integrating sustainability within their own existing mandate. While their contribution to the advancement of sustainability is certainly not negligible, it is comparable within the institution's business-as-usual activity. What differentiates these three case studies is the academic and/or operational positioning of the sustainability actor specifically designed by the university's higher management to lead, coordinate, and strategize for institution-wide advancement of sustainability. Despite the existence of several other actors for sustainability, these 'designated centres' are ultimately key actors of sustainability action because of the central mandate that they are given, which is the case in many institutions like the University of British Columbia, the Massachusetts Institute of Technology, and McGill University (UBC Sustainability Initiative 2020; McGill Sustainability 2020; MITOS 2020). As well, by 'institution-wide' sustainability, we refer to the changes and activities that can be considered as transformative (Martin & Samels 2012; Robinson & Cole 2015) and promote the sustainability transition of the university (Crow & Dabars 2015). In practice, that means focusing our attention on programs that either do or have the potential to reach a considerable percentage of students, faculty, or staff within the university. This concept differs from programs that are more localised and which add parts to the sustainability potential of the university.

Between the three universities, we observed three distinct models for the positioning of mandated sustainability actors, each with varying degrees on the operational-academic balance. In the

case of the University of Edinburgh, its current model championed a strong operational actor whose initiatives frequently tapped into the academic side. Specifically, it is the Department of Social Responsibility and Sustainability (DSRS), in operations, who is designated to strategize and facilitate the implementation of programs for the University as a whole to rise up to the challenges of social responsibility and sustainability (DSRS 2016). The Social Responsibility and Sustainability Committee has the remit to develop and oversee progress on goals and targets on key issues. Meanwhile, Utrecht University has two appointed actors, one on the operational side and one academic. The Sustainability Program Team is the appointed operational actor tasked with realizing the campus sustainability goals, while the Pathways to Sustainability (PtoS) Program team leads efforts from the academic hierarchy by advancing the sustainability research profile of the institution. Finally, the University of Toronto's main appointed actor houses both operational and academic individuals within a single office that is external to the hierarchical structure of both sides. Acting as an advisory and connecting body for the institution's sustainability transition, the Committee on the Environment, Climate Change and Sustainability (CECCS) was created in 2018 (U of T CECCS 2018). These 'appointed sustainability actors' are underlined in Table 3. The following section discusses the roles of the various actors in the three universities and highlights how the hierarchical location of the 'appointed' sustainability actors impacts the prioritization of certain domains of sustainability activities over others.

University of Edinburgh

The University of Edinburgh's mandated sustainability lead is the Department of Social Responsibility and Sustainability (DSRS). It is tasked by senior management to strategise the University's sustainability advancement and support other stakeholders in the process. While it is an operational actor, the DSRS also assumes leadership on several initiatives which incorporate academic actors and can be considered academic in nature, such as its co-curricular SRS Pathways program and the 20 on-campus Living Labs. Both initiatives engage students in operational projects that address sustainability, but the Living Labs go further by creating the platform for students to access operational projects for their courses and dissertations with the active support of staff from DSRS and the research-oriented Edinburgh Centre for Carbon Innovation (ECCI). Furthermore, the DSRS has taken the initiative of creating inventories to support academic work on sustainability, which map out courses and past academic publications at the University that relate to the SDGs.

The University has been a regional and global leader in operational sustainability for several years, with the close collaboration between the DSRS and the Estates department having yielded ambitious yet achievable targets for the University's transition to sustainable operations. For its part, the DSRS and its positioning within the operational Corporate Services Group of the University grants it a considerable budget and staff, as well as key connections and working relationships with various other operational actors in the University. For example, the DSRS and the Estates Department produced the 2016 Climate Strategy and pushed senior management in operations to commit to consulting the SDGs in all business decisions. As previously elaborated, the DSRS' staff also work with a range of academic stakeholders from across the University as a way to provide a concrete platform for their research and teaching. The DSRS' ties with academic sustainability also exist in the fact that its oversight board, the SRS Committee, has members who lead the various schools at the University.

The strong role that an operational actor in the DSRS has in leveraging operational and academic sustainability at the University is supplemented by independent academic work carried out by academic units. The University's research and teaching programs in sustainability are top-tier, such

as those developed by the School of Education and Geosciences and programmes such as the Students as Change Agents which provide integrated opportunities for students across the University. The University's Community Engagement initiatives are led by a Community Engagement Programme Board which encompass various actors from across the University.

At the University of Edinburgh, we observed a mandated sustainability actor in operations who also has various ties with the academic side, allowing it to lead joint projects and facilitate the integration of research and teaching objectives with operational projects. This technically materialises in the considerable advantage of the academic side having a platform to better ground and test new sustainability knowledge through co-production, which gives the University an edge in comparison to solely academic projects. Ultimately, while the DSRS aims to cut across traditional hierarchy boundaries (Cooper & Gorman 2017), its position in the University's operational side nevertheless renders it more focused on operational sustainability objectives as opposed to university-wide sustainability education and research initiatives. This is not necessarily a disadvantage, as we acknowledge the limitations when a main operational actor is expected to reach to the academic side and lead academic sustainability initiatives.

Utrecht University

Utrecht University has a mandated sustainability actor in each of the academic and operational sides. On the academic side, leadership in sustainability is designated to the Pathways to Sustainability (PtoS) program team, while the designated actor in operations is the Sustainability Programme team.

The adoption of sustainability as one of the University's four strategic research themes led the Executive Board to generate a central push for the advancement of sustainability (UU Strategic Plan, 2016-2020). The Board directly funded the creation of the PtoS program in the academic hierarchy, which fosters transdisciplinary research for sustainability. Through its four research hubs and its concerted effort to engage various societal stakeholders in the research process, the program facilitates the co-production of knowledge for sustainability which has been called for in recent SHE literature. The program aims to decrease barriers and increase the appeal of transdisciplinary research for sustainability among academics at the University. The PtoS program's position as an academic actor opens up connections and collaboration potentials in advancing sustainability in research over the three other domains.

On the operational side, the Sustainability Programme team acts as the appointed actor, tasked with realizing the operational ambitions of carbon neutrality by 2030 (UU Strategic Plan, 2016-2020) and actualising campus sustainability objectives through collaborations with researchers and other operational actors such as the Corporate Real Estate and Campus teams. They make a conscious effort to engage other constituents of the University, exemplified by engagement with researchers to improve the biodiversity of campus lands and with students to run sustainable behaviour change campaigns. Furthermore, the Sustainability Programme team's Green Office is tasked with raising awareness on sustainability achievements and engaging staff and students in sustainable projects such as the living labs. Altogether, the Sustainability Programme team is most effective in advancing sustainability in Operations over the other three domains of activities.

Sustainability initiatives in the education and community engagement domains currently lack a university-wide mandate and are often the independent initiatives of academic and operational units, carried out in a distributed manner. The 2018 Sustainability Report suggested the formulation of a sustainability education program with the ambitious goal of encompassing all students regardless of

their disciplinary focus. The Copernicus Institute on Sustainable Development currently leads in sustainability education among other academic faculties with its offerings of various Bachelor's and Minor programs, however, its engagement effectively only includes students enrolled in these programs. Similarly, a distributed approach is observed in community engagement. Although many faculties have connections to relevant external stakeholders, there is a lack of organized efforts at the university level. Community engagement activities are mostly observed in projects led by other actors, such as the Corporate Real Estate department (Circular Pavilion Project), the Sustainability Programme Team (Biodiversity Project) and the PtoS program (Stakeholder Engaged Research).

At Utrecht University, the separate mandated actors in each of the academic and operational sides creates a dynamic where initiatives developed by the two distinct actors are often not integrative or cross-cutting in nature. For example, the Sustainability Programme team's success in creating connections with academics for operational sustainability is still limited, often at the level of outreach. However, this is not a disadvantage but is simply the resulting condition. We highlight that each actor's mandated focus on their own respective side enables them to allocate resources and staff in a more directed manner, creating initiatives that are well-developed in each side. The Green Office's Living Labs program is a good example of current integration between academic and operational actors on a project, but there exists room for improvement, with one being the Corporate Real Estate department's future plans to collaborate with academics on new-builds and retrofits. Closer integration between the appointed academic and operational actors will enable both to better plan a whole-institution sustainability approach that was mandated by higher management during their inception. Lastly, while the two sustainability actors in the operational and academic sides mean that the University is able to prioritize research and operations, the domains of education and community engagement for sustainability are still developing.

University of Toronto

Sustainability research and teaching at the University of Toronto are developed locally in a number of academic faculties and departments across the three campuses. The Office of the Vice-President, Research and Innovation, an operational staff unit, played a key role in developing a whole-institution sustainability research inventory in 2019 in partnership with the Committee on the Environment, Climate Change, and Sustainability (CECCS). Under the leadership of the Facilities and Services group in operations, the University has made considerable commitments to reduce its carbon emissions. However, these commitments remain slightly less ambitious than those of the University of Edinburgh. The University's appointed sustainability actor, the CECCS, is a Presidential Advisory Committee established in 2017 with a mandate to bring together students, staff, faculty and alumni to support the development of university-wide sustainability projects and recommendations. Key projects led by the Committee include expanding Campus as Living Lab (CLL) projects and furthering initiatives to increase participation in community-engaged learning (CEL) for sustainability. As well, curricular pathways are being developed to open sustainability education to students of all disciplines, supported by the creation of an inventory of sustainability research published by the University.

The CECCS presents a unique case among the universities as it is situated outside of the institution's formal operations and academic hierarchies. It takes on the role of a non-binding consultancy with the university's senior management and is composed of both academic faculty and operational staff who are selected on the basis of nominations. As funding is typically localised within either the operational or academic sides, the CECCS' positioning has initially prevented it from receiving

significant institutional funding, often dependent on short-term presidential grants and external donations. This limitation exists only in the first years of its inception, as plans are currently in place for the CECCS to have a formal budget supporting its initiatives. The nature of these initiatives, on the other hand, are the advantage of the CECCS model. It is better positioned as a Committee to bridge the divide between academics and operational staff as initiatives are developed jointly between actors from the two sides, which ideally results in a more balanced and integrated approach to institution-wide sustainability projects in the education, research, operations, and community engagement domains.

Community Engagement for Sustainability

Institution-wide community engagement for sustainability was still in its developmental stages in the three universities, and the case studies were not able to observe meaningful correlations between a university's commitment to community engagement and the position of its appointed sustainability actors on either the academic or operational side. Instead, community engagement seemed to materialize from a broad variety of departments in the university. Furthermore, community engagement for sustainability was also observed to have different meanings in the three case studies. At the University of Edinburgh, the DSRS runs programmes for staff and students, as well as advances community engagement on SRS issues. At Utrecht University, community engagement involves societal stakeholders in the research process through programs such as the Pathways to Sustainability. And at the University of Toronto, it refers to increased student participation in Community Engaged Learning (CEL). The difference in the adoption of Community Engagement for sustainability at the universities suggests that different academic or operational actors can provide leadership for the initiative depending on the intended impact.

Integrative Projects

From our case studies, we argue that universities should enact domain-intersecting sustainability projects as a means to leverage a less prioritized domain through integrating it with a more prioritized domain. While the University of Edinburgh has not laid out a whole-institution sustainability education plan at the moment, its Pathways and Living Labs programs have created highly meaningful opportunities for more students to learn about sustainability. Similarly, projects such as the Make Information and Communication Technologies (ICT) Fair ties research actors with institutional procurement issues managed by operational staff. These programs have allowed the University of Edinburgh to harness its strong engagement in operational sustainability to meaningfully enter the fields of sustainability teaching and research, which are its comparatively less-developed domains. At the University of Toronto, the CECCS' Agent of Change subcommittee aims to further develop its community engagement for sustainability portfolio, but projects uniquely focused on community engagement have not yet been prioritized in the University's sustainability and climate strategies. Rather, the development of community engagement initiatives have depended on integration with the education domain in the form of Community-Engaged Learning opportunities, which helps maintain a sustainable, long-term strategy to enhance both these two domains. Similarly, at Utrecht University, where Community Engagement is the least prioritized domain, integrative projects such as the Pathways to Sustainability transdisciplinary research program add to its portfolio of sustainability initiatives. Even for institutions in differing governance contexts, we suggest that

integrative projects may act as valuable steps to embed sustainability in a domain that has so far been less prioritized.

7. CONCLUSION

This qualitative case-study of the three research-intensive universities sought to understand the impact of sustainability governance structures on the social roles or domains of universities that are prioritized for sustainability advancement—education, research, operations and community engagement. We have found that the positioning of the designated sustainability leadership considerably influences which among the education, research and operational domains are prioritized for sustainability advancement at the university. This positioning is also deterministic of the degree of integration between operations and academic actors on sustainability initiatives. We observed that a sustainability leadership hosted on the operational side would mean that sustainability projects advanced at the university were primarily in the operational domain, which is logical. However, if this operational leadership can also engage academic actors on their initiatives, the impact of these academic initiatives can be increased as they now have access to the campus' operations platforms to test new knowledge. Still, a major finding was that sustainability leadership have a greater capacity to develop initiatives in the corresponding domain where they are hosted. When the academic and operational domains have their own separate sustainability leadership, initiatives in each domain were found to be well-developed but lack integration between them. This integrative aspect may be addressed by positioning the sustainability leadership outside of either domain's formal institutional hierarchy, which we observed to lead to better bridging between the academic-operational divide in sustainability initiatives. Since there are differences of which domains are leveraged depending on the position of the sustainability leadership on campus, we affirm the value of integrative projects as a way to increase engagement and to create synergy in developing less-prioritized domains.

Through the application of our case study's framework, we identified various strengths and limitations to the process. Firstly, this paper uses education, research, community engagement and campus operations as the four domains of a higher education institution. However, for large universities, the management of considerable endowment, pension funds, and sustainable investments is increasingly recognised as an important obligation. This obligation has perpetuated widespread student-led fossil fuel divestment campaigns (Maina et al. 2020; Healy & Debski 2017) and growing institutional commitments to invest in environmental and social sustainability assets (AASHE Stars Reports: Arizona State University 2020; Colorado State University 2019; Cornell University 2020; Stanford University 2019). As well, this paper did not consider enough engagement with sustainable finance, which were preliminarily found to be an important factor in the community engagement domain. Furthermore, our framework does not capture important differences among the sustainability projects at universities such as financial investment, visibility, number of people engaged or impacted and other such quantitative criteria. However, the complex entanglement of all those values make a comparison of sustainability projects hazardous at best. This paper does not intend to compare which university has advanced further in sustainability, as optimal advancement can look differently for different institutions. Rather, using detailed qualitative case studies, it attempts to evaluate whether some domains of activity have been given more significance than others within each individual university.

Additionally, we selected only three institutions for this case study so that we can commit to a sufficient analysis of the systematic qualitative information and extend contact among the three universities, though we acknowledge that a greater number of studied institutions would solidify or challenge this paper's findings. Finally, in an effort to understand the impact of sustainability actors mandated by the institution, particularly by upper management, we did not include examples of grassroots efforts and student-led sustainability initiatives within the university. Such efforts greatly contribute to and are indicative of sustainability culture on campus and should be inventoried for other types of analyses.

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